2.4.7 ICE EFFECTS

The U.S. EPR DCD includes the following COL Item for Section 2.4.7.

> A COL Applicant that references the U.S. EPR design certification will provide site-specific information regarding ice effects and design criterion for protecting safety-related facilities from ice-produced effects and forces with respect to adjacent water bodies.

This COL item is addressed in the following sections.

As discussed in Section 2.4.1, the {Calvert Cliffs Nuclear Power Plant (CCNPP) site is located on the western shore of the Chesapeake Bay, approximately 10.5 mi (16.9 km) southeast of Prince Frederick in Calvert County, Maryland.} Figure 2.4.7-1 indicates the location of the site.

{Reference to elevation values in this section are based of the National Geodetic Vertical Datum of 1929 (NGVD), values unless otherwise stated.}

2.4.7.1 Ice Conditions

Ice at a nuclear power plant site could occur in any one of the following forms:

- Surface ice and its associated forces
- Anchor ice formation on components
- Frazil ice that could clog intake flow passages
- Ice jams that could affect flow path to the water supply intake
- Breach of ice jams causing flooding at site
- Ice accumulation on roofs of safety-related structures and components
- Ice blockage of the drainage system causing flooding
- Ice accumulation causing reduction in water storage volume

{Historical data characterizing ice conditions at the CCNPP site have been collected and the effects evaluated for CCNPP Unit 3. These data include ice cover and thickness observations in the Chesapeake Bay and its tributaries, ice jam records, and long term air temperature measurements from the nearby Patuxent River Naval Air Station meteorological tower (WBANID 13721). Patuxent River Naval Air Station is approximately 10 mi (16 km) south of the CCNPP site on the same (western) shore of the Chesapeake Bay. It also maintains a data record from 1946 to present. Figure 2.4.7-1 shows the location of the Patuxent River Naval Air Station relative to the site.}

2.4.7.2 Description of the Cooling Water Systems

{CCNPP Units 1 and 2

The existing CCNPP Units 1 and 2 use an open cycle once-through cooling system for their normal heat sink. The once-through Circulating Water System withdraws cooling water from Chesapeake Bay via the CCNPP Units 1 and 2 shoreline intake structure, circulates it through the main condensers, and returns the heated water to the Chesapeake Bay via the existing submerged outfall about 850 ft (259 m) offshore. Also relying on the Chesapeake Bay for its cooling water supply is the Salt Water System. The Salt Water System is a safety-related system that provides cooling water for the Service Water System, Component Cooling Water System, and Emergency Core Cooling System pump room coolers. Seal water for the circulating water pumps, which supply water to the main condensers, is also supplied by the

Salt Water System. Each unit has three Salt Water System pumps that provide the driving head to move saltwater from the CCNPP Units 1 and 2 shoreline intake structure through the system and back to the existing circulating water discharge conduits.}

{CCNPP Unit 3}

The {CCNPP Unit 3} Circulating Water Supply System (CWS) uses a {closed-cycle wet cooling tower system} as its normal heat sink. Makeup water is withdrawn from the Chesapeake Bay through a new shoreline intake structure just south of the existing shoreline intake for CCNPP Units 1 and 2. Blowdown flow from the cooling tower is sent to a common retention basin for water quality treatment prior to discharging to a new offshore outfall in the Chesapeake Bay}. The CWS for {CCNPP Unit 3} is a non-safety-related system.

{CCNPP Unit 3} also has a safety-related Essential Service Water System (ESWS) to provide cooling water to the Component Cooling Water System heat exchangers and to the emergency diesel generator cooling jackets to dissipate heat. The ESWS is a closed-cycle system that uses mechanical draft cooling towers for heat removal. These cooling towers provide the Ultimate Heat Sink (UHS) function. Makeup water to the ESWS cooling towers is normally obtained from the desalinization plant receives water from the CWS. No separate shoreline intake at the Chesapeake Bay is required for the desalinization system.}

The basins of the ESWS cooling towers are sized to provide sufficient water to permit the ESWS to perform its safety-related heat removal function for up to 3 days (72 hours) post accident under the worst anticipated environmental conditions without replenishment. Beyond the 72-hour post-accident period, makeup water is supplied from the new UHS makeup water intake structure, a safety-related structure {adjoining the CCNPP Unit 3 CWS makeup intake structure.} Blowdown from the ESWS cooling towers discharges to the {common retention basin and eventually to the new offshore outfall.}

2.4.7.3 Intake and Discharge Structures

{CNPP Units 1 and 2 use water from the Chesapeake Bay for cooling purposes. Water is drawn to the CCNPP Units 1 and 2 intake structure on the shoreline east of the main plant through a 40 ft (12 m) to 51 ft (15.5 m) deep dredged channel that extends approximately 4,500 ft (1372 m) offshore. A baffle wall that extends to a depth of -28 ft (-8.5 m) over the intake channel, limits the intake to mostly bottom water. Water passes is discharged to the north of the plant through the existing outfall, which is approximately 850 ft (259 m) offshore. The outfall is located in a dredged discharge channel with a bottom elevation of about -19.5 ft (-5.9 m).

{Two new intake structures will supply makeup water to the non-safety related CWS and to the safety-related ESWS cooling towers of CCNPP Unit 3. The new intake structures are located on the shoreline just south of the existing intake structure of CCNPP Units 1 and 2 within the existing embayment. A new intake channel, 123 ft (37.5 m) long by 100 ft (30 m) wide, dredged to -20 ft (-6.1 m) will accommodate the new intake structures. The CCNPP Unit 3 CWS makeup water intake structure houses a total of three CWS makeup pumps.} The {CCNPP Unit 3} UHS makeup water intake structure houses a total of four UHS makeup pumps. All CWS and UHS makeup pumps are installed in individual pump bays, each with a set of dedicated trash racks and traveling water screens to filter out debris and foreign objects. {At the design minimum operating water level of -4.0 ft (-1.2 m) for the CWS makeup intake and -6.0 ft (-1.8 m) for the UHS makeup intake, the flow velocity in the widened intake channel would be less than 0.5 ft/s (0.15 m/s), based on the CCNPP Unit 3 maximum makeup water demand of 43,480 gal/min (164,590 l/min). The corresponding approach flow velocities to the CWS makeup pump intake

structure and the UHS makeup pump intake structure would be less than 0.3 ft/s (0.09 m/s) and less than 0.1 ft/s (0.03 m/s), respectively.}

{Plant effluent going back to the Chesapeake Bay from CCNPP Unit 3 consists of cooling tower blowdown from the CWS cooling towers and the ESWS cooling towers, desalinization plant reject stream, and non-radioactive wastewater streams from the domestic water treatment and circulating water treatment systems. A 30 in (61 cm) diameter outfall pipe is used to discharge the plant effluent to a submerged 3-port diffuser located at about 550 ft (168 m) offshore and approximately 1,200 ft (366 m) south of the new intake structure. The water depth at the discharge outfall is approximately 10 ft (3 m).}

Figure 10.4.5-1 shows the location of the CWS intake structures and outfall for {CCNPP Unit 3}. Figures 10.4.5-4, 10.4.5-5 and 10.4.5-7 show the layout of the CWS intake and outfall structures. In addition, Figure 9.2.5-1 shows the general intake areas of {CCNPP Unit 3 as well as existing CCNPP Units 1 and 2}. Figure 9.2.5-2 shows the plan view of the UHS makeup water intake and forebay, and Figure 9.2.5-3 shows a section view of the UHS intake.

2.4.7.4 Historical Ice Formation

{The climate at the CCNPP site is part of the Chesapeake Bay} climate system. Based on air temperature data summaries collected at Patuxent River Naval Air Station from 1971 through 2000, the monthly average air temperature in the region ranges from about 36.1°F (2.3°C) in January to 78.1°F (25.6°C) in July, while the monthly minimum air temperature for January is 28.3°F (-2.1°C) and for February is 29.9°F (-1.17°C) (NOAA, 2002).

Daily air temperatures measured at the Patuxent River Naval Air Station meteorological station indicates that below freezing temperatures occur typically between the months of November and March. However, maximum accumulated freezing degree-days, as defined in Section 2.4.7.6, occur mostly in January and February.

Observations of ice cover conditions in the Chesapeake Bay indicate that the winters of 1977 through 1981 were unusually cold and icing conditions were more severe than normal. The winter of 1977 was the coldest and iciest winter on record in the region. The ice and snow coverage of the Chesapeake Bay was about 85%, compared to normal conditions of about 10% (NWS, 1982).

The National Ice Center (NIC) conducted ice surveys and produced ice charts showing spatial distribution of ice cover conditions in the Chesapeake Bay for the winters of 2000 through 2003 (NOAA, 2007). The ice charts of January 28, 2000, February 1, 2004, January 24, 2005, and January 26, 2005, shown in Figures 2.4.7-2 to 2.4.7-5, indicate ice formation at and near the project site (NOAA, 2007). The ice charts also include a description of ice conditions based on the Egg Code ice classification system and detailed in Figure 2.4.7-6a through Figure 2.4.7-6c (NOAA, 2007).

The NIC ice charts indicate that new ice, which includes frail, grease, slush, and shuga types of ice, and gray ice, with thickness 2 to 3 in (5.1 to 7.6 cm) are common in the southern part of the Chesapeake Bay. In particular, new ice seems to be more common near the CCNPP site.

According to NIC, the southern part of the Chesapeake Bay (south of 38°32' latitude, about 8.5 mi (13.7 km) north of the CCNPP site), where the CCNPP site is located, is less prone to ice formation than the northern part and the tributaries. Nevertheless, the southern part of the Chesapeake Bay does experience ice conditions when the winter temperatures are below normal.

Ice accumulation on the transmission towers and switchyard of existing CCNPP Units 1 and 2 has occurred during freezing rainfall. To date, events such as these have not affected the operation of CCNPP Units 1 and 2.}

2.4.7.5 Frazil Ice

{Research on the properties of frazil ice indicates that the nature and quantities of ice produced depends on the rate of cooling within a critical temperature range. Frazil ice forms when the water temperature is below 32°F (0°C), the rate of super cooling is greater than 0.018°F (0.01°C) per hour in turbulent flows, and there is no surface ice sheet to prevent the cooling (USACE, 1991) (Griffen, 1973). This type of ice, which is in the shape of discoids and spicules (Griffen, 1973) typically forms in shallow flowing water, such as in rivers and lakes, when the flow velocity is approximately 2 ft/s (0.61 m/s) or higher (IAHR, 1970).

If a submerged intake is located in shallow water where frazil ice is forming, ice may grow directly on metal surfaces such as the trash rack and/or water screens. This type of ice is called anchor ice (Griffen, 1973).

Neither frazil ice nor anchor ice have been observed in the intake structure of the existing CCNPP Units 1 and 2 since the start of operation. There is no public record of frazil or anchor ice obstructing other water intakes in the Chesapeake Bay. Formation of frazil ice at the existing intake could be precluded because of the potential recirculation of the heated cooling water discharge from CCNPP Units 1 and 2 back to the intake structure forebay. Based on the historical climate records, frazil ice or anchor ice is unlikely to occur to an extent that will affect the function of the makeup water intakes. Nevertheless, provisions to mitigate the formation of frazil and anchor ice at the intake structures are discussed in Section 2.4.7.7.}

2.4.7.6 Surface Ice Sheet

{The intake structures for CCNPP Unit 3 could be impacted by surface ice formation in multiple ways. For instance, the formation of a surface ice sheet could exert forces on the contact structures due to ice expansion. Unrestrained ice sheets drifting with currents could also exert force on the structures by direct impact. Finally, shallow water or shoreline intakes designed with approach channels can become obstructed by ice jams.

Ice sheets formed outside of the existing baffle wall in the intake channel would not exert force on the new intake structures. This is because the baffle wall, extending to -28 ft (-8.5 m) , would restrict any drift ice from entering the intake forebay even at the minimum design operating water level in the bay of -4.0 ft (-1.2 m) for the CWS makeup water pumps and -6.0 ft (-1.8 m) for the UHS makeup water pumps. Drifting ice sheets coming over the top (5 ft (1.5 m)) of the baffle wall is also unlikely to occur. Drifting ice sheets formed between the baffle wall and the intake forebays would be restrained by the skimmer wall at the entrance of each of the intake structures. The skimmer walls would extend to a minimum of 2 ft (0.6 m) below the -6.0 ft (-1.8 m) elevation, the lowest minimum design water level for the two new intake structures. Trash racks would also prevent large pieces of ice from broken ice sheets from entering the traveling water screens and pump bays (NRC, 1979).

Even though surface ice has been observed in the southern part of Chesapeake Bay, ice jams causing interruption of the cooling water supply for CCNPP Units 1 and 2 have not been reported. It should be noted that the existing CWS system is equipped with a de-icing line that was designed to return a portion of the heated cooling water discharge downstream of the main steam condensers to the intake forebay during cold weather. Potential recirculation of the warm cooling water plume from the CCNPP Units 1 and 2 outfall back to the intake channel may also have been a mitigating factor in eliminating the formation of ice jams in the intake area.

However, in the event that both CCNPP Units 1 and 2 are not operating during severe winter conditions, there would be no warm water recirculation back to the intake or to the intake channel to reduce ice formation. To assure the CCNPP Unit 3 safety-related makeup water supply would not be affected by surface ice, the possibility of ice jam formation and the potential for flow passage blockage are examined by estimating the maximum surface ice thickness that could form during the worst icing condition expected at the site.

The maximum ice thickness that could form at the CCNPP site was estimated using historic air temperature data from the nearby Patuxent River Naval Air Station meteorological tower for the period of 1946 through 2006. Surface ice thickness can be estimated as a function of accumulated freezing degree-days (AFDD) using the modified Stefan equation (USACE, 2004). Accumulated freezing degree-days is obtained by summing the freezing degree-days for each day, which is the difference between the freezing point (32°F (0°C) and the average daily air temperature. Table 2.4.7-1 summarizes the estimated maximum accumulated freezing degree-days and the corresponding ice thickness estimate. As indicated in Table 2.4.7-1, for the years 1946 through 2006, the maximum AFDD is 265.3 occurring on February 9, 1977 with the corresponding ice thickness estimated to be approximately 13 in (33 m). This estimate is conservative because it assumes a freshwater freezing point of 32°F (0°C). Because the Chesapeake Bay is brackish, the freezing point will be depressed, which will mitigate the formation of surface ice. The conservatism is apparent when the 13 in (33 m) estimate is compared to the 2 to 8 in (5.1 to 20.3 cm) ice thicknesses observed south of the Chesapeake Bay Bridge in early February of 1977, the iciest winter on record for the region (NWS, 1982). With the depth of the existing intake channel at 34 ft (10.4 m) to 45 ft (13.7 m) below the minimum operating water level of -6.0 ft (-1.8 m) for the UHS makeup water intake, any ice jam formation at the site will not cause a complete blockage of the flow passage to the new intake structures.

The surface ice layer, when present, insulates and provides protection against the formation of frazil ice. It is noted, however, that the formation of surface ice can exert a high load on the portions of the intake structure in contact with the ice. Ice-induced forces are accounted for in the design of the intake structure as discussed in Section 3.8.}

2.4.7.7 Ice Accumulation on the Intake and ESWS cooling Tower Basin and Preventive Measures

{The surface current induced by the water flowing into the CCNPP Unit 3 intake structures could cause ice floes around the intake structure to be withdrawn or moved by the water. The intake structure design incorporates deep skimmer walls and trash racks in order to prevent ice from reaching the pump bays. However, accumulation of ice at the trash racks and the traveling screens could clog and reduce the flow capacity of the intake. The trash racks and/or the traveling water screens are equipped with heat tracing to mitigate the ice accumulation. Additionally, automatic and continuous raking of trash racks is used to further ensure the trash racks are free of ice buildup.

For the ESWS cooling tower basins, measures will be taken to ensure that the basins underneath the cooling tower cells have a minimum of 72 hours water supply without the need for any makeup water during a design basis accident. As indicated in Section 2.4.7.2, any makeup water to the basin needed beyond the 72 hour, post accident period will be supplied from the new CCNPP Unit 3 UHS makeup intake structure. In order to assure the availability of a minimum of 72 hours water supply in the ESWS cooling tower basins, the minimum volume in each basin will be established considering: (a) losses due to evaporation and drift under design basis accident conditions and design environmental conditions; (b) minimum submergence to

avoid formation of harmful vortices at the pump suction; and (c) the operating range for basin water level control. During extreme cold weather conditions, operational controls will be implemented, as required, to assure the availability of the required volume. Tower operations during cold weather will mitigate ice buildup consistent with vendor recommendations (e.g., periodic fan operation in the reverse direction). Therefore, operational controls, together with system design features, will prevent ice formation in the ESWS cooling tower basins as discussed in Section 9.2.5.}

2.4.7.8 Effect of Ice on High and Low Water Levels and Potential for Ice Jam

{Because the cooling water would be drawn from the Chesapeake Bay and because of the baffle wall (that separates the Chesapeake Bay from the intake forebay), there is no potential for ice-induced low and high water levels at the intake forebay. The top of the baffle wall is 5 ft (1.5 m) which will prevent ice and waves from entering the intake forebay. In addition, there is no reliance from open reservoirs such as ponds or basins for safety-related water supply, with the exception of the ESWS cooling tower basins as discussed in Section 2.4.7.7. Therefore, reduction of the reservoir water volume due to surface ice sheet formation would not be of concern. The potential for ice-induced low and high water levels are more likely to occur with river intakes in cold regions.

The baffle wall (with its top elevation at 5 ft (1.5 m) and bottom elevation at -28 ft (-8.5 m)) functions as a curtain wall that separates the intake from the Chesapeake Bay. The deck level of the UHS intake is at 11.5 ft (3.5 m) as shown in Figure 10.4.5-5. However, during severe winter storms, the baffle wall could be overtopped by the high water level caused by a storm surge. According to the NOAA (NOAA, 2004), the highest water level at Sewells Point, Virginia generated by a winter storm between the years 1927 to 2003 was 5.05 ft (1.54 m) above mean higher high water (MHHW) occurring in March 1962. This rise in water level includes a correction for sea level rise to 2003.

Assuming conservatively that the same water level rise was experienced inside the Chesapeake Bay during the 1962 winter storm, the corresponding still-water level at the CCNPP site would be about 6.5 ft (2.0 m), using the tidal datum conversion scale at Cove Point, Maryland where the MHHW is 1.39 ft (0.42 m) above (NOAA, 2006). It can, therefore, be postulated that the baffle wall could be overtopped by storm surges during extreme winter storm events. No inundation at the UHS intake deck level, however, is expected. Surface ice, if present, may be carried into the intake forebay when the storm surge overtops the baffle wall, but will be prevented from entering the intake by the skimmer wall which extends below water to -8 ft (-2.4 m). As a result, there will be no impact to the UHS intake and winter storm surge will not affect the supply of emergency cooling water.

The probable maximum store surge defined in Section 2.4.5 is higher than the expected winter storm surge. In either case, the baffle wall in front of the UHS intake prevents ice from entering the structure. The enclosed pump house is designed against ice forces as described in Section 3.8.

Although the tributaries to the Chesapeake Bay are prone to ice formation, there has been no major ice jam formation or flooding recorded due to breaching of ice jams on the Patuxent River in recent history. Two ice jam incidents are recorded to have occurred on one of the river's tributaries, the Little Patuxent River, at Savage, Maryland (USACE, 2007). One of the incidents occurred in January of 1944 and the other in February of 1948. However, Savage, Maryland, is about 62 river miles (100 river kilometers) from the mouth of Patuxent River; and therefore, the impact of any ice jam formation or breaching could not have had any effect on the CCNPP site. In addition, the streams close to the site have small drainage areas and would not pose the

potential of ice flooding at the site. Section 2.4.1 discusses the streams and rivers in the vicinity of the site.}

2.4.7.9 Effect of Ice and Snow Accumulation on Site Drainage

{Air temperature measurements at the Patuxent River Naval Air Station meteorological station indicate that mean daily temperatures at the site had periodically fallen below freezing for multiple consecutive days in winter. This introduces the possibility of ice blockage of small catch basins; storm drains; culverts and roof drains. The flood protection design of the CCNPP Unit 3 safety-related facilities assumed that all catch basins, storm drains, and culverts are blocked by ice, snow or other obstructions, rendering them inoperative during a local probable maximum precipitation (PMP) event. Details of the local PMP analyses and flood protection requirements for the site are discussed in Section 2.4.2 and Section 2.4.10. Therefore, temporary blockage of site drainage areas will not affect the operation of safety-related facilities. According to the operating records of existing CCNPP Units 1 and 2, there have been no flooding incidents caused by ice blockage of storm drains on the site.}

2.4.7.10 References

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Table 2.4.7-1 {Estimated Peak Freezing Degree-Days and Ice Thickness from 1946 to 2006}

(Page 1 of 1)

Water Year	Peak AFDD		Ice Thickness (inches)	Water Year	Peak AFDD		Ice Thickness (inches)
	°F days	Date			°F days	Date	
1946	74.2	24-Dec	6.9	1977	265.3	9-Feb	13.0
1947	38.3	11-Feb	5.0	1978	207.5	9-Mar	11.5
1948	159.4	11-Feb	10.1	1979	188.0	20-Feb	11.0
1949	17.2	27-Dec	3.3	1980	57.1	13-Feb	6.0
1950	13.5	28-Feb	2.9	1981	160.2	18-Jan	10.1
1951	47.8	11-Feb	5.5	1982	171.6	28-Jan	10.5
1952	25.5	20-Dec	4.0	1983	22.5	21-Jan	3.8
1953	5.5	29-Dec	1.9	1984	110.8	23-Jan	8.4
1954	26.7	14-Jan	4.1	1985	118.5	11-Feb	8.7
1955	46.7	5-Feb	5.5	1986	36.3	31-Jan	4.8
1956	27.4	22-Dec	4.2	1987	67.0	29-Jan	6.5
1957	57.3	19-Jan	6.1	1988	123.4	16-Jan	8.9
1958	104.7	21-Feb	8.2	1989	33.0	18-Dec	4.6
1959	59.7	16-Dec	6.2	1990	157.6	29-Dec	10.0
1960	81.8	16-Mar	7.2	1991	9.4	23-Jan	2.5
1961	140.3	7-Feb	9.5	1992	11.8	20-Jan	2.7
1962	36.1	14-Jan	4.8	1993	11.2	20-Feb	2.7
1963	66.5	27-Feb	6.5	1994	121.8	22-Jan	8.8
1964	61.7	23-Dec	6.3	1995	30.0	9-Feb	4.4
1965	55.5	19-Jan	6.0	1996	70.8	7-Feb	6.7
1966	85.2	6-Feb	7.4	1997	41.5	20-Jan	5.2
1967	25.6	9-Feb	4.0	1998	5.2	1-Jan	1.8
1968	108.6	13-Jan	8.3	1999	27.7	11-Jan	4.2
1969	42.4	6-Jan	5.2	2000	113.4	3-Feb	8.5
1970	144.1	24-Jan	9.6	2001	71.7	5-Jan	6.8
1971	69.5	4-Feb	6.7	2002	21.7	4-Jan	2.3
1972	27.0	17-Jan	4.2	2003	107.3	28-Jan	5.2
1973	44.1	14-Jan	5.3	2004	129.9	2-Feb	9.1
1974	12.9	19-Dec	2.9	2005	82.4	3-Feb	7.3
1975	6.7	15-Jan	2.1	2006	10.3	21-Feb	2.6
1976	18.8	19-Jan	3.5				

Note:

Water year is the 12 month period from October through September. The water year is designated by the calendar year in which it ends.

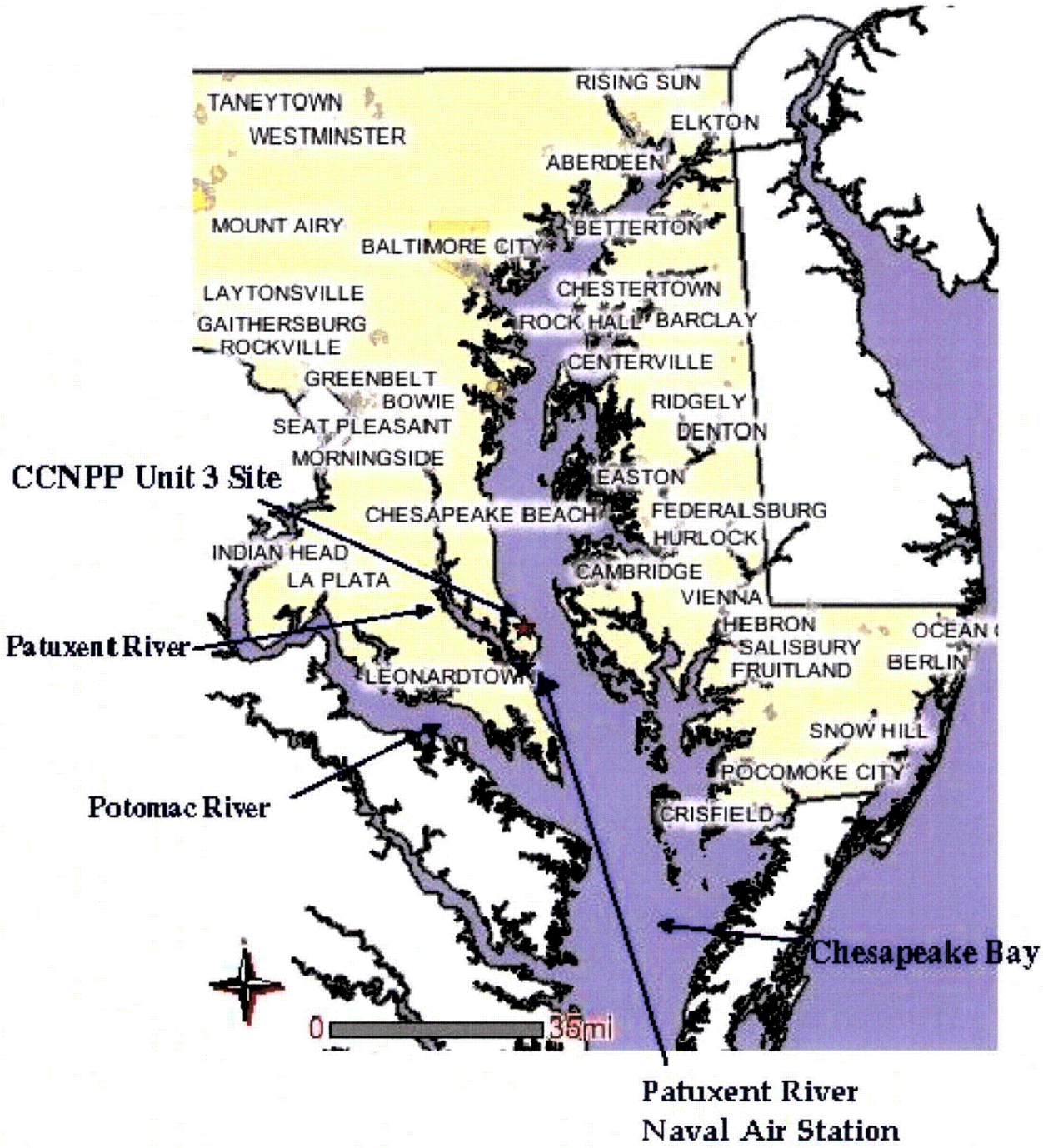
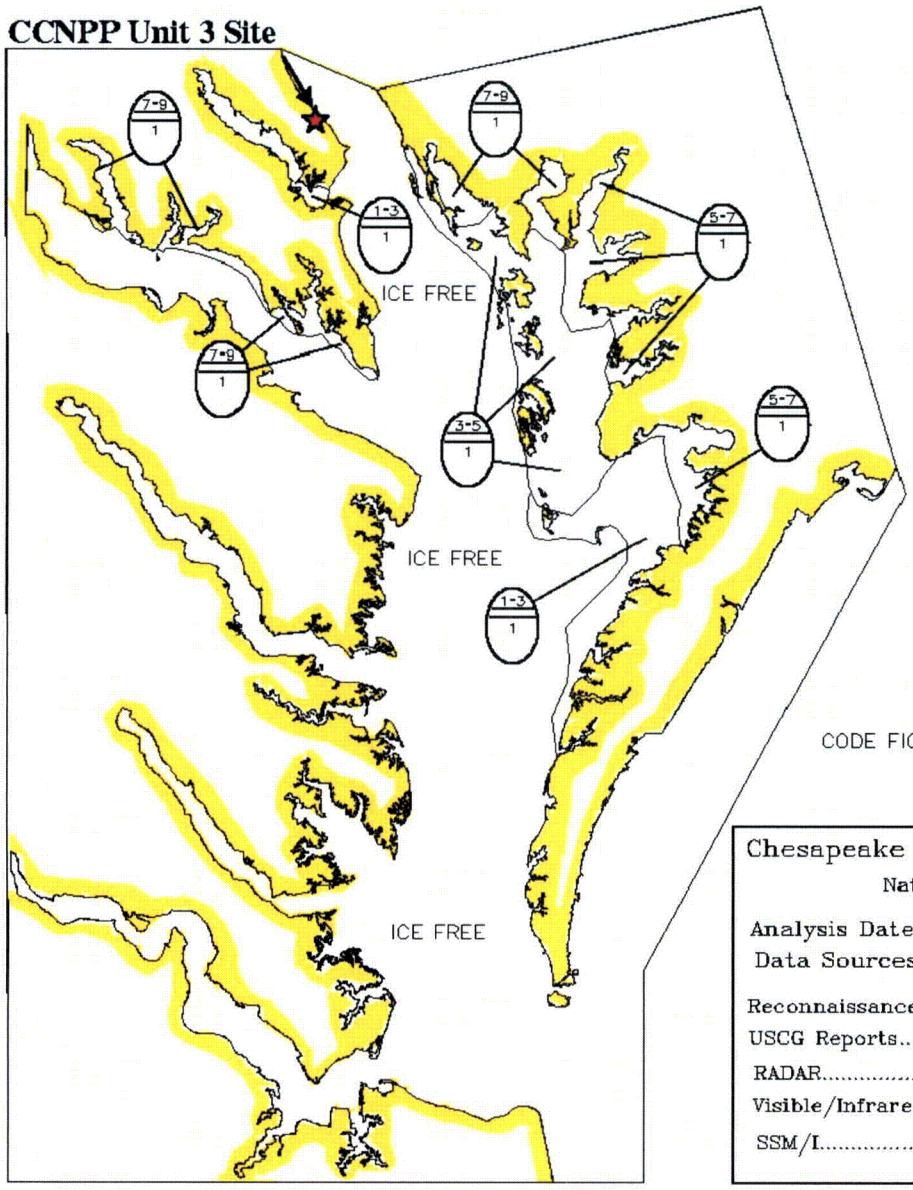


FIGURE 2.4.7-1 **Rev. 0**

GENERAL SITE REGION

CCNPP UNIT 3 FSAR



CODE FIGURE 1 – NEW ICE – 0 to 2"

Chesapeake Bay South Ice Analysis
National Ice Center

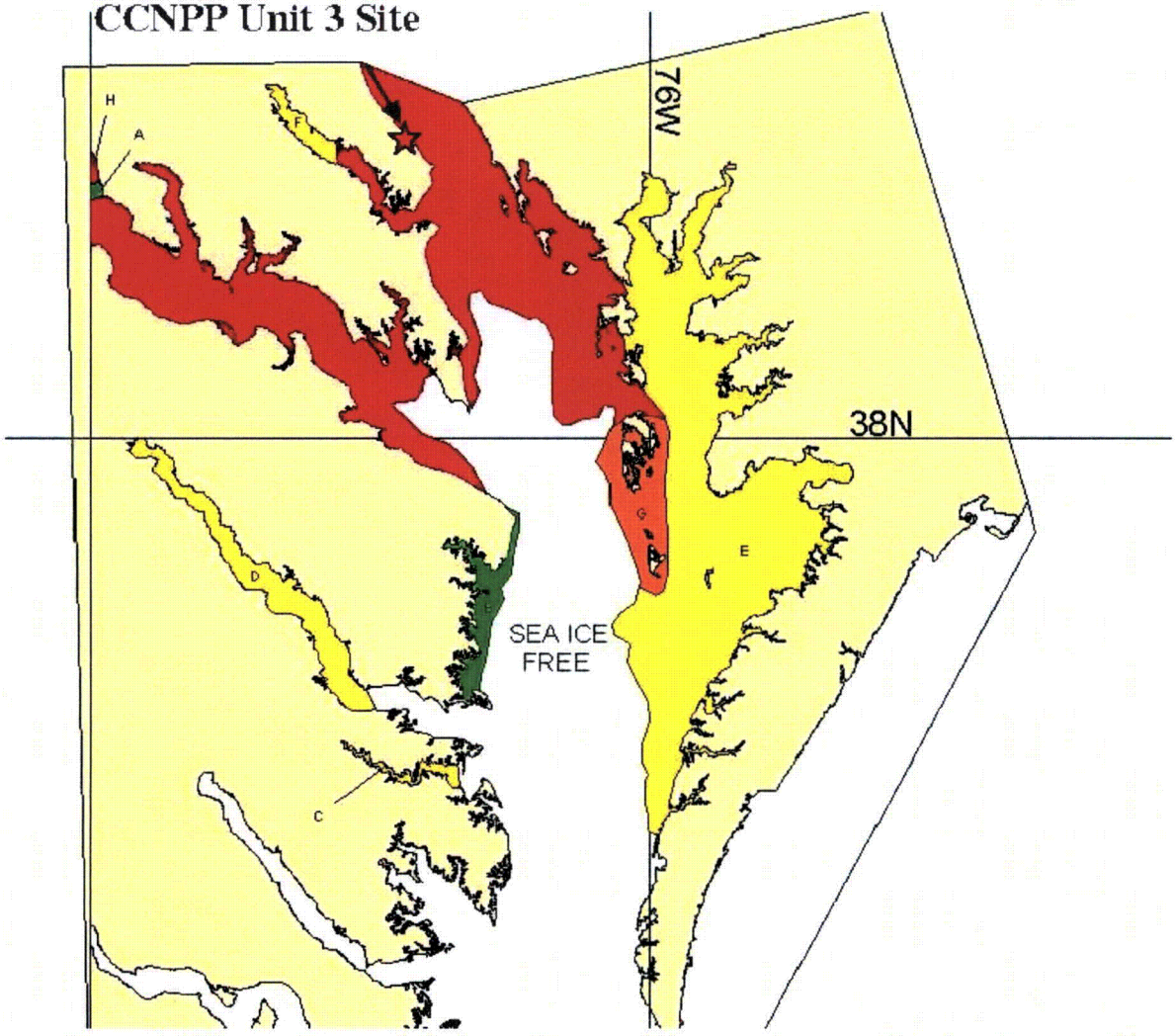
Analysis Date: 28 JAN 00

Data Sources	Date
Reconnaissance.....	
USCG Reports.....	26 JAN 00
RADAR.....	
Visible/Infrared.....	28 JAN 00
SSM/I.....	

FIGURE 2.4.7-2 Rev. 0

{SOUTH CHESAPEAKE BAY ICE ANALYSIS– JANUARY 28, 2000 }

CCNPP UNIT 3 FSAR



A	B	C	D	E	F	G	H	I	J
1-3	2-4	3-5	5-7	5-7	5-7	7-9	8-10	8-10	8-10
11	12	13	42	42		53	252	45	63
41	41	41	41	41	1	41	541	41	41
				~10		~10			

DUE TO IMAGE RESOLUTION SOME SMALL BAYS AND RIVERS MAY CONTAIN ICE NOT SHOWN ON THIS CHART. PLEASE CHECK COAST GUARD WEBSITE: www.uscg.mil/d5/ice_report/ FOR LOCAL CONDITIONS

COLOR CODES BASED ON TOTAL CONCENTRATION

- ICE FREE
- LESS THAN 1 TENTH
- 1-3 TENTHS
- 4-6 TENTHS
- 7-8 TENTHS
- 9-10 TENTHS
- FAST ICE (TEN TENTHS)

ICE ANALYSIS

CHESAPEAKE BAY SOUTH

NATIONAL/NAVAL ICE CENTER

ANALYSIS WEEK: 02 FEB 2004

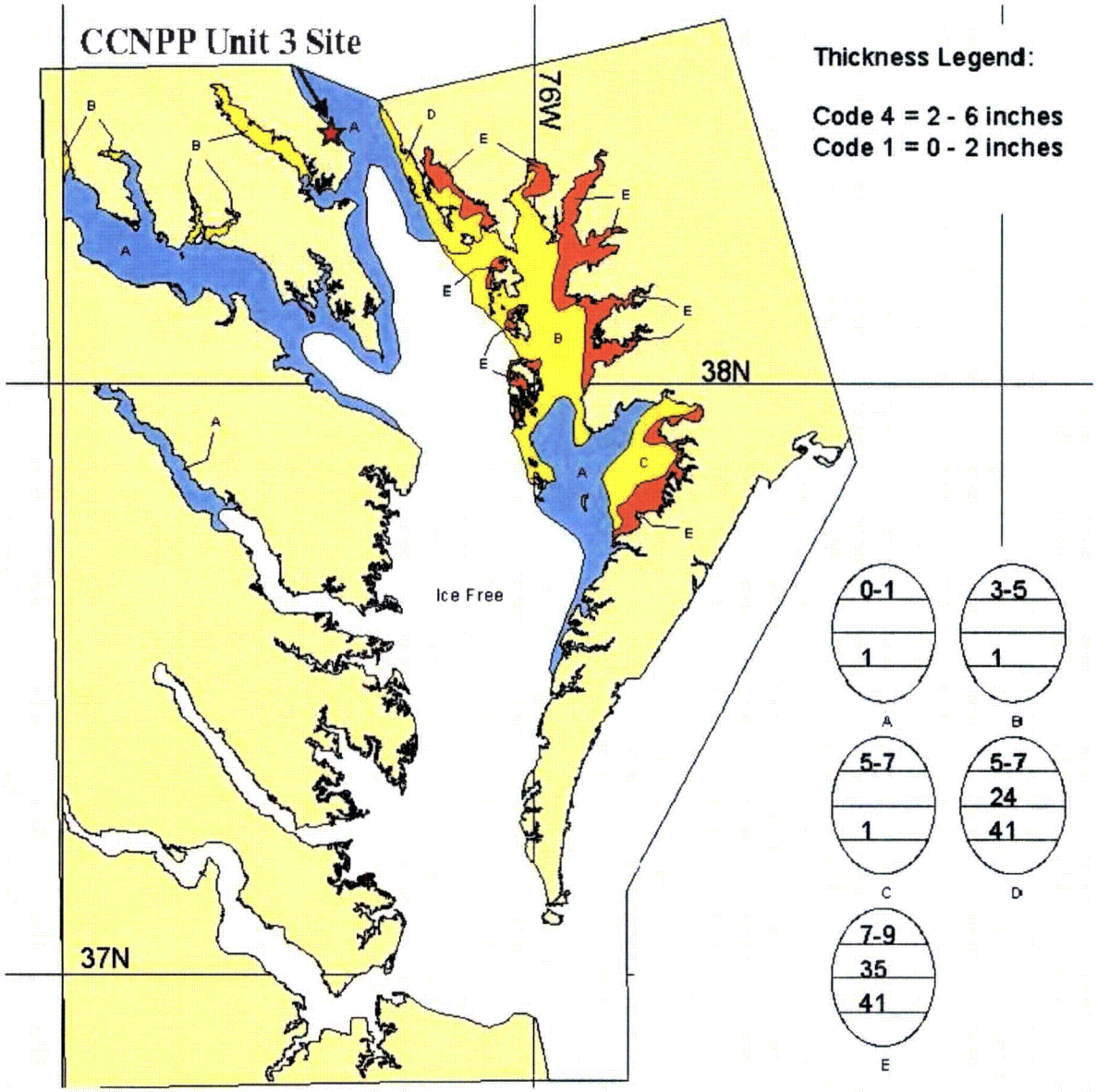
DATA SOURCES	DATE
RADARSAT	01 FEB

UNCLASSIFIED

FIGURE 2.4.7-3 Rev. 0

{SOUTH CHESAPEAKE BAY ICE ANALYSIS– FEBRUARY 01, 2004}

CCNPP UNIT 3 FSAR



DUE TO IMAGE RESOLUTION SOME SMALL BAYS AND RIVERS MAY CONTAIN ICE NOT SHOWN ON THIS CHART. PLEASE REFER TO COAST GUARD WEBSITE: HTTP://WWW.USCG.MIL/D5/ICE_REPORT FOR LOCAL CONDITIONS.

COLOR CODES BASED ON TOTAL CONCENTRATION

- ICE FREE
- LESS THAN 1 TENTH
- 1-3 TENTHS
- 4-6 TENTHS
- 7-8 TENTHS
- 9-10 TENTHS
- FAST ICE (TEN TENTHS)

ICE ANALYSIS
CHESAPEAKE BAY SOUTH
NATIONAL/NAVAL ICE CENTER
ANALYSIS WEEK: 25 JANUARY 2005

DATA SOURCES	DATE
MODIS	24 JAN

Analyst: C. Evanego

UNCLASSIFIED

FIGURE 2.4.7-4 Rev. 0

{SOUTH CHESAPEAKE BAY ICE ANALYSIS– JANUARY 24, 2005}

CCNPP UNIT 3 FSAR

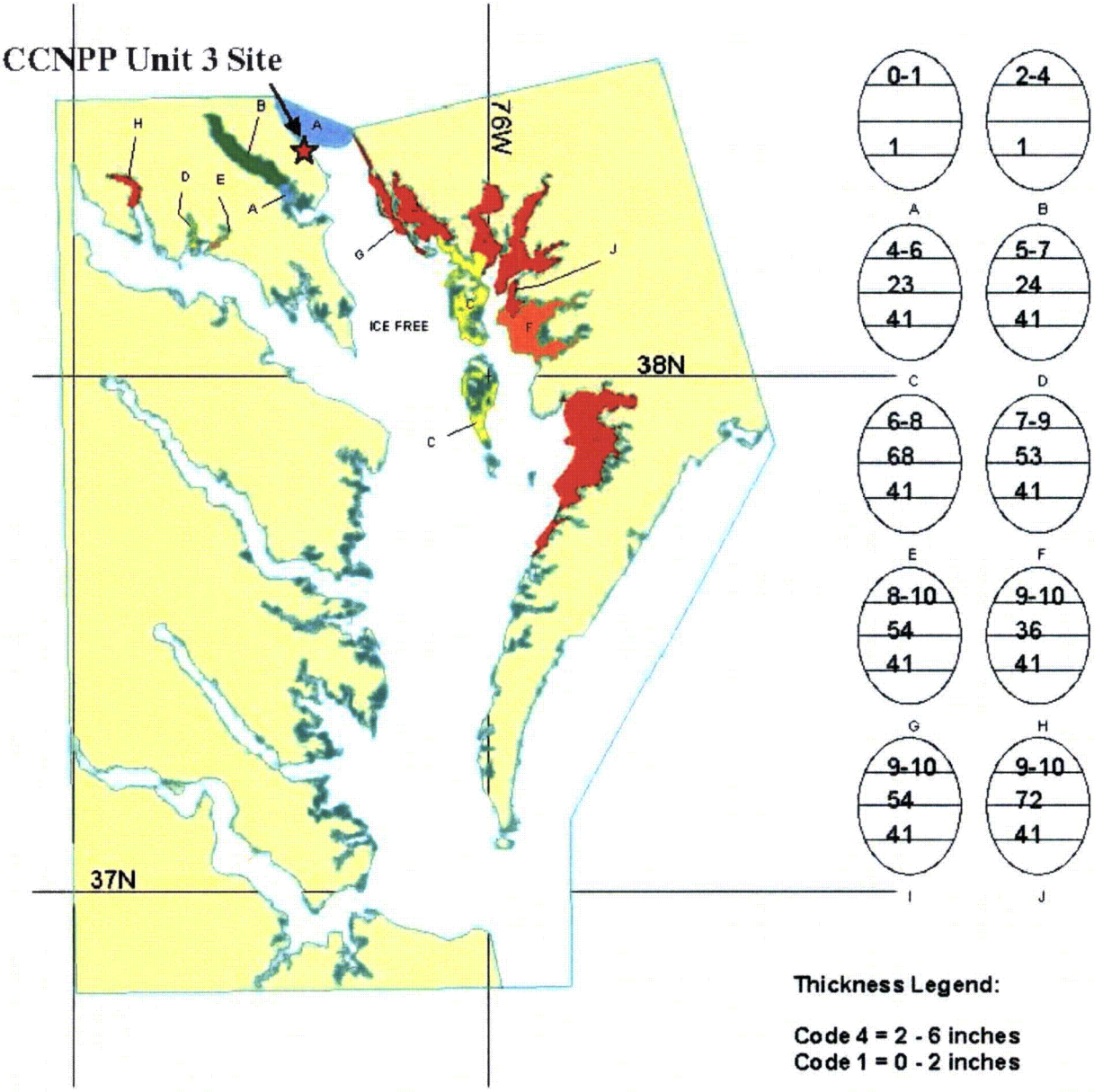


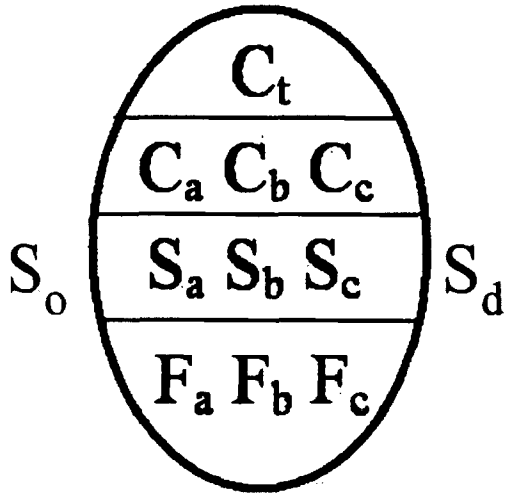
FIGURE 2.4.7-5 Rev. 0

{SOUTH CHESAPEAKE BAY ICE ANALYSIS– JANUARY 26, 2005}

CCNPP UNIT 3 FSAR

National Ice Center
Naval Ice Center

The World Meteorology Organization (WMO) system for sea ice symbology is more frequently referred to as the "Egg Code" due to the oval shape of the symbol. Click on portions of the egg for additional information.



C_t - Total concentration of ice in area, reported in tenths.
Concentration may be expressed as a single number or as a range, not to exceed two tenths (3-5, 5-7 etc.)

C_a C_b C_c - Partial concentration (C_a, C_b, C_c) are reported in tenths, but must be reported as a single digit. These are reported in order of decreasing thickness. C_a is the concentration of the thickest ice and C_c is the concentration of the thinnest ice.

S_a S_b S_c - Stages of development (S_a, S_b, S_c) are listed using the following code in decreasing order of thickness. (NOTE: If there is a dot (.), all stage of development codes to the left of the dot (.) are assumed to carry the dot (.)) These codes are directly correlated with the partial concentrations above. C_a is the concentration of stage S_a, C_b is the concentration of stage S_b, and C_c is the concentration of S_c. (Table 1)

F_a F_b F_c - Predominant form of ice (floe size) corresponding to S_a, S_b and S_c respectively. (Table 2)

S_o S_d - Development stage (age) of remaining ice types. So if reported is a trace of ice type thicker/older than S_a. S_d is a thinner ice type which is reported when there are four or more ice thickness types.

FIGURE 2.4.7-6a Rev. 0

EGG CODE

CCNPP UNIT 3 FSAR

The following codes are used to denote forms of sea ice:		*The following codes are used to denote forms of sea ice for fresh water ice:*	
Forms of Sea Ice	**Code Figure**	**Forms of Sea Ice**	**Code Figure**
New Ice (0 cm - 10 cm)	X	Fast Ice	8
Pancake Ice (30 cm - 3 m)	0	Belts and Strips symbol followed by the concentration of ice	~F
Brash Ice (less than 2 m)	1		
Ice Cake (3 m - 20 m)	2		
Small Ice Floe (20 m - 100 m)	3		
Medium Ice Floe (100 m - 500 m)	4		
Big Ice Floe (500 m - 2 km)	5		
Vast Ice Floe (2 km - 10 km)	6		
Giant Ice Floe (greater than 10 km)	7		
Fast Ice	8		
Ice of Land Origin	9		
Undetermined or Unknown (Iceberg, Growlers, Bergy Bits) (Used for Fa, Fb, Fc, only)	/		

FIGURE 2.4.7-6b Rev. 0

EGG CODE: STAGES OF ICE DEVELOPMENT

CCNPP UNIT 3 FSAR

The following codes are used to denote stages of development for sea ice.		*The following codes are used to denote stages of development for fresh water ice:*	
Stage of Development	**Code Figure**	**Stage of Development**	**Code Figure**
New Ice-Frazil, Grease, Slush, Shuga (0-10 cm)	1	New Ice (0 cm - 5 cm)	1
Nilas, Ice Rind (0 - 10 cm)	2	Thin Ice (5 cm - 15 cm)	4
Young (10 - 30 cm)	3	Medium Ice (15 cm - 30 cm)	5
Gray (10 - 15 cm)	4	Thick Ice (30 cm - 70 cm)	7
Gray - White (15 - 30 cm)	5	First Stage Thick Ice (30 cm - 50 cm)	8
First Year (30 - 200 cm)	6	Second Stage Thick Ice (50 cm - 70 cm)	9
First Year Thin (30 - 70 cm)	7	Very Thick Ice (70 cm - 120 cm)	1.
First Year Thin- First Stage (30 - 70 cm)	8		
First Year Thin- Second Stage (30 - 70 cm)	9		
Med First Year (70 - 120 cm)	1.		
Thick First Year (>120 cm)	4.		
Old-Survived at least one seasons melt (>2 m)	7.		
Second Year (>2 m)	8.		
Multi-Year (>2 m)	9.		
Ice of Land Origin			

FIGURE 2.4.7-6c Rev. 0

EGG CODE: PREDOMINANT FORMS OF ICE

CCNPP UNIT 3 FSAR

2.4.8 COOLING WATER CANALS AND RESERVOIRS

The U.S. EPR DCD includes the following COL Item for Section 2.4.8.

> A COL Applicant that references the U.S. EPR design certification will provide site-specific information and describe the design basis for safety-related canals and reservoirs.

This COL item is addressed in the following sections.

References to elevation values in this section are based on the National Geodetic Vertical Datum of 1929 (NGVD 29), unless otherwise stated.)

2.4.8.1 Cooling Water Design

{Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 does not include any safety-related canals or reservoirs used to transport or impound plant cooling water. As discussed in Section 2.4.1.1, both the non-safety-related Circulating Water Supply System (CWS) and safety-related Ultimate Heat Sink (UHS) makeup water intake structures for CCNPP Unit 3 will be located on the Chesapeake Bay shoreline and on the south bank of the existing CCNPP Units 1 and 2 intake channel. A new forebay, to be constructed on the south bank of the existing CCNPP Units 1 and 2 intake channel, supplies water to the new intake structures. Figure 2.4.1-2 shows the locations of the new forebay and intake structures.

The new forebay dimensions are approximately 123 ft (37.5 m) long and 100 ft (30.5 m) wide with an earthen bottom approximately at elevation -20.5 ft (-6.3 m) and vertical earth retaining structures as shown on figures in Section 9.2.5 and Section 10.4.5. The forebay is sized for the maximum combined CWS and UHS makeup water demand for CCNPP Unit 3, and a minimum operating water level of -6.0 ft (-1.8 m). The bases for the maximum UHS and CWS makeup water flow rates are discussed in Section 9.2.5 and Section 10.4.5, respectively. Section 2.4.11 provides the basis for the minimum operating level. The new forebay will also act as a siltation basin, and maintenance dredging may be required to maintain the invert elevation approximately at -20.5 ft (-6.3 m).

Because the sides of the new forebay will be protected by vertical earth retaining structures, no additional measures will be necessary to protect against wind waves, erosion, and current actions. As discussed in Section 2.4.7, potential ice effects cannot block the forebay or interrupt the water supply to the UHS intake. The maximum water level in the forebay is controlled by the probable maximum storm surge, which is discussed in Section 2.4.5. The design of forebay side walls will comply with the requirements of Regulatory Guide 1.27 (NRC, 1976).}

2.4.8.2 References

{**NRC, 1976.** Ultimate Heat Sink for Nuclear Power Plants, Regulatory Guide 1.27, Revision 2, Nuclear Regulatory Commission, January 1976.}

2.4.9 CHANNEL DIVERSIONS

The U.S. EPR DCD includes the following COL Item for Section 2.4.9.

> A COL Applicant that references the U.S. EPR design certification will provide site-specific information and demonstrate that in the event of upstream diversion or rerouting of the source of cooling water, alternate water supplies will be available to safety-related equipment.

This COL item is addressed in the following sections.

{References to elevation values in this section are based on the National Geodetic Vertical Datum of 1929 (NGVD 29), unless stated otherwise.

The Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 site area is located in Calvert County within the Western Shore Uplands of the Atlantic Coastal Plain physiographic province and is bordered by the Chesapeake Bay to the east. The surrounding topography consists of gently rolling hills with surface topography ranging from sea level to nearly 130 ft (40 m) with an average relief of about 100 ft (31 m). The CCNPP site is well drained by short, ephemeral streams that form a principally dendritic drainage pattern. The nearest stream of significance to the site is Johns Creek. This stream drains to St. Leonard Creek and has a reach length of about 3.5 mi (5.6 km). The remaining streams draining the CCNPP site are either tributaries to Johns Creek or drain directly to the Chesapeake Bay. The Chesapeake Bay shoreline east of the CCNPP site consists mostly of steep cliffs with narrow beach areas. The CCNPP site and surrounding areas are shown in Figure 2.4.1-1.}

2.4.9.1 Historical Channel Diversions

{The Chesapeake Bay will be used to supply makeup water to the safety-related Ultimate Heat Sink (UHS) and non-safety-related Circulating Water Supply System (CWS) as described in Section 2.4.1.1. The Chesapeake Bay was formed toward the end of the last ice age, which marked the end of the Pleistocene epoch. As the glaciers retreated, large volumes of melting ice resulted in the ancestral Susquehanna River eroding older coastal plain deposits and forming a broad river valley. Subsequently, rising sea levels inundated the continental shelf and reached the mouth of the Chesapeake Bay about 10,000 years ago. Continued sea level rise eventually submerged the ancestral Susquehanna River Valley, creating the Chesapeake Bay. The Chesapeake Bay assumed its present dimensions about 3,000 years ago (CBP, 2004). Section 2.5.1 provides further description and discussion of the geologic processes that led to the formation of the Chesapeake Bay.

Given the seismic, topographical, geologic, and thermal evidence in the region, there is very limited potential for upstream diversion or rerouting of the Chesapeake Bay (due to channel migration, river cutoffs, ice jams, or subsidence) and adversely impacting safety-related facilities or water supplies.}

2.4.9.2 Regional Topographic Evidence

{The safety-related UHS makeup water intake and the non-safety-related CWS makeup water intake for CCNPP Unit 3 will be located on the south bank of the existing CCNPP Units 1 and 2 intake channel and southeast of the existing intake. High cliffs reaching elevations greater than 100 ft (30.5 m) exist upstream and downstream of the existing intake structure along the shoreline of the Chesapeake Bay. Approximately 2,500 ft (762 km) of the shoreline, including the CCNPP Units 1 and 2 intake embayment and the shoreline southeast of the intake structure to the existing barge jetty, are stabilized against shoreline erosion. The CCNPP Unit 3 plant will

be located at an elevation of about 85 ft (26 m) and set back approximately 1,000 ft (305 m) from the Chesapeake Bay shoreline.

Both long-term and short-term sediment processes are responsible for shoreline erosion of the Chesapeake Bay. The slow rise in sea level, approximately 1.3 ft (0.4 m) over the last century (CBP, 2005), is the primary long-term process causing the shoreline to recede. Waves and surges due to occasional hurricanes may considerably change coastal morphology. These short-term erosive waves often reach the high, upland banks out of the range of normal tides and waves.

Shoreline locations near the CCNPP site in 1848, 1942 and 1993 are shown in Figure 2.4.9-1 (MGS, 2007). The local rate of shoreline change in the vicinity of the CCNPP site, as estimated by the Maryland Department of Natural Resource (MDNR), is shown in Figure 2.4.9-2 (MDNR, 2007). The rate of shoreline erosion south of the existing barge jetty and near the CCNPP Unit 3 site has been estimated by MDNR to be between 2 ft and 4 ft per year. North of the existing CCNPP Units 1 and 2 intake structure, MDNR has estimated the shoreline change to be between 2 ft (0.6 m) per year accretion and 4 ft (1.2 m) per year erosion. The stabilized shoreline near the intake structures prevents any shoreline retreat.

Observations of the shoreline near the site indicate that the steep slopes fail along irregular, near-vertical surfaces. These slope failures appear to be caused by shoreline erosion along the base of the cliffs, which results in undercutting a portion of the cliff. When the overlying weight of unconsolidated coastal plain deposits exceeds the shear strength of the soils, a portion breaks away from the cliff and drops to the beach level along a near-vertical failure surface. Shoreline processes, such as waves or tidal currents, erode the deposits that have fallen to the beach and transport the sand, silt and clay materials comprising these deposits along the beach.

The hill slope, immediately south of the proposed CCNPP Unit 3 intake structures, is recessed from the beach and the shoreline is protected against erosion by an existing shoreline protection structure as shown in Figure 2.4.1-2 and Figure 2.4.9-2. The slope will be further re-graded to provide access to the new CCNPP Unit 3 intake structures and appropriate engineering measures will be developed to stabilize the slope during the design of the intake structures, as discussed in Section 2.5.5. It is therefore unlikely that the shoreline at this location will retreat due to the shoreline erosion processes described above. Furthermore, any potential adverse impacts on safety-related facilities or water supplies should come from extremely slow changes, which can be remedied as they occur.

The occurrence of shoreline erosion immediately southeast of the barge jetty indicates that the net sediment transport in this area is likely directed towards the southeast with the jetty acting as a sediment barrier. Because the CCNPP Unit 3 intake will be located 2,000 ft (610 m) northwest of the barge jetty, any failures of steep slopes south of the jetty, as detailed in Figure 2.4.1-2, are not likely to result in sufficient transport of material north of the jetty. As such, these types of failures are not likely to impact the water supply to the CCNPP Unit 3 intake. Northwest of the existing CCNPP Units 1 and 2 intake, Figure 2.4.9-2 indicates a low shoreline erosion potential (between 2 ft (0.6 m) per year erosion and 2 ft (0.6 m) per year accretion) for a distance of approximately 2,000 ft (610 m). Slope failures in this area may drop cliff materials on the beach, which will be gradually eroded and transported by waves and tidal currents. Any failures of this slope are not likely to result in blockage of the water supply to UHS and CWS makeup water intakes for CCNPP Unit 3, because the sediment transport rates associated with wave action and tidal currents are limiting. Also, because the CCNPP Unit 3 power block area is set back approximately 1,000 ft (305 m) from the shoreline, it is unlikely that shoreline erosion south of the barge jetty will impact CCNPP Unit 3.}

2.4.9.3 Ice Causes

{Although surface ice has been observed in the southern part of the Chesapeake Bay, ice jams causing channel diversions and interruption of the cooling supply for CCNPP Units 1 and 2 have not been reported. The baffle wall separates the intake forebay from the Chesapeake Bay and acts like a curtain wall. Due to the submerged entrance of water under the baffle wall, surface ice in the Chesapeake Bay has no effect on the cooling water supply. A further discussion on the formation of surface ice and the potential for an ice jam is provided in Section 2.4.7.}

2.4.9.4 Site Flooding Due to Channel Diversion

{The CCNPP site has streams and proposed drainage ditches near the site that could overflow and cause local flooding. Flood water from Johns Creek flows into the Maryland Western Shore watershed and poses a risk to CCNPP Unit 3 structures, systems, or components should the water level exceed the low point of the drainage divide boundary at Elevation 98.0 ft (29.9 m), which passes through the CCNPP Unit 3 switchyard. As discussed in Section 2.4.3, the maximum surface water elevation of Johns Creek is 65 ft (19.8 m) at the CCNPP site due to probable maximum precipitation. The drainage divide boundary is approximately 33.0 ft (10.1 m) above this level. Assuming the creek is partially blocked due to ice formation or fallen trees, the blockage is not assumed to cause the water to rise 33.0 ft (10.1 m). Water will flow around the partial blockage as the creek rises. Section 2.4.1 discusses the streams and rivers in the vicinity.

As indicated on Figure 2.4.2-1, the containment, fuel and safeguards buildings are located in the center and along the high point of the power block area. From the high point, site grading falls at a 1% slope to bio-retention drainage ditches located along the northern and southern edges of the CCNPP Unit 3 site area. There are four bio-retention ditches which drain the power block and the turbine building areas. Three of them run in the east-west direction; one north of CCNPP Unit 3, (North Ditch), one south of CCNPP Unit 3 and between CCNPP Unit 3 and the area reserved for equipment laydown (Center Ditch) and one south of the equipment laydown area (South Ditch). The fourth ditch (East Ditch) is located along the eastern edge of CCNPP Unit 3 and the equipment laydown area. It collect flows from the other three ditches. The East Ditch is divided in two, to allow passage of the CCNPP Unit 3 security fence. Flows in the South Ditch and the southern half of the East Ditch do not have an impact on the PMP flood levels in CCNPP Unit 3 and are not discussed in this section.

The bio-retention ditches are constructed with base materials that promote infiltration of runoff from low intensity rainfall events. However, for large storms, the infiltration capacity of the base materials would be exceeded and overflow pipes are provided to direct the runoff to the stormwater basin located to the east of the power block. For the assessment of the local PMF levels, the overflow pipes and culverts in the drainage system are assumed to be clogged as a result of ice or debris blockage. In that case, PMP storm runoff from the area collected in the North and East Ditches would overflow along the northern and eastern edges (top of berm at Elevation 79 ft (24.1 m)), spilling out to the areas north and east of the power block down the bluff to Chesapeake Bay. Channels and diversion walls will be provided on the north side of the site to direct North Ditch overflows to the east and eventually to the Chesapeake Bay. Flows from the Center Ditch will discharge into the East Ditch before overflowing the eastern edge of the East Ditch.

Grading in the vicinity of the safety-related structures slopes away from the individual structures such that PMP ground and roof runoff will sheet flow away from each of these structures towards the collection ditches. Thus, sheet flows are prevented from entering the structures.

The maximum computed PMP water level in the power block area is Elevation 81.5 ft (24.8 m). However, the maximum PMP water level associated with a safety-related structure is Elevation 81.4 ft (24.8 m) which is 3.2 ft (1.0 m) below the reactor complex grade slab at Elevation 84.6 ft (25.8 m).

Based on the power block grading, entrance locations, and peak PMP water levels in the site ditches, all safety-related facility entrances are located above peak PMP ditch water levels and PMP sheet flows are prevented from reaching safety-related entrances.}

2.4.9.5 Human-Induced Channel Flooding

{Human-induced channel flooding of the Chesapeake Bay is not assumed because the Bay is a major drainage path for the Susquehanna River. There are no known Federal projects to channel or dam any portion of the Chesapeake Bay. The channel and diversion walls and site grading discussed above will need to be maintained to direct stormwater and ditch overflows away from the site and towards the Chesapeake Bay.}

2.4.9.6 Alternate Water Sources

{An alternate water source is not required for the CCNPP Unit 3 design. The emergency safety-related water supply to the Essential Service Water System cooling tower basins is brackish water from the Chesapeake Bay. In the event normal water supply is lost, there is a 72-hour volume of water available at the tower basin to deal with system losses before the emergency UHS makeup water supply is required to be initiated. In the event of a probable maximum hurricane where extreme weather conditions can persist for at most one day as discussed in Section 2.4.11, there is no need to switch to alternate UHS makeup sources. At the end of 72 hours, a safety-related train of makeup water will be put in operation to feed the basin with water drawn from the Chesapeake Bay. As discussed in Section 2.4.11, there is no potential of blockage of the safety-related UHS makeup water intake due to channel diversions. Non-safety related water sources, such as water from the non-safety related intake structure; the raw water supply system or groundwater wells are also available, if needed.}

2.4.9.7 Other Site-Related Evaluation Criteria

{The potential for channel diversion from seismic or severe weather events is not considered to result in a loss of cooling water supply. The new forebay is a seismic Category I structure and has an earthen bottom at approximate elevation -20.5 ft (-6.3 m). Because the sides of the new forebay will be protected by vertical sheet pile walls, no additional measures are necessary to protect against a potential channel diversion due to seismic events. A collapse of the shoreline cliffs to the north or south of the CCNPP site during a seismic or severe weather event is assumed to not result in silt depositing in the forebay to such an extent that it would cause a loss of cooling water supply. A seismic event would result in the bulk of the collapsed material being deposited at the shoreline location of the failure. Normal tides and currents would disperse this material slowly over a wide area. A severe storm could relocate shoreline sands and soils but is again dispersed over a wide area. Note that maintenance dredging may be required over the life of the plant to maintain the invert elevation of the forebay. A severe storm or collapse of nearby shoreline cliffs may result in the need for more frequent maintenance dredging.}

2.4.9.8 References

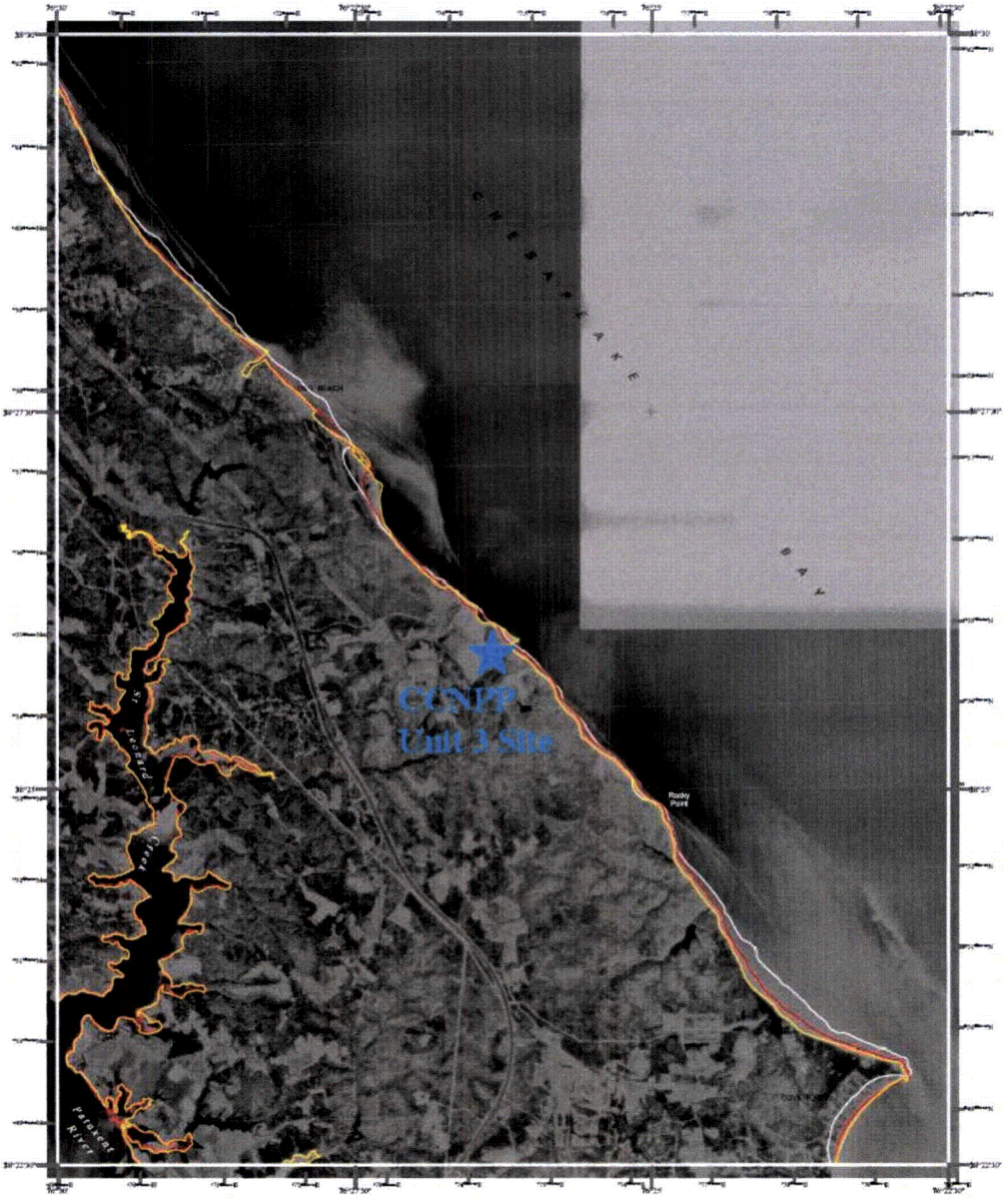
{**CBP, 2004.** Chesapeake Bay – Introduction to an Ecosystem, Chesapeake Bay Program, EPA 903-R-04-003, CBP/TRS 230/00, 2004.

CBP, 2005. Sediment in the Chesapeake Bay and Management Issues: Tidal Erosion Processes, Tidal Sediment Task Force of the Sediment Workgroup under the Chesapeake Bay Program, Nutrient Subcommittee, CBP-TRS276-05, 2005.

MDNR, 2007. Maryland Department of Natural Resources, Maryland Shorelines Online, Website: http://shorelines.dnr.state.md.us/shoreMapper/standard/, Date accessed: February 7, 2007.

MGS, 2007. Coastal and Estuarine Geology Program, Shoreline Change Maps, Maryland Geological Survey, Website: http://www.mgs.md.gov/coastal/maps/schangepdf.html, Date accessed: January 4, 2007 (Shoreline Changes, Cove Point Quadrangle, MD, Maryland, 7.5 Minute Series (Orthophotoquad), Maryland Department of Natural Resources, Maryland, 2001).}

COVE POINT QUADRANGLE
MARYLAND
7.5 MINUTE SERIES (ORTHOPHOTOQUAD)



North American Datum of 1983 (NAD 83)
Projection and 1000-meter grid ticks:
Universal Transverse Mercator, zone 18

The North American Datum of 1927 (NAD 27) shown as dashed corner ticks.

Maryland
With Pride

SCALE 1:24000

HORIZONTAL DATUM NAD 83

COVE POINT, MD
MGS-01-051-1
Second Edition
DATE OF PHOTOGRAPHY
April 20, 1989

INDEX TO ADJOINING 7.5 MAPS

State of Maryland
Parris N. Glendening, Governor
Kathleen Kennedy Townsend, Lt. Governor

Department of Natural Resources
J. Charles Fox, Secretary
Karen M. White, Deputy Secretary

Resource Assessment Service
Paul O. Massicot, Director

Maryland Geological Survey
Emery T. Cleaves, Director

Shoreline Changes
Cove Point Quadrangle, MD

Compiled by

Maryland Geological Survey
Coastal and Estuarine Geology Program
2300 St. Paul Street
Baltimore, Maryland 21218
Telephone: (410) 554-5500
Website: www.mgs.md.gov

2001

LEGEND

- 1848 Shoreline
- 1942 Shoreline
- 1993 Shoreline

SOURCES OF DATA

Base image
Orthophotoquad (38076-D4-OQ-024) produced by the U.S. Geological Survey from the following 1:40000 scale aerial (NAPP) photographs:

NAPP Photo ID	Date of Photography
20-15	4/20/1989
20-50	4/20/1989
20-52	4/20/1989

Shorelines
1848 - Historical Shorelines CZM Map 97A (Maryland Geological Survey, 1975); digitized using AutoCAD

1942 - National Oceanic and Atmospheric Administration, National Ocean Service T-sheets listed below; digitized using GSMAP or AutoCAD

T-sheet	Field Edit	Date of Photography
T-8111	none	1942
T-8544	none	1942

1993 - orthophotoquad shoreline extracted from a Maryland Department of Natural Resources (DNR) digital wetlands delineation based on photo interpretation of DNR digital orthophoto quarter quads (Cove Point - NW, SE, SW) flown on April 8, 1993

ACKNOWLEDGMENTS

This map was prepared using the geographic information system TNTmips by MicroImages, Inc.

Partial funding was provided by a grant from the National Oceanic and Atmospheric Administration (Award No. NA07OZ0118), administered by the Maryland Department of Natural Resources, Coastal Zone Management Program (CZM Grant M01-056 CZM 040)

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

FIGURE 2.4.9-1 Rev. 0
{CHANGE IN THE CHESAPEAKE BAY SHORELINE POSITION NEAR THE CCNPP UNIT 3 SITE BETWEEN 1848, 1942 AND 1993}
CCNPP UNIT 3 FSAR

Base Layers

Shoreline Change Rates

- Slight Change: +2 to -2 ft/yr.
- Low Change: -2 to -4 ft/yr.
- Moderate Change: -4 to -8 ft/yr.
- High Change: less than -8 ft/yr.
- Stabalized

Legend

Orthophotography

Counties

States

- Maryland
- Other

FIGURE 2.4.9-2 Rev. 0

{CHESAPEAKE BAY SHORELINE EROSION RATES NEAR THE CCNPP UNIT 3 SITE ESTIMATED BY MARYLAND DEPARTMENT OF NATURAL RESOURCES}

CCNPP UNIT 3 FSAR

2.4.10 FLOODING PROTECTION REQUIREMENTS

The U.S. EPR DCD includes the following COL Item in Section 2.4.10

> A COL applicant that references the U.S. EPR design certification will use site-specific information to compare the location and elevations of safety-related facilities, and of the structures and components required for protection of safety-related facilities, with estimated static and dynamic effects of the design basis flood conditions.

This COL item is addressed in the following section.

{References to elevation values in this section are based on the National Geodetic Vertical Datum of 1929 (NGVD 29), unless stated otherwise.

This section discusses the locations and elevations of safety-related facilities to identify the structures and components exposed to flooding. The safety-related facilities are compared to design basis flood conditions to determine if flood effects need to be considered in plant design or in emergency procedures.

All safety-related facilities for CCNPP Unit 3 are located in the power block area with the exception of the Ultimate Heat Sink (UHS) makeup water intake structure, which is located adjacent to the CCNPP Unit 3 Circulating Water Supply System (CWS) makeup water intake channel along the southern edge of the intake channel for CCNPP Units 1 and 2 as shown in Figure 2.4.10-1. As discussed in Section 2.4.2, the maximum water level in the power block area due to a local PMP is Elevation 81.5 ft (24.8 m). All safety-related structures in the power block area have a minimum grade slab or entrance at Elevation 84.6 ft (25.8 m) or higher. Grading in the power block area around the safety-related facilities is such that all grades slope away from the structures at a minimum of 1% towards collection ditches.

Additionally, the maximum estimated water surface elevations resulting from all design basis flood considerations discussed in Section 2.4.2 through Section 2.4.7 are well below the entrance and grade slab elevations for the power block safety-related facilities. Therefore, flood protection measures are not required in the CCNPP Unit 3 power block area.

Flood protection measures are required for the CCNPP Unit 3 UHS makeup water intake structure and its associated electrical building. The grade level at the UHS makeup water intake structure location is at Elevation 10.0 ft (3.0 m). The maximum flood level at the UHS makeup water intake structure location is Elevation 39.4 ft (12.0 m) as a result of the surge, wave heights, and wave run-up associated with the probable maximum hurricane (PMH) as discussed in Section 2.4.5. Thus, the UHS makeup water intake structure and the electrical building associated with the UHS makeup pumps would experience flooding during a PMH and flood protection measures are required for these buildings.

A general arrangement figure of the CCNPP Unit 3 UHS makeup water intake structure area, a plan view figure of the UHS intake, and a section view figure of the UHS intake are provide in Section 9.2.5. Flood protection for the UHS makeup intake structure and electrical building will consist of structural measures to withstand the static and dynamic flooding forces as well as water proofing measures to prevent the flooding of the interior of the structures where pump motors and electrical or other equipment associated with the operation of the pumps are located.

The static and dynamic flood forces that the CCNPP Unit 3 UHS makeup water intake structure and electrical building will accommodate and which are associated with the PMH include: the static water pressure from the maximum flood elevation, uplift pressures on the pump deck as

well as uplift pressures on the entire intake structure, and dynamic wave forces on the structure walls and roof. A detailed description of these forces and other design basis loadings including seismic loadings, and the structural measures incorporated to withstand them, is found in Section 3.8.

The grade area surrounding the CCNPP Unit 3 UHS makeup water intake structure is covered in a concrete slab that extends north to the existing CCNPP Units 1 and 2 intake channel bulkhead retaining wall and to the Chesapeake Bay shoreline northeast of the structure as shown on Figure 2.4.10-1. The existing bulkhead retaining wall will be modified to accommodate the CCNPP Unit 3 intake channel. The existing bulkhead retaining wall extends below the bottom of the proposed channel for the CCNPP Unit 3 UHS makeup water intake at Elevation -20.5 ft (-6.2 m) and protects the CCNPP Unit 1 and 2 circulating water intake structure from undermining due to wave action induced erosion.

The existing bulkhead retaining wall, with some modification, will also protect the northern edge of the CCNPP Unit 3 UHS makeup water intake structure from undermining due to erosion. To protect the UHS makeup intake structure and electrical building along the northeastern shoreline from wave forces associated with the PMH that could possibly erode the shoreline and undermine the structures, it is proposed to extend the length of the existing bulkhead retaining wall along the northeast side of the CCNPP Unit 3 UHS makeup water intake structure as shown on Figure 2.4.10-1. The new bulkhead retaining wall will also extend below the bottom of the CCNPP Unit 3 intake channel at Elevation -20.5 ft (-6.2 m) and will be designed to resist the impact of wave forces.

In addition to structural protection against static, dynamic, and erosive forces, the pump house area of the CCNPP Unit 3 UHS makeup water intake structure and the electrical building must remain free from flooding and the intrusion of water. Thus, these areas of the structures will be designed to be water tight. Structural walls and roofs will be designed with water stops at all construction joints to prevent leakage.

Any pipe, pump shaft, or other conduit penetrations will be sealed with water tight fittings. All access to these spaces will be provided with water tight submarine doors or water tight hatches. The water tight measures will also be designed for the static and dynamic flood forces resulting from the PMH water levels and wave forces. Locations of the doors and hatches are provided on figures in Section 9.2.5. Doors and hatches will open outward and will be closed during normal plant operation.

Since all water-tight doors and hatches for the CCNPP Unit 3 UHS makeup water intake structure and the electrical building will be closed during normal operations, no special operating procedures or shutdown technical specifications will be necessary to ensure that flood protection measures are in place when Chesapeake Bay flood water levels associated with the PMH occur.}

References

None

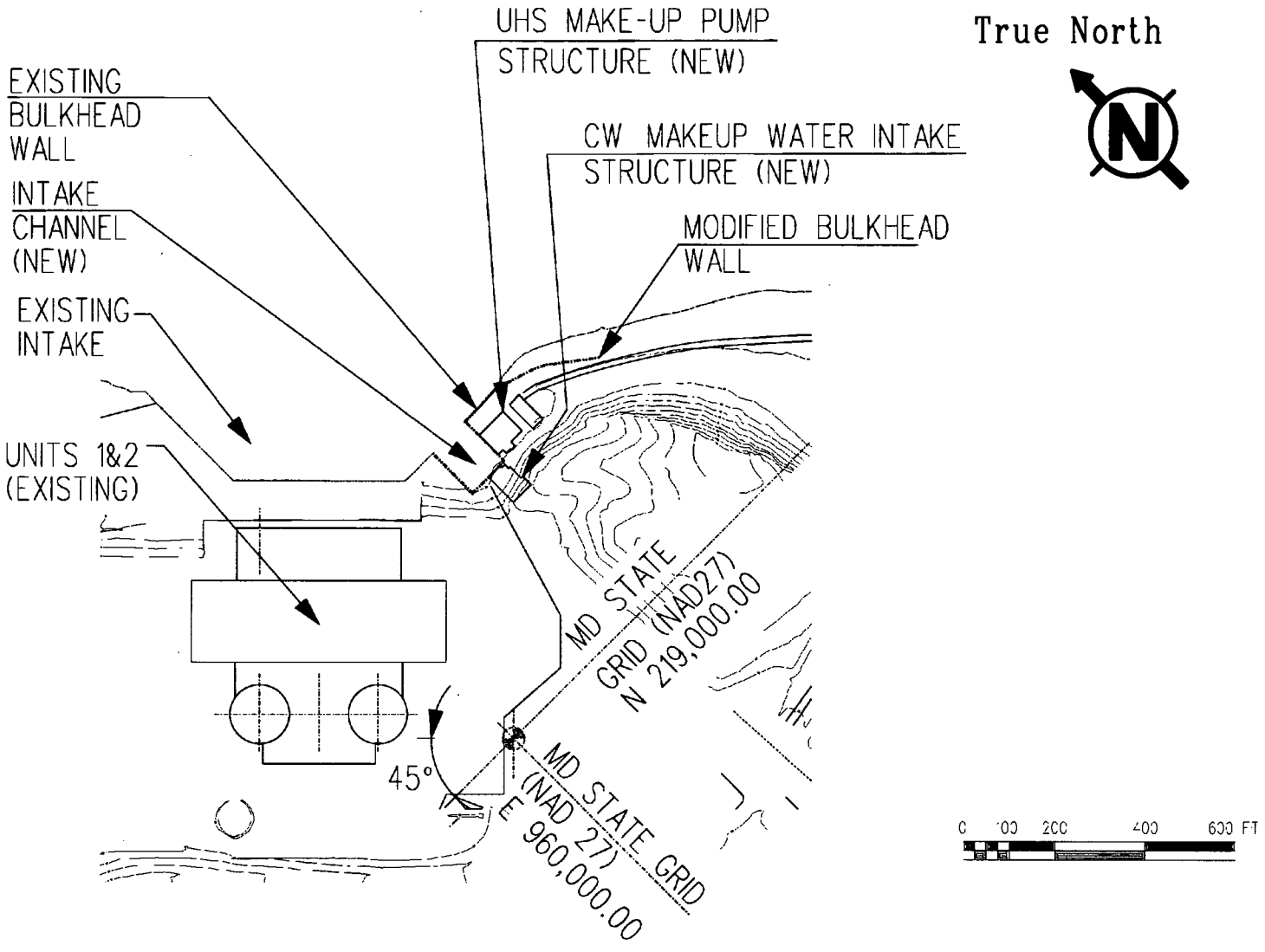


FIGURE 2.4.10-1 **Rev. 0**

UHS MAKE-UP INTAKE STRUCTURE
MODIFIED BULKHEAD RETAINING
WALL LOCATION

CCNPP UNIT 3 FSAR

2.4.11 LOW WATER CONSIDERATIONS

The U.S EPR DCD includes the following COL Item in Section 2.4.11:

> A COL Applicant that references the U.S. EPR design certification will identify natural events that may reduce or limit the available cooling water supply, and will verify that an adequate water supply exists for operation or shutdown of the plant in normal operation, anticipated operational occurrences in low water conditions.

The COL Item is addressed in the following sections.

{References to elevation values in this section are based on the National Geodetic Vertical Datum of 1929 (NGVD 29), unless stated otherwise.}

This section investigates natural events that may reduce or limit the available cooling water supply to ensure that an adequate water supply exists to shut down the plant under conditions requiring safety-related cooling. Specifically, any issues due to a low water level in the {Chesapeake Bay are investigated in this section.

The proposed site for Calvert Cliff Nuclear Power Plant (CCNPP) Unit 3 is located on the western shore of the Chesapeake Bay, in Calvert County, MD, approximately 10.5 mi (16.9 km) southeast of Prince Frederick, MD.}

2.4.11.1 Low Flow in Rivers and Streams

{CCNPP Unit 3 relies on the Chesapeake Bay to supply water for safety-related and non-safety-related purposes. CCNPP Unit 3 does not draw water from any streams or rivers; thus, low water conditions resulting from the low flow in rivers and streams does not apply. The Chesapeake Bay is a drainage basin for many rivers and streams in the watershed area. The largest river flowing into the Chesapeake Bay is the Susquehanna River. Moreover, there are no dams downstream of the site for consideration and no dam will be constructed in the future as the Chesapeake Bay connects to the Atlantic Ocean. A description of the site and facilities is provided in Section 2.4.1.1.

Drought conditions in the area will affect the amount of water flowing into the Chesapeake Bay from area rivers and streams. As discussed in Section 2.4.11.3, historical low water levels in the Chesapeake Bay are due to tides, storm surges and tsunami events and not drought conditions because the Chesapeake Bay is connected to the Atlantic Ocean. The discharge pipe extends approximately 550 ft (168 m) into the Bay along the floor where the depth is greater than 10 ft (3 m). Therefore, extreme low water level conditions at -3.9 ft (-1.2 m) will not uncover the discharge pipe or affect the non-safety-related or safety-related makeup water supplies.}

2.4.11.2 Low Water Resulting from Surges, Seiches, Tsunamis, or Ice Effects

{The CCNPP Unit 3 site is located at the Chesapeake Bay area and the water level is controlled by the {tide, storm surge and tsunami events.} As a consequence, the drawdown effects from storm surge and tsunami are described in the following two sections. Since the effect from seiches on the site is negligible, as described in Section 2.4.5.4, these effects are not taken into account for the low water consideration. Section 2.4.7 includes a description of cases of ice formation or ice-jams that may result in low water level. However, as concluded in Section 2.4.7, the existing baffle wall that separates the Chesapeake Bay from the intake forebay allows cooling water to be drawn from the Chesapeake Bay without the potential of ice-induced low levels. In addition, Section 2.4.7 concluded that impact of any ice jam formation or breaching of

the baffle wall could not have any detrimental effect on the proposed CCNPP Unit 3 site and intake structure.}

2.4.11.2.1 Storm Surge Effect

{Surge studies for the Chesapeake Bay reveal that the negative storm surge could be obtained based on the historical hurricane studies (Pore, 1960) (USWB, 1963). The extreme negative surges would occur at the Chesapeake Bay when hurricanes travel close and {parallel to the coastline} as shown in Figure 2.4.11-1 (MDGIS, 2007). This is the most critical path because if a hurricane travels over land its strength is reduced. The historical negative surge data for several hurricanes near the site are summarized in Table 2.4.11-1 (Pore, 1960) (USWB, 1963). Two additional hurricanes with similar tracks have occurred after 1960, Hurricane Gloria (September of 1985) and Hurricane Emily (August of 1993). The annual minimum water levels recorded at Annapolis and Solomons Island Stations, shown in Table 2.4.11-3 (NOAA, 2006b) and Table 2.4.11-4 (NOAA, 2006c), are not associated with these two hurricanes. Therefore, Hurricane Donna has been selected as a typical hurricane to estimate the negative surge in the Chesapeake Bay area considering the data availability, because the wind data near the site area (at Cove Point and Lookout Point) during Hurricane Donna is available. Moreover, Hurricane Donna is one of the all-time great hurricanes and its path was such that it created a negative surge in the Chesapeake Bay (NOAA, 2006a).

Based on the available data, the maximum sustained wind speed at the Cove Point and Lookout Point was observed as 57 mph (50 knots) (88.5 km/hr) during Hurricane Donna (USWB, 1960). The Cove Point and Lookout Point are located about 6 miles (9.7 km) and 27 miles (43.5 km) south of the site, respectively, as shown in Figure 2.4.11-2 (MDGIS, 2007). Because the wind moves in a counter-clockwise direction, the wind direction changes from NE to N as the hurricane travels past the Chesapeake Bay. It can be inferred that the northerly wind would drive the water towards the south in the Chesapeake Bay and, therefore, the water level at Baltimore is lowest in the Chesapeake Bay area due to the wind setdown.

The lowest water level due to wind effects will take place during the passage of the Probable Maximum Hurricane (PMH) because the wind field due to the PMH is the strongest. The track of the PMH causing the lowest water level at the site location is indicated in Figure 2.4.11-1. The characteristics of the PMH for calculating the negative surge as detailed in EM 1110-2-1412, "Storm Surge Analysis and Design Water Level Determinations (USACE, 1986) are as follows:

From Figure C-10 (USACE, 1986), the K factor for the PMH, {Latitude N37° (location of site)} and for units of mph is K = 78.7. The Coriolis parameter is estimated to be f = 0.315/hr.

From Figure C4 (USACE, 1986), the upper and lower limits of radius to the maximum winds for the PMH are:

R_{lower} = 10 nautical miles or R_{lower} = 11.51 mi (18.53 km)

R_{upper} = 26.2 nautical miles or R_{upper} = 30.15 mi (48.52 km)

The lowest sea-level pressure p_o (in inches Hg) at the hurricane center is determined from Figures C-2 (USACE, 1986) for the PMH at Chesapeake Bay:

p_o = 26.56 in Hg (67.46 cm Hg)

Finally, the peripheral pressure p_n, the sea level pressure at the outskirts of the PMH hurricane is taken as

p_n = 30.12 in Hg (76.50 cm Hg)

Using the PMH characteristics at the site and following the procedure described in EM 1110-2-1412 (USACE, 1986), the maximum sustained wind speed at the site area is estimated as 102.9 mph (165.6 kmph) when the eye of the PMH passes along the coastline as indicated in Figure 2.4.11-1.

The negative surge at the site due to Hurricane Donna is estimated to be -1.2 ft (-0.37 m) based on the data of Table 2.4.11-1 and by interpolating between the Annapolis and Solomons Island Stations. The storm surge is generally proportional to the square of the wind speed (USACE, 1959). Therefore the negative surge due to the PMH can be calculated on the basis of the law of proportionality as follows:

$$\frac{(\text{wind speed due to Hurricane Donna})^2}{(\text{negative surge at site})} = \frac{(\text{wind speed due to PMH})^2}{(\text{negative surge at site})} \Rightarrow \frac{57^2}{-1.2} = \frac{102.9^2}{\text{surge at site}}$$

Therefore, the negative surge due to the PMH is estimated as -3.9 ft (-1.2 m). Moreover, considering the westerly cross wind effects, the additional water level drop has to be added to the negative surge due to the PMH. Assuming that the additional setdown is equal to the setup due to the PMH given in Section 2.4.5 for an easterly wind, the additional setdown is 1.13 ft (0.34 m). Therefore, the total setdown due to the PMH is -5.03 ft (-1.53 m).}

2.4.11.2.2 Tsunami Effect

{Tsunami sources in the Atlantic Ocean were investigated in Section 2.4.6 to determine the probable maximum tsunami height. Any tsunami propagating from the Atlantic Ocean will be highly dispersed once it reaches the Chesapeake Bay area. Therefore, the tsunami effects will be minor compared to the storm surge.

The following three tsunami sources were considered: the Canary Islands tsunami, the Continental Shelf landslide tsunami and the Haiti tsunami. The minimum drawdown at the site among the above three sources is due to the hypothetical Haiti tsunami. The drawdown level due to the hypothetical Haiti tsunami which has the longest wave period has been predicted as -1.64 ft (-0.50 m). Details of the tsunami effects are given in Section 2.4.6.}

2.4.11.2.3 Low Water Level Due to Surge and Tsunami

{The combined low water levels for the cases of the negative storm surge and the tsunami are assumed to occur coincident with the occurrence of Mean Lower Low Water (MLLW) at the site. The MLLW, at the site is estimated by using the tide datum relationship at the Cove Point station. At Cove Point Station the MSL and MLLW are 3.13 ft (0.95 m) and 2.50 ft (0.76 m) above station datum, respectively. The datum at Cove Point is -0.01 ft (-0.003 m) MLLW. This value is adopted for the site and the respective low water levels at the site for the negative surge and tsunami are:

- MLLW + Negative Surge: 0.01 ft (0.003 m) - 5.03 ft (-1.53 m) = -5.02 ft (-1.53 m)
- MLLW + Negative Tsunami: 0.01 ft (0.003 m) -1.64 ft (-0.50 m) = -1.63 ft (-0.50 m)

Therefore, the lowest water level is due to negative storm surge and was estimated to be -5.02 ft (-1.53 m), which is a combination of surge due to PMH and MLLW. The minimum operating water level for the safety-related UHS makeup intake is set at -6.0 ft (-1.83 m). Therefore, the minimum operating water level is maintained.}

2.4.11.3 Historical Low Water

{The low water level based on the historical tide data is determined using the statistical method. Regulatory Guide 1.206 (NRC, 2007) does not mention the specific return period for the

extreme low water level, but mentions the use of the 100-year drought as a design basis. The 100-year low water level is the appropriate design level for the non-safety-related makeup water intake for the Circulating Water System (CWS), while the probable minimum water level (due to negative storm surge from the PMH and MLLW) is the appropriate design level for the safety-related UHS makeup intake pumps.

Because there is no tide} data for the site, the data at the two nearby stations was used for the statistical analysis in determining the low water level. These stations are: NOAA Station ID 8575512 at Annapolis, Maryland, and NOAA Station ID 8577330 at Solomons Island, Maryland (Figure 2.4.11-2). Other stations nearby have recorded the water levels for periods less than six months and, therefore, were not considered. The details of the two stations are provided in Table 2.4.11-2. Annapolis station is located about 37 miles (59.5 km) north of the CCNPP site and Solomons Island is located about 8 miles (12.9 km) south of the site.

The historical tide data at Annapolis station and Solomons Island station were used to analyze the 100 year low water level for the site. The data were obtained from NOAA (NOAA, 2006b and NOAA, 2006c) and all tide levels with no specific reference water level are based on the station datum (NOAA, 2006b) (NOAA, 2006c). For Annapolis, the data cover a period from 1929 to 2006, while for Solomons Island, the data cover a period from 1971 to 2006. The raw data are presented in Table 2.4.11-3 and Table 2.4.11-4.

The raw data mentioned above were analyzed using eight different probability density functions: normal, log-normal, exponential, generalized extreme value - Type 1 (Gumbel), Pearson - Type 3 (P3), log-Pearson - Type 3 (LP3), generalized extreme value - Type 3 and Weibull distributions. These eight probability distributions were considered before selecting the probability distribution that best fits the data. The equations for each probably density distribution can be found in the Flood Frequency Analysis. Goodness-of-fit of the distributions was evaluated using standard χ^2 and Kolmogorov-Smirnov (K-S) tests. A distribution is considered acceptable when the test value is lower than a standard test value for a certain confidence interval (Rao, 2000) and for this case a 95% confidence interval was specified. From the analysis, none of the distributions fit the data very accurately for return periods higher than 10-years, even though they pass the χ^2 and K-S tests. Therefore, the 100-year low water level was conservatively determined by visual inspection of the plotted data and is found to be 0.54 ft (0.16 m) above station datum for Annapolis (Figure 2.4.11-3) and 0.35 ft (0.11 m) above station datum for Solomons Island.

As a conservative approach, the 100-year low water level at the CCNPP Unit 3 site is selected based on the Annapolis station, which is lower than Solomons Island. Therefore, the 100-year low water is -3.90 ft (-1.19 m) and the minimum operating water level of the non-safety-related CWS makeup water intake is set at -4.0 ft (-1.22 m).

According to a report from the U.S. Environmental Protection Agency (EPA, 1995), the historic rate of sea level rise at {Annapolis and Solomons Island is 0.14 and 0.13 in/yr (3.6 and 3.3 mm/yr)}, respectively. Assuming the same rate of sea level rise, the water level in the Chesapeake Bay will rise by 3 to 3.3 in (7.6 to 8.3 cm) by 2030 (CBP, 2003). This estimation does not include the increase in global temperature. According to (CBP, 2003), the oceans would expand their volume, resulting in an 3 to 5 in (8 to 12 cm) rise in sea level. This rise, coupled with the regional rate of land subsidence around the Chesapeake Bay area, will result in a relative rise in the mean Chesapeake Bay water levels of 5 to 7 in (13 to 17 cm) by 2030 (CBP, 2003) Therefore, the MSL is expected to rise in the future, making the current estimates conservative. Although the second source (CBP, 2003) is less conservative but more realistic,

because it includes global warming, the first source (EPA, 1995) was used because it estimates a smaller sea rise and thus is more conservative.}

2.4.11.4 Future Controls

{There are no future controls for the Chesapeake Bay that could affect the availability of water and the water level in the Chesapeake Bay.}

2.4.11.5 Plant Requirements

{In terms of plant requirements, the Essential Service Water System (ESWS) provides flow for normal operating conditions, for shutdown/cooldown and for Design Basis Accident (DBA) conditions. In addition, maximum flow rates should be given for the makeups]. The ESWS pump in each train obtains water from the ESWS cooling tower basin of that train and circulates the water through the ESWS. Heated cooling water returns to the ESWS cooling tower to dissipate its heat load to the environment. Makeup water is required to compensate for ESWS cooling tower water inventory losses due to evaporation, drift, and blowdown associated with cooling tower operation. Makeup water to the ESWS cooling tower basins under normal operating and shutdown/cooldown conditions is provided by the plant Raw Water Supply System. Water is stored in the ESWS cooling tower basin, which provides at least 72 hours of makeup water for the ESWS cooling tower following a DBA. After 72 hours have elapsed under DBA conditions, emergency makeup water to the tower basins is provided by the safety-related UHS emergency makeup water pumps housed in the UHS makeup intake structure.

Under normal plant operating conditions, the makeup water for the CWS will be taken from the Chesapeake Bay by pumps at a maximum rate of approximately 43,480 gpm (164,590 lpm) for the unit. Under normal plant operating conditions, UHS gets its makeup from fresh water (desalination plant output).

Under DBA conditions, the CWS is lost, since it is non-safety-related. The ESWS makeup water under DBA conditions will be provided at a maximum flow rate of approximately 942 gpm (3,566 lpm) to accommodate the maximum evaporation rate (approximately 940 gpm (3,558 lpm)) and drift loss (approximately 2 gpm (7.6 lpm) for the unit) for two UHS cooling towers. Maximum ESWS blowdown and makeup rates are based on maintaining two cycles of concentration and evaporation at 82°F (27.8°C) wet-bulb temperature and 20% relative humidity.

The safety-related UHS makeup intake structure is located south of the existing intake channel for CCNPP Units 1 and 2. Four 100% capacity, vertical turbine, wet-pit UHS emergency makeup water pumps are provided to supply makeup water to the UHS cooling tower basins, one per train, with a capacity per pump of approximately 600 gpm (2,271 lpm). The sump invert elevation of the safety-related UHS makeup intake is approximately at -20.5 ft (-6.25 m). The minimum design operating level is set at -6.0 ft (-1.83 m). The available water depth of 14.5 ft (4.42 m) under the minimum design water level is more than adequate to satisfy the pump submergence, pump intake head loss through screens, and Net Positive Suction Head (NPSH) requirements even when the four UHS emergency makeup pumps are each concurrently operating at 600 gpm (2,271 lpm). The discharge flow from CCNPP Unit 3 is from a retention basin, which collects all site non-radioactive wastewater and cooling tower blowdown to the Chesapeake Bay. Details of the outfall structure are provided in Section 10.4.5.

Since the minimum design operating level is set at -6.0 ft (-1.83 m) for the safety-related UHS makeup intake, the UHS makeup pumps supply sufficient water during the lowest water level due to negative storm surge or tsunami (estimated at -5.02 ft (-1.53 m)). Also, since the minimum design operating level for the non-safety-related CWS makeup intake is set at -4.0 ft

(-1.22 m), the CWS makeup pumps supply sufficient water during the 100 year low water level (estimated at -3.9 ft (-1.19 m). Furthermore, both intake structures are located at the shoreline, so an adequate water supply exists. The amount of water withdrawn from the Chesapeake Bay will be subject to the state water withdrawal permit limits.

The Chesapeake Bay withdrawal permit for the cooling water of the CCNPP Unit 3 will be subject to the provisions of Title 5 of the Environment Article, Annotated Code of Maryland (MD, 2007). The EPA declared the Chesapeake Bay as an impaired water body in 1998 based on the Federal Water Pollution Control Act (USC, 2007) because of excess nutrients and sediments (CBP, 2003). Both the safety-related and non-safety-related makeup intakes comply with the Section 316(b) requirements for existing power plants of the Federal Water Pollution Control Act (USC, 2007), which requires an intake screen through-slot velocity of less than 0.5 fps (0.15 mps).}

2.4.11.6 Heat Sink Dependability Requirements

{The normal non-safety-related water supply to the UHS cooling tower basins is fresh water from a desalination plant (approximately 470 gpm (1,779 lpm) maximum anticipated per train for four trains). The emergency safety-related water supply to the ESWS cooling tower basins is brackish water from the Chesapeake Bay from the emergency makeup water system (approximately 470 gpm (1,179 lpm) maximum anticipated per train). In the event normal water supply is lost, there is a 72 hour volume of water available at the tower basin to deal with system losses before the emergency UHS makeup water supply is required to be initiated.

The ESWS cooling tower basin design considers that the basin is operating just above the low operating water level at the start of an accident and that the normal non-safety-related makeup water supply is lost. At the end of 72 hours following the initiation of an accident, enough water will remain in the basin to provide minimum submergence depth for vortex suppression and to maintain sufficient NPSH for the pumps, plus some margin. At the 72 hour point, the safety-related UHS makeup water system at the Chesapeake Bay would begin supplying makeup water to the basins of the operating ESWS cooling towers (See Section 9.2.5). For cases of severe accidents, the ESWS also has a dedicated, non-safety-related 100% train with one pump. This train provides approximately 2,050 gpm (7,760 lpm) of ESWS flow (1.205×10^6 lbm/hr) (5.466×10^5 kg/hr) to deal with severe accident heat loads. Details of the ESWS design bases for operation and normal or accidental shutdown and cooldown, as well as the water sources and the related retaining and conveyance systems, are provided in Section 9.2.5.

The UHS makeup water intake structure is designed to withstand the extreme meteorological and geo-seismic events, such as the probable maximum storm surge, probable maximum tsunami and tornadoes. Specifically, the invert elevation of the UHS makeup pump sump is set at a level to provide sufficient submergence depth to suppress harmful vortex formation and to maintain sufficient NPSH for the pump, under the design water level (which is -6.0 ft (-1.83 m)).

In the event of a PMH, the resulting extreme low water level can persist at most for one day since the forward speed of the PMH around the site is estimated to be 20.3 mph (32.7 kmph). With this speed, the PMH would have traveled around 500 miles (805 km) in 24 hours and its effect on the site will diminish. Therefore, the site area can be out of the severe-influence area of the PMH after 24 hours. Because the minimum design level is set at -6.0 ft (-1.83 m) and based on the PMH, there is no need to switch to alternate emergency UHS makeup sources in the event of a hurricane.

Design basis heat loads for various plant modes are provided in Section 9.2.5. Makeup water flow rate requirements for the UHS trains are based not only on providing sufficient inventory in

the cooling tower basins for safe operation of the ESWS pumps but also on maintaining basin water chemistry, and takes into consideration maximum ESWS cooling tower evaporation, drift, and seepage losses. The Regulatory Guide 1.27 (NRC, 1976) criteria to provide water inventory for UHS operation during the 30 day post accident period have been incorporated into the CCNPP Unit 3 UHS design: Each ESWS cooling tower basins will have sufficient inventory to permit operation of the associated ESWS train for 72 hours following an accident without the need for additional makeup water. At the end of 72 hours, a safety-related train of makeup water will be put in operation to feed the basin (each train of UHS has a dedicated safety-related makeup water train as a backup to the normal non-safety source). The safety-related makeup water system draws from the Chesapeake Bay, so it will be able to provide water for the 30 day period following an accident (See Section 9.2.5).

There are no other uses of water drawn from the UHS, such as fire water or system charging requirements. There are no other interdependent safety-related water supply systems to the UHS, like reservoirs or cooling lakes. There is no potential of blockage of the safety-related UHS makeup water intake due to ice or channel diversions as discussed in Sections 2.4.7 and 2.4.8. In addition, the forebay will be dredged as necessary to maintain an invert elevation of no greater than -20.5 ft (-6.25 m) in order to avoid any sedimentation issues.}

2.4.11.7 References

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USWB, 1963. Characteristics of the Hurricane Storm Surge, Technical Paper 48, U.S. Weather Bureau, 1963.}

Table 2.4.11-1 {Summary of Negative Surges of Major Hurricane Events}
(Page 1 of 1)

Date		Hurricane Name	Negative Surge (ft) (m)		
			Baltimore	Annapolis	Solomons Island
1938	Sep-21	Not named	-3.2 (-0.98)	-2.2 (-0.67)	-1.4 (-0.43)
1944	Sep-14	Not named	-2.1 (-0.64)	-1.6 (-0.49)	-0.6 (-0.18)
1953	Aug-14	Barbara	-2.6 (-0.79)	-2.4 (-0.73)	-1.5 (0.46)
1954	Sep-11	Edna	-1.4 (-0.43)	-1.0 (-0.30)	-0.4 (-0.12)
1960	Sep-12	Donna	-2.6 (-0.79)	-1.5 (-0.46)	-1.0 (-0.30)

Table 2.4.11- 2 {Summary of Information of the Stations and Range of Data Used}
(Page 1 of 1)

Station Name	NOAA Station ID	Location		MSL above station datum	MLLW above station datum	MLLW in terms of MSL
		Latitude	Longitude	(ft) (m)	(ft) (m)	(ft) (m)
Annapolis	8575512	38° 59.0' N	76° 28.8' W	5.24 (1.60)	4.52 (1.38)	-0.72 (-0.22)
Solomons Island	8577330	38° 19.0' N	76° 27.1' W	4.48 (1.37)	3.72 (1.13)	-0.76 (-0.23)

Table 2.4.11- 3 {Annual Minimum Water Levels at Annapolis Station}
(Page 1 of 1)

Date	Annual Min. level (ft)		Date	Annual Min. level (ft)		Date	Annual Min. level (ft)	
	Station Datum	MSL		Station Datum	MSL		Station Datum	MSL
01/08/1929	1.00	-4.24	03/29/1955	1.90	-3.34	01/05/1981	2.13	-3.11
12/02/1930	1.70	-3.54	01/09/1956	1.80	-3.44	04/07/1982	1.49	-3.75
12/26/1931	1.50	-3.74	12/05/1957	1.70	-3.54	12/25/1983	2.31	-2.93
03/08/1932	1.50	-3.74	02/10/1958	2.21	-3.03	01/11/1984	2.89	-2.35
03/10/1933	1.40	-3.84	01/06/1959	1.38	-3.86	02/09/1985	1.43	-3.81
01/29/1934	1.80	-3.44	02/21/1960	1.90	-3.34	03/08/1986	2.01	-3.23
01/04/1935	1.60	-3.64	01/09/1961[2]	2.10	-3.14	02/09/1987	1.81	-3.43
09/18/1936	0.98	-4.26	12/31/1962	0.70	-4.54	01/14/1988	2.29	-2.95
02/17/1937	1.88	-3.36	01/01/1963	0.80	-4.44	11/21/1989	1.63	-3.61
02/28/1938	1.80	-3.44	02/12/1964	1.80	-3.44	02/26/1990	1.91	-3.33
01/26/1939	2.01	-3.23	12/26/1965	2.10	-3.14	12/19/1991	2.52	-2.72
02/15/1940	1.30	-3.94	12/27/1966	1.90	-3.34	12/06/1992	1.73	-3.51
03/19/1941	1.48	-3.76	02/26/1967	0.80	-4.44	03/18/1993	1.91	-3.33
02/03/1942	1.90	-3.34	01/08/1968	2.00	-3.24	11/24/1994	2.33	-2.91
02/15/1943	1.60	-3.64	02/10/1969	1.59	-3.65	02/06/1995	2.08	-3.16
12/02/1944	1.80	-3.44	02/26/1970	2.33	-2.91	11/27/1996	2.98	-2.26
01/25/1945	1.40	-3.84	01/28/1971	1.99	-3.25	04/01/1997	1.73	-3.51
12/02/1946	1.20	-4.04	02/20/1972	1.79	-3.45	01/01/1998	2.40	-2.84
01/22/1947	1.90	-3.34	02/17/1973	2.07	-3.17	03/08/1999	2.71	-2.53
12/26/1948	1.60	-3.64	11/26/1974	2.56	-2.68	01/14/2000	1.74	-3.50
03/01/1949	2.10	-3.14	04/05/1975	0.66	-4.58	01/01/2001	2.83	-2.41
03/10/1950[1]	2.01	-3.23	01/09/1976[3]	2.80	-2.44	12/03/2002	2.29	-2.95
12/16/1951	1.80	-3.44	03/23/1977	2.22	-3.02	01/24/2003	1.77	-3.47
01/07/1952	1.90	-3.34	01/11/1978	1.88	-3.36	01/17/2004	2.28	-2.96
11/07/1953	1.70	-3.54	04/07/1979	2.45	-2.79	03/03/2005	2.40	-2.84
03/16/1954	1.90	-3.34	12/25/1980	1.24	-4.00	01/15/2006	1.70	-3.54

Notes:

[1] Same level observed on 02/27/1950
[2] Same level observed on 01/25/1961
[3] Same level observed on 01/23/1976

Table 2.4.11- 4 {Annual Minimum Water Level at Solomons Island Station}
(Page 1 of 1)

Date	Annual Min. level (ft)		Date	Annual Min. level (ft)	
	Station Datum	MSL		Station Datum	MSL
01/28/1971	0.97	-3.51	11/21/1989	1.80	-2.68
02/21/1972	1.32	-3.16	02/25/1990	1.41	-3.07
11/18/1973[1]	2.17	-2.31	12/16/1991	2.06	-2.42
03/06/1974	2.15	-2.33	12/06/1992	1.34	-3.14
04/05/1975	0.50	-3.98	03/15/1993	1.49	-2.99
12/22/1976	1.66	-2.82	11/24/1994	1.84	-2.64
01/02/1977	0.56	-3.92	02/06/1995	1.72	-2.76
01/11/1978	1.16	-3.32	04/24/1996	2.44	-2.04
04/07/1979	1.94	-2.54	04/01/1997	1.85	-2.63
12/25/1980	1.39	-3.09	01/01/1998	1.70	-2.78
01/05/1981	1.49	-2.99	03/08/1999	2.39	-2.09
04/07/1982	1.42	-3.06	01/28/2000	1.91	-2.57
12/25/1983	1.87	-2.61	01/01/2001	2.32	-2.16
02/08/1984[2]	2.37	-2.11	12/03/2002	2.14	-2.34
02/09/1985	1.16	-3.32	01/24/2003	1.60	-2.88
03/08/1986	1.53	-2.95	01/17/2004	2.06	-2.42
02/09/1987	1.86	-2.62	03/03/2005	2.15	-2.33
01/06/1988	2.00	-2.48	01/15/2006	2.05	-2.43

Notes:

[1] Based on 10 months data.
[2] Same level observed on 03/09/1984

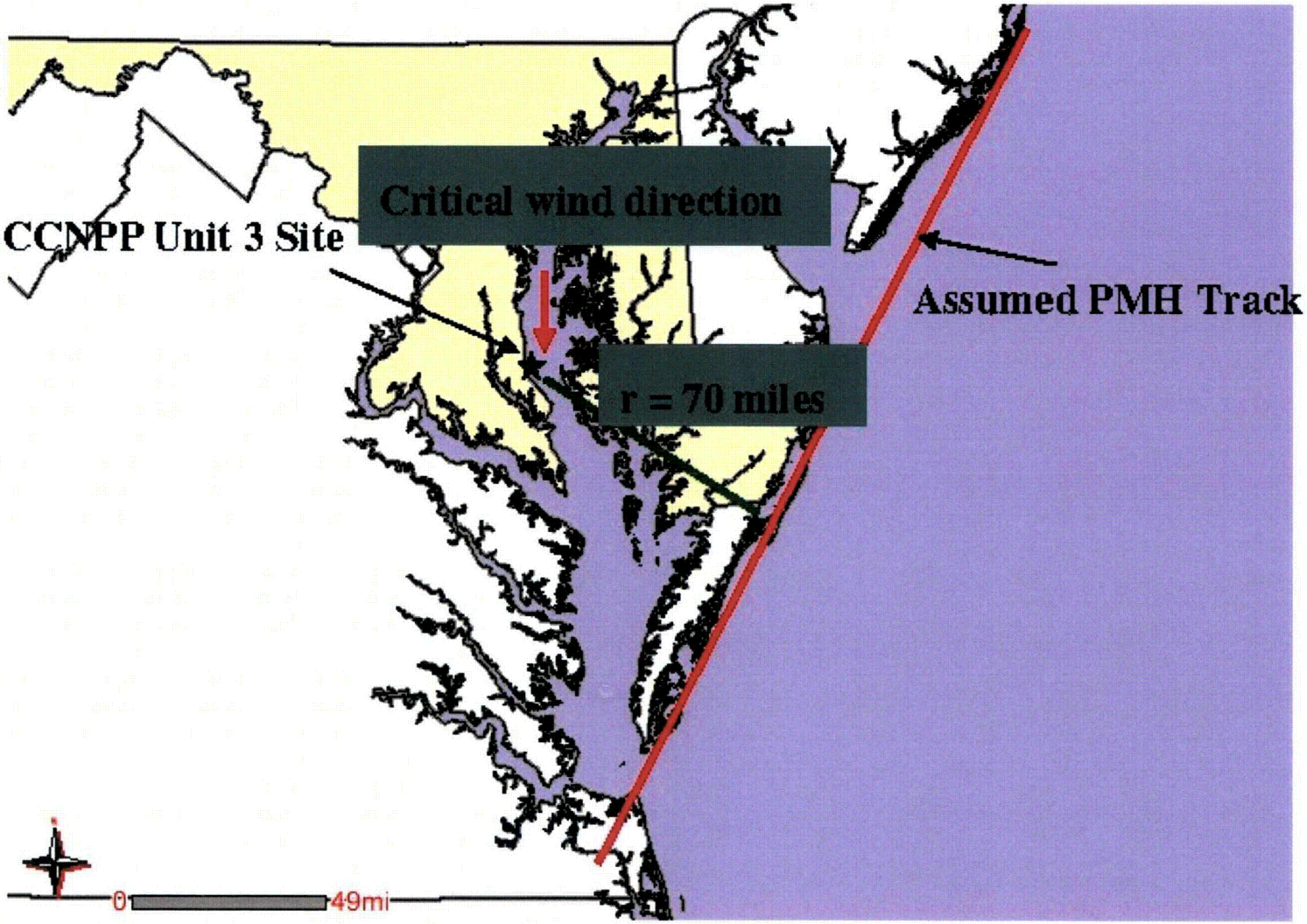

FIGURE 2.4.11-1 **Rev. 0**

TRACK OF THE PROBABLE MAXIMUM HURRICANE

CCNPP UNIT 3 FSAR

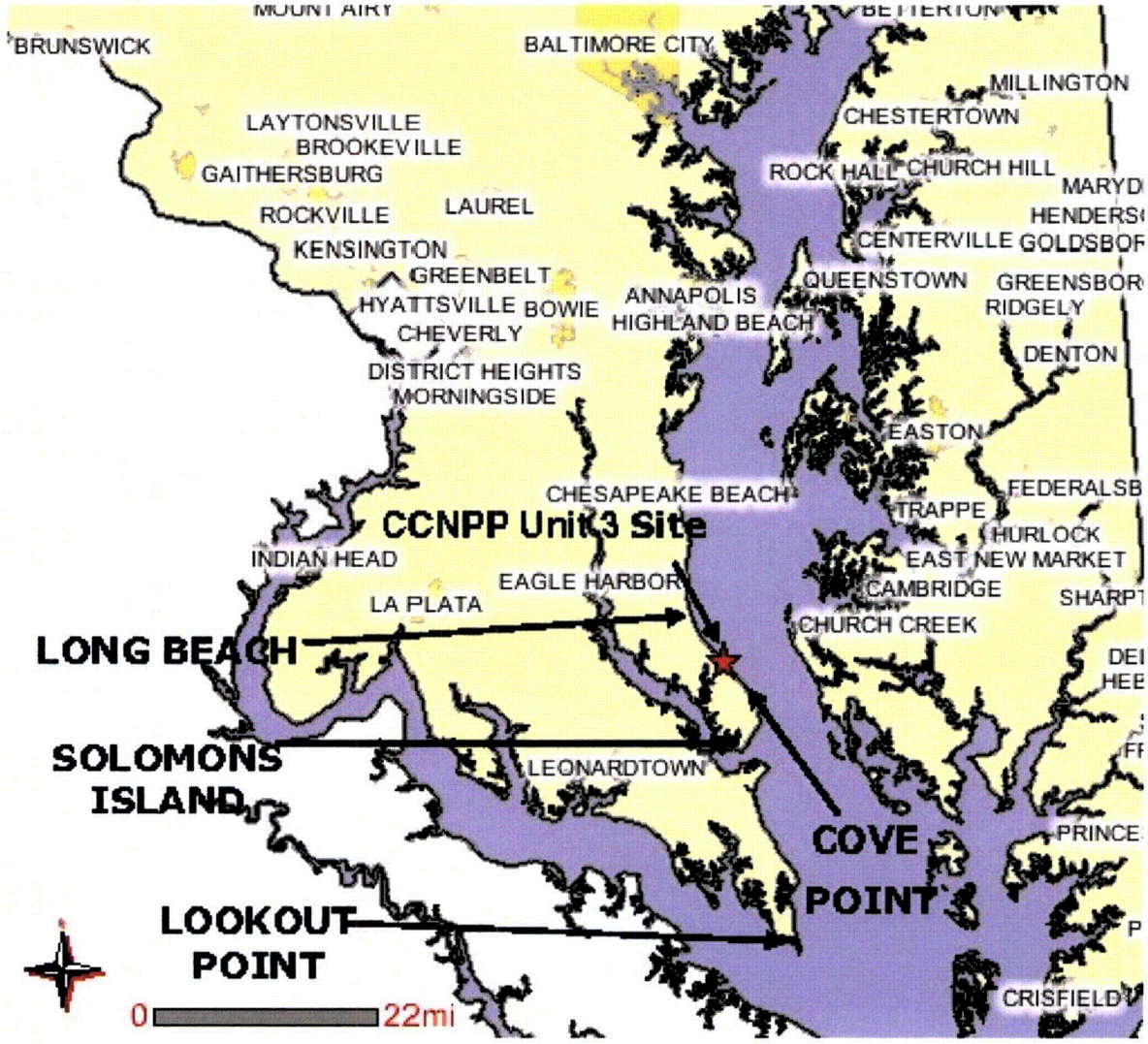

FIGURE 2.4.11-2 **Rev. 0**

CCNPP UNIT 3 SITE LOCATION

CCNPP UNIT 3 FSAR

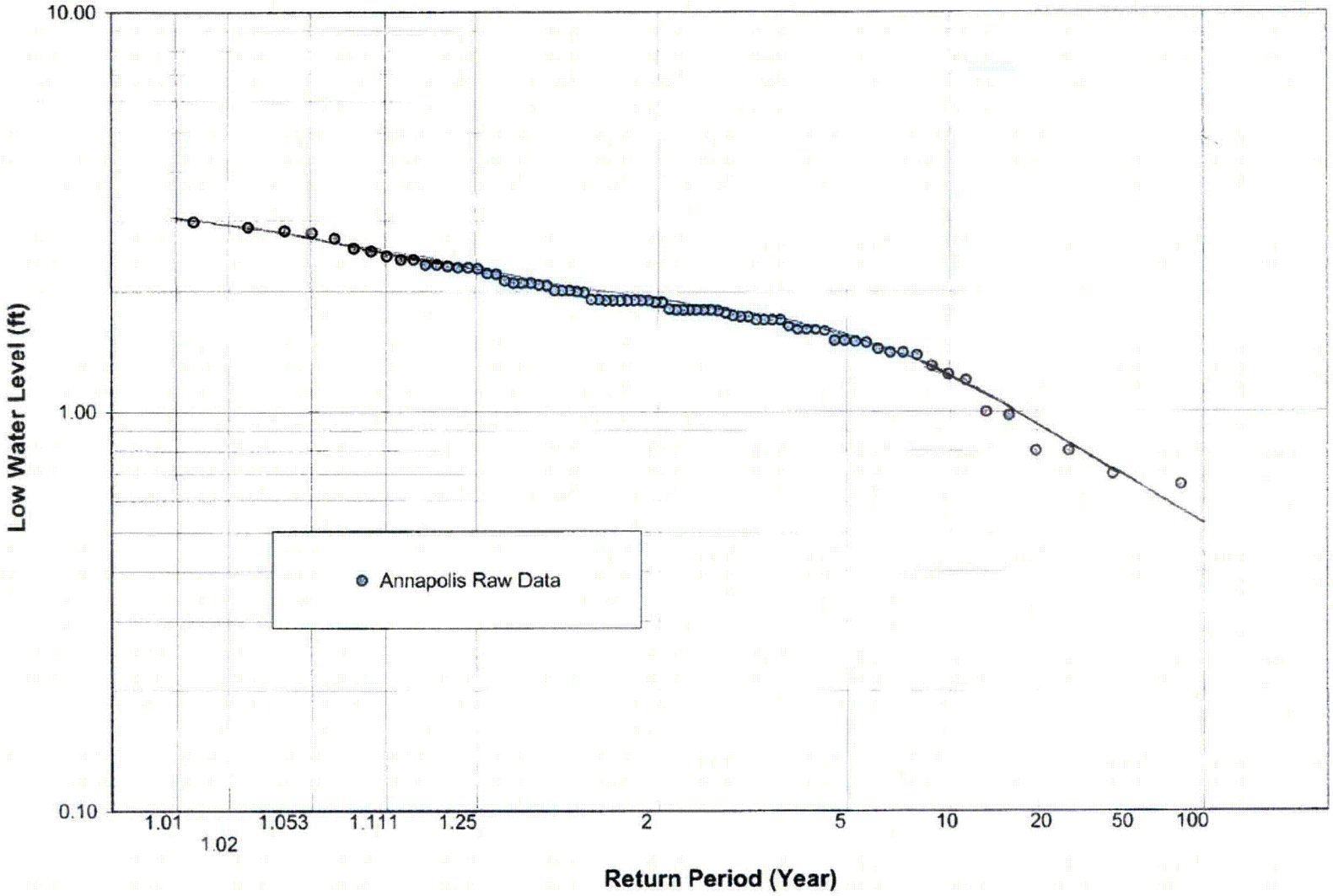

FIGURE 2.4.11-3 Rev. 0

LOW WATER LEVEL DATA OF ANNAPOLIS STATION AND THE CURVE FITTED BY VISUAL INSPECTION

CCNPP UNIT 3 FSAR

2.4.12 GROUNDWATER

The U.S. EPR DCD includes the following COL Item in Section 2.4.12:

> A COL Applicant that references the U.S. EPR design certification will provide site-specific information to identify local and regional groundwater reservoirs, subsurface pathways, onsite use, monitoring or safeguard measures, and to establish the effects of groundwater on plant structures.

This COL item is addressed in the following sections.

This section provides a description of the hydrogeologic conditions present at, and in the vicinity of the {CCNPP} site. This section describes the regional and local groundwater resources that could be affected by the construction and operation of {CCNPP Unit 3}. The regional and site-specific data on the physical and hydrologic characteristics of these groundwater resources are summarized to provide the basic data for an evaluation of potential impacts on the aquifers of the area.

2.4.12.1 Description and Use

2.4.12.1.1 Hydrogeologic Setting

{Except where otherwise noted, the information presented in this section is summarized from the USGS Ground Water Atlas of the United States, Segment 11 (USGS, 1997a). The location of the CCNPP site in reference to the Mid-Atlantic States is shown in Figure 2.4.12-1. The site is located in Calvert County, MD and lies within the Coastal Plain Physiographic Province, at a distance of about 50 mi (80 km) east of the Fall Line. The Coastal Plain Physiographic Province is a lowland that is bordered by the Atlantic Ocean to the east and Fall Line to the west. The Fall Line is a demarcation, separating the eastern, unconsolidated coastal plain sediments from the consolidated rocks of the western physiographic provinces associated with the Appalachian Mountains. Although the Coastal Plain is generally a flat, seaward-sloping lowland, this province has areas of moderately steep local relief that reach elevations of several hundred feet.

The CCNPP site is underlain by approximately 2500 ft (762 m) of southeasterly dipping, Coastal Plain sedimentary strata of Cretaceous and Tertiary age. Underlying these sediments are crystalline and metamorphic rocks of Precambrian and Early Paleozoic age. The Cretaceous and Tertiary strata are comprised primarily of sedimentary deposits of silt, clay, sand, and gravel, which exhibit considerable lateral and vertical variations in lithology and texture. The strata form a wedge-shaped mass, which thickens and deepens to the southeast from the Fall Line towards the Atlantic Ocean (see Section 2.5.1 for additional geologic detail). Water-bearing units within the Coastal Plain sediments consist of unconsolidated to semi-consolidated sand aquifers separated by clay confining units. The sediments that compose the aquifer systems were deposited in non-marine, marginal marine, and marine environments during a series of marine transgressions and regressions during Cretaceous and Tertiary times (USGS, 1997a).

Parts of five physiographic provinces are present in the State of Maryland (Figure 2.4.12-2 and Figure 2.4.12-3). These include (from west to east) the:

- Appalachian Plateau Physiographic Province
- Valley and Ridge Physiographic Province
- Blue Ridge Physiographic Province
- Piedmont Physiographic Province

- Coastal Plain Physiographic Province

The provinces are illustrated in Figure 2.4.12-2, which also illustrates the aquifer systems associated with these provinces. Figure 2.4.12-3 depicts a cross-sectional schematic view of these provinces. Groundwater occurrence is of significance to the site only within the Coastal Plain Physiographic province, specifically, the regional area of southern Maryland east of the Fall Line. The Fall Line identifies a contrast in topography and surficial geology between the western physiographic provinces and that of the eastern Coastal Plain Physiographic Province. However, a brief discussion of groundwater within the other provinces is included below to provide a more complete picture of Maryland's hydrogeologic regimes.

2.4.12.1.1.1 Appalachian Plateau Physiographic Province

The Appalachian Plateau Province extends over most of West Virginia, more than one-half of Pennsylvania, and small parts of westernmost Virginia and Maryland. The province lies approximately 150 mi (241 km) west of the CCNPP site. It is bounded on the east and southeast by the Valley and Ridge Province. The Appalachian Plateau Province is underlain by rocks that are continuous with those of the bordering Valley and Ridge Province, but in the Appalachian Plateau Province the sedimentary rocks are nearly flat-lying, rather than being intensively folded and faulted (USGS, 1997a).

The Appalachian Plateau Province aquifers are contained in Paleozoic sedimentary rocks consisting mostly of shale, sandstone, conglomerate, and limestone. Coal beds are found in rocks of Pennsylvanian age. The water-yielding characteristics of these aquifers vary significantly due to local variations in lithology and thickness of the geologic units. Most of the productive aquifers lie within sandstones or conglomerates, but limestone formations locally yield significant volumes of water (USGS, 1997a).

2.4.12.1.1.2 Valley and Ridge Physiographic Province

The northeast-southwest trending Valley and Ridge Physiographic Province lies southeast of the Appalachian Plateau Physiographic Province and lies approximately 100 mi (161 km) west of the CCNPP site. This province is characterized by layered Paleozoic sedimentary rocks that have been complexly faulted and folded. These rocks range in age from Cambrian to Pennsylvanian. Well-cemented sandstones and conglomerates resistant to weathering form elongated mountain ridges. The less resistant limestone, dolomite, and shale are more easily eroded and form the intervening valleys between the ridges (USGS, 1997a), further described in Section 2.5.1.

The principal aquifers in the Valley and Ridge Province are carbonate rocks (limestone and dolomite) and sandstones that range in age from early to late Paleozoic. Most of the more productive aquifers are in carbonate rocks, primarily limestone, and most are in the valleys. However, the water-yielding character of the carbonate rocks depends on the degree of fracturing and development of solution cavities in the rock. Sandstone formations can also yield large volumes of water where these rocks are well fractured. Generally, the carbonate aquifers predominate in early Paleozoic rocks, whereas the sandstone aquifers are more often found in late Paleozoic rocks (USGS, 1997a).

2.4.12.1.1.3 Blue Ridge Physiographic Province

The Blue Ridge Physiographic Province lies east of the Valley and Ridge Province. It forms a thin (generally 5 to 20 mi (8 to 32 km) in width) and continuous band of mountains trending northeast to southwest from Pennsylvania to Georgia. The province boundary lies approximately 90 mi (145 km) northwest of the CCNPP site. The rocks comprising the Blue Ridge Province are geologically similar to those of the bordering Piedmont Province. Therefore,

from a groundwater perspective, the two provinces are often described together. The principal differences between the two provinces are relief, altitude, and geographical position. The Blue Ridge mountain belt contains primarily crystalline, igneous and high-grade metamorphic rocks consisting of coarse-grained gneisses and schists. Minor amounts of low-grade metamorphic rocks (phyllites and slates) and Early Cambrian sedimentary rocks occur along its western margin (USGS, 1997a).

The primary features for the storage and transmission of groundwater in the Blue Ridge Province occur in surficial regolith and bedrock fractures. Although the porosity of the regolith varies, it is one to three orders of magnitude greater than the crystalline bedrock. Accordingly, the regolith has the capacity to store a much larger volume of water than the bedrock, which only contains water in fractures. Because the size, number, and interconnection of bedrock fractures decreases with depth, most of the groundwater is stored in the regolith. Therefore, well yields are greatest in areas of greatest regolith thickness (USGS, 1997a).

2.4.12.1.1.4 Piedmont Physiographic Province

The Piedmont Physiographic Province lies east of the Blue Ridge Physiographic Province, and its eastern boundary lies approximately 50 mi (80 km) northwest of the CCNPP site. The Piedmont Province is bounded on the east by the Fall Line. The Fall Line is a zone of stream rapids that marks the position where streams flow from Piedmont Province's consolidated rocks to the Coastal Plain's unconsolidated sediments (Figure 2.4.12-2 and Figure 2.4.12-3). The Piedmont Province is an area of varied topography ranging from lowlands to peaks and ridges of moderate relief and elevation. The metamorphic and igneous rock types seen in the Blue Ridge Province are also present in the Piedmont Province. Sedimentary basins that formed within early Mesozoic crustal rift zones are also included in this province. These basins contain shale, sandstone, and conglomerate interbedded locally with basalt lava flows and minor coal beds. In places, these rocks are intruded by diabase dikes and sills (USGS, 1997a).

Aquifers in the Piedmont Province lie predominantly in the shallow, more fractured igneous and metamorphic rocks that underlie both the Blue Ridge and Piedmont Provinces. In some topographically low areas of the Piedmont Province, aquifers exist within the carbonate rocks and sandstones associated with the Mesozoic rift basins (USGS, 1997a).

2.4.12.1.1.5 Coastal Plain Physiographic Province

The Coastal Plain Physiographic Province is located east of the Piedmont Province and extends to the Atlantic coastline. The CCNPP site lies within this province on the western shore of Chesapeake Bay in Maryland. Semi-consolidated to unconsolidated sediments of Cretaceous and younger ages form a northeast trending band that narrows to the northeast and parallels the coast (Figure 2.4.12-2). These sediments overlie igneous and metamorphic basement rocks equivalent to those exposed in the Piedmont. The Coastal Plain Province sediments form a southeasterly thickening wedge-shaped mass ranging in thickness from 0 ft (0 m) at the Fall Line to as much as 8000 ft (2438 m) along the Atlantic coastline of Maryland (USGS, 1997a).

The sediments in this province consist of layers of sand, silt, and clay with minor amounts of gravel and calcareous sediments. Aquifers are found primarily in the sand, gravel, and calcareous sediments. They can be traced over long distances, although some occur in lenses and are localized. The aquifers are separated vertically by confining units consisting primarily of clay with lesser amounts of silt and sand. Depending on the thickness and sand content of the confining units, they can act locally as either aquitards or aquicludes by retarding vertical groundwater flow to varying degrees (USGS, 1997a).

In the Mid-Atlantic States, the aquifers within the Coastal Plain Physiographic Province are referred to as the Northern Atlantic Coastal Plain aquifer system (Figure 2.4.12-2). This aquifer system extends from New Jersey to the Carolinas. Water-bearing units within the Coastal Plain Province sediments consist of unconsolidated to semi-consolidated sand aquifers separated by clay confining units. Although water moves more readily through the aquifers than the intervening confining units, water can leak through the confining units. Therefore, the aquifer systems are considered hydraulically interconnected to some degree (USGS, 1997a).

The principal aquifers within the system, from shallow to deep are as follows (USGS, 1997a):

- Surficial aquifer
- Chesapeake aquifer
- Castle Hayne-Aquia aquifer
- Severn-Magothy aquifer
- Potomac aquifer

The aquifer units dip east to southeast from the Fall Line towards the Atlantic Ocean. Outcrop areas are identified as areas where the upward dip of the aquifer unit reaches ground surface. The deeper the aquifer, the more western the outcrop area would be towards the Fall Line. While the shallower the aquifer unit, the more easterly the outcrop area. The Fall Line is considered to be the western-most boundary of the outcrop areas for the Coastal Plain aquifer system. In southern Maryland, recharge areas to the shallow aquifer systems (Surficial and Chesapeake aquifers) are localized while the recharge areas for the deeper aquifer systems (Caste Hayne – Aquia, Severn – Magothy, and Potomac aquifers) are the outcrop areas to the west and northwest in Charles, Prince George's, and Anne Arundel counties (Figure 2.4.12-2).}

2.4.12.1.2 Regional Hydrogeologic Description

{Regionally, the CCNPP site is located in southern Maryland. It is underlain by approximately 2500 ft (762 m) of southeasterly dipping sedimentary strata of Cretaceous and Tertiary age. The Cretaceous and Tertiary strata are comprised primarily of sedimentary deposits of silt, clay, sand, and gravel, which exhibit considerable lateral and vertical variations in lithology and texture. The stratum forms a wedge-shaped mass, which thickens to the southeast from the Fall Line towards the Atlantic Ocean.

For southern Maryland, investigators have refined the aquifer nomenclature system described in Section 2.4.12.1.1.5 based on local hydrostratigraphic conditions. From shallow to deep, the local aquifer systems are as follows: Surficial aquifer, Piney Point - Nanjemoy aquifer, Aquia aquifer, Magothy aquifer, and the Potomac Group of aquifers (MGS, 1996 and MGS, 1997). The major difference between the nomenclatures is that the Chesapeake aquifer is treated as a confining unit and that the Castle Hayne - Aquia aquifer system has been subdivided into the Piney Point - Nanjemoy and Aquia aquifers.

The refined nomenclature will be used to describe the regional hydrogeologic conditions in the vicinity of CCNPP Unit 3 site. The hydrostratigraphic column for the CCNPP site and surrounding area, identifying geologic units, confining units, and aquifers is illustrated in Figure 2.4.12-4 (MGS, 1997). A schematic cross-section of the Southern Maryland hydrostratigraphic units is presented in Figure 2.4.12-5. Geologic and stratigraphic unit descriptions are discussed further in Section 2.5.1.

2.4.12.1.2.1 Surficial Aquifer

In Calvert County, the unconfined Surficial aquifer consists of two informal stratigraphic units, the Lowland Deposits and the Upland Deposits. The units comprising the Lowland Deposits are Holocene to Pleistocene in age. They consist of sands and clays deposited in fluvial and estuarine environments. The Upland Deposits are Pliocene in age and consist primarily of sands and gravels deposited in fluvial environments. In Calvert and St. Mary's counties, the Lowland Deposits outcrop along the Patuxent and Potomac Rivers and the Chesapeake Bay; however, these deposits appear to be absent in the immediate vicinity of the CCNPP site. The Upland Deposits are geographically more extensive in St. Mary's County than in Calvert County, but they are present at the CCNPP site and form the entirety of the Surficial aquifer at the site (MGS, 1996).

Recharge to the Surficial Aquifer is almost exclusively by direct infiltration of precipitation. Flow within the aquifer is localized with water moving from recharge areas (local land surface) along short flow paths to discharge areas (nearby streams or springs). Some of the water may percolate downwards to recharge underlying aquifers. Based on information provided in USGS Ground Water Atlas of the United States, Segment 11 (USGS, 1997a), the average annual precipitation between 1951 and 1980 in the region was estimated at 44 in (112 cm) with an average annual runoff estimated as 15 in (38 cm) (34 percent). The remaining 29 in (74 cm) of precipitation is available as recharge to the aquifer system, with the exception of that removed from the hydrologic cycle by direct evaporation and plant evapotranspiration.

Within the southern Maryland region, the Surficial aquifer is not a reliable source of groundwater. This is due to its relative thinness, limited saturated thickness (particularly during prolonged drought), and topographic dissections, which causes local groundwater to discharge as small springs (USGS, 1997a). The Surficial aquifer is tapped by irrigation wells and some older farm and domestic wells, but it is not widely used as a potable water supply because of its vulnerability to contamination and reduced dependability during droughts (MGS, 1995). Wells completed in this aquifer generally yield less than 50 gpm (189 lpm). The groundwater table is usually encountered within a depth of 50 ft (15 m) below ground surface (bgs) (USGS, 1997a).

2.4.12.1.2.2 Chesapeake Confining Unit

From youngest to oldest, the Miocene Chesapeake Group consists of the Saint Mary's, Choptank, and Calvert Formations. The Chesapeake Group is a significant aquifer east of the CCNPP site in the Delmarva Peninsula. However, beneath the western shore of Maryland, in the vicinity of the CCNPP site, the Chesapeake Group is described as a confining unit. With the exception of a relatively thin sandy unit at its base (lower Calvert Formation), the silts and clays of the Chesapeake Group are hydrostratigraphically undifferentiated, and they define the Chesapeake Confining Unit, which separates the overlying Surficial aquifer from the underlying Piney Point - Nanjemoy aquifer (MGS, 1996), although thin and discontinuous sand units capable of producing small quantities of groundwater are present locally. These saturated materials beneath the western shore of Maryland may yield water, but not of quantities sufficient for most uses. Within the region, localized sand units are recharged by precipitation and percolation through the overlying Surficial aquifer, moving a few miles or less downgradient along the flow path, and discharging to the Chesapeake Bay, streams, or localized areas of pumping. The potentiometric surface of the localized sand aquifers in the Chesapeake Group is generally above mean sea level (USGS, 1997a).

In general, the Chesapeake Confining Unit thickens from northwest to southeast in Calvert County and ranges in thickness from approximately 115 to 300 ft (35 to 91.4 m). A boring log from a production well at the CCNPP site indicate that the base of the Chesapeake Confining

Unit is at an elevation of approximately –205 ft (-62.5 m) msl and its total thickness is approximately 250 ft (76 m) (MGS, 1996).

2.4.12.1.2.3 Piney Point – Nanjemoy Aquifer

The Piney Point - Nanjemoy aquifer is stratigraphically complex, consisting of several geologic units. From youngest to oldest, the aquifer includes the following: the basal sandy strata of the lower to middle Miocene Chesapeake Group (lower Calvert Formation); unnamed upper Oligocene beds; the middle Eocene Piney Point Formation; and the sandy, upper part of the lower Eocene Nanjemoy Formation. Recharge to this aquifer is interpreted to be from direct infiltration of precipitation in northern Calvert County (lower Calvert Formation) and Anne Arundel County (Nanjemoy Formation) where these units are exposed at the surface. Recharge also presumably occurs from leakage from overlying aquifers. Discharge of the Piney Point - Nanjemoy aquifer is primarily from subaqueous exposures of the aquifer that are presumed to occur along the Continental Shelf. However, the northern portion of the Chesapeake Bay is a discharge area where the aquifer system is eroded by ancestral Susquehanna River paleochannels. Additional discharge occurs at local pumping locations (MGS, 1996).

The basal beds of the Calvert Formation are hydraulically connected to the underlying Piney Point - Nanjemoy aquifer. This unit is generally 10 to 20 ft (3 to 6 m) thick and consists of green to gray, glauconitic, fine to medium grained quartz sand. In places, this unit contains coarse shell fragments, phosphate nodules, and gravel (MGS, 1996). The underlying unnamed upper Oligocene beds are thin (less than 5 ft (1.5m)) to locally absent and very difficult to map in the subsurface. Consequently, the basal Calvert Formation sands and the unnamed upper Oligocene beds are treated as a single subsurface mapping unit (MGS, 1997).

The middle Eocene Piney Point Formation underlies the unnamed upper Oligocene beds and consists of shelly, glauconitic, quartzose sands and carbonate cemented interbeds of sands up to 5 ft (1.5 m) in thickness. The Piney Point Formation thickens to the southeast and ranges from 0 ft (0 m) in central Calvert County to approximately 45 ft (14 m) thick in southern Calvert County at Solomons. A boring log from a production well at the CCNPP site indicates that the base of the Piney Point Formation is at an approximate elevation of –225 ft (-68.6 m) msl and its total thickness is approximately 10 ft (3 m) (MGS, 1996).

The Piney Point Formation overlies lower Eocene beds of the Nanjemoy Formation. The Nanjemoy Formation coarsens upward overall from predominantly sandy silts and clays to dominantly clayey sands. This allows it to be subdivided into two hydrostratigraphic units. The sandy upper Nanjemoy Formation is hydraulically connected to the overlying Piney Point Formation and is assigned to the Piney Point - Nanjemoy aquifer. The more clayey sediments of the lower Nanjemoy Formation are placed in the Nanjemoy Confining Unit (MGS, 1996 and MGS, 1983). A boring log from a production well at the CCNPP site indicates that the base of the coarser grained upper Nanjemoy Formation (bottom of the Piney Point - Nanjemoy aquifer is at an approximate elevation of –315 ft (-96 m) msl and the total thickness of the Piney Point - Nanjemoy aquifer is approximately 115 ft (35 m) MGS, 1996).

Results from six pumping tests conducted in the Piney Point - Nanjemoy aquifer in the late 1970s indicate transmissivity values ranging from 275 ft^2/day to 690 ft^2/day (25.5 to 64.1 m^2/day). Similar transmissivity values ranging from 125 ft^2/day to 740 ft^2/day (11.6 to 68.7 m^2/day) were estimated from 90 well specific capacities derived from well completion reports (MGS, 1997). A storage coefficient of 0.0003 was applied to this aquifer as part of a groundwater modeling effort by the State of Maryland (MGS, 1997).

Although a few major users in southern Calvert and St. Mary's counties pump from the Piney Point - Nanjemoy aquifer, it is primarily used for domestic water supply. Domestic well yields are generally less than 20 gpm (75.7 lpm) with maximum reported well yields of up to 200 gpm (757 lpm) in the Piney Point Formation and up to 60 gpm (227 lpm) in the Nanjemoy formation.

2.4.12.1.2.4 Nanjemoy Confining Unit

The Nanjemoy Confining Unit underlies the Piney Point - Nanjemoy aquifer and consists of the lower part of the early Eocene Nanjemoy Formation and the underlying late Paleocene Marlboro Clay. The lower Nanjemoy Formation consists of greenish-gray, glauconitic sandy clay. The underlying Marlboro Clay occurs at the base of the Nanjemoy Confining Unit and consists of a gray to pale-red plastic clay interbedded with reddish silt. A boring log from a production well at the CCNPP site indicates that the base of the lower Nanjemoy is at an approximate elevation of -415 ft (-126.5 m) msl and attains a thickness of approximately 90 ft (27.4 m). The boring log indicates that the base of the Marlboro Clay is at an approximate elevation of -440 ft (-134 m) msl and is approximately 25 ft (7.6 m) thick in the vicinity of the site (MGS, 1997).

The Marlboro Clay is described as much "tighter" than the muddy sands of the Nanjemoy Formation. Vertical hydraulic conductivities from laboratory tests performed on Nanjemoy samples in Queen Anne's county range from 6.6×10^{-3} ft/day to 6.8×10^{-2} ft/day (2×10^{-3} to 2.1×10^{-2}). Similar tests on Marlboro Clay samples generated lower results ranging from 9.5×10^{-5} ft/day to 4.5×10^{-4} ft/day (2.9×10^{-5} to 1.4×10^{-4}). Specific storage values assigned to the Nanjemoy Confining Unit in several groundwater models range from 7.6×10^{-5} ft^{-1} to 1×10^{-5} ft^{-1} (24.9×10^{-5} m^{-1} to 3.28×10^{-5} m^{-1}). Laboratory results of specific storage tests on the Marlboro Clay range from 1.0×10^{-5} ft^{-1} to 1.1×10^{-4} ft^{-1} (3.28×10^{-5} m^{-1} to 3.6×10^{-4} m^{-1} (MGS, 1997).

2.4.12.1.2.5 Aquia Aqifier

In southern Maryland, the Aquia aquifer correlates with the late Paleocene Aquia Formation. The Aquia Formation is poorly to well sorted, shelly, and glauconitic quartz sand with carbonate cemented sandstones and shell beds. The Aquia Formation (aquifer) dips to the southeast with its upper surface ranging in elevation from approximately -100 ft (-30.5) msl in northern Calvert County to -500 ft (-152.4) msl just off Solomons in southern Calvert County. The aquifer's thickness varies considerably in Calvert County. It reaches a maximum thickness of approximately 200 ft (61 m) in east-central and northeastern Calvert County and thins to the northwest and southeast where it reaches a thickness of approximately 145 ft (44.2 m) at Solomons and 160 ft (48.8 m) at the boundary between Anne Arundel and Calvert counties. The Aquia aquifer thins progressively to the southeast where it grades into predominantly fine-grained sediments and hydraulically becomes a confining unit in southernmost St. Mary's County where it is no longer used for water supply. A boring log from a production well at the CCNPP site indicates that the base of the Aquia aquifer is at an approximate elevation of –560 ft msl and its total thickness is approximately 145 ft (44.2 m) (MGS, 1996).

Aquia aquifer transmissivity maps derived from pumping tests display a general correlation to Aquia aquifer thickness maps with highest transmissivity values in areas of greatest aquifer thickness. Reported transmissivities in northern Calvert County at Randle Cliff Beach are 1330 ft^2/day (123.6 m^2/day) where the Aquia reaches its maximum thickness of approximately 200 ft. Farther south, at Solomons, reported transmissivities are 755 ft^2/day (70.2 m^2/day) where the aquifer thins to approximately 145 ft (44.2 m). A transmissivity of 935 ft^2/day (86.9 m^2/day) is reported at the CCNPP site (MGS, 1997). Storage coefficient values of the Aquia aquifer determined from pumping tests in southern Maryland range from 4×10^{-4} to 1×10^{-4} (MGS, 1997).

The Aquia formation is a productive aquifer with a reported yield of up to 300 gpm (1136 lpm). Recharge to the Aquia aquifer is from direct infiltration of precipitation in central Anne Arundel and Prince George's counties where these units are exposed at the surface. Natural discharge of the Aquia aquifer is to the southeast, primarily from subaqueous exposures of the aquifer that are presumed to occur along the Continental Shelf. Other discharge occurs at local pumping locations.

The Aquia aquifer is used extensively for domestic and major-user water supplies in southern Maryland. By the 1980s, a deep cone of depression (up to 100 ft (30.5 m)) had developed in the Solomons area of Calvert and St. Mary's county area where it is heavily pumped for public, commercial, and military supplies (USGS, 2005a). This has diverted the groundwater flow direction in Calvert County to the south and southeast toward these pumping centers. This is depicted in Figure 2.4.12-6. A 2003 potentiometric surface map of the Aquia aquifer that indicates the elevation and horizontal direction of ground water flow (USGS, 2005a). Because of these considerations, water supply managers in these counties are seeking to shift some groundwater usage from the Aquia aquifer to deeper aquifers (MGS, 1995).

2.4.12.1.2.6 Brightseat Confining Unit

The confining unit underlying the Aquia aquifer is composed of several geologic units. These include the lower Paleocene Brightseat Formation and several upper Cretaceous units, including the Monmouth, Matawan, and Magothy Formations. The fine-grained sediments of these formations combine to form the hydraulically indistinguishable Brightseat Confining Unit. The Brightseat Confining Unit has a composite thickness ranging from approximately 20 to 105 ft (6.1 to 32 m). A boring log from a production well at the CCNPP site indicates that the base of the Brightseat Confining Unit is at an elevation of approximately -590 ft (-180 m) msl and attains a thickness of approximately 30 ft (9.1 m) (MGS, 1996).

Most researchers model the Brightseat Confining Unit as a no flow boundary; however, a few vertical hydraulic conductivity and specific storage values have been reported. Samples from Prince George's County yielded vertical hydraulic conductivity and specific storage values of 9.5×10^{-4} ft/day (2.9×10^{-4} m/day) and 7.4×10^{-5} ft^{-1} (24.3×10^{-5} m^{-1}), respectively. Vertical hydraulic conductivities for the Matawan Formation in the Annapolis area range from 5.7×10^{-5} ft/day to 3.1×10^{-4} ft/day (1.7×10^{-5} m/day to 9.4×10^{-5} m/day (MGS, 1997).

2.4.12.1.2.7 Magothy Aquifer

In central Calvert County, the Magothy aquifer is contained in the Upper Cretaceous Magothy Formation. This unit consists of interbedded red, brown, and gray sands and clays. The Magothy aquifer is present in the northern and central portions of Calvert County where it is used extensively for public and domestic supplies. It thins to the south and pinches out in southern Calvert County where it is not a significant aquifer. The southern extent of the aquifer is estimated to lie somewhere between the CCNPP site and Solomons. A boring log from a production well at the CCNPP site indicates that the base of the Magothy aquifer is at an elevation of approximately -610 ft (-186 m) msl and appears to attain a thickness of less than 25 ft (7.6 m) (MGS, 1996).

Transmissivities of 450 ft^2/day to 4570 ft^2/day (41.8 m^2/day to 424.6 m^2/day) have been reported for the Magothy aquifer in southern Anne Arundel County (MGS, 2002). Reported transmissivity values for southern Maryland counties range from 1000 ft^2/day to 12,000 ft^2/day (92.9 m^2/day to 1114.8 m^2/day. The primary use of this aquifer occurs in Anne Arundel, Prince George's, and Charles counties (Wolman, 2004).

Recharge to the Magothy aquifer is from direct infiltration of precipitation in northern Anne Arundel County where the Magothy Formation is exposed at the surface. In central Calvert County, flow is east-southeast, towards the Atlantic Coast. Other discharge occurs at local pumping locations (MGS, 1997 and USGS, 2005b).

A 2003 potentiometric surface map of the Magothy aquifer is presented in Figure 2.4.12-7 (USGS, 2005b) to establish the elevation and horizontal direction of groundwater flow.

2.4.12.1.2.8 Potomac Group

The lower Cretaceous Potomac Group consists of the following (in descending order): the Patapsco, Arundel, and Patuxent Formations. These units form a thick (greater than 1500 ft (457 m)) series of unconsolidated sediments, which locally contain three confining units and three aquifers. Because of the significant depth of these formations, and the abundance of exploitable supplies of groundwater in shallower aquifers, these units are not currently used as a significant source of groundwater in the vicinity of the CCNPP site. Consequently, available hydrogeologic information for the Potomac Group of aquifers and confining units is limited.

The Upper Patapsco aquifer underlies the Magothy aquifer and is separated from it by clayey units in the top of the Patapsco Formation and bottom of the Magothy Formation. These clayey units are collectively referred to as the Upper Patapsco confining unit. The Upper Patapsco aquifer includes sand units in the upper part of the Patapsco Formation. This aquifer is not continuous and comprises complexly stratified sandy units separated locally by silts and clays. Individual sand units in the Upper Patapsco aquifer are difficult to correlate laterally, but they appear to be sufficiently interconnected at the regional scale to form a single aquifer (MGS, 1995). The aquifer extends to the northeast through Prince George's and Anne Arundel counties, and beneath Chesapeake Bay to the eastern shore of Maryland. The aquifer is recharged by precipitation at outcrops in western and northern Charles, Prince George's and Anne Arundel counties. It subcrops beneath the tidal part of the Potomac River, where river water intrusion has been documented in the Indian Head area (USGS, 1997b).

The Upper Patapsco aquifer is extensively used for public supply in central Charles County, where a cone of depression has formed as much as elevation -136 ft (-41.5 m) msl. It is also pumped heavily by major users in Prince George's and Anne Arundel counties (Wolman, 2004). A few major users pump the Upper Patapsco aquifer in northern St. Mary's and Calvert counties (MGS, 1995). Pump tests performed in the Upper Patapsco aquifer in east-central Charles County yielded a transmissivity of 1110 ft^2/day (103 m^2/day) (MGS, 2007). Upper Patapsco transmissivities reported for Charles and Anne Arundel counties range from 1000 ft^2/day to 10,000 ft^2/day (92.9 to 929 m^2/day) (Wolman, 2004).

The Lower Patapsco aquifer underlies the Upper Patapsco aquifer. The two aquifers are separated by clayey units forming the Middle Patapsco confining unit in the middle part of the Patapsco Formation. The Lower Patapsco aquifer comprises sandy units in the lower part of the Patapsco Formation. The aquifer extends northeast to northern Anne Arundel County, but its correlation to the west and southwest is uncertain. It extends across the Chesapeake Bay to the eastern shore of Maryland. The Lower Patapsco aquifer is pumped heavily by users in central and northwestern Charles County, but it is not currently used in St Mary's or Calvert counties (MGS, 1995). Pumping tests performed in the Lower Patapsco aquifer in western Charles County yielded a transmissivity of 1130 ft^2/day (105 m^2/day). Specific capacity for wells used in these pump tests ranged from 1.8 gpm/ft to 7.1 gpm/ft (22.4 to 88.2 lpm/m) (Wolman, 2004 and MGS, 2004). Lower Patapsco aquifer transmissivities reported for Charles and Anne Arundel counties range from 1000 ft^2/day to 5000 ft^2/day (92.9 to 464.5 m^2/day) (Wolman, 2004).

A 2003 potentiometric surface map of the Upper and Lower Patapsco aquifers are presented in Figure 2.4.12-8 and Figure 2.4.12-9 to establish the elevation and horizontal direction of ground water flow (USGS, 2005c and USGS, 2005d).

The Patuxent aquifer lies below the Lower Patapsco aquifer, and it is separated from it by the Arundel confining unit. The Arundel Formation consists of a thick series of dense clays and silts and probably does not allow much leakage. However, the Arundel Formation is not uniformly recognized in southern Maryland (see Section 2.5.1).

The Patuxent Aquifer is the deepest Coastal Plain aquifer in Maryland, and rests on the Piedmont bedrock surface. Patuxent aquifer transmissivities reported for Charles and Anne Arundel counties range from 200 ft^2/day to 8000 ft^2/day (18.6 to 743.2 m^2/day) (Wolman, 2004). Pumping tests performed in the Patuxent aquifer in western Charles County yielded a transmissivity of 937 ft^2/day (87 m^2/day). The specific capacity for the single Patuxent aquifer well used in this pumping test was 2.6 gpm/ft (32.3 lpm/m) (MGS, 2004). Pump tests performed on Patuxent aquifer municipal wells in Bowie, Maryland (northern Prince George's County) yielded an average transmissivity of 1468 ft^2/day (136.4 m^2/day) (Bowie, 2007). Because of its great depth and the known presence of brackish water in coastal areas, its potential for development is thought to be limited (Wolman, 2004).}

2.4.12.1.3 Local and Site-Specific Hydrogeology and Sources

{The topography at the site (Figure 2.4.12-10) is gently rolling with steeper slopes along stream courses. Local relief ranges from sea level up to an elevation of approximately 130 ft (39.6 m) msl with an average elevation of approximately 100 ft (30.5 m). The Chesapeake Bay shoreline consists mostly of steep cliffs with narrow beach areas. The site is well drained by short, intermittent streams. A drainage divide, which is generally parallel to the coastline, extends across the site. The area to the east of the divide drains into the Chesapeake Bay. The western area is drained by tributaries of Johns Creek and Goldstein Branch, which flow into St. Leonard Creek, located west of Maryland Highway 2/4 and subsequently into the Patuxent River. The Patuxent River empties into the Chesapeake Bay approximately 10 mi (16 km) southeast from the mouth of St. Leonard Creek. The Chesapeake Bay and Patuxent River define the eastern, southern, and western boundaries of Calvert County. The creeks and streams within the area influence the shallow aquifer systems beneath the site. Deeper aquifers are less influenced by incised streams and rivers.

Geotechnical and hydrogeological investigations provided information on the CCNPP Unit 3 site to depths of 400 ft (122 m) below ground surface. Subsurface information was collected from over 180 borings and cone penetrometer tests (CPTs). A detailed description of the geotechnical subsurface investigation, including the locations of these borings and CPTs is provided in Section 2.5. The location of the soil borings is provided on Figure 2.4.12-11.

Forty (40) groundwater observation wells were installed across the site. They were completed in the Surficial aquifer and water-bearing materials in the Chesapeake Group. The wells were located in order to provide adequate distribution with which to determine site groundwater levels, subsurface flow directions, and hydraulic gradients beneath the site. Well pairs were installed at selected locations to determine vertical gradients. Field hydraulic conductivity tests (slug tests) were conducted in each observation well. Monthly water level measurements from the groundwater observation wells began in July 2006 and will continue until July 2007. The groundwater program milestones are: 1) Collect groundwater data through July 2007 (to be completed in July 2007); 2) Analysis of collected data (to be completed in 3rd Quarter 2007); and 3) Prepare and Review Section 2.4.12 (to be completed in 4th Quarter 2007). Figure 2.4.12-12 and Figure 2.4.12-13 contain hydrogeologic cross sections for the strata penetrated by the soil

borings at the CCNPP Unit 3 site. These cross sections cover the area in the vicinity of the CCNPP Unit 3 power block area.}

2.4.12.1.3.1 Geohydrology

The elevations, thicknesses, and geologic descriptions of the sediments comprising the shallow hydrogeologic units (depths to {400 ft (122 m)}) below ground surface) were determined from {CCNPP Unit 3} geotechnical and hydrogeological borings. Geotechnical and geological descriptions of the material encountered are described in Section 2.5.

{Surficial Aquifier

The elevations, thicknesses, and geologic descriptions of the sediments comprising the Surficial aquifer, as determined from the CCNPP Unit 3 geotechnical and hydrogeological borings, are summarized as follows.

- The unconsolidated sediments comprising the Surficial aquifer consist primarily of fine to medium grained sands and silty or clayey sands. At relatively few locations and intervals, coarse grained sands were observed to comprise the bulk of the interval sampled.
- The Surficial aquifer is present above an elevation ranging from approximately 65 to 70 ft (19.8 to 21.3 m) msl at the CCNPP site (Figure 2.4.12-12 and Figure 2.4.12-13). The thickness of the Surficial aquifer ranges from 0 ft (0 m), where local drainages have dissected the unit, to approximately 55 ft (16.8 m) at the site's higher elevations.

Chesapeake Confining Unit

The Chesapeake Confining Unit thickens from northwest to southeast in Calvert County and ranges in thickness from approximately 115 to 300 ft (35 to 91.4 m). A boring log from a production well at the CCNPP site indicates that the base of the Chesapeake Confining Unit is at an elevation of approximately –205 ft (-62.5 m) msl and its total thickness is approximately 250 ft (76.2 m) (MGS, 1996). The CCNPP Unit 3 soil borings advanced to this depth confirm this observation.

The elevations, thicknesses, and geologic descriptions of the sediments comprising the Chesapeake Confining Unit, as determined from the CCNPP Unit 3 geotechnical and hydrogeological borings, are summarized as follows.

- The unconsolidated sediments comprising the Chesapeake Confining Unit consist primarily of silty clays, silt, and silty fine-grained sands. Thin, interbedded fine- to medium-grained fossiliferous sands are common.
- The base of the Chesapeake Confining Unit is observed at an elevation of approximately –205 ft (-62.5 m) msl in Boring B-301 and -215 ft (-65.5 m) msl in Boring B-401.
- The top of the Chesapeake Confining Unit ranges from an elevation of approximately 8 ft (2.4 m) msl in Boring B-701 at the Chesapeake Bay shore to approximately 65 ft to 70 ft (19.8 to 21.3 m) msl in borings where the overlying Upland Deposits comprising the Surficial aquifer were encountered.
- The thickness of the Chesapeake Confining Unit, as observed in Borings B-301 and B-401, is approximately 280 ft (85.3 m) and 277 ft (84.4 m), respectively.
- Two thin, semi-continuous, water-bearing sand units were encountered in the upper portion of the Chesapeake Confining Unit. These units are informally referred to as the Upper Chesapeake unit and the Lower Chesapeake unit.
- The base of the Upper Chesapeake unit ranges from approximately 8 ft (2.4 m) msl to -19 ft (-5.8 m) msl in elevation, has a mean thickness of approximately 21 ft (6.4 m), and reaches

a maximum thickness of approximately 44 ft (13.4 m) at boring B-331. The minimum, observed thickness of the Upper Chesapeake unit was 8 ft (2.4 m) at borings B-720 and B-721. The elevation of the top of the Upper Chesapeake unit averages approximately elevation 20 ft (6.1 m) msl.

- The Lower Chesapeake unit is thicker than the Upper Chesapeake unit and contains a higher silt and clay content than the Upper Chesapeake unit. The base of the Lower Chesapeake unit ranges in elevation of approximately -38 ft (-11.6 m) msl to -92 ft (-28.0 m) msl, has a mean thickness of approximately 36 ft (11 m), and reaches a maximum thickness of approximately 62 ft (18.9 m) at boring B-311. The minimum observed thickness of the Lower Chesapeake unit was 19 ft at boring B-323.
- The Upper Chesapeake unit is separated from the overlying Surficial aquifer by the informally named relatively thin Upper Chesapeake aquitard. The Upper Chesapeake aquitard ranges in thickness from approximately 4 to 36 ft (1.2 to 11 m) and averages approximately 20 ft (6.1 m). The Lower Chesapeake unit is separated from the underlying Piney Point - Nanjemoy aquifer by the informally named and relatively thick Lower Chesapeake aquitard. Two CCNPP Unit 3 soil borings penetrated the Lower Chesapeake aquitard, which is approximately 190 ft (57.9 m) thick.

Piney Point – Nanjemoy Aquifer

The basal beds of the Calvert Formation are readily identified in the two CCNPP borings (B-301 and B-401) that penetrate this unit. The top of the basal Calvert Formation sands was observed at an elevation of approximately –205 ft (-62.5 m) msl in Boring B-301 and -215 ft (-65.5 m) msl in Boring B-401. The base of the Piney Point Formation was encountered at approximately -230 ft (-70.1 m) msl and -234 ft (-71.3 m) msl respectively. Borings B-301 and B-401 extended into the Nanjemoy Formation but did not penetrate through the Nanjemoy Confining Unit.}

2.4.12.1.4 CCNPP Unit 3 Groundwater Use Projections

{The proposed water source to meet the water demand requirements during the operation of CCNPP Unit 3 is a desalinization plant utilizing water from the Chesapeake Bay. An additional source of water will be required during construction activities until the desalinization plant is operational. Construction water needs are expected to be satisfied by appropriating water from CCNPP Units 1 and 2 by utilizing the established groundwater permits.

It is currently estimated that a peak water supply of up to approximately 1200 gpm (4542 lpm) will be required for CCNPP Unit 3 construction activities (demands include those for construction personnel, concrete manufacturing, dust control, and hydro testing and flushing). Average construction demand would be less. In addition to appropriating water from CCNPP Units 1 and 2, the potential sources of water for construction include off-site water trucked to the construction site, and on-site storage tanks.

If properly managed, construction activities at CCNPP and any additional groundwater withdrawals for construction of CCNPP Unit 3 should not adversely affect the local or regional groundwater systems. There are currently no known or projected site discharges that are or could affect the local groundwater system. Construction activities will affect the shallower, non-utilized water-bearing units beneath the site (the Surficial aquifer and upper water bearing units within the Chesapeake Group). Water demands for construction and operation of the proposed CCNPP Unit 3 will be met from desalinization of Chesapeake Bay water or by appropriating groundwater from CCNPP Units 1 and 2 in accordance with the established groundwater permits.}

2.4.12.2 Sources

2.4.12.2.1 Regional Groundwater Use

{Groundwater is extensively used as a source of water within the Coastal Plain and is the primary source of water supply in southern Maryland. The area is dependent on groundwater for potable supplies because the major surface-water bodies are brackish and the small freshwater streams originating within the area lack adequate dam sites for reservoirs (MGS, 1997). Therefore, an objective of this section is to discuss the U.S. Environmental Protection Agency (U.S. EPA) sole source aquifers within the region, to identify and determine impacts to these aquifers due to the construction and operation of CCNPP Unit 3, and to describe the following: groundwater use in southern Maryland, current users in Calvert County, current CCNNP groundwater use, expected future groundwater demand for southern Maryland and Calvert County.}

2.4.12.2.2 Sole Source Aquifiers

{The Sole Source Aquifer (SSA) Program, which is authorized by the Safe Drinking Water Act, allows for protection when a community is dependent on a single source of drinking water and there is no possibility of a replacement water supply to be found. The U.S. EPA defines a sole or principal source aquifer as one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer (USEPA, 2007a).

The CCNPP site is located in EPA Region 3 (the District of Columbia, Delaware, Maryland, Pennsylvania, Virginia, and West Virginia). Six sole-source aquifers are identified in U.S. EPA Region 3 (as shown in Figure 2.4.12-30). None of the sole-source aquifers in U.S. EPA Region 3 are located in southern Maryland. Based on the evaluation of both the regional and local hydrogeologic systems presented in Sections 2.4.12.1.1 through 2.4.12.3, the construction and operation of CCNPP Unit 3 will not adversely impact the sole-source aquifers identified in EPA Region 3. The identified sole-source aquifers are beyond the boundaries of the local and regional hydrogeologic systems in southern Maryland.}

2.4.12.2.3 {Southern Maryland} Groundwater Use

{The Piney Point - Nanjemoy aquifer and underlying Aquia aquifer are the chief sources of groundwater to Calvert and St. Mary's counties. The Piney Point - Nanjemoy aquifer is primarily used for domestic water supply. The Aquia aquifer is the primary source of groundwater for major groundwater appropriation in southern Maryland.

Early in the 20th century, few Aquia aquifer wells had been drilled in Calvert and St. Mary's counties. By mid-century, groundwater demands were increasing in the region due to growth in population and industry and military use. Groundwater usage was reported to have increased by 75 percent between 1940 (1.6 million gallons per day [mgpd] (6.1 mlpd)) and 1980 (2.8 mgpd (10.6 mlpd)). By the end of the 1980s, groundwater pumpage had increased to about 4.8 mgpd (18.2 mlpd). Domestic pumpage accounted for about 60.1 percent of usage in 1991 and was about 3.4 mgpd (12.9 mlpd) in 1994. Groundwater use was approximately evenly distributed between the Point Piney - Nanjemoy and the Aquia aquifers (MGS, 1997).

The underlying Magothy aquifer is present in the northern and central portions of Calvert County and farther north where it is now used extensively for public and domestic supplies in northern Calvert and Anne Arundel counties. It thins to the south and pinches out in southern Calvert County where it is not a significant aquifer. The underlying Upper Patapsco aquifer is used extensively for public supply in central Charles County, where multiple cones of depression have formed. It is also pumped heavily by major users in Prince George's and Anne Arundel

counties. A few users pump the Upper Patapsco aquifer in St. Mary's and northern Calvert counties. The Lower Patapsco aquifer is pumped heavily by users in central and northwestern Charles County, but it is not currently used as a major source of water in St Mary's or Calvert counties (MGS, 1997).}

2.4.12.2.4 {Calvert County} Groundwater Use

{The Aquia aquifer is currently the primary source of groundwater for the major appropriators in the county as the overlying Piney Point - Nanjemoy aquifer is increasingly being reserved for domestic users. The county Sanitary District operates major water-distribution systems as do numerous municipal and private water companies. In 1985, it was reported that major users withdrew approximately 73.4 percent from the Aquia aquifer, 19.4 percent from the Piney Point - Nanjemoy aquifer, and 7.2 percent from the deeper Magothy and Patapsco aquifers (MGS, 1997). By 1994, Calvert County withdrawals from the Piney Point - Nanjemoy and the Aquia aquifers totaled about 1.9 mgpd (7.2 mlpd) and 3.6 mgpd (14 mlpd), respectively.

A database obtained from the Water Supply Program, Maryland Department of Environment (MDE) in December 2006 for Calvert County lists the active Water Appropriations Permits for the county, including surface water permits, and groundwater permits. The appropriated amount of groundwater that was permitted in Calvert County in 2006 was approximately 5.3 mgpd (20 mlpd) for the daily average withdrawal rates (gallons withdrawn per year/365 days). The permitted average use during the month of maximum use was tabulated as approximately 9.3 mgpd (35 mlpd) (gallons withdrawn during the month of maximum use/number of days in that month). Permitted users, aquifer or stream withdrawal rates, and other pertinent information are provided in Table 2.4.12-6.

The locations of the groundwater users listed in Table 2.4.12-6 have a nominal mapping accuracy to the nearest 10,000 ft (3048 m). Due to this limited available accuracy, a figure depicting the locations of the groundwater permits within the county was not developed. Because the location of these wells can not be accurately plotted, the nearest permitted MDE groundwater well (beyond the boundary of the CCNPP site property boundary), downgradient from the site, is conservatively presumed to lie adjacent to the southeastern boundary of the site. At this location, the distance between the boundary and the center of the CCNPP Unit 3 power block area is approximately 1.1 mi (1.8 km) (Figure 2.4.12-31). The flow direction was based on the regional direction of flow within the Aquia aquifer (Figure 2.4.12-6).

The Safe Drinking Water Information System (SDWIS) (USEPA, 2007b) maintained by the U.S. EPA lists community, non-transient non-community, and transient non-community water systems that serve the public. Community water systems are defined as those that serve the same people year-round (e.g., in homes or businesses). Non-transient non-community water systems are those that serve the same people, but not year-round (e.g., schools that have their own water system). Transient non-community water systems are those that do not consistently serve the same people (e.g., rest stops, campground, and gas stations). Table 2.4.12-7 lists the community, non-transient non-community, and transient non-community water systems using groundwater as their primary water source in Calvert County (USEPA, 2007b). Many of these listings correlate to those provided by the MDE. Coordinates for the locations of the water systems listed in the SDWIS database for Calvert County are not publicly released. In addition, many of the addresses provided are mail drop locations for the owners of water systems and, for some, addresses are not provided. Therefore, a figure depicting the locations of these systems was not developed. Because the location of these water systems can not be accurately plotted, the nearest downgradient water system (beyond the boundary of the CCNPP

site property boundary), is assumed to be near the community of Lusby, approximately 2.7 mi (4.3 km) to the south (Figure 2.4.12-31).}

2.4.12.2.5 {CCNPP Units 1 and 2 Groundwater Use

Table 2.4.12-8 lists the MDE water appropriation permits and the groundwater production wells currently residing at the CCNPP site. There are a total of 13 wells at the site. Five (5) Maryland Water Appropriations Permits have been issued to the CCNPP site for the operation of 12 groundwater withdrawal wells. Seven (7) of the wells were completed in the Piney Point aquifer and the other five (5) wells were completed in the Aquia aquifer. The table also lists a historical Aquia well referred to as the Old Bay Farm location. At the CCNPP site, the Aquia aquifer ranges in elevation from approximately -560 ft (-170.7 m) msl to -415 ft (-126.5 m) msl. The Piney Point – Nanjemoy aquifer ranges in elevation from approximately -315 ft (-96 m) msl to -200 ft (-61 m) msl.

CCNPP Units 1 and 2 use groundwater for potable supply, sanitary facilities, fire protection, and make-up water. CCNPP Units 1 and 2 obtains groundwater from five Aquia aquifer wells (listed as CCNPP well Number 1 through well Number 5 on Figure 2.4.12-32). First appropriated in July 1969, these wells are listed under permit number CA69G010 (05). The water appropriation permit issued for these wells requires semi-annual monthly groundwater withdrawal rate reports to be provided to the State of Maryland. Table 2.4.12-9 summarizes the water withdrawal rates for a five year interval (July 2001 through June 2006). Plant withdrawals from the Aquia aquifer average about 70.6 million gallons (267.4 million liters) every six months or approximately 141 million gallons a year (533.8 million liters a year).

Additional CCNPP groundwater appropriation permits have relatively low use limits compared to those for permit number CA69G010 (05). These permits are summarized as follows:

MDE water appropriation permit CA63G003 (07), first issued in May 1963, authorized groundwater use for potable supply, sanitary facilities, and filling a swimming pool at Camp Conoy (including the Eagle Den and Conference Center). Groundwater can be obtained from four wells (Camp Conoy wells) from the Piney Point aquifer. Currently, three of the four wells are active. One well has been taken out of service.

- MDE water appropriation permit CA83G008 (03), first issued in August 1983, authorized groundwater use for potable supply and sanitary facilities at the Visitor Center. Groundwater can be obtained from one well in the Piney Point aquifer.
- MDE water appropriation permit CA89G007 (02), first issued in April 1989, authorized groundwater use for potable supply, sanitary facilities, and lawn irrigation at the Rifle Range. Groundwater can be obtained from one well from the Piney Point aquifer.
- MDE water appropriation permit CA89G107 (01), first issued in July 1995, authorized groundwater use for non-potable supply at the Procedure Upgrade Project Trailers. Groundwater can be obtained from one well in the Piney Point aquifer, northeast of the rifle range.

Groundwater withdrawal rates by use category are not available; however, permitted withdrawal rates for CCNPP's five groundwater appropriation permits are provided in Table 2.4.12-8.

As shown on Figure 2.4.12-32, the only existing CCNPP groundwater production wells within the proposed CCNPP Unit 3 site are the three Camp Conoy Piney Point – Nanjemoy aquifer wells located east of the proposed Unit 3 power block. During construction of the CCNPP Unit 3 facility, the two active Camp Conoy wells immediately adjacent to CCNPP Unit 3 may need to be taken out of service. The other active Camp Conoy well (at the Eagle's Den) is

approximately 1,400 ft (427 m) northeast of the center of the CCNPP Unit 3 area on the Calvert Cliffs bluff. The nearest CCNPP Units 1 and 2 Aquia production well (CCNPP Well #5) is approximately 900 ft (274 m) north of the center of the proposed CCNPP Unit 3 power block area.}

2.4.12.2.6 {Southern Maryland} Groundwater Demands

{Withdrawals from Maryland Coastal Plain aquifers have caused groundwater levels in confined aquifers to decline by tens to hundreds of feet from their original levels (USGS, 2006). Beginning in the 1940s, with the development of the Patuxent Naval Air Station, water levels within the Aquia aquifer began to decline significantly. Between 1960 and 1985, groundwater levels within the Aquia aquifer in southern Maryland declined at a relatively constant rate as groundwater use increased over time. Since 1985, the decline in groundwater levels has sharply increased as the demand for water from the Aquia aquifer and, to a lesser extent, deeper aquifers (Magothy and Patapsco) has increased substantially. The current rate of decline in many of the confined aquifers has been estimated at about 2 ft (61 cm) per year. Declines have been especially large in southern Maryland and parts of the eastern shore where groundwater pumpage is projected to increase by more than 20 percent between 2000 and 2030 as population within the region is expected to grow by 37 percent (USGS, 2006).

Potentiometric surface maps developed on a regional scale by the U.S. Geological Survey (USGS) were used to evaluate the areal extent of groundwater elevation decreases through time (Section 2.4.12.1.2). The USGS potentiometric surface maps for the Aquia, Magothy, Upper Patapsco, and Lower Patapsco aquifers in Southern Maryland for 2003 were presented as Figure 2.4.12-6 through 2.4.12-9. Two areas in Calvert County show cones of depression in the Aquia aquifer. A small depression north of the site is present in the North Beach and Chesapeake Beach area and a large depression south of the site in the Solomons area appears to be having a significant regional effect on the Aquia aquifer. This larger cone of depression is influencing regional groundwater flow out to a radius of at least 15 mi (24.1 km) from the pumping centers in the Solomons area (Figure 2.4.12-6). This area of influence includes the CCNPP site. Similar cones of depression are present in the lower aquifers, although they are not as pronounced in Calvert County (Figure 2.4.12-7 through Figure 2.4.12-9).

The USGS has also compiled historical water elevations for the Aquia, Magothy, Upper Patapsco, and Lower Patapsco aquifers in Southern Maryland to determine the magnitude of potentiometric surface declines through time. Potentiometric surface difference maps of these four southern Maryland aquifers are presented in Figure 2.4.12-33 through Figure 2.4.12-36, for various periods between 13 years and 28 years (USGS, 2005e, 2005f, 2005g, 2005h). As expected, the areas showing the largest cones of depression correlate with the largest historical declines in potentiometric surface elevations. From 1982 to 2003, the Aquia aquifer potentiometric surface has decreased over 100 ft (30.5 m) in elevation inside the center of the cone of depression at Solomons in southern Calvert County (Figure 2.4.12-33). Decreases of over 70 ft (21.3 m) were observed in the Magothy aquifer in northeastern Charles County (Figure 2.4.12-34), and smaller decreases were observed in the Upper and Lower Patapsco aquifers (Figure 2.4.12-35 and Figure 2.4.12-36). Figure 2.4.12-6 and Figure 2.4.12-33 suggest that local Aquia aquifer flow directions have been slightly deflected in the vicinity of the CCNPP site, possibly from CCNPP groundwater use. This information demonstrates that local and regional groundwater flow directions can be deflected or even reversed by groundwater withdrawal from localized pumping centers.

In 1943, the USGS and the Maryland Geological Survey (MGS) began a statewide cooperative groundwater monitoring network. Several private wells in the Solomons area of Calvert County

were among the first to be monitored by what now is referred to as the Calvert County Ground-Water-Level Monitoring Network, which is a cooperative program between the Calvert County Department of Public Works, Bureau of Utilities, the MGS, and the USGS (USGS, 2007). This network of approximately 42 wells is mainly focused on monitoring the deeper, confined aquifers that are affected by local and regional groundwater withdrawal. The major aquifers of interest are the Piney Point - Nanjemoy, Aquia, and Magothy aquifers. Recently, wells have been added to the system in order to study the availability of water in the deeper Upper and Lower Patapsco aquifers. Water-table monitoring wells have also been added, which are used as climate response wells for indicating local groundwater recharge and drought conditions. The USGS provides water level trends for selected wells in the network (USGS, 2007). These wells are shown on Figure 2.4.12-37 and presented in Table 2.4.12-10.

Select well hydrographs from the Calvert County Ground-Water-Level Monitoring Network were reviewed to evaluate the temporal trends of the potentiometric surfaces of the aquifers underlying southern Calvert County. For each aquifer, the Calvert County Ground-Water-Level Monitoring Network well closest to the CCNPP site is evaluated in the following bullets:

- Well CA Fd 51 is screened in the Piney Point-Nanjemoy aquifer and is located approximately 2.5 mi (4 km) southeast of the CCNPP site at Calvert Cliffs State Park. Groundwater levels have been monitored since 1977 and show a nearly steady decrease in elevation from approximately 15.0 ft (4.6 m) to -3.0 ft (-0.9 m) msl. This rate of decline is approximately 0.6 ft/yr (18.3 cm/yr). The rate of decline appears to have decreased slightly since 2000 (Figure 2.4.12-38).
- Well CA Ed 42 is screened in the Aquia aquifer and is one of the production wells at the CCNPP site. Groundwater levels have been monitored since 1978. It shows a much higher rate of groundwater elevation decrease from approximately -19.0 ft (-5.8 m) msl to -92 (-28 m) ft msl. This corresponds to an overall rate of decline of approximately 2.6 ft/yr (79.3 cm/yr), although relatively stable elevations have been observed since 2003 (Figure 2.4.12-39).
- Well CA Dc 35 monitors the Magothy aquifer and is located approximately 6 mi northwest of the CCNPP site at Scientists Cliffs. Groundwater levels have been monitored since 1975 and the data exhibit a very steady rate of groundwater elevation decrease from approximately 8 ft (2.4 m) msl to -37 ft (-11.3 m) msl. This rate of decline of approximately 1.6 ft/yr (48.8 cm/yr) is less than that observed in the overlying Aquia aquifer (Figure 2.4.12-40).
- Groundwater elevations in the Upper Patapsco aquifer were evaluated at well CA Db 96, located approximately 10 mi (16 km) northwest of the CCNPP site in Prince Frederick. Groundwater levels in this well have only been monitored since 2003, but groundwater level decreases in this aquifer are also observed. Groundwater elevation decreased at a rate of approximately 1.4 ft/yr (42.7 cm/yr) from approximately -35.5 ft (-10.8 m) to -40.0 (-12.2 m) ft msl (Figure 2.4.12-41).

Groundwater elevations in the Lower Patapsco aquifer were evaluated at well CA Fd 85, located approximately 3.5 mi southeast of the CCNPP site at Chesapeake Ranch Estates. Groundwater levels in this well have only been monitored since 2001, but groundwater level decreases in this aquifer are observed. Groundwater elevation decreased steadily from approximately -14.5 ft (-4.4 m) to -20.0 ft (-6.1 m) msl (Figure 2.4.12-42), a rate of approximately 1.1 ft/yr (33.5 cm/yr).

Calvert and St. Mary's counties are rapidly growing areas. Between 1980 and 1990 the combined population of the two-county area increased 34.7% (MGS. 1997). The population of

these counties will continue to increase, putting additional demand on the area's groundwater resources.

A 2004 report by an advisory committee on the management and protection of the State's Water Resources identified the need for a comprehensive assessment of groundwater resources of the Maryland Coastal Plain (Wolman, 2004) (USGS, 2006). The assessment will be conducted by the MGS and the USGS in three phases between 2006 and 2013. The goal of the assessment is to develop tools to facilitate scientifically sound management of the groundwater resources in the region.

MDE regulates major groundwater users (those users pumping an average of 10,000 gallons or more) by requiring them to obtain Groundwater Appropriation Permits to prevent the regional potentiometric surface from declining below the 80-percent management level (80% of the aquifer's available drawdown). Because substantial population growth is anticipated in both Calvert and St. Mary's counties, the MGS developed a model to simulate water-level trends through 2020 (MGS, 1997) and subsequently updated through 2025 (MGS, 2001) using several future alternative pumping scenarios for the Piney Point - Nanjemoy and the Aquia aquifers. The model was calibrated by matching simulated water levels against 1952, 1980, and 1982 data and verified by matching simulated data against 1991 through 1994 water levels in 198 observations wells. Future domestic pumpage for 1995 to 2025 simulations were based on estimated population increases and evaluated by comparing simulated drawdowns with the permitted 80-percent management levels. Major appropriated pumpage and domestic pumpage for the Piney Point - Nanjemoy and Aquia aquifers were simulated in the calibration and predictive scenarios for Anne Arundel, Charles, and Prince George's counties. Major appropriated pumpage was also taken into account for the Maryland Eastern Shore counties. The Piney Point - Nanjemoy aquifer water levels remained substantially above the Aquia aquifer water levels, but it was suggested that in the future, large appropriators should be restricted from using this aquifer, leaving it to accommodate self-supplied domestic usage. In areas where Aquia domestic wells predominate, water levels could be stabilized by allocating major withdrawals to deeper, more productive aquifers such as the Magothy and Upper Patapsco.

The MGS recently developed a model to simulate and evaluate the potential for increasing groundwater withdrawals from the deeper Upper Patapsco and Lower Patapsco aquifers in Southern Maryland (Calvert, Charles, and St. Mary's counties) (MGS, 1995). The results of this study projected that water demands within Calvert and St. Mary's counties through 2030 could be met by increasing pumpage in the Aquia aquifer without reducing water levels below the 80% management level. Shifting a portion of the public-supply withdrawals from the Aquia to the Upper Patapsco aquifer would result in an increase in available drawdown in the Aquia aquifer in many areas, with minimal effects on drawdowns near the aquifers outcrop areas in Charles County.

The MGS continues to conduct studies, including modeling efforts to understand and predict the effects of increasing groundwater demands of the Coastal Plain aquifers within the state. New users (or existing user applying to increase its withdrawal) would not be granted a permit if the proposed withdrawal rate is predicted to cause the regional head to fall below the management level.}

2.4.12.3 Subsurface Pathways

2.4.12.3.1 Observation Well Data

{Data collected from groundwater observation wells installed for the CCNPP Unit 3 site subsurface investigation were used to develop groundwater elevation contour maps and present

groundwater elevation trends. A total of 40 new observation wells with depths extending to 122 ft (37.2 m) bgs were installed from May to July 2006. Observation wells were installed in three distinct groundwater bearing intervals: the Surficial aquifer (17 wells), a deeper sand unit at the top of the Chesapeake Formation, informally referred as the Upper Chesapeake unit (20 wells), and an even deeper sand unit in the Chesapeake, informally called the Lower Chesapeake unit (3 wells). No wells were installed in the deeper Piney Point - Nanjemoy aquifer.

The base of the well screens in the Surficial aquifer wells were placed at elevations ranging from approximately 81.6 ft (24.9 m) msl to 63.7 ft (19.4 m) msl. Elevations for the base of well screens in the Upper Chesapeake unit range from approximately 27.1 ft (8.3 m) msl to -2.3 ft (-0.7 m) msl, while the corresponding elevations for the Lower Chesapeake unit wells range from approximately -32.4 ft (-9.9 m) msl to -54.3 ft (-16.6 m) msl (Table 2.4.12-1).

Three well series designations are assigned to the CCNPP Unit 3 observation wells.

- OW-300 Series wells are located in the proposed CCNPP Unit 3 power block area.
- OW-400 series wells are located adjacent to the CCNPP Unit 3 power block area, generally to the southeast.
- The OW-700 series wells include all of the wells located outside of the power block areas. The OW-700 Series wells are located in the proposed cooling tower, switchyard, and support facility areas.

Three wells screened in the Surficial aquifer (OW-413A, OW-729, and OW-770) are consistently dry, i.e. the depth to water is at or below the bottom of the well screens and exhibit minimal water level fluctuation and, therefore, are not included in the analysis. Additionally, observation well OW-744 appears to have been screened in a discontinuous sand unit between the water bearing sand units of the Surficial aquifer and the Upper Chesapeake unit and could not be grouped into one of the water-bearing units described above. Accordingly, the groundwater elevation trends, flow directions, and rates presented below do not consider data from this well. Observation Well Locations are shown in Figure 2.4.12-14.

To evaluate vertical hydraulic gradients, several observation wells were installed as well clusters. Well clusters are a series of wells placed at the same location, with each well monitoring a distinct water bearing interval. Four well clusters were installed to evaluate the hydraulic gradient between the Surficial aquifer and the Upper Chesapeake unit, and three well clusters were installed to evaluate the gradient between the Upper Chesapeake and Lower Chesapeake units. Table 2.4.12-1 provides construction details for all observation wells installed onsite. Table 2.4.12-2 provides the groundwater elevation data from these wells over time, listed in numerical order, whereas Table 2.4.12-3 presents a summary of the observation wells, segregated by aquifer, and used in the following evaluations.

Monthly water levels in the observation wells were measured to characterize seasonal trends in groundwater levels and flow directions for the CCNPP Unit 3 site. Monthly monitoring of these wells began in July 2006 and is continuing. A nine-month data set representing July 2006 through March 2007 is utilized for this evaluation. The following groundwater potentiometric surface trend discussion is based on this information.

2.4.12.3.1.1 Surficial Aquifer

Recent groundwater data for the Surficial aquifer are shown in Figure 2.4.12-15. These data exhibit little variability in groundwater elevations during the observation period (July 2006 to March 2007). A slight seasonal influence during this monitoring period was indicated by groundwater elevation lows in late summer (August and September), followed by gradually

increasing levels for the remainder of the observation period. In general, groundwater elevation averaged approximately 1.3 ft (0.4 m), and the maximum observed fluctuation of 3.6 ft (1.1 m) was observed in OW-765A.

The groundwater elevation data (summarized in Table 2.4.12-3) were used to develop groundwater surface elevation contour maps for the Surficial aquifer on a quarterly basis. These maps are presented in Figure 2.4.12-16 through Figure 2.4.12-19 for July, September, December 2006, and March 2007. For each quarter, the spatial trend of the water table surface and horizontal gradients are similar. Groundwater elevations range from a high of approximately 84.8 ft (25.8 m) msl in the vicinity of well OW-423 to a low of approximately 68.1 ft (20.8 m) msl at well OW-743.

The groundwater surface contour maps indicate that horizontal groundwater flow in the Surficial aquifer is generally bi-modal. A northwest trending groundwater divide roughly following a line extending through the southwestern boundary of the proposed power block area is present at the CCNPP site. Northeast of this divide, horizontal groundwater flow is northeast toward Chesapeake Bay. Because the Surficial aquifer is not present below elevations of approximately 65 ft (19.8 m) msl to 70 ft (21.3 m) msl, groundwater flowing in the northeastern direction likely discharges to small seeps and springs before reaching the Chesapeake Bay or CCNPP site streams. Groundwater southwest of this divide flows to the southwest. Groundwater southwest of this divide flows to the southwest. Groundwater flowing between the divide and the hydraulic boundary created by John's Creek and Branch 3 presumably discharges from seeps and springs above the 65 to 70 ft (19.8 to 21.3 m) msl elevation level along these stream valleys.

In general, the horizontal hydraulic gradient for the Surficial aquifer decreases from north to south across the CCNPP site. In the northern portion of the CCNPP site, the hydraulic gradients associated with the southwesterly and northeasterly flow components are similar with values ranging from 0.0147 ft/ft and 0.0138 ft/ft, respectively. In the southern portion of the CCNPP site where northeasterly flow predominates, the hydraulic gradient is lower (approximately 0.0086 ft/ft). In the northwest portion of the CCNPP site where a small portion of the site's groundwater flow emanating from the groundwater divide is to the north and west, the hydraulic gradient is approximately 0.0150 ft/ft.

Groundwater elevations collected from the five well clusters that monitor head differences between the Surficial aquifer and the Upper Chesapeake unit indicated a downward vertical gradient between the Surficial aquifer and the Upper Chesapeake unit. Water table elevations in the Surficial aquifer range from approximately 34.5 to 42.0 ft (10.5 to 12.8 m) higher than the potentiometric surface of the Upper Chesapeake unit (Table 2.4.12-3) indicative of less-permeable material separating the two water-bearing units.

2.4.12.3.1.2 Upper Chesapeake Unit

Groundwater elevation data for the Upper Chesapeake unit in 2006 and 2007 are shown in Figure 2.4.12-20. These data exhibit slightly more variability in groundwater elevations during the observation period (July 2006 to March 2007) than those for the Surficial aquifer. Seasonal trends for the Upper Chesapeake are very similar to those in the Surficial aquifer; they are slightly more pronounced. A slight seasonal influence during the monitoring period was indicated by groundwater elevation lows in August 2006, followed by gradually increasing levels through March 2007. On average, groundwater elevations fluctuated approximately 3.6 ft (1.1 m), and the maximum observed fluctuation of 8.3 ft (2.5 m) was observed in OW-708A.

The groundwater potentiometric data summarized in Table 2.4.12-3 were used to develop groundwater surface elevation contour maps for the Upper Chesapeake unit on a quarterly basis. These maps are presented in Figure 2.4.12-21 through Figure 2.4.12-24 for July 2006, September 2006, December 2006, and March 2007. For each quarter, the spatial trends of the potentiometric surface and the horizontal hydraulic gradient are similar, with elevations ranging from a high of approximately 41.7 ft (12.7 m) msl observation well OW-401 to a low of approximately 17.6 ft (5.4 m) msl at well OW-703A.

The groundwater surface contour maps indicate that horizontal groundwater flow in the Upper Chesapeake unit ranges from north to east across most of the site. Groundwater flowing in this direction likely discharges to the lower reaches of Branch 1 and Branch 2 and to seeps and springs in topographically low areas where the Upper Chesapeake unit is presumably exposed at the surface (below an elevation of approximately 20 ft (6 m) msl), including at the face of the Calvert Cliffs. It is also possible that a component of the Upper Chesapeake unit flow discharges directly to the Chesapeake Bay. The south central portion of the site exhibits a very flat horizontal hydraulic gradient over a large area centered over an area just south of the CCNPP Unit 3 power block area. It is possible that a groundwater hydraulic divide exists along the southwestern boundary of the power block area, resulting in a flow direction beneath the western switchyard area towards St. John's Creek and Branch 3. A potential exists for localized Upper Chesapeake unit recharge associated with seepage from the small pond southeast of the CCNPP Unit 3 power block area at Camp Canoy (Figures 2.4.12-21 to 2.4.12-24). In this area, the base of the pond is approximately 20 ft (6 m) above the water bearing sands of the Upper Chesapeake unit.

In general, three different horizontal hydraulic gradients can be observed from the potentiometric surface data. The highest gradients, at approximately 0.0170 ft/ft are observed to the north and east of the CCNPP Unit 3 power block area. The horizontal hydraulic gradient southeast of the CCNPP Unit 3 power block area is slightly lower at approximately 0.0091 ft/ft. The lowest horizontal hydraulic gradient observed at the CCNPP site was in the southwestern corner of the site where the gradient approaches zero.

2.4.12.3.1.3 Lower Chesapeake Unit

Groundwater data for the Lower Chesapeake unit are shown in Figure 2.4.12-25. The data exhibit similar groundwater elevation trends to those observed in the Surficial aquifer and exhibit little variability in groundwater elevations during the observation period (July 2006 to March 2007). A slight seasonal influence during this monitoring period is indicated by groundwater elevation lows in late summer (August and September), followed by gradually increasing levels for the remainder of the observation period. In general, groundwater elevations fluctuated approximately 3.4 ft (1.0 m), and the maximum observed fluctuation of 5.2 ft (1.6 m) was observed in OW-703B.

The groundwater elevation data summarized in Table 2.4.12-3 were used to develop groundwater surface elevation contour maps for the Lower Chesapeake unit on a quarterly basis. These maps are presented in Figure 2.4.12-26 through Figure 2.4.12-29 for July 2006, September 2006, December 2006, and March 2007. It should be noted that only three observation wells penetrate the Lower Chesapeake unit, and the monitoring area is limited to the area within and immediately north of the CCNPP Unit 3 power block area. For each quarter, the spatial trend in the potentiometric surface shows very little change, with elevations ranging from a high of approximately 35.0 ft (10.7 m) msl in the vicinity of well OW-418B to a low of approximately 17.6 ft (5.4 m) msl at well OW-703B.

The potentiometric surface contour maps suggest that horizontal groundwater flow in the Lower Chesapeake aquifer is to the north-northeast across the coverage area. Groundwater flowing in this direction likely discharges directly to the Chesapeake Bay because the silty sand unit containing the Lower Chesapeake unit is below sea level. Very little change in horizontal hydraulic gradient was observed during the monitoring period with values averaging approximately 0.0140 ft/ft.

Groundwater elevations collected from the three well clusters that monitored head differences between the Upper Chesapeake unit and the Lower Chesapeake unit indicated a slight downward vertical gradient. Potentiometric surface elevations in the Upper Chesapeake unit range approximately 3.0 to 5.0 ft (0.9 to 1.5 m) higher than the ranges in the Lower Chesapeake unit at well cluster locations OW-313 and OW-418. Potentiometric surface elevations are basically identical at the well cluster closest to the Chesapeake Bay, location OW-703.}

2.4.12.3.2 Hydrogeologic Properties

{The 40 groundwater observation wells installed in connection with the CCNPP Unit 3 site subsurface evaluation were slug tested to determine in situ hydraulic conductivity values for the Surficial aquifer and Upper and Lower Chesapeake units. Table 2.4.12-4 summarizes the test results.

Ten of the 17 Surficial aquifer wells tested were used to calculate hydraulic conductivity values. Three wells screened in the Surficial aquifer had measurable water but at or below the bottom of the well screen (OW-413A, OW-729, and OW-770); therefore, the slug test results from these wells are not included in this analysis. The slug test data from three additional Surficial aquifer wells (OW-714, OW-718, and OW-766) were not used in this evaluation because the static water levels were below the top of the solid slugs inserted into the well to displace the water level. Additionally, observation well OW-744 appears to have been screened in a discontinuous sand unit between the water bearing sand units of the Surficial aquifer and the Upper Chesapeake unit. Because the following slug test analyses are categorized by the three distinct water bearing units encountered onsite, the hydraulic conductivity evaluations presented below do not consider slug test data from this well. Slug test data from all the Upper and Lower Chesapeake unit wells were used in the hydraulic conductivity evaluations.

Soil samples collected from the Surficial aquifer, Upper Chesapeake, and Lower Chesapeake units during the geotechnical investigation were submitted for laboratory testing to determine moisture unit weight, moisture content, and specific gravity. Testing results are included in Table 2.4.12-5. The results of these laboratory analyses were used to calculate mean void ratio and porosity values for the three water bearing units cited above. The following discussions on hydrogeological properties are derived from the CCNPP Unit 3 data evaluations for the Surficial aquifer, Upper Chesapeake unit, and Lower Chesapeake unit. Hydrogeological property discussions for the Chesapeake Group aquitards comprising the Chesapeake Confining Unit and all deeper units described in Section 2.4.12.1.2 were summarized from the literature, where available. A detailed description of the geotechnical subsurface site investigation, including the hydrogeologic field program is described in Section 2.5.

2.4.12.3.2.1 Surficial Aquifer

Hydraulic conductivity values were determined from slug test results for the Surficial aquifer range from 0.040 ft/day to 17.4 ft/day (0.01 to 5.3 m/day), with a geometric mean of 0.910 ft/day (0.28 m/day) as detailed in Table 2.4.12-4. The range in values is considered to be indicative of the variability of the subsurface material composition (see Section 2.5). A transmissivity of 10.9

ft^2/day (1.01 m^2/day) for the Surficial aquifer was calculated using the mean hydraulic conductivity value cited above and an average saturated thickness of 12 ft (3.7 m).

Table 2.4.12-5 summarizes the laboratory test results for the three geotechnical samples collected from the Surficial aquifer sediments, which were at elevations ranging from 66.3 to 75.3 ft (20.2 m to 23 m) msl. These samples were collected from geotechnical borings B-320, B-722, and B-732. Sand and clayey sand make up the majority of the samples. Measured moisture unit weight ranges from 120 to 124 pounds/cubic ft (pcf) (1922 to 1986 kg/m^3). Measured moisture contents, by weight, range from 23.1% to 29.4%. Specific gravity values range between 2.63 and 2.76. Using these values, the mean void ratio was estimated to be about 0.75. A mean total porosity of 42.7%t was calculated from this void ratio, and mean effective porosity of about 34.1% (Table 2.4.12-5) was estimated based on 80 percent of the total porosity (de Marsily, 1986).

Information on the vadose zone above the Surficial aquifer is limited. From the geotechnical data listed in Section 2.5.4, measured moisture contents by weight range from approximately 2.5% to 19.1%. The majority of the values ranged between 5% and 15%. Hydraulic conductivity for the Upland Deposits was estimated from grain size analyses as part of the CCNPP Units 1 and 2 FSAR investigation. A maximum hydraulic conductivity of 400 gpd/ft^2 (16,299 lpd/m) (53.6 ft/day (16.3 m/day)) was reported.

2.4.12.3.2.2 Chesapeake Group

The following discussion presents the evaluations of the hydrogeologic properties of the two water bearing units in the upper Chesapeake Group informally named the Upper Chesapeake and Lower Chesapeake units. This is followed by a description of the intervening and underlying Chesapeake Clay and Silt units comprising the remainder of the Chesapeake Group.

Upper Chesapeake Unit

The top of the silty sand unit comprising the informally named Upper Chesapeake unit lies approximately 50 ft (15 m) below the base of the Surficial aquifer. Hydraulic conductivities determined from the slug test results for the Upper Chesapeake unit range from 0.12 to 13.7 ft/day (0.04 m/day to 4.2 m/day), with a geometric mean of 0.740 ft/day (0.23 m/day) as detailed in Table 2.4.12-4. The range in values is indicative of the variability of the grain size and clay content of the material. A transmissivity of 15.8 ft^2/day (1.5 m^2/day) for the Upper Chesapeake unit is calculated using the mean hydraulic conductivity value cited above and an average saturated thickness of 21.4 ft (6.5 m/day).

Table 2.4.12-5 summarizes the laboratory test results for the five geotechnical samples collected from the Upper Chesapeake Unit sediments. Measured moisture unit weights range from 116 pcf to 121 pcf (1859 to 1939 kg/m^3). Measured moisture contents, by weight, range from 23.1% to 44.2%. Specific gravity values range between 2.66 and 2.75. Using these values, the mean void ratio is estimated to be about 0.86. A mean total porosity of 46.2% is calculated from this void ratio, and the mean effective porosity of about 37.0% (Table 2.4.12-5) was estimated based on 80% of the total porosity (de Marsily, 1986).

Lower Chesapeake Unit

The top of the informally named Lower Chesapeake unit generally lies approximately 35 ft (10.7 m) below the base of the Upper Chesapeake unit. Hydraulic conductivities determined from the slug test results for the three wells screened in the Lower Chesapeake unit range from 0.019 to 0.093 ft/day (0.006 to 0.028 m/day), with an arithmetic mean of 0.045 ft/day (1.37 cm/day) (Table 2.4.12-4). The arithmetic mean for the hydraulic conductivity was used instead

of the geometric mean due to the very small sample size. These values are lower than those observed in the Surficial aquifer and the Upper Chesapeake unit by more than one order of magnitude. A transmissivity of 1.6 ft^2/day (0.15 m^2/day) for the Lower Chesapeake unit is calculated using the mean hydraulic conductivity value cited above and an average saturated thickness of 36.1 ft (11 m).

Table 2.4.12-5 summarizes the laboratory test results for the three geotechnical samples collected from the Upper Chesapeake Unit sediments. Measured moisture unit weights range from 113 pcf to 116 pcf (1811 to 1859 kg/m^3). Measured moisture contents, by weight, range from 37.3% to 50.5%. Specific gravity values range between 2.64 and 2.70. Using these values, the mean void ratio is estimated to be about 1.06. A mean total porosity of 51.5% is calculated from this void ratio, and mean effective porosity of about 41.2% was estimated based on 80% of the total porosity (de Marsily, 1986).

Chesapeake Clay and Silts

The Upper Chesapeake's clay and silt separates the Surficial aquifer from the underlying Upper Chesapeake unit. It immediately underlies the Surficial aquifer below an elevation between approximately 65 to 70 ft (19.8 to 20.3 m) msl. Laboratory tests performed on core samples in support of southern Maryland hydrogeologic studies reported vertical hydraulic conductivities ranging between 5.9 x 10^{-5} ft/day to 2.5 x 10^{-2} ft/day (1.8 x 10^{-5} m/day to 7.6 x 10^{-3} m/day (MGS, 1997). Vertical hydraulic conductivities established for groundwater model calibrations associated with these studies, range from 8.6 x 10^{-6} ft/day to 8.6 x 10^{-5} ft/day (2.6 x 10^{-6} m/day to 2.6 x 10^{-5} ft/day), except for channeled areas where higher values were assigned to accommodate infilled deposits of sand and gravel (MGS, 1997). These sand units presumably correlate to the Upper and Lower Chesapeake units described herein. Assigned specific storage values ranged between 6.0 x 10^{-6} ft^{-1} and 1 x 10^{-5} ft^{-1} (2.0 x 10^{-5} m^{-1} and 3.3 x 10^{-5} $m^{-1}$and the Chesapeake Group aquitards in the Chesapeake Confining Unit (MGS, 1996).}

2.4.12.3.3 Groundwater Flow and Transport

The following sections present the most probable groundwater flow direction and travel time from the {CCNPP Unit 3} power block area to nearby surface water features. Based on the evaluation summarized in the above sections, {only the shallow water bearing units (Surficial aquifer and the Upper Chesapeake and Lower Chesapeake water-bearing units)} would be affected by construction and operation of the {CCNPP Unit 3.} Groundwater use associated with {CCNPP Unit 3} operations is discussed in Section 2.4.12.1.4. Accidental release parameters and pathways for liquid effluents in groundwater and surface water are presented in Section 2.4.13.

The groundwater seepage velocity is defined as distance over time and is calculated as follows:

Velocity = [(hydraulic gradient) x (hydraulic conductivity)] / (effective porosity)

The travel time is defined as rate of groundwater movement for a set distance and is calculated as follows:

Travel Time = (distance) / (velocity)

2.4.12.3.3.1 Surficial Aquifer

In the vicinity of the CCNPP site, the Surficial aquifer is capable of transmitting groundwater but is of limited areal and vertical extent. The Surficial aquifer (Upland Deposits) is not a reliable source of groundwater because of its relative thinness, limited saturated thickness, and dissected topography that causes local groundwater to discharge as small seeps and springs.

The groundwater travel time in the Surficial aquifer was calculated from the center of the groundwater divide in the CCNPP Unit 3 power block area to the projected discharge point in the headwater area of Branch 3. An average horizontal groundwater velocity of 0.040 ft/day (0.012 m/day) was calculated using a mean horizontal hydraulic gradient of 0.0150 ft/ft (Section 2.4.12.3.1.1) between the groundwater divide and Branch 3 (Figure 2.4.12-16 to Figure 2.4.12-19), a hydraulic conductivity of 0.910 ft/day (0.28 m/day), and an effective porosity of 34.1% (Section 2.4.12.3.2.1). Using a mean travel distance of approximately 1315 ft (400.8 m) from the groundwater divide in the CCNPP Unit 3 power block to the closest downgradient point above 65 ft (19.8 m) msl in Branch 3, the groundwater travel time from the power block area to Branch 3 was estimated to be about 90 years. East of the CCNPP Unit 3 reactor building, the flow paths to adjacent springs and seeps are presumed to be shorter, with shorter corresponding travel times for spring/seep discharge.

2.4.12.3.3.2 Upper Chesapeake Unit

Direct groundwater discharge to surface water from the Upper Chesapeake unit likely occurs along the lower reaches of Branch 1 and Branch 2 at elevations below approximately 20 ft (6 m) msl where the Upper Chesapeake unit presumably outcrops. The groundwater travel time in the Upper Chesapeake unit was calculated from the center of the CCNPP Unit 3 power block area northward to the projected discharge point at an elevation of 20 ft (6 m) msl in Branch 2. An average horizontal groundwater velocity of 0.034 ft/day (0.010 m/day) was calculated using a mean horizontal hydraulic gradient of 0.017 ft/ft (Section 2.4.12.3.1.2) along the projected flowpaths between the center of the CCNPP Unit 3 power block and the discharge point in Branch 2 (Figure 2.4.12-21 to Figure 2.4.12-24), a hydraulic conductivity of 0.740 ft/day (0.226 m/day), and an effective porosity of 37.0% (Section 2.4.12.3.2.2.1). Using a mean travel distance of approximately 1425 ft (434 m) from the center of the CCNPP Unit 3 power block to the projected downgradient discharge point at 20 ft (6 m) msl in Branch 2, the groundwater travel time from the power block area to Branch 2 was estimated to be about 115 years. Similarly, the groundwater travel times in the Upper Chesapeake unit were calculated from a point south of the CCNPP Unit 3 power block area northeastward to the projected discharge point at an elevation of 20 ft (6 m) msl in Branch 1 and farther downgradient to Chesapeake Bay. Using the same average horizontal groundwater velocity of 0.034 ft/day (0.010 m/day) and mean path distances of 1415 ft (431.3 m) and 1685 ft (513.6 m) to Branch 1 and the Chesapeake Bay, respectively, travel times of approximately 114 years and 138 years were calculated. It is possible that a groundwater hydraulic divide exists along the southwestern boundary of the CCNPP Unit 3 power block area, resulting in a flow direction beneath the western switchyard area towards St. John's Creek and Branch 3.

2.4.12.3.3.3 Lower Chesapeake Unit

The groundwater in the Lower Chesapeake unit likely discharges to the Chesapeake Bay, because this unit is entirely below sea level. The groundwater travel time in the Lower Chesapeake unit was calculated from the center of the CCNPP Unit 3 power block area northeastward to the downgradient location of the Chesapeake Bay shoreline. An average horizontal groundwater velocity of 0.0015 ft/day (0.00046 m/day) was calculated using a mean horizontal hydraulic gradient of 0.014 ft/ft (Section 2.4.12.3.1.3) along the projected flowpaths between the center of the CCNPP Unit 3 power block area and the shoreline (Figure 2.4.12-26 to Figure 2.4.12-29), a hydraulic conductivity of 0.045 ft/day (0.014 m/day), and an effective porosity of 41.2% (Section 2.4.12.3.2.2.2). The arithmetic mean for the hydraulic conductivity was used instead of the geometric mean due to the very small sample size. Using a distance of approximately 1540 ft (469 m) from the center of the CCNPP Unit 3 power block area to a

downgradient point on the shoreline of Chesapeake Bay, the groundwater travel time from the CCNPP Unit 3 power block area to the bay is estimated to be about 2810 years.}

2.4.12.4 Monitoring or Safeguard Requirements

Groundwater monitoring (water level observation) of the {CCNPP Unit 3} area is currently being implemented through the use of the groundwater observation wells installed in {2006 for the CCNPP Unit 3 site subsurface investigation and through the periodic review of water levels from selected wells within the Calvert County Ground-Water Level Monitoring Network}. {Some of the existing CCNPP Unit 3 area observation wells will be taken out of service prior to construction activities due to anticipated earth moving and construction requirements. Prior to construction activities, the observation well monitoring network will be evaluated in order to determine groundwater data gaps and needs created by the abandonment of existing wells. These data needs will be met by the installation of additional observation wells, if required. Additionally, the hydrologic properties and groundwater flow regimes of the shallow water bearing units (Surficial aquifer, and to a lesser extent, the Chesapeake units) will be impacted by the proposed earthmoving, regrading, and construction of infrastructure (buildings, parking lots, etc.). Revisions to the observation well network will be implemented to ensure that the resulting changes in the local groundwater regime from construction activities will be identified.}

Safeguards will be used to minimize the potential of adverse impacts to the groundwater by construction and operation of {CCNPP Unit 3}. These safeguards would include the use of lined containment structures around storage tanks (where appropriate), hazardous materials storage areas, emergency cleanup procedures to capture and remove surface containments, and other measures deemed necessary to prevent or minimize adverse impacts to the groundwater beneath the {CCNPP Unit 3} site. {No groundwater wells are planned for safety-related purposes.}

2.4.12.5 Site Characteristics for Subsurface Hydrostatic Loading and Dewatering

Groundwater conditions relative to the foundation stability of safety-related facilities and plans for the analysis of seepage and piping conditions during construction are discussed in Section 2.5.4.6. {The completed surface grade for CCNPP Unit 3 is expected to range between elevations of 72 to 85 ft (21.9 to 25.9 m) msl, requiring cut and fill across the site area. The proposed grade elevation of the nuclear island is approximately 85.0 ft (25.9 m) msl. The minimum design depth for construction activities is currently estimated to be at an approximate elevation of 44 ft (13.4 m) msl for the reactor containment structure. Groundwater elevations within the Surficial aquifer range from approximately elevation 68 to 85 ft (20.7 to 25.9 m) msl with the highest observed elevations occurring in the CCNPP Unit 3 power block area. Since the current maximum observed Surficial aquifer groundwater elevation is at proposed grade level (85.0 ft (25.9 m) msl in the nuclear island area, the water table lies approximately 41 ft (12.5 m) above the lowest subsurface portions of safety-related structures, systems, and components.

The U.S. EPR Design Certification Document (DCD) requires that maximum groundwater elevation be at least 3.3 ft (1.0 m) below grade for the nuclear island. As indicated above, existing data indicates that the groundwater is currently at the proposed grade level in the nuclear island area, potentially outside of the U.S. EPR DCD design envelope. Since the CCNPP Unit 3 cut and fill operations, site grading, and construction activities will alter the existing Surficial aquifer groundwater system, groundwater modeling was employed to evaluate these effects and determine post-construction groundwater levels below the nuclear island. Modeling results indicate the following:

- With the exception of the Essential Service Water System Cooling Tower 1 and Emergency Power Generating Building 1/2, Surficial aquifer water table elevations range approximately 4.0 to 10.0 ft (1.2 to 3.0 m) below proposed grade at all safety-related facilities (Figure 2.4.12-43).
- The water table averages approximately 4.0 ft (1.2 m) below grade at Service Water System Cooling Tower 1 and approximately 3.0 ft (0.9 m) below grade at Emergency Power Generating Building 1/2 (Figure 2.4.12-43). The effects of the groundwater elevation at the Emergency Power Generating building 1/2 (3.0 ft (0.9 m) versus the 3.3 ft (1.0 m) below grade DCD requirement) is evaluated in Section 3.8.
- Groundwater mounding in the Surficial aquifer will no longer be present below the CCNPP Unit 3 power block area (which includes the nuclear island). Horizontal flow will be predominantly to the north and east and controlled by discharge to the bio-retention ditches on the northwest, northeast, and southeast sides of the CCNPP Unit 3 power block area (Figure 2.4.12-44).

Modeled post-construction water table elevations will average approximately 73.0 ft (22.3 m) msl at the nuclear island (Figure 2.4.12-44). Therefore a maximum of approximately 29.0 ft (8.8 m) of groundwater induced hydrostatic head loadings should be used as the design basis for the subsurface portions of all safety-related structures.

A permanent groundwater dewatering system is not anticipated to be a design feature for the CCNPP Unit 3 facility. Surface water controls (precipitation seepage and runoff) and temporary groundwater dewatering controls are expected during construction activities.

Groundwater within the Surficial aquifer beneath the CCNPP Unit 3 facility area ranges from approximately elevation 68 to 85 ft (20.7 to 25.9 m) msl. Therefore, it is expected that the saturated sands within the Surficial aquifer will be encountered during grading and excavation activities. The saturated sands, where present, rest on at least 10 ft (3m) of relatively low permeable clays and silts at an approximate elevation of 65 to 75 ft (19.8 to 22.9 m) msl. A temporary groundwater management system may need to be employed during excavation to drain and control groundwater flow through the Surficial aquifer. It is expected that surface swales and passive ground drains may be required in areas of higher elevations adjacent to the CCNPP Unit 3 facilities to redirected surface runoff and groundwater away from the site. Stormwater and Surficial aquifer groundwater runoff will be directed to Stormwater Management Basin(s) for settlement prior to discharge to the Chesapeake Bay. If required, this water may also be redirected for construction dust control use or other non-potable water supplies.

From the period of July 2006 through March 2007, groundwater elevations in the Upper Chesapeake unit at the proposed power block area ranged from a high of approximately 41.7 ft (12.7 m) msl in observation well OW-401 to a low of approximately 17.6 ft (5.4 m) msl at well OW-703A. The deepest base of the excavation for construction of the reactor building is an elevation of approximately 44 ft (13.4 m) msl within the clays and silts separating the overlying Surficial aquifer from the Chesapeake sand units. It is therefore anticipated that a groundwater management/dewatering system may not be required for the Upper Chesapeake unit. Groundwater elevations will continue to be monitored, and any observed deviations in groundwater elevations potentially impacting the current design bases will be accounted for to design a construction dewatering system, as appropriate.

As previously stated, a permanent groundwater dewatering system is not anticipated to be a design feature for the CCNPP Unit 3 facilities. Based on current groundwater conditions and the anticipated facility surface grade between elevations of 72 to 85 ft (21.9 to 25.9 m), groundwater is expected to be encountered at depths of a few feet to 15 ft (4.6 m) below grade.

Removal of a portion of the Surficial aquifer during construction may eventually lower the expected depth to groundwater. Surface water controls to minimize precipitation infiltration and the redirection of surface runoff away from the facility area are expected, further minimizing water infiltration to the groundwater system beneath the site.

Electrical manholes within the facility area are expected to be at depths of 10 to 15 ft (3 to 4.6 m) below grade and, therefore, have the potential for encountering groundwater that may eventually leak into these structures. Manhole sump pumps may be required and periodically operated to collect and remove the water seeping into these features.}

2.4.12.6 References

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Table 2.4.12-1 CCNPP Unit 3 Observation Wells Construction Details
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Well ID	Northing[1] (ft)	Easting[1] (ft)	Ground Surface Elevation (ft)	Well Pad Elevation (ft)	Top of Casing[2] Elevation (ft)	Boring Depth (ft)	Well Depth (ft)	Screen Diameter & Slot Size (in)	Screen Interval Depth		Screen Interval Elevation		Filterpack Interval Depth		CCNPP Hydrostratigraphic Unit
									Top (ft)	Bottom (ft)	Top (ft)	Bottom (ft)	Top (ft)	Bottom (ft)	
OW-301	217048.02	960814.47	94.51	94.78	96.27	80.0	77.0	2 / 0.010	65.0	75.0	29.5	19.5	61.0	80.0	Upper Chesapeake Unit
OW-313A	217367.31	960705.30	51.03	51.31	53.20	57.5	52.5	2 / 0.010	40.0	50.0	11.0	1.0	35.0	57.5	Upper Chesapeake Unit
OW-313B	217372.35	960713.67	50.73	51.16	53.54	110.0	107.5	2 / 0.010	95.0	105.0	-44.3	-54.3	91.0	110.0	Lower Chesapeake Unit
OW-319A	216962.56	961116.12	103.13	103.31	104.91	35.0	32.0	2 / 0.010	20.0	30.0	83.1	73.1	15.0	35.0	Surficial Aquifer
OW-319B	216957.32	961125.02	103.53	103.85	105.35	85.0	82.0	2 / 0.010	70.0	80.0	33.5	23.5	65.0	85.0	Upper Chesapeake Unit
OW-323	217034.46	960057.07	106.96	107.55	109.69	43.5	42.0	2 / 0.010	30.0	40.0	77.0	67.0	26.0	43.5	Surficial Aquifer
OW-328	216828.86	960493.21	76.29	76.55	77.85	72.0	72.0	2 / 0.010	60.0	70.0	16.3	6.3	56.5	72.0	Upper Chesapeake Unit
OW-336	216643.18	960746.61	97.11	97.50	99.07	74.0	72.0	2 / 0.010	60.0	70.0	37.1	27.1	53.0	74.0	Upper Chesapeake Unit
OW-401	216348.86	961530.99	71.38	71.91	73.49	77.5	75.3	2 / 0.010	63.0	73.0	8.4	-1.6	57.0	77.5	Upper Chesapeake Unit
OW-413A	216703.14	961418.81	123.15	123.51	125.04	50.0	47.0	2 / 0.010	35.0	45.0	88.2	78.2	30.0	50.0	Surficial Aquifer
OW-413B	216694.88	961413.25	122.90	123.25	124.85	125.0	122.0	2 / 0.010	110.0	120.0	12.9	2.9	105.0	125.0	Upper Chesapeake Unit
OW-418A	216340.41	961966.46	43.66	44.31	45.83	40.0	37.0	2 / 0.010	25.0	35.0	18.7	8.7	21.0	40.0	Upper Chesapeake Unit
0W-418B	216340.25	961976.71	43.67	44.13	45.77	92.0	87.0	2 / 0.010	75.0	85.0	-31.3	-41.3	72.0	92.0	Lower Chesapeake Unit
OW-423	216339.99	960882.24	111.12	111.67	113.16	43.0	40.3	2 / 0.010	28.0	38.0	83.1	73.1	23.0	43.0	Surficial Aquifer
OW-428	216105.21	961212.38	113.92	114.32	115.92	50.0	47.0	2 / 0.010	35.0	45.0	78.9	68.9	30.0	50.0	Surficial Aquifer
OW-436	215922.47	961446.87	108.13	108.53	110.39	50.0	41.0	2 / 0.010	29.0	39.0	79.1	69.1	24.0	50.0	Surficial Aquifer
OW-703A	218171.23	960967.72	44.02	44.44	45.65	49.0	47.0	2 / 0.010	35.0	45.0	9.0	-1.0	32.5	49.0	Upper Chesapeake Unit
OW-703B	218171.67	960958.91	45.57	45.97	47.53	80.0	80.0	2 / 0.010	68.0	78.0	-22.4	-32.4	65.0	80.0	Lower Chesapeake Unit
OW-705	217566.62	960917.18	47.71	47.77	50.22	52.0	52.0	2 / 0.010	40.0	50.0	7.7	-2.3	35.0	52.0	Upper Chesapeake Unit

Table 2.4.12-1 CCNPP Unit 3 Observation Wells Construction Details
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Well ID	Northing[1] (ft)	Easting[1] (ft)	Ground Surface Elevation (ft)	Well Pad Elevation (ft)	Top of Casing[2] Elevation (ft)	Boring Depth (ft)	Well Depth (ft)	Screen Diameter & Slot Size (in)	Screen Interval Depth		Screen Interval Elevation		Filterpack Interval Depth		CCNPP Hydrostratigraphic Unit
									Top (ft)	Bottom (ft)	Top (ft)	Bottom (ft)	Top (ft)	Bottom (ft)	
OW-708A	217586.23	961803.52	37.44	37.82	39.61	34.0	34.0	2 / 0.010	22.0	32.0	15.4	5.4	19.0	34.0	Upper Chesapeake Unit
OW-711	216748.48	961741.61	52.92	53.26	55.31	50.0	47.0	2 / 0.010	35.0	45.0	17.9	7.9	30.0	50.0	Upper Chesapeake Unit
OW-714	215705.73	962034.37	116.02	116.32	117.98	50.0	50.0	2 / 0.010	38.0	48.0	78.0	68.0	36.0	50.0	Surficial Aquifer
OW-718	214133.58	961924.87	118.53	118.96	120.41	43.0	42.0	2 / 0.010	30.0	40.0	88.5	78.5	28.0	43.0	Surficial Aquifer
OW-725	214649.30	963212.73	58.04	58.38	59.94	60.0	60.0	2 / 0.010	48.0	58.0	10.0	0.0	46.0	60.0	Upper Chesapeake Unit
OW-729	214872.58	962445.93	118.88	119.44	121.11	42.0	42.0	2 / 0.010	30.0	40.0	88.9	78.9	28.0	42.0	Surficial Aquifer
OW-735	214805.48	961021.83	91.20	91.81	93.44	72.0	72.0	2 / 0.010	60.0	70.0	31.2	21.2	58.0	72.0	Upper Chesapeake Unit
OW-743	213320.62	961234.01	103.65	104.05	105.89	55.0	52.0	2 / 0.010	40.0	50.0	63.7	53.7	36.0	55.0	Surficial Aquifer
OW-744	216405.37	960089.41	97.50	97.96	99.81	50.0	50.0	2 / 0.010	38.0	48.0	59.5	49.5	36.0	50.0	Chesapeake Unit
OW-752A	215482.18	960250.12	95.30	95.73	97.00	37.0	37.0	2 / 0.010	25.0	35.0	70.3	60.3	19.0	37.0	Surficial Aquifer
OW-752B	215489.21	960257.57	95.79	96.09	97.41	97.0	97.0	2 / 0.010	85.0	95.0	10.8	0.8	83.0	97.0	Upper Chesapeake Unit
OW-754	217369.78	960290.37	67.00	67.21	68.85	44.0	44.0	2 / 0.010	32.0	42.0	35.0	25.0	30.0	44.0	Upper Chesapeake Unit
OW-756	215497.07	961212.39	106.56	107.07	108.77	42.0	42.0	2 / 0.010	30.0	40.0	76.6	66.6	28.0	42.0	Surficial Aquifer
OW-759A	214536.47	960055.02	97.78	98.05	99.69	35.0	32.0	2 / 0.010	20.0	30.0	77.8	67.8	17.0	35.0	Surficial Aquifer
OW-759B	214526.25	960056.32	98.35	98.72	100.14	90.0	87.0	2 / 0.010	75.0	85.0	23.4	13.4	70.0	90.0	Upper Chesapeake Unit
OW-765A	216424.51	959701.22	97.37	97.92	99.60	29.0	29.0	2 / 0.010	17.0	27.0	80.4	70.4	15.0	29.0	Surficial Aquifer
OW-765B	216420.42	959693.64	96.82	97.19	98.47	102.0	94.0	2 / 0.010	82.0	92.0	14.8	4.8	80.0	102.0	Upper Chesapeake Unit
OW-766	216932.89	959791.50	108.89	109.32	110.72	50.0	32.0	2 / 0.010	20.0	30.0	88.9	78.9	15.0	37.0	Surficial Aquifer
OW-768A	217106.06	962238.98	48.48	48.96	49.84	42.0	42.0	2 / 0.010	30.0	40.0	18.5	8.5	28.0	42.0	Upper Chesapeake Unit

Table 2.4.12-1 CCNPP Unit 3 Observation Wells Construction Details
(Page 3 of 3)

Well ID	Northing[1] (ft)	Easting[1] (ft)	Ground Surface Elevation (ft)	Well Pad Elevation (ft)	Top of Casing[2] Elevation (ft)	Boring Depth (ft)	Well Depth (ft)	Screen Diameter & Slot Size (in)	Screen Interval Depth		Screen Interval Elevation		Filterpack Interval Depth		CCNPP Hydrostratigraphic Unit
									Top (ft)	Bottom (ft)	Top (ft)	Bottom (ft)	Top (ft)	Bottom (ft)	
OW-769	216589.75	962559.47	54.23	54.39	56.43	42.0	42.0	2 / 0.010	31.8	41.8	22.4	12.4	18.0	42.0	Upper Chesapeake Unit
OW-770	215466.60	962826.95	121.59	121.79	123.08	42.0	42.0	2 / 0.010	30.0	40.0	91.6	81.6	28.0	42.0	Surficial Aquifer

Notes:

(1) Maryland State Plane (NAD 1927). The Maryland State Plane 1927 coordinate system is based on North American Datum of 1927 (NAD27). NAD27 is a surface (or plane) to which horizontal positions in the U.S., Canada and Mexico is surveyed and referenced.

(2) Elevation is top of PVC Well Casing. Reference Point for Groundwater Level Monitoring

Table 2.4.12-2 CCNPP Unit 3 Observation Well Water Level Elevations
(Page 1 of 3)

Well ID	Ground Surface Elevation	Water Level Monitoring Reference Point Elevation	Depth to Water									Water Level Elevation								
			July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007	July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
OW-301	94.51	96.27	58.85	59.45	59.37	58.34	58.00	58.04	57.33	57.00	56.78	37.42	36.82	36.90	37.93	38.27	38.23	38.94	39.27	39.49
OW-313A	51.03	53.20	19.80	20.40	20.08	19.57	18.80	18.90	17.93	18.25	17.12	33.40	32.80	33.12	33.63	34.40	34.30	35.27	34.95	36.08
OW-313B	50.73	53.54	23.05	23.65	23.47	23.17	22.76	22.52	21.89	21.80	21.44	30.49	29.89	30.07	30.37	30.78	31.02	31.65	31.74	32.10
OW-319A	103.13	104.91	26.48	26.58	26.25	26.08	26.28	26.22	26.25	26.44	26.25	78.43	78.33	78.66	78.83	78.63	78.69	78.66	78.47	78.66
OW-319B	103.53	105.35	67.49	67.97	67.95	67.53	66.57	66.49	65.74	65.52	65.27	37.86	37.38	37.40	37.82	38.78	38.86	39.61	39.83	40.08
OW-323	106.96	109.69	27.80	28.22	28.37	28.13	27.96	27.26	26.88	26.45	26.52	81.89	81.47	81.32	81.56	81.73	82.43	82.81	83.24	83.17
OW-328	76.29	77.85	40.77	41.40	41.35	40.68	40.33	40.13	39.63	39.42	39.32	37.08	36.45	36.50	37.17	37.52	37.72	38.22	38.43	38.53
OW-336	97.11	99.07	60.99	61.36	61.52	60.45	60.42	60.19	59.65	59.20	59.25	38.08	37.71	37.55	38.62	38.65	38.88	39.42	39.87	39.82
OW-401	71.38	73.49	34.13	34.95	34.73	33.72	32.95	33.37	32.33	32.45	31.76	39.36	38.54	38.76	39.77	40.54	40.12	41.16	41.04	41.73
OW-413A	123.15	125.04	45.87	45.85	45.87	45.87	45.87	45.86	45.83	45.77	45.76	79.17	79.19	79.17	79.17	79.17	79.18	79.21	79.27	79.28
OW-413B	122.90	124.85	86.60	87.30	87.13	86.46	85.14	85.56	84.40	84.75	83.57	38.25	37.55	37.72	38.39	39.71	39.29	40.45	40.10	41.28
OW-418A	43.66	45.83	8.22	9.44	8.60	7.97	6.45	7.60	6.40	6.91	5.68	37.61	36.39	37.23	37.86	39.38	38.23	39.43	38.92	40.15
0W-418B	43.67	45.77	12.52	13.36	12.90	12.47	11.67	12.85	11.03	11.27	10.74	33.25	32.41	32.87	33.30	34.10	32.92	34.74	34.50	35.03
OW-423	111.12	113.16	29.77	30.04	30.03	29.93	29.78	29.54	29.02	28.76	28.38	83.39	83.12	83.13	83.23	83.38	83.62	84.14	84.40	84.78
OW-428	113.92	115.92	37.82	37.92	37.98	38.07	38.01	37.89	37.69	37.25	37.17	78.10	78.00	77.94	77.85	77.91	78.03	78.23	78.67	78.75
OW-436	108.13	110.39	31.68	32.06	31.85	31.55	31.08	31.40	30.60	31.05	30.28	78.71	78.33	78.54	78.84	79.31	78.99	79.79	79.34	80.11

Table 2.4.12-2 CCNPP Unit 3 Observation Well Water Level Elevations
(Page 2 of 3)

Well ID	Ground Surface Elevation	Water Level Monitoring Reference Point Elevation	Depth to Water									Water Level Elevation								
			July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007	July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
OW-703A	44.02	45.65	27.33	27.84	28.05	27.93	27.60	27.12	25.16	25.60	22.15	18.32	17.81	17.60	17.72	18.05	18.53	20.49	20.05	23.50
OW-703B	45.57	47.53	29.34	29.85	29.95	29.73	29.40	29.10	27.45	27.72	24.74	18.19	17.68	17.58	17.80	18.13	18.43	20.08	19.81	22.79
OW-705	47.71	50.22	20.28	21.10	20.67	20.10	19.02	19.40	17.82	18.60	16.57	29.94	29.12	29.55	30.12	31.20	30.82	32.40	31.62	33.65
OW-708A	37.44	39.61	13.39	15.01	13.85	12.78	10.46	12.58	8.96	12.20	6.71	26.22	24.60	25.76	26.83	29.15	27.03	30.65	27.41	32.90
OW-711	52.92	55.31	19.26	20.64	19.50	18.43	16.14	18.33	15.94	17.70	14.33	36.05	34.67	35.81	36.88	39.17	36.98	39.37	37.61	40.98
OW-714	116.02	117.98	45.93	46.28	46.33	46.36	46.19	45.87	45.60	45.42	45.21	72.05	71.70	71.65	71.62	71.79	72.11	72.38	72.56	72.77
OW-718	118.53	120.41	40.47	40.56	40.80	41.07	41.29	41.37	41.18	40.40	40.22	79.94	79.85	79.61	79.34	79.12	79.04	79.23	80.01	80.19
OW-725	58.04	59.94	32.80	33.87	33.92	33.56	32.54	32.30	30.77	30.77	29.77	27.14	26.07	26.02	26.38	27.40	27.64	29.17	29.17	30.17
OW-729	118.88	121.11	44.08	41.99	41.96	41.96	41.92	41.99	41.98	41.98	41.98	77.03	79.12	79.15	79.15	79.19	79.12	79.13	79.13	79.13
OW-735	91.20	93.44	54.18	55.17	55.14	54.57	53.31	53.24	52.36	52.13	52.16	39.26	38.27	38.30	38.87	40.13	40.20	41.08	41.31	41.28
OW-743	103.65	105.89	37.22	37.77	37.52	37.35	37.22	36.99	36.61	36.03	35.80	68.67	68.12	68.37	68.54	68.67	68.90	69.28	69.86	70.09
OW-744	97.50	99.81	32.97	33.52	33.15	32.96	32.47	32.52	32.06	31.97	31.73	66.84	66.29	66.66	66.85	67.34	67.29	67.75	67.84	68.08
OW-752A	95.30	97.00	24.76	25.18	25.35	25.36	25.23	24.08	23.34	22.77	22.68	72.24	71.82	71.65	71.64	71.77	72.92	73.66	74.23	74.32
OW-752B	95.79	97.41	59.55	60.25	60.05	59.75	59.38	59.16	58.77	58.60	58.58	37.86	37.16	37.36	37.66	38.03	38.25	38.64	38.81	38.83
OW-754	67.00	68.85	31.32	32.05	31.80	31.05	30.73	30.93	30.24	30.12	29.67	37.53	36.80	37.05	37.80	38.12	37.92	38.61	38.73	39.18
OW-756	106.56	108.77	29.98	30.17	30.42	30.55	30.59	30.46	30.04	29.42	29.18	78.79	78.60	78.35	78.22	78.18	78.31	78.73	79.35	79.59

Table 2.4.12-2 CCNPP Unit 3 Observation Well Water Level Elevations
(Page 3 of 3)

Well ID	Ground Surface Elevation	Water Level Monitoring Reference Point Elevation	Depth to Water									Water Level Elevation								
			July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007	July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
OW-759A	97.78	99.69	26.88	27.53	28.00	28.12	28.32	27.41	26.77	25.50	24.41	72.81	72.16	71.69	71.57	71.37	72.28	72.92	74.19	75.28
OW-759B	98.35	100.14	63.09	63.80	63.56	63.31	63.11	62.87	62.54	62.32	62.30	37.05	36.34	36.58	36.83	37.03	37.27	37.60	37.82	37.84
OW-765A	97.37	99.60	21.72	22.02	21.87	21.70	21.20	20.10	18.95	19.25	18.38	77.88	77.58	77.73	77.90	78.40	79.50	80.65	80.35	81.22
OW-765B	96.82	98.47	60.22	60.72	60.55	60.40	59.92	59.77	59.73	59.45	59.37	38.25	37.75	37.92	38.07	38.55	38.70	38.74	39.02	39.10
OW-766	108.89	110.72	28.88	29.36	29.42	29.20	29.20	28.76	28.11	27.60	27.30	81.84	81.36	81.30	81.52	81.52	81.96	82.61	83.12	83.42
OW-768A	48.48	49.84	24.05	24.88	24.04	23.67	23.12	23.65	23.10	23.26	22.53	25.79	24.96	25.80	26.17	26.72	26.19	26.74	26.58	27.31
OW-769	54.23	56.43	26.50	27.96	27.37	26.74	24.13	25.74	23.48	24.43	20.55	29.93	28.47	29.06	29.69	32.30	30.69	32.95	32.00	35.88
OW-770	121.59	123.08	dry	42.10	42.09	42.08	42.09	42.11	42.10	42.10	42.10	dry	80.98	80.99	81.00	80.99	80.97	80.98	80.98	80.98

Notes:

Highlighted wells: Questionable water level readings due to proximity of depth of water to bottom of well screen and/or minimal water level fluctuations with time

Reading from water level round was 41.90. Review suggested questionable reading. Retaken 5 days later and reading was 30.04 ft

Table 2.4.12-3 CCNPP Unit 3 Observation Wells Used in the Hydrogeologic Evaluations
(Page 1 of 3)

Well ID	Aquifer Unit	Ground Surface Elevation	Water Level Monitoring Reference Point Elevation	Depth to Water											Water Level Elevation						
				July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007	July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
Surficial Aquifer (SA)																					
OW-319A	SA	103.13	104.91	26.48	26.58	26.25	26.08	26.28	26.22	26.25	26.44	26.25	78.43	78.33	78.66	78.83	78.63	78.69	78.66	78.47	78.66
OW-323	SA	106.96	109.69	27.80	28.22	28.37	28.13	27.96	27.26	26.88	26.45	26.52	81.89	81.47	81.32	81.56	81.73	82.43	82.81	83.24	83.17
OW-423	SA	111.12	113.16	29.77	30.04	30.03	29.93	29.78	29.54	29.02	28.76	28.38	83.39	83.12	83.13	83.23	83.38	83.62	84.14	84.40	84.78
OW-428	SA	113.92	115.92	37.82	37.92	37.98	38.07	38.01	37.89	37.69	37.25	37.17	78.10	78.00	77.94	77.85	77.91	78.03	78.23	78.67	78.75
OW-436	SA	108.13	110.39	31.68	32.06	31.85	31.55	31.08	31.40	30.60	31.05	30.28	78.71	78.33	78.54	78.84	79.31	78.99	79.79	79.34	80.11
OW-714	SA	116.02	117.98	45.93	46.28	46.33	46.36	46.19	45.87	45.60	45.42	45.21	72.05	71.70	71.65	71.62	71.79	72.11	72.38	72.56	72.77
OW-718	SA	118.53	120.41	40.47	40.56	40.80	41.07	41.29	41.37	41.18	40.40	40.22	79.94	79.85	79.61	79.34	79.12	79.04	79.23	80.01	80.19
OW-743	SA	103.65	105.89	37.22	37.77	37.52	37.35	37.22	36.99	36.61	36.03	35.80	68.67	68.12	68.37	68.54	68.67	68.90	69.28	69.86	70.09
OW-752A	SA	95.30	97.00	24.76	25.18	25.35	25.36	25.23	24.08	23.34	22.77	22.68	72.24	71.82	71.65	71.64	71.77	72.92	73.66	74.23	74.32
OW-756	SA	106.56	108.77	29.98	30.17	30.42	30.55	30.59	30.46	30.04	29.42	29.18	78.79	78.60	78.35	78.22	78.18	78.31	78.73	79.35	79.59
OW-759A	SA	97.78	99.69	26.88	27.53	28.00	28.12	28.32	27.41	26.77	25.50	24.41	72.81	72.16	71.69	71.57	71.37	72.28	72.92	74.19	75.28
OW-765A	SA	97.37	99.60	21.72	22.02	21.87	21.70	21.20	20.10	18.95	19.25	18.38	77.88	77.58	77.73	77.90	78.40	79.50	80.65	80.35	81.22
OW-766	SA	108.89	110.72	28.88	29.36	29.42	29.20	29.20	28.76	28.11	27.60	27.30	81.84	81.36	81.30	81.52	81.52	81.96	82.61	83.12	83.42
Upper Chesapeake Unit (CU)																					
OW-301	CU	94.51	96.27	58.85	59.45	59.37	58.34	58.00	58.04	57.33	57.00	56.78	37.42	36.82	36.90	37.93	38.27	38.23	38.94	39.27	39.49

Table 2.4.12-3 CCNPP Unit 3 Observation Wells Used in the Hydrogeologic Evaluations
(Page 2 of 3)

Well ID	Aquifer Unit	Ground Surface Elevation	Water Level Monitoring Reference Point Elevation	Depth to Water									Water Level Elevation						
				July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007	July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
OW-313A	CU	51.03	53.20	19.80	20.40	20.08	19.57	18.80	18.90	17.93	18.25	17.12	33.40	32.80	33.12	33.63	34.40	34.30	35.27	34.95	36.08
OW-319B	CU	103.53	105.35	67.49	67.97	67.95	67.53	66.57	66.49	65.74	65.52	65.27	37.86	37.38	37.40	37.82	38.78	38.86	39.61	39.83	40.08
OW-328	CU	76.29	77.85	40.77	41.40	41.35	40.68	40.33	40.13	39.63	39.42	39.32	37.08	36.45	36.50	37.17	37.52	37.72	38.22	38.43	38.53
OW-336	CU	97.11	99.07	60.99	61.36	61.52	60.45	60.42	60.19	59.65	59.20	59.25	38.08	37.71	37.55	38.62	38.65	38.88	39.42	39.87	39.82
Surficial Aquifer (SA)																					
OW-401	CU	71.38	73.49	34.13	34.95	34.73	33.72	32.95	33.37	32.33	32.45	31.76	39.36	38.54	38.76	39.77	40.54	40.12	41.16	41.04	41.73
OW-413B	CU	122.90	124.85	86.60	87.30	87.13	86.46	85.14	85.56	84.40	84.75	83.57	38.25	37.55	37.72	38.39	39.71	39.29	40.45	40.10	41.28
OW-418A	CU	43.66	45.83	8.22	9.44	8.60	7.97	6.45	7.60	6.40	6.91	5.68	37.61	36.39	37.23	37.86	39.38	38.23	39.43	38.92	40.15
OW-703A	CU	44.02	45.65	27.33	27.84	28.05	27.93	27.60	27.12	25.16	25.60	22.15	18.32	17.81	17.60	17.72	18.05	18.53	20.49	20.05	23.50
OW-705	CU	47.71	50.22	20.28	21.10	20.67	20.10	19.02	19.40	17.82	18.60	16.57	29.94	29.12	29.55	30.12	31.20	30.82	32.40	31.62	33.65
OW-708A	CU	37.44	39.61	13.39	15.01	13.85	12.78	10.46	12.58	8.96	12.20	6.71	26.22	24.60	25.76	26.83	29.15	27.03	30.65	27.41	32.90
OW-711	CU	52.92	55.31	19.26	20.64	19.50	18.43	16.14	18.33	15.94	17.70	14.33	36.05	34.67	35.81	36.88	39.17	36.98	39.37	37.61	40.98
OW-725	CU	58.04	59.94	32.80	33.87	33.92	33.56	32.54	32.30	30.77	30.77	29.77	27.14	26.07	26.02	26.38	27.40	27.64	29.17	29.17	30.17
OW-735	CU	91.20	93.44	54.18	55.17	55.14	54.57	53.31	53.24	52.36	52.13	52.16	39.26	38.27	38.30	38.87	40.13	40.20	41.08	41.31	41.28
OW-752B	CU	95.79	97.41	59.55	60.25	60.05	59.75	59.38	59.16	58.77	58.60	58.58	37.86	37.16	37.36	37.66	38.03	38.25	38.64	38.81	38.83
OW-754	CU	67.00	68.85	31.32	32.05	31.80	31.05	30.73	30.93	30.24	30.12	29.67	37.53	36.80	37.05	37.80	38.12	37.92	38.61	38.73	39.18

Table 2.4.12-3 CCNPP Unit 3 Observation Wells Used in the Hydrogeologic Evaluations
(Page 3 of 3)

Well ID	Aquifer Unit	Ground Surface Elevation	Water Level Monitoring Reference Point Elevation	Depth to Water												Water Level Elevation						
				July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007	July 2006	August 2006		September 2006	October 2006	November 2006	December 2006	January 2007	February 2007	March 2007
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
OW-759B	CU	98.35	100.14	63.09	63.80	63.56	63.31	63.11	62.87	62.54	62.32	62.30	37.05	36.34		36.58	36.83	37.03	37.27	37.60	37.82	37.84
OW-765B	CU	96.82	98.47	60.22	60.72	60.55	60.40	59.92	59.77	59.73	59.45	59.37	38.25	37.75		37.92	38.07	38.55	38.70	38.74	39.02	39.10
OW-768A	CU	48.48	49.84	24.05	24.88	24.04	23.67	23.12	23.65	23.10	23.26	22.53	25.79	24.96		25.80	26.17	26.72	26.19	26.74	26.58	27.31
OW-769	CU	54.23	56.43	26.50	27.96	27.37	26.74	24.13	25.74	23.48	24.43	20.55	29.93	28.47		29.06	29.69	32.30	30.69	32.95	32.00	35.88
Lower Chesapeake Unit (CL)																						
OW-313B	CL	50.73	53.54	23.05	23.65	23.47	23.17	22.76	22.52	21.89	21.80	21.44	30.49	29.89		30.07	30.37	30.78	31.02	31.65	31.74	32.10
0W-418B	CL	43.67	45.77	12.52	13.36	12.90	12.47	11.67	12.85	11.03	11.27	10.74	33.25	32.41		32.87	33.30	34.10	32.92	34.74	34.50	35.03
OW-703B	CL	45.57	47.53	29.34	29.85	29.95	29.73	29.40	29.10	27.45	27.72	24.74	18.19	17.68		17.58	17.80	18.13	18.43	20.08	19.81	22.79

Table 2.4.12-4 CCNPP Unit 3 Observation Wells - Hydraulic Conductivities from Slug Tests

Well ID	Surficial Aquifer	Kh	Kh	Kh
		(ft/sec)	(cm/sec)	(ft/day)
OW-319A	SA	2.89E-06	8.81E-05	2.50E-01
OW-323	SA	6.24E-05	1.90E-03	5.39E+00
OW-423	SA	6.86E-05	2.09E-03	5.93E+00
OW-428	SA	1.19E-05	3.63E-04	1.03E+00
OW-436	SA	2.80E-06	8.53E-05	2.42E-01
OW-743	SA	6.23E-07	1.90E-05	5.38E-02
OW-752A	SA	7.03E-05	2.14E-03	6.07E+00
OW-756	SA	2.01E-04	6.13E-03	1.74E+01
OW-759A	SA	4.64E-07	1.41E-05	4.01E-02
OW-765A	SA	1.00E-05	3.05E-04	8.64E-01
	max	2.01E-04	6.13E-03	1.74E+01
	min	4.64E-07	1.41E-05	4.01E-02
	mean	4.31E-05	1.31E-03	3.72E+00
	geo mean	1.05E-05	3.21E-04	9.10E-01

Well ID	Upper Chesapeake Unit	Kh	Kh	Kh
		(ft/sec)	(cm/sec)	(ft/day)
OW-301	CU	1.58E-04	4.82E-03	1.37E+01
OW-313A	CU	7.50E-06	2.29E-04	6.48E-01
OW-319B	CU	3.42E-05	1.04E-03	2.95E+00
OW-328	CU	3.79E-06	1.16E-04	3.27E-01
OW-336	CU	2.10E-05	6.40E-04	1.81E+00
OW-401	CU	6.77E-06	2.06E-04	5.85E-01
OW-413B	CU	2.78E-06	8.47E-05	2.40E-01
OW-418A	CU	4.41E-06	1.34E-04	3.81E-01
OW-703A	CU	1.34E-05	4.08E-04	1.16E+00
OW-705	CU	4.99E-06	1.52E-04	4.31E-01
OW-708A	CU	2.56E-05	7.80E-04	2.21E+00
OW-711	CU	6.04E-06	1.84E-04	5.22E-01
OW-725	CU	7.54E-06	2.30E-04	6.51E-01
OW-735	CU	5.48E-05	1.67E-03	4.73E+00
OW-752B	CU	3.35E-06	1.02E-04	2.89E-01
OW-754	CU	5.29E-06	1.61E-04	4.57E-01
OW-759B	CU	1.77E-06	5.39E-05	1.53E-01
OW-765B	CU	1.36E-06	4.15E-05	1.18E-01
OW-768A	CU	5.29E-06	1.61E-04	4.57E-01
OW-769	CU	1.74E-05	5.30E-04	1.50E+00
	max	1.58E-04	4.82E-03	1.37E+01
	min	1.36E-06	4.15E-05	1.18E-01
	mean	1.93E-05	5.87E-04	1.66E+00
	geo mean	8.56E-06	2.61E-04	7.40E-01

Well ID	Lower Chesapeake Unit	Kh	Kh	Kh
		(ft/sec)	(cm/sec)	(ft/day)
OW-313B	CL	2.74E-07	8.35E-06	2.37E-02
0W-418B	CL	2.16E-07	6.58E-06	1.87E-02
OW-703B	CL	1.08E-06	3.29E-05	9.33E-02
	max	1.08E-06	3.29E-05	9.33E-02
	min	2.16E-07	6.58E-06	1.87E-02
	mean	5.23E-07	1.60E-05	4.52E-02
	geo mean	4.00E-07	1.22E-05	3.45E-02

Note: Slug test results for 7 Surficial Aquifer wells (OW-413A, OW-714, OW-718, OW-729, OW-766, and OW-770) are not included because of invalid test conditions, questionable data, or the well was screened in a discontinuous sand unit.

Table 2.4.12-5 CCNPP Unit 3 Aquifer Unit Geotechnical Parameters
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Exploratory Boring	Sample Top Elevation (ft)	Geotechnical Laboratory Test Results			Calculated Values		
		Natural Moisture (%)	Moisture Unit Weight (PCF)	Specific Gravity	Void Ratio	Porosity (%)	Effective Porosity (%)
Surficial Aquifer							
B-320	67.9	29.4%	124	2.63	0.713	41.6%	33.3%
B-722	66.3	26.8%	120	2.76	0.820	45.0%	36.0%
B-732	75.3	23.1%	124	2.75	0.704	41.3%	33.0%
				Mean =	0.745	42.7%	34.1%
Upper Chesapeake							
B-328	12.8	44.2%	121	2.66	0.978	49.4%	39.6%
B-321	-2.8	28.5%	120.5	2.67	0.777	43.7%	35.0%
B-423	6.6	23.1%	120	2.74	0.754	43.0%	34.4%
B-420	-0.9	28.3%	117	2.75	0.882	46.9%	37.5%
B-440	5.3	30.0%	116	2.75	0.923	48.0%	38.4%
				Mean =	0.863	46.2%	37.0%
Lower Chesapeake							
B-304	-30.5	42.1%	113.2	2.65	1.076	51.82%	41.5%
B-401	-26.4	50.5%	117	2.70	1.167	53.86%	43.1%
B-701	-38.8	37.3%	116	2.64	0.950	48.71%	39.0%
				Mean =	1.064	51.5%	41.2%

Calculations:

Void Ratio = {Specific Gravity (x) Unit Weight of Water (x) [1+ Natural Moisture]/[Moisture Unit Weight]-1}
Unit Weight Water = 62.4
Porosity = {(Void Ratio)/(1+Void Ratio)}
Effective Porosity = 80% of Total Porosity)

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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CA	G	CA1962 G001	(08)	BEACHES WATER COMPANY, INC.	08/1990	Y	68,800	114,900	230	950	124C	NANJEMOY FORMATION	02-13-11-05	LONG BEACH AND CALVERT BEACH COMMUNITY SUPPLY
CA	G	CA1962 G006	(01)	ROGERS, WILLIAM C.	07/1962	N	3,000	3,500	320	930	125B	AQUIA FORMATION	02-13-10-05	NORTH BEACH LAUNDROMAT
CA	G	CA1962 G007	(05)	TPI GROUP, LLC.	03/2005	N	4,500	7,500	250	900	124C	NANJEMOY FORMATION	02-13-11-01	CALVERT MOBILE HOME PARK - PDWIS# 004-0206
CA	G	CA1962 G103	(02)	CHESAPEAKE BIOLOGICAL LABORATORY	11/1997	N	8,000	10,000	180	960	125B	AQUIA FORMATION	02-13-11-01	UM CHESAPEAKE BIOLOGICAL LABORATORY
CA	G	CA1962 G201	(03)	BEACHES WATER COMPANY, INC.	08/1990	Y	49,200	82,200	230	950	125B	AQUIA FORMATION	02-13-11-05	LONG BEACH AND CALVERT BEACH COMMUNITY SUPPLY
CA	G	CA1963 G001	(04)	SHIELDS, SR., ROY, J.	09/1996	N	500	800	340	900	125B	AQUIA FORMATION	02-13-11-01	COMMERCIAL RENTAL PROPERTY - LEASED BY BEAUTY SHOP
CA	G	CA1963 G003	(07)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	N	500	5000	220	960	124E	PINEY POINT FORMATION	02-13-10-05	CALVERT CLIFFS POWER PLANT - CAMP CANOY
CA	G	CA1963 G005	(02)	SCOTT, JOHN, J.	05/1997	N	500	1,000	320	920	124C	NANJEMOY FORMATION	02-13-10-05	PREV.STRUCTURE BURNT APPROX.8 MOS. AGO - UNSURE WHEN REBUILDING
CA	G	CA1963 G007	(05)	VERIZON MARYLAND INC.	03/2002	N	100	300	260	920	124C	NANJEMOY FORMATION	02-13-10-05	PRINCE FREDERICK FACILITY #34183
CA	G	CA1965 G002	(04)	RAWLINGS, L. LOUISE	11/1997	N	6,300	10,000	250	920	124C	NANJEMOY FORMATION	02-13-11-01	PINE TRAILER PARK
CA	G	CA1965 G003	(04)	BURKE, ALAN	03/2003	N	500	700	230	930	124C	NANJEMOY FORMATION	02-13-11-01	GATEWAY RESTAURANT
CA	G	CA1965 G007	(05)	CALVERT COUNTY COMMISSIONERS	03/2005	N	100	1,000	260	920	124C	NANJEMOY FORMATION	02-13-10-05	PARKS & REC FACILITY (OLD FAIRGROUNDS SITE)
CA	G	CA1965 G009	(04)	WATERS MEMORIAL UNITED METHODIST CHURCH	09/1997	N	300	800	230	930	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH

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CA	G	CA1966 G001	(05)	CROOKS, EDWARD	08/2005	Y	25,000	40,000	240	940	124E	PINEY POINT FORMATION	02-13-10-05	WESTERN SHORES COMMUNITY SUPPLY - PDWIS# 004-0016
CA	G	CA1966 G002	(01)	KNOTTY PINE BAR & GRILL	08/1965	N	500	1,000	220	950	122	MIOCENE	02-13-11-01	
CA	G	CA1966 G005	(05)	CALVERT COUNTY COMMISSIONERS	04/2004	Y	16,000	25,000	330	900	125B	AQUIA FORMATION	02-13-11-01	LAKEWOOD SUBD COMMUNITY SUPPLY - PDWIS #0040008
CA	G	CA1966 G006	(04)	MD STATE HIGHWAY ADMINISTRATION	03/1997	N	2,000	3,000	260	920	125B	AQUIA FORMATION	02-13-10-05	S.H.A. GARAGE
CA	G	CA1966 G007	(02)	PATUXENT METHODIST CHURCH	08/1997	N	300	700	280	910	124C	NANJEMOY FORMATION	02-13-11-01	PATUXENT UNITED METHODIST CHURCH
CA	G	CA1966 G008	(04)	WARD'S UNITED METHODIST CHURCH	07/1997	N	200	300	320	930	125B	AQUIA FORMATION	02-13-10-05	CHURCH
CA	G	CA1966 G010	(05)	AMERICAN LEGION POST 206 INC.	05/1998	N	1,500	2,500	320	930	124C	NANJEMOY FORMATION	02-13-10-05	AMERICAN LEGION
CA	G	CA1966 G011	(05)	CALVERT COUNTY COMMISSIONERS	09/2004	N	7,700	15,000	290	890	125B	AQUIA FORMATION	02-13-11-01	KING'S LANDING-POOL(1041140)/DIN HALL(1041053)/CHESPAX/EQUES CTR
CA	G	CA1966 G012	(04)	SPRING GROVE MARINA LTD.	07/1997	N	4,000	7,500	180	950	124E	PINEY POINT FORMATION	02-13-11-01	SPRING COVE MARINA
CA	G	CA1966 G014	(04)	VICTOR STANLEY, INC.	03/1996	N	700	1,150	330	900	125B	AQUIA FORMATION	02-13-11-01	FURNITURE MANUFACTURER
CA	G	CA1967 G003	(01)	SAINT ANTHONY'S CHURCH	11/1966	N	1,000	1,500	320	930	124C	NANJEMOY FORMATION	02-13-10-05	
CA	G	CA1967 G005	(04)	AL BANNA, EDMAD	02/2002	N	300	500	250	910	125B	AQUIA FORMATION	02-13-11-01	CITGO GAS & GALLO'S DELI
CA	G	CA1967 G006	(06)	CALVERT COUNTY DAY SCHOOL, INC.	08/2005	N	8,300	11,900	280	910	125B	AQUIA FORMATION	02-13-11-01	CALVERTON SCHOOL - PDWIS# 104-0022
CA	G	CA1968 G001	(04)	PLUM POINT UNITED METHODIST CHURCH	08/2001	N	300	500	280	930	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH

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CA	G	CA1968 G003	(02)	AMERICAN LEGION GRAY-RAY POST #220	05/1997	N	300	500	240	920	124C	NANJEMOY FORMATION	02-13-11-01	AMERICAN LEGION
CA	G	CA1968 G004	(05)	MIDDLEHAM & ST PETER'S PARISH	02/1999	N	300	600	210	960	124E	PINEY POINT FORMATION	02-13-10-05	CHURCH, PARISH HALL, DAY SCHOOL, PROJECT SMILE(THRIFT SHOP/OFFICE
CA	G	CA1968 G005	(04)	KING'S APOSTLE CHURCH OF GOD INC.	01/1998	N	300	500	310	930	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH
CA	G	CA1968 G008	(05)	PROUT, CLAIRE, EBY	07/2004	N	1,200	2,000	220	920	124C	NANJEMOY FORMATION	02-13-10-05	PATUXENT CAMPSITES
CA	G	CA1968 G009	(05)	CALVERT COUNTY COMMISSIONERS	07/2000	Y	25,000	42,000	240	940	124E	PINEY POINT FORMATION	02-13-10-05	KENWOOD BEACH COMMUNITY SUPPLY
CA	G	CA1969 G002	(04)	CALVARY BIBLE CHURCH	05/1996	N	300	500	220	950	124E	PINEY POINT FORMATION	02-13-11-01	SANITARY & POTABLE SUPPLY FOR CHURCH
CA	G	CA1969 G003	(05)	BROOKS UNITED METHODIST CHURCH	03/2004	N	200	300	230	930	124E	PINEY POINT FORMATION	02-13-11-04	CHURCH - PDWIS #1041011
CA	G	CA1969 G005	(05)	COX FAMILY LLLP	04/2006	N	500	900	260	920	125B	AQUIA FORMATION	02-13-11-01	WINEGARDNER PONTIAC-GMC
CA	G	CA1969 G007	(04)	SMITH, SHERMAN & MABEL,	04/1998	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	BARBER SHOP/CARRY OUT
CA	G	CA1969 G008	(04)	ASSOCIATION OF SEVENTH-DAY ADVENTISTS, CHESAPEAKE CONFERENCE	07/2000	N	300	500	240	930	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH
CA	G	CA1969 G009	(05)	FULL GOSPEL ASSEMBLY OF GOD	04/2006	N	600	800	250	920	124E	PINEY POINT FORMATION	02-13-10-05	CHURCH
CA	G	CA1969 G010	(05)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	Y	450,000	865,000	220	960	125B	AQUIA FORMATION	02-13-10-05	CALVERT CLIFFS NUCLEAR POWER PLANT - FENCED AREA
CA	G	CA1969 G013	(05)	BREEZY POINT MARINA, INC.	03/2004	N	2,400	5,000	290	940	124C	NANJEMOY FORMATION	02-13-10-05	MARINA - 230 SLIPS

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CA	G	CA1969 G014	(04)	PADILLA, JAIME, A.	11/1998	N	2,800	4,000	250	930	124C	NANJEMOY FORMATION	02-13-11-01	ADAM'S THE PLACE FOR RIBS RESTAURANT
CA	G	CA1969 G015	(04)	R.S. LEITCH COMPANY	04/1994	N	100	200	190	960	124E	PINEY POINT FORMATION	02-13-11-01	SOUTHEND SEVICE CENTER, INC. - SERVICE STATION
CA	G	CA1970 G002	(03)	DOWELL PLAZA, INC.	03/1986	N	300	500	190	960	124C	NANJEMOY FORMATION	02-13-11-01	TWO UNIT OFFICE BUILDING
CA	G	CA1970 G003	(03)	KRICK PLUMBING & HEATING CO., INC.	04/1998	N	150	300	320	910	125B	AQUIA FORMATION	02-13-11-01	KRICK PLUMBING & HEATING SHOP
CA	G	CA1970 G004	(07)	CALVERT COUNTY COMMISSIONERS	07/2004	Y	50,000	86,000	330	910	211D	MAGOTHY FORMATION	02-13-11-01	CAVALIER COUNTRY SUBD COMMUNITY SUPPLY - PDWIS# 0040002
CA	G	CA1970 G005	(06)	CALVERT COUNTY PUBLIC SCHOOLS	01/2003	Y	27,000	45,000	260	920	125B	AQUIA FORMATION	02-13-11-01	CALVERT HIGH SCHOOL & CALVERT CAREER CENTER
CA	G	CA1970 G007	(06)	CALVERT COUNTY COMMISSIONERS	02/2004	Y	60,000	100,000	250	900	125B	AQUIA FORMATION	02-13-11-01	CALVERT COUNTY INDUSTRIAL PARK
CA	G	CA1971 G001	(04)	HARBOR ISLAND MARINA, INC.	07/2002	N	900	1,800	180	960	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1971 G002	(02)	CALVERT COUNTY PUBLIC SCHOOLS	08/1996	N	2,000	3,300	290	910	125B	AQUIA FORMATION	02-13-11-01	HUNTINGTOWN ELEMENTARY SCHOOL
CA	G	CA1971 G004	(04)	SOLOMONS BEACON INN LIMITED PARTNERSHIP	01/2004	N	3,000	6,000	180	950	124E	PINEY POINT FORMATION	02-13-11-01	SOLOMONS BEACON MARINA
CA	G	CA1972 G001	(04)	CALVERT COUNTY PUBLIC SCHOOLS	09/2003	Y	18,000	23,000	310	900	211D	MAGOTHY FORMATION	02-13-11-01	NORTHERN HIGH SCHOOL & MIDDLE SCHOOL
CA	G	CA1972 G002	(05)	CALVERT COUNTY COMMISSIONERS	12/2001	Y	35,000	60,000	330	890	211D	MAGOTHY FORMATION	02-13-11-01	SHORES OF CALVERT SUBDIVISION
CA	G	CA1972 G003	(06)	TOWN OF CHESAPEAKE BEACH	12/2004	Y	630,000	1,100,000	310	930	125B	AQUIA FORMATION	02-13-10-05	CHESAPEAKE BEACH COMMUNITY SUPPLY - PDWIS# 004-0003
CA	G	CA1973 G001	(03)	HOWLIN JR., EDWARD, B.	09/2000	N	5,500	8,000	320	900	124C	NANJEMOY FORMATION	02-13-11-01	DUNKIRK VILLAGE SHOP/BUS CENTER - COMBINE CA73G001 & CA85G004

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CA	G	CA1973 G002	(04)	CALVERT COUNTY COMMISSIONERS	07/2004	N	3,600	5,000	240	930	125B	AQUIA FORMATION	02-13-11-01	COLLEGE OF SOUTHERN MARYLAND CALVERT COUNTY - PDWIS# 1040049
CA	G	CA1973 G003	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	200	300	290	910	124C	NANJEMOY FORMATION	02-13-11-01	HUNTING CREEK ALTERNATIVE SCHOOL - PDWIS# 1040025
CA	G	CA1973 G004	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	2,000	3,000	260	920	125B	AQUIA FORMATION	02-13-10-05	BROOKS ADMINISTRATIVE CENTER - PDWIS# 1040006
CA	G	CA1973 G005	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	5,000	6,000	260	920	125B	AQUIA FORMATION	02-13-11-01	CALVERT COUNTRY & CALVERT ELEMENTARY SCHOOLS - PDWIS# 1040012
CA	G	CA1973 G006	(04)	CALVERT COUNTY COMMISSIONERS	12/2001	N	500	800	310	900	125B	AQUIA FORMATION	02-13-11-01	CHANEYVILLE TOURIST CENTER & FAIRVIEW BRANCH LIBRARY
CA	G	CA1973 G007	(02)	BD. OF CO. COMMISSIONERS OF CALVERT CO.	08/1996	N	800	1,300	310	920	125B	AQUIA FORMATION	02-13-10-05	MT. HOPE COMMUNITY CENTER
CA	G	CA1973 G008	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	5,000	10,000	260	920	125B	AQUIA FORMATION	02-13-11-01	CALVERT MIDDLE SCHOOL - PDWIS# 1040018
CA	G	CA1973 G009	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	5,000	7,000	320	910	125B	AQUIA FORMATION	02-13-11-01	MT. HARMONY ELEMENTARY SCHOOL - PDWIS# 1040030
CA	G	CA1973 G010	(04)	CALVERT COUNTY PUBLIC SCHOOLS	07/1997	N	5,300	8,900	200	960	124E	PINEY POINT FORMATION	02-13-11-01	APPEAL ELEMENTARY - ONE WELL PRIMARY OTHER WELL FIRE SUPP/BACK-UP
CA	G	CA1973 G011	(04)	CALVERT COUNTY COMMISSIONERS	06/1995	N	500	800	230	930	124C	NANJEMOY FORMATION	02-13-11-01	FAMILY RESOURCE CENTER/HEAD START
CA	G	CA1973 G012	(01)	GLASCOCK, BEDFORD C.	12/1972	N	2,600	3,500	180	950	124E	PINEY POINT FORMATION	02-13-11-01	
CA	G	CA1973 G013	(05)	CALVERT COUNTY BOARD OF COMMISSIONERS	02/2002	Y	29,000	44,000	320	920	125B	AQUIA FORMATION	02-13-10-05	PARIS OAKS SUBDIVISION
CA	G	CA1973 G014	(07)	DOMINION COVE POINT LNG, LP	03/2004	Y	32,000	50,000	200	970	125B	AQUIA FORMATION	02-13-10-05	LIQUEFIED NATURAL GAS TERMINAL
CA	G	CA1973 G015	(04)	CALVERT COUNTY BOARD OF COMMISSIONERS	08/2003	N	700	1,000	260	920	124C	NANJEMOY FORMATION	02-13-10-05	PRINCE FREDERICK WASTEWATER TREATMENT PLANT

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouF127	East-thouF127	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1973 G017	(04)	BRANDYWINE CORPOREX PLAZA II LP	02/2004	N	1,500	2,000	310	900	125B	AQUIA FORMATION	02-13-11-01	RETAIL CENTER
CA	G	CA1974 G001	(03)	VAN DINE, PETER D.	10/1993	N	1,000	1,500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MERGANSER AIRCRAFT CORP.
CA	G	CA1974 G002	(05)	CALVERT COUNTY COMMISSIONERS	07/2000	Y	25,000	37,500	270	940	124C	NANJEMOY FORMATION	02-13-10-05	DARES BEACH - NANJEMOY
CA	G	CA1974 G003	(02)	GIBBONS, RICHARD, M.	05/1997	N	400	600	180	950	124E	PINEY POINT FORMATION	02-13-11-01	WATER FOR OFFICE
CA	G	CA1974 G004	(03)	JESCHKE, CRAIG, A.	10/1993	N	1,000	1,500	320	910	125B	AQUIA FORMATION	02-13-11-01	MEDICAL CENTER
CA	G	CA1974 G005	(06)	CALVERT COUNTY BOARD OF COMMISSIONERS, ,	05/1994	Y	245,000	370,000	260	920	125B	AQUIA FORMATION	02-13-11-01	PRINCE FREDERICK COMMUNITY WATER SUPPLY
CA	G	CA1974 G007	(03)	T H B MANAGEMENT SERVICES, LLC	02/2004	N	5,000	8,800	310	900	125B	AQUIA FORMATION	02-13-11-01	
CA	G	CA1974 G008	(03)	HUNTINGTOWN VOLUNTEER FIRE DEPARTMENT	05/1994	N	1,200	2,000	290	910	125B	AQUIA FORMATION	02-13-11-01	FIRE DEPT. & RESCUE SQUAD
CA	G	CA1974 G009	(03)	CALVERT COUNTY PUBLIC SCHOOLS	03/1997	N	3,000	4,000	230	930	125B	AQUIA FORMATION	02-13-11-01	MUTUAL ELEMENTARY SCHOOL
CA	G	CA1974 G102	(02)	CALVERT COUNTY COMMISSIONERS	07/2000	Y	25,000	37,500	270	940	125B	AQUIA FORMATION	02-13-10-05	DARES BEACH - AQUIA
CA	G	CA1975 G001	(04)	VERIZON MARYLAND INC.	03/2002	N	200	300	320	920	125B	AQUIA FORMATION	02-13-11-01	NORTH BEACH FACILITY #35078
CA	G	CA1975 G002	(03)	CALVERT COUNTY BOARD OF COMMISSIONERS	04/1998	N	1,000	5,000	260	910	125B	AQUIA FORMATION	02-13-11-01	OLD LANDFILL OFFICE BLDG
CA	G	CA1975 G004	(01)	UNIVERSITY OF MARYLAND	03/1976	N	1,000	1,500	250	900	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1975 G005	(03)	COLLIER, CHARLES	04/1998	N	1,100	2,200	270	910	124C	NANJEMOY FORMATION	02-13-11-01	LORD CALVERT BOWLING ALLEY

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1976 G005	(07)	CALVERT COUNTY COMMISSIONERS	07/2006	Y	6,300	23,800	250	910	125B	AQUIA FORMATION	02-13-11-01	HALLOWING POINT PARK - PDWIS# 1041185 (MAINT) & 1041015 (CONCESS)
CA	G	CA1976 G006	(05)	HARVEST FELLOWSHIP PRESBYTERIAN CHURCH	04/2001	N	100	200	210	960	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1976 G007	(02)	ALL SAINTS EPISCOPAL CHURCH	08/1996	N	200	300	300	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1976 G010	(02)	HARBOUR COAST INC.	09/1997	N	1,500	2,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESTAURANT/LOUNGE
CA	G	CA1976 G011	(03)	THE GOTT COMPANY	07/2000	N	200	300	200	960	124E	PINEY POINT FORMATION	02-13-11-01	NATIONS BANK - LUSBY BRANCH
CA	G	CA1977 G001	(02)	MARYLAND TOBACCO GROWERS ASSOCIATION	07/1987	N	500	600	290	910	124C	NANJEMOY FORMATION	02-13-11-01	R.K. AGRI SERVICES, INC.
CA	G	CA1977 G002	(03)	RAJA HAWIT, MD & RICHARD GHAFFAS, MD	02/1999	N	1,200	2,000	280	910	124C	NANJEMOY FORMATION	02-13-11-01	MEDICAL OFFICES
CA	G	CA1977 G005	(03)	FERRENZ, BRIAN, F.	06/2000	N	300	500	310	910	125B	AQUIA FORMATION	02-13-11-01	MT. HARMONY AUTO SERVICE - AUTO REPAIR
CA	G	CA1977 G006	(03)	DUNKIRK SUPPLY, INC.	06/1999	N	400	600	320	920	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK SUPPLY - TRUSS PLANT
CA	G	CA1977 G008	(03)	CALVERT COUNTY PUBLIC SCHOOLS	11/1999	N	7,500	10,000	210	960	125B	AQUIA FORMATION	02-13-11-01	SOUTHERN MIDDLE SCHOOL
CA	G	CA1977 G009	(03)	GLASCOCK, BEDFORD, C.	09/1999	N	1,500	2,000	180	950	124E	PINEY POINT FORMATION	02-13-11-01	SHOPPING CENTER
CA	G	CA1977 G011	(03)	MT. OLIVE UNITED METHODIST CHURCH	11/2004	N	200	300	260	920	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH - PDWIS# 104-1062
CA	G	CA1977 G016	(04)	CALVERT COUNTY COMMISSIONERS	03/2003	Y	33,000	45,000	260	910	125B	AQUIA FORMATION	02-13-11-01	CALVERT COUNTY DETENTION CENTER
CA	G	CA1977 G017	(03)	AMERICAN LEGION POST 274	06/2000	N	800	1,200	200	960	124E	PINEY POINT FORMATION	02-13-11-01	ARICK L. LORE POST 274, THE AMERICAN LEGION INC.

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFf27	East-thouFf27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1977 G018	(03)	DORAN, JOHN, T.	06/2000	N	1,000	1,500	250	910	124C	NANJEMOY FORMATION	02-13-11-01	R.T&E LAND - TRADE CENTER - OFFICE/WAREHOUSE BUILDING
CA	G	CA1977 G019	(03)	SOUTHERN MARYLAND ELECTRIC COOPERATIVE	12/1999	N	2,000	3,000	260	920	125B	AQUIA FORMATION	02-13-10-05	ELECTRIC UTILITY AT 901 DARES BEACH ROAD
CA	G	CA1978 G001	(03)	ST. PAUL UNITED METHODIST CHURCH	03/2001	N	600	800	200	960	124E	PINEY POINT FORMATION	02-13-10-05	CHURCH, PARSONAGE, DAY SCHOOL
CA	G	CA1978 G003	(03)	PARKERS CREEK WATER COMPANY	08/2000	N	2,700	4,600	250	930	124E	PINEY POINT FORMATION	02-13-10-05	PARKERS CREEK KNOLLS SUBD COMMUNITY SUPPLY
CA	G	CA1978 G004	(09)	BOARD OF COMMISSIONERS OF CALVERT COUNTY	12/1996	Y	128,600	214,700	320	930	125B	AQUIA FORMATION	02-13-10-05	SUMMIT, HIGHLANDS & CHESAPEAKE LIGHTHOUSE SBDNS.
CA	G	CA1978 G006	(02)	HILL, THOMAS	05/1997	N	1,000	1,500	310	910	125B	AQUIA FORMATION	02-13-11-01	OPTIMIST CLUB
CA	G	CA1978 G008	(04)	CALVERT COUNTY COMMISSIONERS	06/2003	Y	6,500	9,000	250	920	125B	AQUIA FORMATION	02-13-11-01	MASON ROAD/WOODRIDGE COMM. SUPPLY
CA	G	CA1978 G009	(03)	COOPERS UNITED METHODIST CHURCH	06/2000	N	200	300	320	900	125B	AQUIA FORMATION	02-13-11-01	CHURCH
CA	G	CA1978 G010	(02)	MC ALLUM, T., J.	03/2000	N	500	800	300	910	125B	AQUIA FORMATION	02-13-10-05	B & M MOBILE TUNE-UP
CA	G	CA1978 G011	(04)	CALVERT BEACH WATER COMPANY INC.	05/1998	Y	40,000	70,000	230	950	124E	PINEY POINT FORMATION	02-13-10-05	CALVERT BEACH PARK WEST SUBDIVISION
CA	G	CA1978 G012	(03)	FOWLER, GENEVIEVE, M.	09/2000	N	300	500	260	920	124C	NANJEMOY FORMATION	02-13-10-05	SEARS APPLIANCE STORE (FORMERLY A GROCERY STORE)
CA	G	CA1978 G013	(02)	OLIVET UNITED METHODIST CHURCH	05/1997	N	100	300	180	960	122	MIOCENE	02-13-11-01	
CA	G	CA1978 G015	(03)	THE CHRIST CHILD SOCIETY	04/2000	N	1,000	4,000	220	920	124C	NANJEMOY FORMATION	02-13-11-01	CHRIST CHILD SUMMER CAMP
CA	G	CA1979 G001	(04)	J.H. GRIBBLE & SONS, INC.	09/2002	N	9,600	9,800	250	920	125B	AQUIA FORMATION	02-13-10-05	CALVERT WELL DRILLING COMPANY

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County	GorS	WAPID	Rev-t4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouF127	East-thouF127	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1979 G002	(02)	ADAMS, R. SCOTT	10/2005	N	1,200	2,000	210	960	124E	PINEY POINT FORMATION	02-13-11-01	FRYING PAN RESTAURANT - PDWIS# 104-1036
CA	G	CA1979 G003	(03)	SOLID GROUND FARM, INC.	06/2001	N	6,900	41,000	220	920	125B	AQUIA FORMATION	02-13-11-01	HORSE & ALFALFA FARM
CA	G	CA1979 G004	(05)	CALVERT COUNTY COMMISSIONERS	07/2006	Y	6,000	29,400	320	900	211D	MAGOTHY FORMATION	02-13-11-01	DUNKIRK DISTRICT PARK - PDWIS# 104-1013
CA	G	CA1979 G005	(03)	FRANKEL DMD, BENNETT, F.	01/2006	N	2,000	3,400	260	910	124C	NANJEMOY FORMATION	02-13-11-01	PRINCE FREDERICK PROFESSIONAL BLDG - PDWIS# 104-1095
CA	G	CA1979 G006	(02)	RIDGEWAY, JON R. AND PEGGY JO	09/1996	N	2,000	3,400	340	900	125B	AQUIA FORMATION	02-13-11-01	MULTI FAMILY APARTMENT UNIT
CA	G	CA1979 G008	(03)	CALVERT COUNTY BOARD OF COMMISSIONERS	06/2001	N	600	2,000	240	920	124C	NANJEMOY FORMATION	02-13-11-01	BATTLE CREEK CYPRESS SWAMP NATURE CENTER
CA	G	CA1979 G009	(03)	RANDLE CLIFF COMMUNITY CHURCH	06/2001	N	100	300	300	930	124C	NANJEMOY FORMATION	02-13-10-05	
CA	G	CA1979 G010	(02)	TOWN OF CHESAPEAKE BEACH	09/1996	N	1,000	1,500	320	930	124C	NANJEMOY FORMATION	02-13-10-05	TOWN ROADS BUILDING
CA	G	CA1979 G011	(02)	DODSON, JOSEPH, S.	08/1996	N	400	600	250	920	124C	NANJEMOY FORMATION	02-13-10-05	KEN MAR LIQUORS
CA	G	CA1979 G013	(02)	BETHEL WAY OF THE CROSS CHURCH	09/1996	N	500	2,500	300	910	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH
CA	G	CA1980 G001	(02)	HILL & JOHN PRINCIPE, ROBERT	07/1996	N	500	800	340	900	125B	AQUIA FORMATION	02-13-11-01	LIQUOR STORE & DELI
CA	G	CA1980 G003	(03)	JOHNSON ACRES WATER COMPANY	05/2003	N	3,200	5,400	220	940	124C	NANJEMOY FORMATION	02-13-11-01	JOHNSON ACRES SUBD - COMMUNITY SUPPLY
CA	G	CA1980 G004	(03)	CALVERT COUNTY SPORTSMEN'S CLUB, INC.	08/2002	N	300	500	250	920	124C	NANJEMOY FORMATION	02-13-11-01	CLUB
CA	G	CA1980 G005	(03)	VERIZON MARYLAND INC.	03/2002	N	100	200	230	930	124E	PINEY POINT FORMATION	02-13-11-01	PORT REPUBLIC/MUTUAL FACILITY #34087

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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFf27	East-thouFf27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1980 G008	(02)	SHELDON, NANETTE	07/1990	N	1,200	2,000	300	930	124C	NANJEMOY FORMATION	02-13-10-05	RANDLE CLIFFS COMMUNITY SUPPLY
CA	G	CA1980 G009	(01)	SKIP JACK, INC.	11/1980	N	500	800	180	960	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1980 G010	(02)	DRUM POINT YACHT CLUB, INC.	11/1990	N	600	1,000	190	960	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1981 G001	(06)	CALVERT COUNTY COMMISSIONERS	06/2006	Y	3,300	21,100	200	970	124E	PINEY POINT FORMATION	02-13-10-05	COVE POINT PARK-1041186(MAINT)/1041111(CONCESSION)/104-1255(POOL)
CA	G	CA1981 G003	(03)	MT. HARMONY UNITED METHODIST CHURCH	12/2003	N	300	400	320	910	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1981 G006	(02)	EMMANUEL SEVENTH-DAY ADVENTIST CHURCH	07/1991	N	100	300	260	920	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH
CA	G	CA1981 G008	(01)	SOLID ROCK CHURCH OF OUR LORD JESUS CHRI	09/1981	N	400	600	250	930	124E	PINEY POINT FORMATION	02-13-10-05	
CA	G	CA1981 G010	(02)	CHRISTIAN BIBLE CENTER, INCORPORATED	09/1991	N	300	500	280	920	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1981 G011	(03)	MC CARTNEY, LABEN, J.	11/2005	N	300	500	260	920	124C	NANJEMOY FORMATION	02-13-11-01	PENN AUTO
CA	G	CA1981 G012	(03)	MERILLAT, STEPHEN M.	01/2004	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	AQUA MAINTENANCE SERVICES
CA	G	CA1981 G014	(02)	HARBOR HILLS CITIZENS ASSOCIATION, INC.	09/1991	N	300	1,000	230	920	124C	NANJEMOY FORMATION	02-13-11-01	MARINA
CA	G	CA1981 G015	(03)	ERSOY, OSMAN Z.	10/2003	N	300	500	270	910	124C	NANJEMOY FORMATION	02-13-11-01	O'BRIEN REALTY
CA	G	CA1981 G016	(02)	CALVERT BANK & TRUST COMPANY	09/1996	N	300	500	310	900	125B	AQUIA FORMATION	02-13-11-01	BANK BRANCH OFFICE - CHANEYVILLE
CA	G	CA1982 G001	(03)	FLAG HARBOR PARTNERSHIP	10/2004	N	1,000	4,000	230	950	124E	PINEY POINT FORMATION	02-13-10-05	MARINA - 165 SLIPS/2 EMPLOYEES/POOL - PDWIS# 104-1099

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1982 G002	(03)	PADGETT, BASCOMBE, G.	05/2004	N	6,800	10,200	270	900	125B	AQUIA FORMATION	02-13-11-01	RESIDENTIAL GWHP W/RECHARGE WELL
CA	G	CA1982 G003	(04)	THOMPSON, PAUL	07/2005	N	3,000	5,000	290	930	124C	NANJEMOY FORMATION	02-13-10-05	RESIDENTIAL GWHP W/RECHARGE WELL
CA	G	CA1982 G004	(03)	PRINCE FREDERICK MOTOR COMPANY, INC.	03/2004	N	900	1,500	260	920	124E	PINEY POINT FORMATION	02-13-10-05	AUTO SALES & SERVICE
CA	G	CA1982 G006	(03)	FIRST LUTHERAN CHURCH	09/2001	N	300	500	300	910	125B	AQUIA FORMATION	02-13-11-01	CHURCH
CA	G	CA1982 G007	(04)	M & D PARTNERS, LLC.	12/2004	N	7,500	12,500	250	900	125B	AQUIA FORMATION	02-13-11-01	HALLOWING POINT MOBILE HOME PARK - PDWIS# 004-0208
CA	G	CA1982 G008	(03)	CALVERT SKATING ASSOCIATES, INC.	01/2006	N	1,000	1,500	310	900	125B	AQUIA FORMATION	02-13-11-01	CALVERT ROLLER SKATING CENTER - PDWIS# 104-1018
CA	G	CA1982 G010	(03)	SOUTHERN MARYLAND OIL, INC.	10/2005	N	200	300	320	910	125B	AQUIA FORMATION	02-13-11-01	PETROLEUM PRODUCTS DISTRIBUTOR
CA	G	CA1983 G002	(02)	THE FIRST NATIONAL BANK OF MARYLAND	09/1996	N	300	500	260	920	124C	NANJEMOY FORMATION	02-13-11-01	BANK
CA	G	CA1983 G005	(03)	WEBER, KARL & DEBORAH	04/2005	N	300	500	270	920	124C	NANJEMOY FORMATION	02-13-11-01	CHARLES F. WEBER CO., INC
CA	G	CA1983 G006	(03)	CHRIST EPISCOPAL CHURCH	07/2005	N	800	1,500	240	930	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH/PARISH HOUSE/RESIDENCE - PDWIS# 104-1115
CA	G	CA1983 G007	(02)	CHURCH OF CHRIST AT PRINCE FREDERICK	12/2000	N	500	800	290	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1983 G008	(03)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	N	300	500	220	960	124E	PINEY POINT FORMATION	02-13-10-05	CALVERT CLIFFS POWER PLANT - VISTORS CENTER
CA	G	CA1983 G009	(03)	DUNKIRK SUPPLY INC.	08/1997	N	1,400	2,300	310	910	125B	AQUIA FORMATION	02-13-11-01	RETAIL LUMBER YARD
CA	G	CA1983 G011	(03)	RICKER, MICHAEL	01/2006	N	5,000	9,000	200	960	124E	PINEY POINT FORMATION	02-13-11-01	POTABLE/SANITARY & COMMERCIAL GWHP - PDWIS# 104-1023

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CA	G	CA1983 G013	(03)	CALVERT COUNTY PUBLIC SCHOOLS	11/1999	N	100	200	310	900	125B	AQUIA FORMATION	02-13-11-01	WELL-NORTHERN HS WWTP & WELL-CONCESSION STAND/FIELD IRRIGATION
CA	G	CA1983 G014	(03)	MATTHEWS, GAYLE B. & STELLA J.	06/2001	N	3,000	6,000	220	950	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP - NO RETURN
CA	G	CA1984 G001	(02)	BUCKINGHAM, MICHAEL, H.	02/1994	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	BAY METAL WORKS
CA	G	CA1984 G002	(02)	MCLELLAND, SLATEN, A.	08/1996	N	3,000	3,500	340	900	125B	AQUIA FORMATION	02-13-11-01	GROUNDWATER HEAT PUMP
CA	G	CA1984 G003	(03)	BOARD OF COMMISSIONERS OF CALVERT CO.	03/2006	Y	550,000	825,000	190	960	125B	AQUIA FORMATION	02-13-11-01	SOLOMONS ISLAND/LUSBY COMMUNITY WATER SUPPLY
CA	G	CA1984 G005	(01)	ASBURY COMMUNITY CHURCH, INC.	06/1984	N	100	300	250	910	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1984 G007	(02)	DASH IN FOOD STORES, INC.	05/1996	N	500	1,000	320	910	125B	AQUIA FORMATION	02-13-11-01	CONVENIENCE STORE
CA	G	CA1984 G008	(02)	KING, ESTATE OF BOYD	08/1996	N	500	800	260	920	124C	NANJEMOY FORMATION	02-13-11-01	RADIO SHACK - CALVERT VILLAGE SHOPPING CENTER
CA	G	CA1984 G010	(02)	EASTERN & ST. JOHN U.M.C.	07/1996	N	400	700	200	960	124E	PINEY POINT FORMATION	02-13-11-01	EAST JOHN YOUTH CENTER
CA	G	CA1984 G012	(02)	FIRST BAPTIST CHURCH, ,	08/1996	N	300	1,000	250	920	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH
CA	G	CA1984 G013	(02)	CHURCH OF JESUS CHRIST OF LDS, CALVERT BRANCH	08/1997	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS
CA	G	CA1984 G015	(02)	MORRIS, MICHAEL F., AND SHARON	09/1999	N	4,000	7,000	320	900	125B	AQUIA FORMATION	02-13-11-01	GWHP - RECHARGE WELL
CA	G	CA1984 G016	(04)	STROCON, INC.	07/2002	N	1,300	1,800	310	910	125B	AQUIA FORMATION		02-13-11-01
CA	G	CA1984 G017	(02)	MULLER, KENNETH, M.	08/1996	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	MT. HARMONY PROFESSIONAL CENTER

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1985 G001	(03)	MARYLAND HISTORICAL TRUST	10/2004	N	5,700	7,300	210	940	124E	PINEY POINT FORMATION	02-13-11-01	JEFFERSON PATTERSON PARK & MUSEUM - PDWIS# 104-1131
CA	G	CA1985 G002	(03)	TALPALAR ET AL, JAY, & BEVERLY	12/2005	N	800	1,200	290	910	125B	AQUIA FORMATION	02-13-11-01	7-11 & PIZZA SHOP/CARPET STORE/VIDEO RENTAL - NEW WELL AQUIA
CA	G	CA1985 G003	(02)	SOUTHERN MARYLAND ISLAMIC CENTER	08/2000	N	300	500	270	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1985 G005	(02)	DEPARTMENT OF NATURAL RESOURCES	01/1999	N	500	600	250	900	125B	AQUIA FORMATION	02-13-11-01	SOUTHERN SERVICE CENTER
CA	G	CA1985 G006	(02)	HOWLIN, EDWARD, B.	08/1997	N	1,400	2,000	320	900	125B	AQUIA FORMATION	02-13-11-01	PROFESSIONAL BUILDING - PDWIS# 104-1201
CA	G	CA1985 G008	(02)	THOMAS DEVENNEY	08/1997	N	700	1,200	320	900	125B	AQUIA FORMATION	02-13-11-01	PEACHTREE COURT CENTER
CA	G	CA1985 G009	(02)	LAKE, WILLIAM, B.	11/2001	N	2,000	4,000	220	950	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP - OVERBOARD DISCHARGE
CA	G	CA1985 G010	(02)	BOWLES, JOHN	06/1998	N	300	450	330	890	125B	AQUIA FORMATION	02-13-11-01	BUILDING CONTRACTOR
CA	G	CA1985 G011	(02)	MILLER, JAMES, A.	11/2001	N	2,500	4,000	220	950	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP
CA	G	CA1985 G012	(03)	EDWARD B. HOWLIN, INC.	03/2003	N	9,800	16,000	320	920	124C	NANJEMOY FORMATION	02-13-11-01	CONCRETE BATCH PLANT - PROCESS WATER AND POTABLE
CA	G	CA1985 G014	(02)	CALVERT LIGHTHOUSE TABERNACLE	07/2002	N	300	500	260	930	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1985 G015	(02)	CALVERT COUNTY PUBLIC SCHOOLS	11/1997	N	2,200	3,500	310	910	125B	AQUIA FORMATION	02-13-10-05	SUNDERLAND ELEMENTARY SCHOOL
CA	G	CA1985 G016	(02)	ZION HILL CHURCH OF GOD IN CHRIST	07/2000	N	300	500	190	960	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH
CA	G	CA1985 G017	(02)	CONNOR, ROBERT & DARLENE	11/1998	N	300	500	240	910	124C	NANJEMOY FORMATION	02-13-11-01	RAY GROCERY STORE

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFf27	East-thouFf27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1985 G018	(02)	GROVER, JUNE, L.	04/1998	N	300	500	240	940	124E	PINEY POINT FORMATION	02-13-10-05	PLUMBING SHOP
CA	G	CA1986 G001	(02)	CLEARY & CARL G. BROWN, FRANK, J.	04/1998	N	1,100	1,900	310	910	124C	NANJEMOY FORMATION	02-13-11-01	BROWN-CLEARY OFFICE BLDG- CUSTOM HOME BUILDER & ANIMAL HOSPITAL
CA	G	CA1986 G002	(02)	BESCHE OIL COMPANY, INC.	04/1998	N	300	500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	LUSBY SUNOCO GAS STATION AND REPAIR GARAGE
CA	G	CA1986 G005	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	05/1998	N	350	500	230	940	124E	PINEY POINT FORMATION	02-13-11-01	TRASH COMPACTOR
CA	G	CA1986 G006	(02)	HUNTINGTOWN UNITED METHODIST CHURCH	06/2000	N	300	500	290	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1986 G007	(04)	CALVERT COUNTY COMMISSIONERS	03/2006	Y	30,000	45,000	230	940	125B	AQUIA FORMATION	02-13-11-01	ST. LEONARD MUNICIPAL SUPPLY - PDWIS# 004-0013
CA	G	CA1986 G008	(02)	ELLIS, JOHN	12/1998	N	2,500	4,000	330	900	125B	AQUIA FORMATION	02-13-11-01	GWHP
CA	G	CA1986 G009	(02)	TAYLOR, WILLIAM, R.	11/1998	N	3,000	5,000	270	920	124C	NANJEMOY FORMATION	02-13-11-01	GWHP AND SOME LIVESTOCK WATERING (CHANGE IN TYPE)
CA	G	CA1986 G010	(02)	PRINCE FREDERICK CONGREGATION OF JEHOVAH	08/2000	N	200	300	280	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1986 G011	(02)	BENNETT, CHARLES & GAIL	03/1999	N	300	500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	MEDICAL SERVICES
CA	G	CA1986 G012	(02)	CALVERT COUNTY GOVERNMENT	03/2001	N	900	1,500	200	980	124E	PINEY POINT FORMATION	02-13-10-05	COVE POINT LIGHT RESIDENCES
CA	G	CA1986 G013	(03)	SILPASUVAN, SUWAT	02/2006	N	500	800	270	910	124C	NANJEMOY FORMATION	02-13-11-01	CALVERT PROFESSIONAL PARK - DOCTORS OFFICES - PDWIS# 104-1204
CA	G	CA1986 G014	(02)	SHERIDAN ET AL, DANIEL, P.	10/1998	N	1,000	1,500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	LAZY J'S TAVERN
CA	G	CA1986 G015	(02)	BOARD OF COMMISSIONERS CALVERT COUNTY	06/2000	N	100	1,500	260	920	125B	AQUIA FORMATION	02-13-10-05	COURTHOUSE STANDBY WELL - PDWIS #104-0083

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFf27	East-thouFf27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1986 G016	(02)	BURKE, ALAN,	10/1998	N	500	800	200	960	124E	PINEY POINT FORMATION	02-13-11-01	GUIDO'S RESTAURANT
CA	G	CA1986 G017	(02)	WENTWORTH NURSERY, INC.	08/2004	N	1,500	4,500	250	920	124C	NANJEMOY FORMATION	02-13-10-05	POTABLE/SANITARY & NURSERY IRRIGATION - 1 AC
CA	G	CA1987 G001	(01)	STOKES, PAUL	03/1987	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	PAUL STOKES & SONS, INC. (PLUMBING)
CA	G	CA1987 G004	(02)	FIRE DEPARTMENT & RESCUE SQUAD INC., HUNTINGTOWN VOLUNTEER	08/2000	N	100	150	290	910	124C	NANJEMOY FORMATION	02-13-11-01	HUNTINGTOWN POST OFFICE
CA	G	CA1987 G005	(02)	DUNKIRK ASSOCIATES, LLC,	06/2002	N	3,000	4,500	320	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK TOWN SQUARE SHOPPING CENTER
CA	G	CA1987 G006	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	04/2000	N	500	1,000	230	950	124E	PINEY POINT FORMATION	02-13-99-98	FLAG PONDS PARK
CA	G	CA1987 G007	(01)	MARYLAND TOBACCO GROWERS ASSOCIATION	07/1987	N	350	500	290	910	124C	NANJEMOY FORMATION	02-13-11-01	JOHN'S OPEN PIT BAR-B-QUE
CA	G	CA1987 G008	(02)	EDSINGER, ROBERT	11/2004	N	2,000	4,000	230	920	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/RECHARGE WELL
CA	G	CA1987 G009	(01)	STEVENSON, DOUGLAS	08/1987	N	300	500	310	910	125B	AQUIA FORMATION	02-13-11-01	STEVENSON POOLS OFFICE
CA	G	CA1987 G010	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	05/1998	N	1,000	5,000	290	930	124C	NANJEMOY FORMATION	02-13-10-05	PLUM POINT TRASH COMPACTOR SITE
CA	G	CA1987 G011	(03)	SINGH, RAGHUVIR	11/2004	N	100	300	290	910	124C	NANJEMOY FORMATION	02-13-11-01	LIQUOR STORE
CA	G	CA1987 G012	(02)	SUNTRUST BANK	11/2001	N	300	400	320	900	125B	AQUIA FORMATION	02-13-11-01	SUNTRUST BANK
CA	G	CA1987 G014	(01)	MOORE, SEWELL	10/1987	N	7,000	14,500	220	940	124E	PINEY POINT FORMATION	02-13-11-01	GROUND WATER HEAT PUMP

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1987 G015	(02)	WILLIS, MICHAEL & LORI	01/2000	N	3,000	5,000	260	940	124C	NANJEMOY FORMATION	02-13-10-05	GROUND WATER HEAT PUMP
CA	G	CA1987 G016	(01)	BEVERLY, LINWOOD	01/1988	N	3,000	5,000	240	930	124E	PINEY POINT FORMATION	02-13-11-01	GROUND WATER HEAT PUMP
CA	G	CA1987 G017	(02)	GOLLUB, MELVIN	11/1999	N	100	200	250	910	124C	NANJEMOY FORMATION	02-13-11-01	RADIO STATION - WMJS
CA	G	CA1987 G018	(02)	MOORE, SEWELL, T.	01/2000	N	3,000	5,000	220	940	124E	PINEY POINT FORMATION	02-13-11-01	GWHP - RECHARGE WELL
CA	G	CA1987 G019	(02)	BOWEN, EDWARD, L.	03/2000	N	500	800	250	930	124E	PINEY POINT FORMATION	02-13-10-05	JACK & JILL DAY CARE CENTER
CA	G	CA1987 G020	(01)	ABNER, ROBERT	03/1988	N	100	200	310	930	125B	AQUIA FORMATION	02-13-10-05	MARINA
CA	G	CA1988 G001	(02)	HEGARTY KOPICKI INCORPORATED	06/2000	N	300	500	290	910	124C	NANJEMOY FORMATION	02-13-11-01	OFFICE
CA	G	CA1988 G002	(02)	GRIBBLE, JOSEPH, H.	06/2002	N	4,000	6,000	180	970	124E	PINEY POINT FORMATION	02-13-10-05	GROUND WATER HEAT PUMP
CA	G	CA1988 G003	(02)	GRACE BRETHREN CHURCH	12/1996	N	600	1,000	320	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH & PARSONAGE
CA	G	CA1988 G004	(02)	BAY STATE INSULATION INC.	06/2000	N	200	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	INSULATION CONTRACTOR
CA	G	CA1988 G005	(01)	CARROLL WESTERN CHURCH	04/1988	N	300	500	240	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1988 G006	(02)	T. AND T. LUMBER COMPANY, INC.	03/2001	N	800	1,200	240	930	124E	PINEY POINT FORMATION	02-13-11-01	?
CA	G	CA1988 G007	(01)	SPARROW, DOUG	10/1988	N	3,000	6,000	260	910	124C	NANJEMOY FORMATION	02-13-11-01	GROUND WATER HEAT PUMP
CA	G	CA1988 G008	(03)	MYCHALUS, IHOR & ANNE	11/2001	N	3,000	5,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GROUND WATER HEAT PUMP SYSTEM

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1988 G009	(03)	THE TOWN OF NORTH BEACH,	09/2006	Y	185,000	300,000	320	930	125B	AQUIA FORMATION	02-13-10-05	MUNICIPAL SUPPLY - PDWIS# 004-0030
CA	G	CA1988 G010	(01)	PENN, JAMES & PATRICIA	12/1988	N	300	500	250	910	124C	NANJEMOY FORMATION	02-13-11-01	PATTI'S QUICK SHOP
CA	G	CA1989 G002	(03)	KUNST, MARY ANN AND JAMES W.	11/2005	N	3,000	6,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/RECHARGE WELL
CA	G	CA1989 G003	(03)	SELECT PRODUCTS, INC.	07/2001	N	100	200	180	960	124E	PINEY POINT FORMATION	02-13-11-01	MARINA
CA	G	CA1989 G004	(02)	SELECT PRODUCTS, INC.	07/2001	N	6,000	12,000	180	960	122H	MIOCENE SERIES	02-13-11-01	CATAMARANS RESTAURANT - GWHP
CA	G	CA1989 G005	(01)	FLORIA, JOSEPH	04/1989	N	3,000	6,000	300	910	124C	NANJEMOY FORMATION	02-13-11-01	GROUND WATER HEAT PUMP
CA	G	CA1989 G007	(02)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	N	500	1,000	220	960	124E	PINEY POINT FORMATION	02-13-11-01	RIFLE RANGE -DRINKING FOUNTAIN, SINK, LAWN IRRIGATION
CA	G	CA1989 G008	(03)	HOWLIN, JR., EDWARD, B.	01/2005	N	21,000	33,200	320	900	211D	MAGOTHY FORMATION	02-13-11-01	SHOPPES @ APPLE GREEN - PDWIS # 104-0076
CA	G	CA1989 G009	(02)	HUDSON JR., JOHN, W.	06/2001	N	300	500	270	910	125B	AQUIA FORMATION	02-13-11-01	HUDSON'S SUNOCO & MINI MART INC.
CA	G	CA1989 G010	(02)	COLUMBIA INVESTMENTS, LLC	10/2003	N	500	800	270	910	124C	NANJEMOY FORMATION	02-13-11-01	AUTO BODY REPAIR
CA	G	CA1989 G011	(02)	CERRITO FAMILY PROPERTIES LLC	07/2001	N	1,000	1,500	340	900	125B	AQUIA FORMATION	02-13-11-01	RETAIL, OFFICE AND SERVICES
CA	G	CA1989 G012	(02)	SNEADE, WILLIAM, D.	06/2001	N	500	700	320	920	125B	AQUIA FORMATION	02-13-10-05	HARDWARE STORE
CA	G	CA1989 G013	(02)	WILLIAMS, JENNIFER	11/2005	N	1,000	1,600	270	910	124C	NANJEMOY FORMATION	02-13-11-01	FIRST IMPRESSIONS DAYCARE - PDWIS# 104-0054
CA	G	CA1989 G015	(01)	RICHARD & PHYLLIS HORSMON	09/2001	N	3,000	12,000	220	940	112	PLEISTOCENE	02-13-11-01	NURSERY

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1989 G016	(02)	CALVERT ELKS LODGE #2620	07/2001	N	500	800	260	920	124C	NANJEMOY FORMATION	02-13-10-05	MEETING HALL
CA	G	CA1989 G017	(03)	CHESAPEAKE CHURCH	11/2005	N	1,100	2,200	300	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH & SHILOH CHRISTIAN ACADEMY PDWIS# 104-1176
CA	G	CA1989 G018	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	06/1998	N	1,000	5,000	200	960	124E	PINEY POINT FORMATION	02-13-11-01	APPEAL/LUSBY COMPACTOR SITE
CA	G	CA1989 G019	(03)	JEFFERSON, AGNES	12/2004	N	100	300	210	960	124E	PINEY POINT FORMATION	02-13-11-01	D.J.'S MARKET-PDWIS# 104-1029 (INACTIVE) - PROP FOR SALE
CA	G	CA1989 G020	(03)	CALVERT COUNTY PUBLIC SCHOOLS	12/2002	N	6,000	9,000	280	920	125B	AQUIA FORMATION	02-13-11-01	PLUM POINT ELEMENTARY SCHOOL
CA	G	CA1989 G021	(02)	RAYMOND-WOOD FUNERAL HOME, P.A.	10/2005	N	500	700	320	900	125B	AQUIA FORMATION	02-13-11-01	FUNERAL HOME AND FLORIST SHOP - PDWIS# 104-1190
CA	G	CA1989 G022	(02)	J & K INVESTMENT ASSOCIATES, L.L.C.	12/2001	N	900	1,500	320	900	125B	AQUIA FORMATION	02-13-11-01	OFFICE BLDG - 10020 SOUTHERN MARYLAND BLVD
CA	G	CA1989 G023	(02)	WAYSON, MORGAN	09/2002	N	6,100	10,000	310	910	125B	AQUIA FORMATION	02-13-11-01	OFFICE/WAREHOUSE SPACE/SAMES INDUSTRIAL CENTER
CA	G	CA1989 G107	(01)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	N	300	500	220	960	124E	PINEY POINT FORMATION	02-13-11-01	PUP TRAILERS - NON-POTABLE SUPPLY ONLY
CA	G	CA1990 G001	(02)	QUALITY BUILT HOMES, INC.	10/2003	N	600	1,200	220	950	112	PLEISTOCENE	02-13-11-01	
CA	G	CA1990 G004	(03)	GIGLIOTTI, FELIX	09/2003	N	2,500	5,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	GWHP
CA	G	CA1990 G005	(02)	CALVERT COUNTY PUBLIC SCHOOLS	12/2002	N	5,000	7,000	280	920	125B	AQUIA FORMATION	02-13-11-01	PLUM POINT MIDDLE SCHOOL
CA	G	CA1990 G006	(02)	GRAY, BRUCE	05/1997	N	1,000	2,800	280	930	124C	NANJEMOY FORMATION	02-13-10-05	GWHP - RETURN WELL
CA	G	CA1990 G008	(04)	DUNKIRK MARKET PLACE LLC,	07/2004	Y	15,000	30,000	320	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK MARKET PLACE - 1 WELL - PDWIS# 1040064

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1990 G009	(02)	BOWEN, DOUGLAS R.	11/2002	N	200	300	270	910	124C	NANJEMOY FORMATION	02-13-11-01	WASHING FARM EQUIPMENT.
CA	G	CA1990 G010	(02)	CALVERT COUNTY COMMISSIONERS	12/2002	N	300	500	250	910	124C	NANJEMOY FORMATION	02-13-11-01	WASTE WATER TREATMENT PLANT.
CA	G	CA1990 G011	(02)	RIVERA III, MODESTO S.	12/2002	N	300	500	260	920	124C	NANJEMOY FORMATION	02-13-11-01	MEDICAL OFFICE BUILDING.
CA	G	CA1990 G012	(02)	KATZENBERGER, FRANK & KATHI	01/2003	N	300	500	220	960	124E	PINEY POINT FORMATION	02-13-11-01	FRANK'S GARAGE INC.
CA	G	CA1990 G013	(02)	CRANE JR., JOHN, T.	01/2003	N	300	500	210	960	124E	PINEY POINT FORMATION	02-13-11-01	GROCERY STORE
CA	G	CA1990 G014	(04)	DONALDSON, STEVEN, E.	09/2005	N	3,000	6,000	180	160	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/RETURN WELL
CA	G	CA1990 G015	(03)	MURRAY, JR., RAYMOND, W.	09/2005	N	3,000	6,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/ RECHARGE WELL
CA	G	CA1990 G016	(02)	RADEACKAR, RANDY,	10/1996	N	3,000	6,000	180	960	122	MIOCENE	02-13-11-01	GWHP.
CA	G	CA1990 G017	(02)	EASTERN UNITED METHODIST CHURCH	11/2002	N	300	500	190	960	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH
CA	G	CA1991 G005	(02)	CROSSROAD CHRISTIAN CHURCH, INC.	07/2003	N	1,200	1,800	230	940	125B	AQUIA FORMATION	02-13-11-01	CHURCH & SCHOOL
CA	G	CA1991 G006	(02)	MT. GETHSEMANE BAPTIST CHURCH	09/2006	N	100	200	290	920	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH - PDWIS# 104-1129
CA	G	CA1991 G008	(02)	MOUNT HOPE METHODIST CHURCH	07/2004	N	100	300	300	910	125B	AQUIA FORMATION	02-13-10-05	
CA	G	CA1991 G023	(02)	AMERICAN LEGION POST #85	04/2004	N	100	300	290	910	125B	AQUIA FORMATION	02-13-11-01	AMERICAN LEGION
CA	G	CA1991 G024	(02)	COLLINS CONTROLS, INC.	11/2003	N	500	1,000	210	960	124E	PINEY POINT FORMATION	02-13-11-01	WAREHOUSE-ELECTRICAL AND MASONRY CONTRACTORS

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1991 G028	(02)	CALVERT COUNTY PUBLIC SCHOOLS	01/2004	N	4,400	6,600	200	960	124C	NANJEMOY FORMATION	02-13-11-01	PATUXENT ELEMENTARY SCHOOL
CA	G	CA1992 G002	(02)	CHOICE HOME CENTER, INC.	01/2006	N	300	500	310	900	125B	AQUIA FORMATION	02-13-11-01	FLOORING CENTER
CA	G	CA1992 G010	(02)	BECKER BROTHERS ENTERPRISES	07/1996	N	13,100	21,800	290	940	124C	NANJEMOY FORMATION	02-13-10-05	55-LOT BREEZY POINT ESTATES SUBDIVISION
CA	G	CA1992 G024	(02)	SAFEWAY INC.	07/2004	N	8500	11,800	320	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK MARKET PLACE SAFEWAY - PDWIS# 1040069
CA	G	CA1992 G027	(02)	CALVERT COUNTY COMMISSIONERS	06/2004	N	400	700	200	970	124C	NANJEMOY FORMATION	02-13-11-01	FIRE SUBSTATION NO. 3A
CA	G	CA1992 G029	(02)	ABDALLA, ET AL, NAJAH,	03/1996	N	10,700	17,800	230	930	124E	PINEY POINT FORMATION	02-13-11-01	MILLS POND SUBDIVISION
CA	G	CA1992 G035	(03)	QUALITY BUILT HOMES, INC.	04/1997	N	14,700	24,600	280	930	124C	NANJEMOY FORMATION	02-13-10-05	WILBURN ESTATES SUBD - ADD 20 LOTS TO PLATTED 42
CA	G	CA1992 G037	(02)	RAY ENTERPRISES, INC., ,	08/1995	N	7,200	12,100	220	920	124C	NANJEMOY FORMATION	02-13-11-01	WILLIAMS WHARF PLANTATION - 30 LOT SBDN
CA	G	CA1992 G039	(02)	STONE, LOUIS, P.	01/2005	N	600	900	210	930	124E	PINEY POINT FORMATION	02-13-11-01	2 APARTMENTS
CA	G	CA1993 G007	(02)	SOUTHERN CALVERT BAPTIST CHURCH	07/2005	N	1,000	2,000	190	960	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH - PDWIS# 1041161
CA	G	CA1993 G008	(02)	MORGAN STATE UNIVERSITY	03/2005	N	2,000	3,000	210	940	124E	PINEY POINT FORMATION	02-13-11-01	ENVIRONMENTAL RESEARCH FACILITY
CA	G	CA1993 G010	(02)	STALLINGS, LARRY R. & JUDY C.	12/2005	N	400	700	290	920	124C	NANJEMOY FORMATION	02-13-10-05	THE ANOINTED HANDS HAIR SALON/STALLING NAT'L ENTER/TRAILER
CA	G	CA1993 G011	(03)	FDI POSTAL PROPERTIES II, INC.	03/2006	N	300	500	320	910	124C	NANJEMOY FORMATION	02-13-11-01	OWINGS POST OFFICE
CA	G	CA1993 G020	(02)	TYRRELL, BRENDA	11/2005	N	1,800	3,000	320	920	125B	AQUIA FORMATION	02-13-11-01	PRIMETIME CHILDRENS CENTER

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouF27	East-thouF27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1993 G033	(02)	BOWEN, GORDON, F.	08/2005	N	300	400	290	910	124C	NANJEMOY FORMATION	02-13-11-01	BOWEN'S GROCERY - PDWIS# 104-1008
CA	G	CA1993 G035	(01)	GRANADOS, MICHAEL & ROBERT	08/1993	N	8700	70,000	270	900	125B	AQUIA FORMATION	02-13-11-01	GRANADOS FARMS
CA	G	CA1993 G038	(03)	BAYLINE BUILDERS & DEVELOPERS, INC.	03/2004	N	8,800	14,700	290	930	125B	AQUIA FORMATION	02-13-10-05	37-LOT HOLBROOK ESTATES SECT II SUBD
CA	G	CA1993 G039	(04)	JLH GROUP, LLC	09/2004	N	1,000	1,900	260	910	124C	NANJEMOY FORMATION	02-13-11-01	DUPONT BLDG - PARK PLACE LOT 7RR - OFFICE & SUITES
CA	G	CA1993 G040	(02)	BUCKLER, GORMAN, A.	08/2005	N	4,800	7,900	270	910	124C	NANJEMOY FORMATION	02-13-11-01	BUCKLER MOBILE HOME PARK - PDWIS# 004-0209
CA	G	CA1993 G041	(01)	GRANADOS, MICHAEL & ROBERT	08/1993	N	8700	70,000	270	900	122	MIOCENE	02-13-11-01	GRANADOS FARMS
CA	G	CA1993 G044	(02)	EVELYN NESTOR	05/1997	N	8,800	14,800	230	930	124E	PINEY POINT FORMATION	02-13-11-01	LOST MILL SBDN.
CA	G	CA1993 G045	(02)	MATHEW, MD, SCARIA	10/2005	N	300	500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	MEDICAL OFFICE
CA	G	CA1993 G048	(04)	NAVAL AIR STATION	04/2006	Y	80,000	150,000	180	950	125B	AQUIA FORMATION	02-13-11-01	CENTRAL SUPPLY FOR PATUXENT NAVAL AIR STATION
CA	G	CA1994 G004	(02)	NRL - CHESAPEAKE BAY DETACHMENT	02/2006	Y	25,000	51,000	300	930	125B	AQUIA FORMATION	02-13-10-05	CHESAPEAKE BY DETACHMENT - CHESAPEAKE BEACH - PDWIS# 004-0019
CA	G	CA1994 G008	(02)	THE GOTT COMPANY	03/2006	N	500	700	200	960	124E	PINEY POINT FORMATION	02-13-11-01	"FASTOP" MINI-MART #54 - PDWIS# 104-1180
CA	G	CA1994 G009	(02)	MARYLAND DEPARTMENT OF TRANSPORTATION	08/1994	N	300	500	260	910	124C	NANJEMOY FORMATION	02-13-11-01	PRINCE FREDERICK VEHICLE EMISSION TESTING FACILITY
CA	G	CA1994 G011	(02)	CRAIG, JANET, L.	03/2006	N	1,500	3,000	290	910	125B	AQUIA FORMATION	02-13-11-01	DAYCARE FACILITY - PDWIS# 104-0084
CA	G	CA1994 G023	(01)	MATHEWS, SCARIA	06/1994	N	300	500	200	960	122	MIOCENE	02-13-11-01	MEDICAL BUILDING

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1994 G025	(02)	WLHSPE, LLC	11/2005	N	100	300	320	920	125B	AQUIA FORMATION	02-13-11-01	FRIENDLY SELF STORAGE
CA	G	CA1994 G026	(03)	CALVERT COUNTY FAIR, INCORPORATED	05/2006	N	2,200	8,000	250	910	124C	NANJEMOY FORMATION	02-13-11-01	CALVERT COUNTY FAIR GROUNDS (104-1110)
CA	G	CA1994 G028	(03)	CALVERT COUNTY COMMISSIONERS	03/2006	Y	6,000	9,500	290	910	125B	AQUIA FORMATION	02-13-11-01	COMMUNITY SUPPLY - TARA SUBD - 25 HOMES - PDWIS# 004-0034
CA	G	CA1994 G033	(02)	HENNON, JR., JAMES, F.	07/1995	N	3,400	5,600	270	930	124C	NANJEMOY FORMATION	02-13-11-01	14L GARRETT ACRES SUBDIVISION
CA	G	CA1994 G039	(01)	CEDAR BEACH HOMEOWNERS ASSOC., INC.	08/1994	N	100	300	250	900	124C	NANJEMOY FORMATION	02-13-11-01	CEDAR BEACH COMMUNITY PIER
CA	G	CA1994 G044	(01)	CALVERT COUNTY COMMISSIONERS	10/1994	N	300	500	210	930	124C	NANJEMOY FORMATION	02-13-11-01	BROOMES ISLAND COMMUNITY CENTER
CA	G	CA1994 G052	(02)	SCHMEISER, HAROLD R. & LAURIE T.	07/2006	N	600	1,000	230	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK ANIMAL HOSPITAL - PDWIS# 104-1239
CA	G	CA1994 G057	(01)	WILLOWS DEVELOPMENT COMPANY	12/1994	N	6,400	10,700	290	940	124C	NANJEMOY FORMATION	02-13-10-05	WILLOWS BEACH HOME SBDN
CA	G	CA1995 G003	(01)	WALKER, DONALD, C.	02/1995	N	250	300	310	910	125B	AQUIA FORMATION	02-13-11-01	YESTERYEAR FURNISHINGS, INC.
CA	G	CA1995 G004	(01)	PERRY, THOMAS, C.	02/1995	N	6,000	10,000	340	900	125B	AQUIA FORMATION	02-13-11-01	HARNISHAN SBDN
CA	G	CA1995 G005	(02)	THE SHOPPES AT DUNKIRK, LLC	07/2005	N	5,600	8,100	320	900	125B	AQUIA FORMATION	02-13-11-01	COUNTRY PLAZA SHOPPING CENTER - PDWIS# 104-1152
CA	G	CA1995 G006	(02)	GRACE, MARK & PEGGY	08/1998	N	2,500	10,000	300	890	125B	AQUIA FORMATION	02-13-11-01	PITCH & PUT GOLF COURSE T & GREENS ONLY 9 HOLES
CA	G	CA1995 G010	(01)	PENWICK VILLAGE LIMITED PARTNERSHIP	03/1995	N	2,000	2,500	330	900	125B	AQUIA FORMATION	02-13-11-01	CALVERT GATEWAY CITGO
CA	G	CA1995 G011	(01)	GREEN, SR., GEORGE	03/1995	N	2,900	4,900	290	930	124C	NANJEMOY FORMATION	02-13-10-05	THE ESTATE OF LEROY GREEN

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County	GorS	WAPID	Rev-t4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouF27	East-thouF27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1995 G019	(02)	BOARD OF COMMISSIONERS OF CALVERT COUNTY	07/2005	Y	10,000	15,000	200	960	125B	AQUIA FORMATION	02-13-11-01	SOUTHERN PINES SENIOR - TIED TO SOLOMONS/LUSBY PDWIS# 004-0002
CA	G	CA1995 G026	(01)	PAINTER, WILLIE	01/1996	N	10,000	16,700	300	920	125B	AQUIA FORMATION	02-13-10-05	SUNDERLEIGH SBDN (42 LOTS)
CA	G	CA1995 G030	(03)	CALVERT COUNTY COMMISSIONERS	11/2000	Y	14,700	24,600	290	910	125B	AQUIA FORMATION	02-13-11-01	WALNUT CREEK COMMUNITY SUPPLY (PHASE III)
CA	G	CA1995 G031	(01)	SOUTHERN MARYLAND OIL, INCORPORATED	07/1995	N	300	500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	LUSBY TEXACO
CA	G	CA1995 G032	(01)	CHAFFEE, CHRIS	07/1995	N	3,400	5,600	260	910	124C	NANJEMOY FORMATION	02-13-11-01	14L CHAFFEE PROPERTY SBDN
CA	G	CA1995 G035	(01)	DUNLAP, STEVEN, H.	07/1995	N	2,700	4,400	230	930	124E	PINEY POINT FORMATION	02-13-11-01	STRATHEMOOR 11L SBDN
CA	G	CA1995 G040	(01)	DINARDO, BRIAN	07/1995	N	1,000	4,000	220	930	124E	PINEY POINT FORMATION	02-13-11-01	SOUTHERN MD GREENHOUSE - NURSERY (PLANTS)
CA	G	CA1995 G047	(01)	PRALEY, EDWARD	09/1995	N	3,400	5,600	270	910	124C	NANJEMOY FORMATION	02-13-11-01	14 LOT HUNTINGTOWN SOUTH SBDN
CA	G	CA1995 G048	(01)	LEE FUNERAL HOME, INC.	09/1995	N	500	800	310	900	125B	AQUIA FORMATION	02-13-11-01	LEE FUNERAL HOME
CA	G	CA1995 G049	(02)	MURRAY, J., D.	11/1996	N	11,500	19,200	320	910	125B	AQUIA FORMATION	02-13-11-01	48-LOT CABIN BRANCH SBDN
CA	G	CA1995 G051	(01)	CLEARY, SR., FRANK,	11/1995	N	2,700	4,400	310	900	125B	AQUIA FORMATION	02-13-11-01	11L WILLIAMS PROPERTY SUBDIVISION
CA	G	CA1995 G055	(01)	GATES, JR., ANDREW G.,	10/1995	N	300	500	300	910	124C	NANJEMOY FORMATION	02-13-11-01	GATES GREENHOUSE
CA	G	CA1995 G057	(03)	CASTLETON COMMUNITY ASSOCIATION INC.	10/2002	N	300	500	280	920	124C	NANJEMOY FORMATION	02-13-11-01	CASTLETON SBDN - LAWN IRRIGATION & MAKE-UP WATER FOR FOUNTAIN
CA	G	CA1995 G059	(01)	COX, MAURICE,	12/1995	N	300	500	260	910	124C	NANJEMOY FORMATION	02-13-11-01	OFFICE

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1995 G060	(01)	BROWN, THOMAS PARRAN III/MELVIN,	12/1995	N	5,000	8,000	240	940	124E	PINEY POINT FORMATION	02-13-11-01	20- LOT SUBDIVISION
CA	G	CA1995 G062	(01)	WOOD, FRANK	12/1995	N	500	800	320	910	125B	AQUIA FORMATION	02-13-11-01	SISK AUTO BODY
CA	G	CA1996 G005	(01)	VENTURE UPHOLSTERY, INC.	02/1996	N	400	700	310	910	124C	NANJEMOY FORMATION	02-13-11-01	COMMERCIAL TRUCK SEAT SALES/UPHOLSTERY
CA	G	CA1996 G008	(01)	ALEXANDER, R. BROOKE KAINE AND RICHA	02/1997	N	27,500	45,800	270	930	124C	NANJEMOY FORMATION	02-13-11-01	RESUBDIVISION OF 71 PLATTED LOTS INTO 115 LOTS
CA	G	CA1996 G009	(01)	MILL BRANCH LLC, C/O MORGAN RUSSELL	02/1996	N	6,200	10,300	300	900	124C	NANJEMOY FORMATION	02-13-11-01	26 LOT SUBDIVISION
CA	G	CA1996 G015	(01)	HOMES AMERICA CORPORATION	03/1996	N	400	700	300	910	124C	NANJEMOY FORMATION	02-13-10-05	CHIPS TOWING SERVICE
CA	G	CA1996 G016	(01)	DOUBLE D FITNESS CENTER	04/1996	N	800	1,300	260	910	124C	NANJEMOY FORMATION	02-13-11-01	HEALTH AND FITNESS CENTER
CA	G	CA1996 G018	(02)	HOWLIN, EDWARD, B.	06/1996	N	8,800	14,700	310	920	124C	NANJEMOY FORMATION	02-13-10-05	37 LOT ASPEN WOODS SUBD
CA	G	CA1996 G019	(01)	WATHEN, KENNETH, L.	04/1996	N	500	800	230	940	124E	PINEY POINT FORMATION	02-13-11-01	SELF-STORAGE FACILITY AND APARTMENT
CA	G	CA1996 G020	(01)	CALVERT MEMORIAL HOSPITAL	04/1996	N	2,600	4,000	330	900	125B	AQUIA FORMATION	02-13-11-01	PHYSICIAN'S OFFICE BUILDING
CA	G	CA1996 G021	(04)	WELLONS, III & DIANE L. WELLONS, L. THOMAS	07/2005	N	500	800	260	910	124C	NANJEMOY FORMATION	02-13-11-01	LOT #2 - FUTURE COMMERCIAL ESTABLISHMENT
CA	G	CA1996 G022	(04)	WELLONS, III & DIANE WELLONS, L. THOMAS	07/2005	N	500	800	260	910	124C	NANJEMOY FORMATION	02-13-11-01	LOT #3 - FUTURE COMMERCIAL ESTABLISHMENT
CA	G	CA1996 G023	(04)	WELLONS, III & DIANE L. WELLONS, L. THOMAS	07/2005	N	500	800	260	910	124C	NANJEMOY FORMATION	02-13-11-01	LOT #4 - FUTURE COMMERCIAL ESTABLISHMENT
CA	G	CA1996 G025	(02)	TROTT, RAYMOND, G.	04/1998	N	2,600	4,300	280	900	124C	NANJEMOY FORMATION	02-13-11-01	11-LOT SUBD

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1996 G026	(03)	CALVERT COUNTY BOARD OF COMMISSIONERS	03/2000	Y	37,000	61,000	320	910	125B	AQUIA FORMATION	02-13-11-01	CROSS POINT COMMUNITY SUPPLY - CHANGE OF OWNER
CA	G	CA1996 G036	(02)	GODSGRACE 1652, LLC	12/2004	N	500	800	310	900	125B	AQUIA FORMATION	02-13-11-01	OFFICE BUILDING PDWIS# 104-1209
CA	G	CA1996 G039	(01)	THE CARROLL INDEPENDENT FUEL COMPANY	07/1996	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	CITGO GAS/SERVICE STATION
CA	G	CA1996 G044	(01)	GROVER, RUTH	09/1996	N	7100	11,900	320	910	124C	NANJEMOY FORMATION	02-13-11-01	30 LOT SUBD
CA	G	CA1996 G045	(01)	MARQUESS, ELINOR, J.	09/1996	N	6,700	11,200	300	910	124C	NANJEMOY FORMATION	02-13-11-01	28 LOT SUBD
CA	G	CA1996 G046	(01)	WARD, DOROTHY, T.	09/1996	N	3,300	5,500	280	920	124C	NANJEMOY FORMATION	02-13-11-01	14 LOT SUBD
CA	G	CA1996 G049	(01)	APPLE CREEK DEVELOPMENT CORPORATION	09/1996	N	4,000	6,700	240	910	124E	PINEY POINT FORMATION	02-13-11-01	17L APPLE CREEK SUBD
CA	G	CA1996 G050	(01)	BUTTON, LELIA, M.	09/1996	N	8,800	14,700	230	930	124E	PINEY POINT FORMATION	02-13-11-01	37 LOT AUGUST RUN SUBD
CA	G	CA1996 G052	(02)	TYRRELL, BRENDA	11/2005	N	2,000	3,300	320	920	125B	AQUIA FORMATION	02-13-11-01	PRIMETIME YOUTH ACTIVITY CENTER
CA	G	CA1996 G055	(02)	CALVERT ANIMAL WELFARE LEAGUE	05/2004	N	1,000	2,500	260	910	125B	AQUIA FORMATION	02-13-11-01	CALVERT ANIMAL WELFARE LEAGUE
CA	G	CA1996 G058	(01)	IRN, INC.	11/1996	N	300	500	190	960	124E	PINEY POINT FORMATION	02-13-11-01	DOWELL STORAGE
CA	G	CA1996 G241	(01)	TWIN SHIELDS GOLF CLUB, INC.	07/2005	N	300	600	340	900	125B	AQUIA FORMATION	02-13-11-01	CONCESSION(CLUB HOUSE) & BATHROOMS - PDWIS# 1041096
CA	G	CA1997 G001	(01)	KING, EUNICE	09/1997	N	11,200	18,600	300	900	125B	AQUIA FORMATION	02-13-11-01	OAKMOUNT MANOR RES SUBD
CA	G	CA1997 G002	(01)	MCINTYRE, DONALD	01/1997	N	1,000	1,600	270	910	124C	NANJEMOY FORMATION	02-13-11-01	NURSERY

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CA	G	CA1997 G010	(02)	GEORGE MATHEWS & ASSOCIATES	04/1998	N	2,100	3,500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	3-LOT COMMERCIAL SUBD "LUSBY TOWN SQUARE"
CA	G	CA1997 G014	(01)	LEWIS, DAVID, R	04/1997	N	2,900	4,800	320	890	125B	AQUIA FORMATION	02-13-11-01	12 LOT SUBD
CA	G	CA1997 G017	(01)	HARDESTY, MAURICE	05/1997	N	2,800	4,700	300	910	125B	AQUIA FORMATION	02-13-11-01	13-LOT CHANCELLORS RUN SUBD
CA	G	CA1997 G019	(01)	LEWIS, DAVID, R.	05/1997	N	2,900	4,700	320	890	125B	AQUIA FORMATION	02-13-11-01	12-LOT LOVING FARM SUBD
CA	G	CA1997 G020	(01)	MELVIN BROWN - EUGENE SMITH	06/1997	N	5,200	8,800	200	950	124E	PINEY POINT FORMATION	02-13-11-01	SUBDIVISION
CA	G	CA1997 G023	(01)	GLENN BOWEN, ROBERT FOWLER, &	08/1997	N	8,100	13,500	270	920	124C	NANJEMOY FORMATION	02-13-11-01	34 LOT SUBDIVISION - LOTTIES REST
CA	G	CA1997 G026	(01)	TANAVAGE, LEE, C.	07/1997	N	8,400	12,000	200	960	124E	PINEY POINT FORMATION	02-13-11-01	GENERIC SHOPPING, TAVERN, OFFICE BUILDING, BANK
CA	G	CA1997 G027	(01)	COLLINSON, RICHARD	08/1997	N	8,300	14,000	240	910	124E	PINEY POINT FORMATION	02-13-11-01	35-LOT FOX FIELD SUBDIVISION
CA	G	CA1997 G028	(01)	APOSTOLIC FAITH CHURCH	08/1997	N	300	500	320	910	125B	AQUIA FORMATION	02-13-11-01	CHURCH
CA	G	CA1997 G029	(01)	FAI-MAR CORPORATION	08/1997	N	1,200	1,600	270	910	124C	NANJEMOY FORMATION	02-13-11-01	FULL SERVICE CAR WASH
CA	G	CA1997 G030	(01)	ISLAND BAY L.L.C.	09/1997	N	2,900	4,800	220	940	124E	PINEY POINT FORMATION	02-13-11-01	ISLAND CREEK SUBD
CA	G	CA1997 G031	(01)	QUALITY BUILT HOMES, INC.	09/1997	N	1,200	2,000	230	930	124E	PINEY POINT FORMATION	02-13-11-01	ADDITION TO PREV. RECORDED 38-LOT SUBD THAT WAS NEVER PERMITTED
CA	G	CA1997 G032	(01)	GOLDSTEIN, LOUIS, L.	09/1997	N	200	300	240	930	124C	NANJEMOY FORMATION	02-13-11-01	FLOWER STAND
CA	G	CA1997 G034	(01)	MULFORD SR. & WILLIAM FOWLER, RICHAR	09/1997	N	300	500	250	910	124C	NANJEMOY FORMATION	02-13-11-01	BARSTOW POST OFFICE

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CA	G	CA1997 G035	(02)	KOPICKI & MICHAEL HEGARTY, CHESTER	02/2002	N	6,000	10,000	290	910	125B	AQUIA FORMATION	02-13-11-01	FARM VALLEY NURSERY -
CA	G	CA1997 G036	(01)	FOWBOWLSTONE L.L.P.	10/1997	N	8,100	13,500	270	930	124C	NANJEMOY FORMATION	02-13-11-01	35-LOT RES. SUBD
CA	G	CA1997 G038	(01)	WARD, S., CHESTER	01/1998	N	4,600	7,700	320	920	124C	NANJEMOY FORMATION	02-13-10-05	20-LOT SUBD OF L.E. WARD PROPERTY
CA	G	CA1997 G039	(01)	FINLEY, ELLIOTT, C.	01/1998	N	3,000	5,000	300	910	124C	NANJEMOY FORMATION	02-13-11-01	13-LOT SUBD
CA	G	CA1997 G040	(01)	JOY, WAYNE, H.	01/1998	N	5,000	8,100	190	970	124E	PINEY POINT FORMATION	02-13-11-01	21-LOT SUBD
CA	G	CA1998 G001	(01)	EASTERN PETROLEUM CORPORATION	02/1998	N	300	500	340	900	125B	AQUIA FORMATION	02-13-11-01	AMOCO GAS STATION (EP5)
CA	G	CA1998 G002	(01)	MCKAY MANAGEMENT AND INVESTMENT COMPANY	02/1998	N	9,000	15,000	200	960	124E	PINEY POINT FORMATION	02-13-11-01	SOUTH CALVERT MARKETPLACE - GROCERY STORE AND RETAIL STORES
CA	G	CA1998 G003	(01)	VAN HOY, DAVID	04/1998	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	CENTURY 21 REAL ESTATE OFFICE
CA	G	CA1998 G004	(01)	SMITHVILLE UNITED METHODIST CHURCH	05/1998	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	REPLACEMENT WELL- NO PREVIOUS PERMIT LOCATED
CA	G	CA1998 G006	(01)	CALVERT COUNTY BOARD OF COMMISSIONERS	05/1998	N	1,000	5,000	280	910	124C	NANJEMOY FORMATION	02-13-11-01	HUNTINGTOWN COMPACTOR SITE
CA	G	CA1998 G009	(01)	PARRAN, JR., THOMAS	05/1998	N	9,500	15,800	230	950	124E	PINEY POINT FORMATION	02-13-11-01	PARRAN'S GRANT SECTION II - 41 LOT SUBD
CA	G	CA1998 G010	(01)	EMMANUEL BAPTIST CHURCH	06/1998	N	300	500	280	910	125B	AQUIA FORMATION	02-13-11-01	CHURCH
CA	G	CA1998 G011	(01)	JOHNSON, LANKFORD	06/1998	N	500	800	230	930	124E	PINEY POINT FORMATION	02-13-11-01	BROTHERS JOHNSON INC.
CA	G	CA1998 G013	(01)	WAYSON JR., MORGAN	07/1998	N	500	800	310	910	125B	AQUIA FORMATION	02-13-11-01	SELF STORAGE RENTAL

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouF127	East-thouF127	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1998 G014	(01)	HENNIG FAMILY LIMITED PARTNERSHIP	09/1998	N	13,700	22,900	230	940	124E	PINEY POINT FORMATION	02-13-11-01	59-LOT ORIOLE LANDING SBDN
CA	G	CA1998 G015	(02)	LOGAN, RICHARD, EDWARD	08/1998	N	2,600	4,300	230	930	124E	PINEY POINT FORMATION	02-13-11-01	11-LOT RES. SUBD. - CHANGE IN LAND OWNERSHIP
CA	G	CA1998 G016	(01)	SUNDERLAND LTD PARTNERSHIP	08/1998	N	500	2,000	300	910	124C	NANJEMOY FORMATION	02-13-11-01	CONTRACTING OFFICE & WAREHOUSE
CA	G	CA1998 G017	(01)	MARRICK PROPERTIES,INC.	02/2000	N	27,000	44,000	330	900	125B	AQUIA FORMATION	02-13-11-01	113-LOT SBDN
CA	G	CA1998 G018	(01)	BLANCADO, RICHARD	08/1998	N	7,100	42,000	230	910	124C	NANJEMOY FORMATION	02-13-11-01	IRRIGATION AND POND FILLING
CA	G	CA1998 G019	(01)	CARTER, SR., ROBERT	09/1998	N	2,300	3,900	300	900	124C	NANJEMOY FORMATION	02-13-11-01	PRESENTLY 10 LOT RES. SUBD., 6 FORMER LOTS ALREADY SOLD,MORE LAND
CA	G	CA1998 G022	(01)	HORSMON, RICHARD, A.	09/1998	N	3,500	5,900	220	940	122	MIOCENE	02-13-11-01	HORSMON, R., BELLE GROVE SUBD LOTS 6 - 20/ CA92G012 LOT1-5 INACT.
CA	G	CA1998 G023	(01)	HOWSARE, WILLIAM	09/1998	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	6 EMPLOYEES
CA	G	CA1998 G025	(01)	GOTT COMPANY	09/1998	N	500	700	230	940	124E	PINEY POINT FORMATION	02-13-11-01	FAST STOP GAS AND CONVENIENCE STORE
CA	G	CA1998 G026	(01)	PITCHER, CARL, L.	11/1998	N	4,000	20,000	230	930	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENCE/IRRIGATION
CA	G	CA1998 G028	(02)	BUCKINGHAM, MICHAEL, H.	07/2001	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	BAY METAL WORKS INC.
CA	G	CA1998 G030	(01)	BEE'S AUTO SUPPLY INCORPORATED OF PRINCE	11/1998	N	300	500	250	920	124C	NANJEMOY FORMATION	02-13-10-05	BEE'S AUTO SUPPLY - NEW WELL - CANNOT LOCATE EXISTING PERMIT
CA	G	CA1998 G031	(01)	DUNKIRK BAPTIST CHURCH	11/1998	N	300	500	330	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK BAPTIST CHURCH
CA	G	CA1998 G124	(01)	J. ALLEN SWANN	08/1999	Y	45,000	272,000	310	890	211D	MAGOTHY FORMATION	02-13-11-01	IRRIGATION MAGOTHY AQUIFER

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1999 G002	(01)	WEEMS, CLAUDE, RONALD	02/1999	N	300	500	230	940	124E	PINEY POINT FORMATION	02-13-11-01	DICKSON'S EMPORIUM (FLOWER & GIFT SHOP)
CA	G	CA1999 G004	(01)	TOCHTERMANN, WILLIAM	02/1999	N	500	800	210	930	124E	PINEY POINT FORMATION	02-13-11-01	BILL'S MARINA
CA	G	CA1999 G005	(01)	RUSSELL, MORGAN	03/1999	N	1,500	2,500	300	910	124C	NANJEMOY FORMATION	02-13-10-05	EXCAVATING COMPANY
CA	G	CA1999 G007	(01)	WOOD, GARY	03/1999	N	9,500	16,000	200	970	124E	PINEY POINT FORMATION	02-13-11-01	41-LOT FOXHOLE RESIDENTIAL SUBDIVISION
CA	G	CA1999 G011	(01)	SWANN, HAZEL, M.	07/1999	N	4,200	7,000	310	890	124C	NANJEMOY FORMATION	02-13-11-01	PATUXENT SUNSET SUBDIVISION (18-LOT)
CA	G	CA1999 G012	(01)	RAUSCH, MYRTLE, M.	07/1999	N	300	500	320	910	124C	NANJEMOY FORMATION	02-13-11-01	RAUSCH FUNERAL HOME
CA	G	CA1999 G013	(01)	YANNONE, JOHN, J.	07/1999	N	1,000	1,500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	CAR WASH AND AUTOMOTIVE CENTER
CA	G	CA1999 G014	(01)	OGLE, CLARISSA	07/1999	N	6,500	10,800	280	920	124C	NANJEMOY FORMATION	02-13-11-01	SINGLE FAMILY DWELLING
CA	G	CA1999 G015	(01)	TEDDER, RICHARD, C.	07/1999	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	RICH'S QUICK LUBE LLC
CA	G	CA1999 G016	(01)	GOLDSTEIN, PHILIP, T.	08/1999	N	9,300	15,500	230	940	124E	PINEY POINT FORMATION	02-13-11-01	OLD GLORY 40-L RES. SUBD
CA	G	CA1999 G017	(02)	US POSTAL SERVICE	10/1999	N	200	300	240	940	124E	PINEY POINT FORMATION	02-13-10-05	US POST OFFICE, 4 EMPL, WELL REPLACE-NEW BLDG-PREV NOT PERMITTED
CA	G	CA1999 G018	(02)	CALVERT COUNTY COMMISSIONERS	02/2002	Y	38,200	64,000	280	920	125B	AQUIA FORMATION	02-13-11-01	COMMUNITY SUPPLY - MARLEY RUN SUBD
CA	G	CA1999 G021	(01)	VAN HOY, DAVID	12/1999	N	5,800	9,700	280	900	124C	NANJEMOY FORMATION	02-13-11-01	OAKWOOD MANOR 25-L RESIDENTIAL SUBDIVISION
CA	G	CA1999 G022	(01)	EL-DAMALOUJI, ISSAM, F.	12/1999	N	4,000	6,600	280	920	124C	NANJEMOY FORMATION	02-13-11-01	20-LOT BARAKAT RESIDENTIAL SUBD - 17 WELLS

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA2000 G001	(01)	GOTT JR, JOHN, M.	02/2000	N	4,600	7,700	230	920	124C	NANJEMOY FORMATION	02-13-11-01	20-L DEER RUN SUBD (RESIDENTIAL)
CA	G	CA2000 G002	(01)	NORFOLK, DALE & ANN	02/2000	N	3,900	6,600	320	920	124C	NANJEMOY FORMATION	02-13-10-05	17-L NORFOLK PLACE SUBD (RESIDENTIAL)
CA	G	CA2000 G004	(01)	KENT, SARAH	04/2000	N	4,400	7,400	280	910	124C	NANJEMOY FORMATION	02-13-11-01	CHANCE POINT RESIDENTIAL SUBD
CA	G	CA2000 G005	(01)	THOMPSON, SHIRLEY, E.	04/2000	N	4,900	8,100	280	920	124C	NANJEMOY FORMATION	02-13-11-01	21-LOT HUNTING CREEEK HILLS RESIDENTIAL SUBD
CA	G	CA2000 G006	(01)	MC CONKEY, KELLY, D.	05/2000	N	4,500	20,000	330	900	125B	AQUIA FORMATION	02-13-11-01	MC CONKEY - VOLUNTARY AGRICULTURE
CA	G	CA2000 G007	(01)	KAINE, BROOKE	11/2000	N	11,000	18,500	320	910	125B	AQUIA FORMATION	02-13-11-01	47-LOT RESIDENTIAL COVENANT CREEK SUBD
CA	G	CA2000 G008	(01)	SUSAN CHAN	06/2000	N	300	500	300	910	124C	NANJEMOY FORMATION	02-13-11-01	ROUTES 2 & 4 LIQUORS
CA	G	CA2000 G009	(02)	MURPHY DEVELOPMENT LLC	07/2003	N	2,000	3,500	300	910	124C	NANJEMOY FORMATION	02-13-11-01	RETAIL CENTER FOR 5 BUSINESSES - ONE TO BE FLOOR SYSTEMS
CA	G	CA2000 G010	(01)	JLH GROUP LLC	06/2000	N	900	1,500	260	910	124C	NANJEMOY FORMATION	02-13-11-01	RETAIL WAREHOUSES - TO BE LEASED
CA	G	CA2000 G011	(02)	POUNSBERRY, RONALD & SHEREE	03/2004	N	1,500	2,500	290	910	125B	AQUIA FORMATION	02-13-11-01	SLEEPY HOLLOW DAYCARES AND RESIDENCE
CA	G	CA2000 G014	(02)	DUNKIRK VOLUNTEER FIRE DEPARTMENT, INC.	09/2002	N	1,000	2,500	320	900	125B	AQUIA FORMATION	02-13-11-01	3170 WEST WARD RD - DUNKIRK VFD NEW SITE
CA	G	CA2000 G015	(02)	OSBORNE PROPERTIES LLC	09/2002	N	1,500	3,000	320	900	125B	AQUIA FORMATION	02-13-11-01	10200 SOUTHERN MD BLVD - ARBYS
CA	G	CA2000 G016	(01)	BECKMAN, INC.	07/2000	N	2,000	5,000	310	900	124C	NANJEMOY FORMATION	02-13-11-01	LANDSCAPING BUSINESS/COMMERCIAL NURSERY/HYDROSEEDING
CA	G	CA2000 G018	(02)	CHIARAMONTE, FRANCIS, P.	09/2002	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	3180 WEST WARD RD - LOT 4 DUNKIRK COMMERCIAL PARK

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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CA	G	CA2000 G019	(03)	HOPEWELL PROPERTIES, LLC.	11/2006	N	900	1,700	320	900	125B	AQUIA FORMATION	02-13-11-01	10000 FT*2 OFFICE BUILDING
CA	G	CA2000 G020	(03)	CALVERT INVESTMENT PROPERTIES, L.L.C.	07/2005	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	3185 WEST WARD RD - LOT 2 DUNKIRK COMMERCIAL PARK
CA	G	CA2000 G021	(02)	CHIARAMONTE, FRANCIS, P.	09/2002	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	3195 WEST WARD RD - LOT 1 DUNKIRK COMMERCIAL PARK
CA	G	CA2000 G024	(01)	BRISCOE, CROFTON	10/2000	N	200	300	210	940	124C	NANJEMOY FORMATION	02-13-11-01	LIVESTOCK & POTABLE
CA	G	CA2000 G027	(01)	JONES SR., PHILLIP	11/2000	N	200	300	280	910	124C	NANJEMOY FORMATION	02-13-11-01	LIVESTOCK WATERING
CA	G	CA2000 G028	(01)	CALVERT COUNTY COMMISSIONERS	12/2000	N	100	200	280	920	124C	NANJEMOY FORMATION	02-13-11-01	MARLEY RUN REC. AREA-SNACK STAND
CA	G	CA2001 G001	(01)	SNEADE, DAVE	01/2001	N	400	700	200	960	124E	PINEY POINT FORMATION	02-13-11-01	SNEADES ACE HARDWARE
CA	G	CA2001 G002	(01)	KELLY, PATRICK	01/2001	N	100	200	280	930	124C	NANJEMOY FORMATION	02-13-10-05	LIVESTOCK WATERING
CA	G	CA2001 G003	(01)	HUMM, ET.AL., JOSEPH	03/2001	N	9300	15,300	310	900	124C	NANJEMOY FORMATION	02-13-11-01	SINGLE FAMILY RESIDENTIAL SUBDIVISION
CA	G	CA2001 G004	(01)	MORRIS, JR., JAMES, S.	03/2001	N	8,100	13,600	300	990	125B	AQUIA FORMATION	02-13-11-01	CLAIREMONT-SINGLE FAMILY RESIDENTIAL
CA	G	CA2001 G005	(01)	MORGAN WAYSON, JR.	05/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MORGAN WAYSON, JR. DUNKIRK BUS.CENT LOT1
CA	G	CA2001 G006	(01)	MORGAN WAYSON, JR.	05/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MORGAN WAYSON, JR. DUNKIRK BUS.CENT. LOT 2
CA	G	CA2001 G007	(02)	NSM REALTY, LLC	12/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	DUNKIRK BUSINESS CENTER, LOT 3
CA	G	CA2001 G008	(02)	J & J DEVELOPMENT CORPORATION	05/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE DEVELOPMENT

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CA	G	CA2001 G009	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 5
CA	G	CA2001 G010	(02)	QUALITY INVESTORS, LLC	06/2004	N	100	300	310	910				DUNKIRK BUSINESS CTR LOT 6
CA	G	CA2001 G011	(02)	BCJJ, LLC	06/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	DUNKIRK BUS CTR - LOT #7 - 635 KEITH LANE
CA	G	CA2001 G012	(02)	BCJJ, LLC	06/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	DUNKIRK BUSINESS CENTER - LOT #8 - 615 KEITH LANED
CA	G	CA2001 G013	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 9
CA	G	CA2001 G014	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 10
CA	G	CA2001 G015	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 11
CA	G	CA2001 G016	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 12
CA	G	CA2001 G017	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 13
CA	G	CA2001 G018	(04)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	12/2005	N	1,400	2,500	310	910	125B	AQUIA FORMATION	02-13-11-01	LOT 14, DUNKIRK BUS. CTR - 7 UNITS - WELL DRILLED TO AQUIA
CA	G	CA2001 G021	(01)	ARMIGER, MILTON, W.	07/2001	N	9,100	15,100	280	910	124C	NANJEMOY FORMATION	02-13-11-01	ARMIGER
CA	G	CA2001 G022	(02)	TAYLOR BUSINESS CENTER, LLC	11/2004	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	7640 INVESTMENT CT, LOT #8
CA	G	CA2001 G024	(01)	MORGAN WAYSON, JR.	09/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MORGAN WAYSON, JR. 7656 INVESTMENT CT, LOT #10
CA	G	CA2001 G025	(02)	DRURY, ROBERT & MICHELLE	10/2002	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	

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CA	G	CA2001 G026	(03)	PHIPPS, W., SCOTT	05/2006	N	200	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	CHESAPEAKE INDUSTRIES - 7672 INVESTMENT CT LOT #12R
CA	G	CA2001 G028	(03)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	09/2004	N	100	300	310	910	125B	AQUIA FORMATION	02-13-11-01	AUTO REPAIR BUSINESS/7665 INVESTMENT CT/N CAL IND PK LOT 15
CA	G	CA2001 G029	(02)	TRUMPY PROPERTIES, LLC	12/2002	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA2001 G031	(03)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	12/2005	N	3,000	4,500	310	910	125B	AQUIA FORMATION	02-13-11-01	7632 INVESTMENT CT, LOT 4RR - WELL DRILLED TO AQUIA
CA	G	CA2001 G032	(02)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE BUSINESS, JR. 7673 INVESTMENT CT, LOT #14R
CA	G	CA2001 G033	(02)	MICHAEL H. BUCKINGHAM	07/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MICHAEL BUCKINGHAM 7600 INVESTMENT CT, LOT #1
CA	G	CA2001 G034	(01)	MICHAEL H. BUCKINGHAM	07/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MICHAEL H. BUCKINGHAM INVESTMENT COURT, LOT #5
CA	G	CA2001 G035	(01)	VAN WIE BUILDERS, INC.	10/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	VAN WIE BULDERS, INC. 7601 INVESTMENT CT, LOT #22R
CA	G	CA2001 G036	(01)	CONSTANTINE, CHRIS	07/2001	N	3,700	6,200	300	930	124C	NANJEMOY FORMATION	02-13-01-05	CONSTANTINE
CA	G	CA2001 G038	(01)	KEIR, KENNETH, G.	09/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	KEN KEIR RACE CARS
CA	G	CA2001 G039	(02)	KEIR, KENNETH, G.	10/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	AUTO REPAIR - N. CALVERT IND PARK LOT 2
CA	G	CA2001 G040	(02)	SCHWENK, JOHN, P.	10/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE BUSINESS @ 7615 GINGER LANE
CA	G	CA2001 G041	(02)	SCHWENK, JOHN, P.	10/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE BUSINESS @ 7625 GINGER LANE
CA	G	CA2001 G042	(01)	COLLEGE OF SOUTHERN MARYLAND	09/2001	N	1300	3,000	260	910	124C	NANJEMOY FORMATION	02-13-11-01	PRINCE FREDERICK

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CA	G	CA2001 G043	(01)	CONSTANTINE, CHRIS, G.	09/2001	N	3,700	6,200	300	930	124C	NANJEMOY FORMATION	02-13-10-05	SINGLE FAMILY RESIDENCE SUBDIVISION
CA	G	CA2001 G044	(01)	HANCE, TOM	10/2001	N	600	800	240	930	124E	PINEY POINT FORMATION	02-13-11-01	FARM AND GREENHOUSE
CA	G	CA2001 G047	(01)	RAUSH FUNERAL HOME	11/2001	N	350	500	230	930	124E	PINEY POINT FORMATION	02-13-11-01	RAUSH FUNERAL HOME
CA	G	CA2001 G048	(01)	SELLERS, PAUL	10/2001	N	600	900	240	940	124E	PINEY POINT FORMATION	02-13-11-01	LIVESTOCK WATERING
CA	G	CA2001 G049	(01)	YANNONE, JOHN, J.	12/2001	N	1,000	1,500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	AUTOMOTIVE SERVICE
CA	G	CA2002 G001	(01)	CALVERT COUNTY PUBLIC SCHOOLS	10/2003	Y	15,500	38,000	290	910	125B	AQUIA FORMATION	02-13-11-01	HUNTINGTON HIGH SCHOOL
CA	G	CA2002 G002	(02)	LITTEN, CURTIS & VIALONDA	08/2005	N	1,200	2,000	290	910	125B	AQUIA FORMATION	02-13-11-01	VET&ANIMAL HOSPITAL/DANCE INSTRUCT/PAINT CONTR
CA	G	CA2002 G003	(01)	RODBELL, LARRY	02/2002	N	400	500	260	930	125B	AQUIA FORMATION	02-13-11-01	DOG KENNEL
CA	G	CA2002 G006	(01)	GERTZ, RODNEY	04/2002	N	1,000	1,500	220	950	124E	PINEY POINT FORMATION	02-13-11-01	RODNEY GERTZ - SAW MILL DUST CONTROL
CA	G	CA2002 G007	(01)	PETRALIAE, SALVATORE	04/2002	N	300	900	300	920	125B	AQUIA FORMATION	02-13-11-01	SALVATORE
CA	G	CA2002 G009	(02)	BAYSIDE LAND DEVELOPMENT, LLC	05/2006	N	500	900	270	910	125B	AQUIA FORMATION	02-13-11-01	BAYSIDE TOYOTA-CHEVROLET - PDWIS #104-1230
CA	G	CA2002 G010	(01)	PENWICK VILLAGE, L.L.C.	10/2003	Y	32,000	48,000	320	900	211D	MAGOTHY FORMATION	02-13-11-01	COMMERCIAL DEVELOPMENT - CALVERT GATEWAY
CA	G	CA2002 G013	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	03/2004	N	500	600	290	940	125B	AQUIA FORMATION	02-13-10-05	BREEZY PT BEACH BATHHOUSE & SNACK BAR - PDWIS #1041154
CA	G	CA2002 G016	(02)	WAWA, INC.	10/2005	N	800	1,700	320	900	125B	AQUIA FORMATION	02-13-11-01	WAWA CONVENIENCE STORE-PDWIS# 104-1248

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouF127	East-thouF127	AquiCd	AquiNam	Basin	Remarks
CA	G	CA2002 G017	(01)	CHIARAMONTE, FRANCIS, P.	09/2002	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	CHIARAMONTE - 3180 FERRY LANDING RD
CA	G	CA2002 G018	(01)	7 ELEVEN, INC.	09/2002	N	500	800	300	910	124C	NANJEMOY FORMATION	02-13-10-05	7-ELEVEN STORE #2543-33340
CA	G	CA2002 G020	(01)	WOOD, CHARLES	11/2002	N	2,600	4,300	300	910	124C	NANJEMOY FORMATION	02-13-11-01	COXCOMBE ESTATES SUBDIVISION
CA	G	CA2002 G021	(01)	SAFEWAYM INC.	12/2002	N	200	300	320	900	125B	AQUIA FORMATION	02-13-11-01	GASOLINE SERVICE STATION
CA	G	CA2002 G113	(01)	CALVERT COUNTY BOARD OF COMMISSIONERS	03/2004	N	1,000	2,000	290	940	124C	NANJEMOY FORMATION	02-13-10-05	BREEZY PT CAMPGROUND BATHHOUSE & LOWER CAMPGROUNDS PDWIS #1040072
CA	G	CA2003 G001	(01)	MASK, CRAIG	02/2003	N	2,600	15,700	230	920	124E	PINEY POINT FORMATION	02-13-11-01	VEG IRRIGATION
CA	G	CA2003 G004	(01)	CVS DUNKIRK MARKETPLACE, L.L.C.	03/2003	N	300	500	320	900	124C	NANJEMOY FORMATION	02-13-11-02	CVS STORE # 1881 - 10095 WARD ROAD
CA	G	CA2003 G005	(01)	BRIGHT, WYLMA AND ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION
CA	G	CA2003 G006	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION
CA	G	CA2003 G007	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	LOT 3 - BRIGHT PROPERTY INDUSTRIAL SUBDIVISION
CA	G	CA2003 G008	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION LOT 4
CA	G	CA2003 G009	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION LOT 5
CA	G	CA2003 G010	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION
CA	G	CA2003 G011	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION LOT 7

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CA	G	CA2003 G012	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION LOT 8
CA	G	CA2003 G014	(01)	CALVERT CO. BD OF COMMISSIONERS	04/2003	N	300	500	180	950	124E	PINEY POINT FORMATION	02-13-11-01	SOLOMONS WWTP - HEADWORKS SITE
CA	G	CA2003 G015	(01)	CALVERT CO. BD OF COMMISSIONERS	04/2003	N	600	1,200	200	960	124C	NANJEMOY FORMATION	02-13-11-01	SOLOMONS WWTP-APPEAL SITE
CA	G	CA2003 G016	(01)	EDWARD B. HOWLIN, INC.	06/2003	N	4,300	7,900	320	920	125B	AQUIA FORMATION	02-13-11-01	EDWARD B. HOWLIN INC. - OFFICES/WAREHOUSES
CA	G	CA2003 G017	(01)	CHESAPEAKE HIGHLANDS MEMORIAL GARDENS	08/2003	N	8,000	16,000	240	930	125B	AQUIA FORMATION	02-13-11-01	CHESAPEAKE HIGHLANDS MEMORIAL GARDEN
CA	G	CA2003 G018	(02)	WAYSON, MORGAN	04/2006	N	1,000	1,500	310	910	125B	AQUIA FORMATION	02-13-11-01	SOLID WASTE RECYCLING/TRUCKING/MILLWRIGHT/CONTRACTORS
CA	G	CA2003 G019	(01)	WOOD, SR., CHARLES	11/2003	N	2,600	4,200	300	910	124C	NANJEMOY FORMATION	02-13-11-01	11 LOT SINGLE FAMILY RESIDENTIAL SUBDIV.
CA	G	CA2003 G021	(02)	HAMPSHIRE, ANTHONY	03/2004	N	500	800	290	910	125B	AQUIA FORMATION	02-13-11-01	CHESAPEAKE MONTESSORI - HAMPSHIRE
CA	G	CA2004 G005	(01)	CHARLOTTE RUSSELL & WINDMILL. L.L.C.	02/2004	N	800	1,600	300	910	125B	AQUIA FORMATION	02-13-10-05	RETAIL CENTER
CA	G	CA2004 G006	(01)	TOWNE, KAREN	02/2004	N	100	300	320	920	125B	AQUIA FORMATION	02-13-11-01	KAREN TOWNE
CA	G	CA2004 G007	(01)	CALVERT COUNTY BOARD OF COMMISSIONERS	03/2004	N	2,000	4,000	210	960	124E	PINEY POINT FORMATION	02-13-11-05	BGE FIELD FACILITY - PARKS & REC
CA	G	CA2004 G008	(01)	MATTESON, JOHN	05/2004	N	300	500	250	920	124C	NANJEMOY FORMATION	02-13-10-05	MATTESON SUPPLY - GAS/MOTOR REPAIR/SUPPLY
CA	G	CA2004 G009	(01)	FISHER/TOM LANTZ, MARK	07/2004	N	3,100	12,200	320	910	125B	AQUIA FORMATION	02-13-11-01	GRAYS FIELD FOUNDATION - RECREATION FIELD IRRIGATION
CA	G	CA2004 G010	(01)	CALVERT TRASH SERVICE, INCORPORATED	08/2004	N	200	400	310	910	124C	NANJEMOY FORMATION	02-13-11-01	CALVERT TRASH

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CA	G	CA2004 G012	(01)	LAVERENZ, TERRY	10/2004	N	200	2,500	240	920	124C	NANJEMOY FORMATION	02-13-11-01	LIVESTOCK WATERING - 17 HORSES
CA	G	CA2004 G013	(01)	EWALT FAMILY, LLC	11/2004	N	100	200	230	920	124C	NANJEMOY FORMATION	02-13-11-01	EWALT FAMILY LLC PRIVATE PIER
CA	G	CA2004 G014	(01)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	11/2004	N	300	500	290	910	124C	NANJEMOY FORMATION	02-13-11-01	BANK & VACANT RETAIL SLOT
CA	G	CA2004 G015	(01)	CALVERT COUNTY COMMISSIONERS	02/2005	N	100	200	240	920	124E	PINEY POINT FORMATION	02-13-11-01	GRAYS ROAD RECREATION AREA - DOG EXERCISE AREA
CA	G	CA2005 G001	(01)	LYSNE, MARK, A.	02/2005	N	100	200	240	920	124C	NANJEMOY FORMATION	02-13-11-01	RESIDENTIAL GREENHOUSE IRRIGATION
CA	G	CA2005 G002	(01)	CHURCH BY THE CHESAPEAKE, INC.	02/2005	N	600	1,200	240	930	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH
CA	G	CA2005 G003	(01)	RUSSELL, MARY	03/2005	N	200	500	280	930	124C	NANJEMOY FORMATION	02-13-10-05	LUCKY CRICKET FARM - HORSES
CA	G	CA2005 G004	(01)	WILLIAMS ROAD DEVELOPMENT, L.L.C.	10/2006	N	34,800	58,200	260	910	125B	AQUIA FORMATION	02-13-11-01	152-L COLLEGE STATION SUBD
CA	G	CA2005 G005	(01)	HEALEY, PAT & TONI	04/2005	N	900	1,500	290	910	125B	AQUIA FORMATION	02-13-11-01	NOAH'S ARK LEARNING CENTER - PDWIS# 104-0080
CA	G	CA2005 G006	(01)	THE TIDEWATER SCHOOL, INC.	04/2005	N	800	1,300	290	910	124C	NANJEMOY FORMATION	02-13-11-01	THE TIDEWATER SCHOOL - PDWIS# 104-0067
CA	G	CA2005 G010	(01)	HARMS DEVELOPMENT, LLC	09/2006	N	8,900	14,900	270	930	124C	NANJEMOY FORMATION	02-13-11-01	39-L FARMS @ HUNTING CREEK SUBD (#LOTS REDUCED FROM 179 APF ORD)
CA	G	CA2005 G011	(02)	SMTCCAC, INC.	11/2005	N	900	1,500	280	910	125B	AQUIA FORMATION	02-13-11-02	CARROLL VICTORIA LODGE (PDWIS #104-0071)
CA	G	CA2005 G016	(01)	FAIRVIEW CENTRE, INC.	08/2005	N	3,400	5,000	310	900	125B	AQUIA FORMATION	02-13-11-01	FAIRVIEW SOUTH - 7 UNIT SHOPPING CENTER
CA	G	CA2005 G017	(01)	CLEARY, FRANK	08/2005	N	300	6,000	310	890	125B	AQUIA FORMATION	02-13-11-01	FRIDAY'S CREEK VINEYARD/WINERY - 400 VINES

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouF127	East-thouF127	AquiCd	AquiNam	Basin	Remarks
CA	G	CA2005 G018	(01)	MARKETPLACE PROFESSIONAL CENTER, L.L.C.	08/2005	N	2,500	3,700	320	900	125B	AQUIA FORMATION	02-13-11-01	OFFICES - PDWIS# 1041210
CA	G	CA2005 G019	(01)	BRINSON, JENNIFER	10/2005	N	1,100	2,000	320	910	124C	NANJEMOY FORMATION	02-13-11-01	IMAGINE NATIONS EARLY LEARNING CENTER - PDWIS# 104-0081
CA	G	CA2005 G020	(01)	MS. BEV'S PLACE LLC	10/2005	N	1,400	2,300	330	900	125B	AQUIA FORMATION	02-13-11-01	MS. BEVS PLACE DAYCARE - PDWIS# 104-0004
CA	G	CA2005 G021	(01)	ALLEN, DOUG & SUSAN	11/2005	N	1,000	2,000	220	940	124E	PINEY POINT FORMATION	02-13-11-01	LIVESTOCK WATERING - VARIETY
CA	G	CA2005 G022	(02)	JESUS THE GOOD SHEPHERD,	10/2006	N	2,000	3,000	320	900	125B	AQUIA FORMATION	02-13-11-01	CHURCH & SCHOOL - PDWIS# 104-1184 ADDING A 3RD WELL
CA	G	CA2005 G023	(01)	BIGSBY, TINA	11/2005	N	700	1100	270	920	124C	NANJEMOY FORMATION	02-13-11-01	MISS TINA'S DAY CARE - PDWIS# 104-0052
CA	G	CA2005 G024	(01)	WAYSON LAND HOLDINGS LTD. PARTNERSHIP	11/2005	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	COMMERCIAL FLEX SPACE
CA	G	CA2005 G025	(01)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	04/2006	N	1,600	2,900	310	910	124C	NANJEMOY FORMATION	02-13-11-01	ANNAPOLIS SOUTH MARINE LOT 1
CA	G	CA2005 G026	(01)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	11/2005	N	800	1,300	320	920	125B	AQUIA FORMATION	02-13-10-05	PARIS OAKS CENTER - PDWIS# 104-1070
CA	G	CA2005 G028	(01)	BROTHERS' JOHNSON, INC.	12/2005	N	300	600	230	930	124E	PINEY POINT FORMATION	02-13-11-01	LIVESTOCK WATERING - CATTLE
CA	G	CA2005 G029	(01)	WHITE SANDS CORPORATION	12/2005	N	1,500	2,500	210	950	124E	PINEY POINT FORMATION	02-13-11-01	WHITE SANDS RESTAURANT/VERA FREEMAN - PDWIS# 1041150
CA	G	CA2005 G030	(01)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	04/2006	N	3,500	5,000	220	950	124E	PINEY POINT FORMATION	02-13-11-01	CALVERT CLIFFS BUSINESS CENTER-FLEX SPACE-PDWIS# 104-0089
CA	G	CA2006 G001	(01)	WELLS, WALTER AND SUSAN HANCE-	03/2006	N	500	900	220	910	124C	NANJEMOY FORMATION	02-13-11-01	LIVESTOCK WATERING - 70 TOTAL CATTLE/HORSES
CA	G	CA2006 G002	(01)	CALVERT LLC.	04/2006	N	5,300	8,800	310	920	124C	NANJEMOY FORMATION	02-13-10-05	23-L EAGLE'S TRACE SUBD

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CA	G	CA2006 G006	(01)	GREATER MOUNT ZION, INCORPORATED	05/2006	N	2,500	4,000	250	910	124C	NANJEMOY FORMATION	02-13-11-01	GREATER MT. ZION BAPTIST CHURCH - PDWIS# 104-0090
CA	G	CA2006 G007	(01)	LOWER MARLBORO UNITED METHODIST CHURCH	05/2006	N	100	300	300	890	125B	AQUIA FORMATION	02-13-11-04	CHURCH
CA	G	CA2006 G012	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 1
CA	G	CA2006 G013	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 2
CA	G	CA2006 G014	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 3
CA	G	CA2006 G015	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 4
CA	G	CA2006 G016	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 5
CA	G	CA2006 G017	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 6
CA	G	CA2006 G018	(01)	RIDDLE, RITA	09/2006	N	100	300	210	940	124E	PINEY POINT FORMATION	02-13-11-01	HORSE FARM WATERING
CA	G	CA2006 G019	(01)	ACCIPITER, COURTNEY	09/2006	N	200	400	290	910	124C	NANJEMOY FORMATION	02-13-11-01	OLD TOWN AUTOMOBILE - CAR SALES
CA	G	CA2006 G021	(01)	GALLAHAN, WILLIAM, ALTON	09/2006	N	6,000	9900	250	920	125B	AQUIA FORMATION	02-13-10-05	26-LOT GALLAHAN'S CHOICE RES SUBDD
CA	G	CA2006 G023	(01)	MILLER, LAWRENCE	11/2006	N	2,000	4,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/ RECHARGE WELL

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1962 G001	(08)	BEACHES WATER COMPANY, INC.	08/1990	Y	68,800	114,900	230	950	124C	NANJEMOY FORMATION	02-13-11-05	LONG BEACH AND CALVERT BEACH COMMUNITY SUPPLY
CA	G	CA1962 G006	(01)	ROGERS, WILLIAM C.	07/1962	N	3,000	3,500	320	930	125B	AQUIA FORMATION	02-13-10-05	NORTH BEACH LAUNDROMAT
CA	G	CA1962 G007	(05)	TPI GROUP, LLC.	03/2005	N	4,500	7,500	250	900	124C	NANJEMOY FORMATION	02-13-11-01	CALVERT MOBILE HOME PARK - PDWIS# 004-0206
CA	G	CA1962 G103	(02)	CHESAPEAKE BIOLOGICAL LABORATORY	11/1997	N	8,000	10,000	180	960	125B	AQUIA FORMATION	02-13-11-01	UM CHESAPEAKE BIOLOGICAL LABORATORY
CA	G	CA1962 G201	(03)	BEACHES WATER COMPANY, INC.	08/1990	Y	49,200	82,200	230	950	125B	AQUIA FORMATION	02-13-11-05	LONG BEACH AND CALVERT BEACH COMMUNITY SUPPLY
CA	G	CA1963 G001	(04)	SHIELDS, SR., ROY, J.	09/1996	N	500	800	340	900	125B	AQUIA FORMATION	02-13-11-01	COMMERCIAL RENTAL PROPERTY - LEASED BY BEAUTY SHOP
CA	G	CA1963 G003	(07)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	N	500	5000	220	960	124E	PINEY POINT FORMATION	02-13-10-05	CALVERT CLIFFS POWER PLANT - CAMP CANOY
CA	G	CA1963 G005	(02)	SCOTT, JOHN, J.	05/1997	N	500	1,000	320	920	124C	NANJEMOY FORMATION	02-13-10-05	PREV.STRUCTURE BURNT APPROX.8 MOS. AGO - UNSURE WHEN REBUILDING
CA	G	CA1963 G007	(05)	VERIZON MARYLAND INC.	03/2002	N	100	300	260	920	124C	NANJEMOY FORMATION	02-13-10-05	PRINCE FREDERICK FACILITY #34183
CA	G	CA1965 G002	(04)	RAWLINGS, L. LOUISE	11/1997	N	6,300	10,000	250	920	124C	NANJEMOY FORMATION	02-13-11-01	PINE TRAILER PARK
CA	G	CA1965 G003	(04)	BURKE, ALAN	03/2003	N	500	700	230	930	124C	NANJEMOY FORMATION	02-13-11-01	GATEWAY RESTAURANT
CA	G	CA1965 G007	(05)	CALVERT COUNTY COMMISSIONERS	03/2005	N	100	1,000	260	920	124C	NANJEMOY FORMATION	02-13-10-05	PARKS & REC FACILITY (OLD FAIRGROUNDS SITE)
CA	G	CA1965 G009	(04)	WATERS MEMORIAL UNITED METHODIST CHURCH	09/1997	N	300	800	230	930	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1966 G001	(05)	CROOKS, EDWARD	08/2005	Y	25,000	40,000	240	940	124E	PINEY POINT FORMATION	02-13-10-05	WESTERN SHORES COMMUNITY SUPPLY - PDWIS# 004-0016

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CA	G	CA1966 G002	(01)	KNOTTY PINE BAR & GRILL	08/1965	N	500	1,000	220	950	122	MIOCENE	02-13-11-01	
CA	G	CA1966 G005	(05)	CALVERT COUNTY COMMISSIONERS	04/2004	Y	16,000	25,000	330	900	125B	AQUIA FORMATION	02-13-11-01	LAKEWOOD SUBD COMMUNITY SUPPLY - PDWIS #0040008
CA	G	CA1966 G006	(04)	MD STATE HIGHWAY ADMINISTRATION	03/1997	N	2,000	3,000	260	920	125B	AQUIA FORMATION	02-13-10-05	S.H.A. GARAGE
CA	G	CA1966 G007	(02)	PATUXENT METHODIST CHURCH	08/1997	N	300	700	280	910	124C	NANJEMOY FORMATION	02-13-11-01	PATUXENT UNITED METHODIST CHURCH
CA	G	CA1966 G008	(04)	WARD'S UNITED METHODIST CHURCH	07/1997	N	200	300	320	930	125B	AQUIA FORMATION	02-13-10-05	CHURCH
CA	G	CA1966 G010	(05)	AMERICAN LEGION POST 206 INC.	05/1998	N	1,500	2,500	320	930	124C	NANJEMOY FORMATION	02-13-10-05	AMERICAN LEGION
CA	G	CA1966 G011	(05)	CALVERT COUNTY COMMISSIONERS	09/2004	N	7,700	15,000	290	890	125B	AQUIA FORMATION	02-13-11-01	KING'S LANDING-POOL(1041140)/DIN HALL(1041053)/CHESPAX/EQUES CTR
CA	G	CA1966 G012	(04)	SPRING GROVE MARINA LTD.	07/1997	N	4,000	7,500	180	950	124E	PINEY POINT FORMATION	02-13-11-01	SPRING COVE MARINA
CA	G	CA1966 G014	(04)	VICTOR STANLEY, INC.	03/1996	N	700	1,150	330	900	125B	AQUIA FORMATION	02-13-11-01	FURNITURE MANUFACTURER
CA	G	CA1967 G003	(01)	SAINT ANTHONY'S CHURCH	11/1966	N	1,000	1,500	320	930	124C	NANJEMOY FORMATION	02-13-10-05	
CA	G	CA1967 G005	(04)	AL BANNA, EDMAD	02/2002	N	300	500	250	910	125B	AQUIA FORMATION	02-13-11-01	CITGO GAS & GALLO'S DELI
CA	G	CA1967 G006	(06)	CALVERT COUNTY DAY SCHOOL, INC.	08/2005	N	8,300	11,900	280	910	125B	AQUIA FORMATION	02-13-11-01	CALVERTON SCHOOL - PDWIS# 104-0022
CA	G	CA1968 G001	(04)	PLUM POINT UNITED METHODIST CHURCH	08/2001	N	300	500	280	930	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH
CA	G	CA1968 G003	(02)	AMERICAN LEGION GRAY-RAY POST #220	05/1997	N	300	500	240	920	124C	NANJEMOY FORMATION	02-13-11-01	AMERICAN LEGION

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1968 G004	(05)	MIDDLEHAM & ST PETER'S PARISH	02/1999	N	300	600	210	960	124E	PINEY POINT FORMATION	02-13-10-05	CHURCH, PARISH HALL, DAY SCHOOL, PROJECT SMILE(THRIFT SHOP/OFFICE
CA	G	CA1968 G005	(04)	KING'S APOSTLE CHURCH OF GOD INC.	01/1998	N	300	500	310	930	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH
CA	G	CA1968 G008	(05)	PROUT, CLAIRE, EBY	07/2004	N	1,200	2,000	220	920	124C	NANJEMOY FORMATION	02-13-10-05	PATUXENT CAMPSITES
CA	G	CA1968 G009	(05)	CALVERT COUNTY COMMISSIONERS	07/2000	Y	25,000	42,000	240	940	124E	PINEY POINT FORMATION	02-13-10-05	KENWOOD BEACH COMMUNITY SUPPLY
CA	G	CA1969 G002	(04)	CALVARY BIBLE CHURCH	05/1996	N	300	500	220	950	124E	PINEY POINT FORMATION	02-13-11-01	SANITARY & POTABLE SUPPLY FOR CHURCH
CA	G	CA1969 G003	(05)	BROOKS UNITED METHODIST CHURCH	03/2004	N	200	300	230	930	124E	PINEY POINT FORMATION	02-13-11-04	CHURCH - PDWIS #1041011
CA	G	CA1969 G005	(05)	COX FAMILY LLLP	04/2006	N	500	900	260	920	125B	AQUIA FORMATION	02-13-11-01	WINEGARDNER PONTIAC-GMC
CA	G	CA1969 G007	(04)	SMITH, SHERMAN & MABEL,	04/1998	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	BARBER SHOP/CARRY OUT
CA	G	CA1969 G008	(04)	ASSOCIATION OF SEVENTH-DAY ADVENTISTS, CHESAPEAKE CONFERENCE	07/2000	N	300	500	240	930	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH
CA	G	CA1969 G009	(05)	FULL GOSPEL ASSEMBLY OF GOD	04/2006	N	600	800	250	920	124E	PINEY POINT FORMATION	02-13-10-05	CHURCH
CA	G	CA1969 G010	(05)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	Y	450,000	865,000	220	960	125B	AQUIA FORMATION	02-13-10-05	CALVERT CLIFFS NUCLEAR POWER PLANT - FENCED AREA
CA	G	CA1969 G013	(05)	BREEZY POINT MARINA, INC.	03/2004	N	2,400	5,000	290	940	124C	NANJEMOY FORMATION	02-13-10-05	MARINA - 230 SLIPS
CA	G	CA1969 G014	(04)	PADILLA, JAIME, A.	11/1998	N	2,800	4,000	250	930	124C	NANJEMOY FORMATION	02-13-11-01	ADAM'S THE PLACE FOR RIBS RESTAURANT

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1969 G015	(04)	R.S. LEITCH COMPANY	04/1994	N	100	200	190	960	124E	PINEY POINT FORMATION	02-13-11-01	SOUTHEND SEVICE CENTER, INC. - SERVICE STATION
CA	G	CA1970 G002	(03)	DOWELL PLAZA, INC.	03/1986	N	300	500	190	960	124C	NANJEMOY FORMATION	02-13-11-01	TWO UNIT OFFICE BUILDING
CA	G	CA1970 G003	(03)	KRICK PLUMBING & HEATING CO., INC.	04/1998	N	150	300	320	910	125B	AQUIA FORMATION	02-13-11-01	KRICK PLUMBING & HEATING SHOP
CA	G	CA1970 G004	(07)	CALVERT COUNTY COMMISSIONERS	07/2004	Y	50,000	86,000	330	910	211D	MAGOTHY FORMATION	02-13-11-01	CAVALIER COUNTRY SUBD COMMUNITY SUPPLY - PDWIS# 0040002
CA	G	CA1970 G005	(06)	CALVERT COUNTY PUBLIC SCHOOLS	01/2003	Y	27,000	45,000	260	920	125B	AQUIA FORMATION	02-13-11-01	CALVERT HIGH SCHOOL & CALVERT CAREER CENTER
CA	G	CA1970 G007	(06)	CALVERT COUNTY COMMISSIONERS	02/2004	Y	60,000	100,000	250	900	125B	AQUIA FORMATION	02-13-11-01	CALVERT COUNTY INDUSTRIAL PARK
CA	G	CA1971 G001	(04)	HARBOR ISLAND MARINA, INC.	07/2002	N	900	1,800	180	960	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1971 G002	(02)	CALVERT COUNTY PUBLIC SCHOOLS	08/1996	N	2,000	3,300	290	910	125B	AQUIA FORMATION	02-13-11-01	HUNTINGTOWN ELEMENTARY SCHOOL
CA	G	CA1971 G004	(04)	SOLOMONS BEACON INN LIMITED PARTNERSHIP	01/2004	N	3,000	6,000	180	950	124E	PINEY POINT FORMATION	02-13-11-01	SOLOMONS BEACON MARINA
CA	G	CA1972 G001	(04)	CALVERT COUNTY PUBLIC SCHOOLS	09/2003	Y	18,000	23,000	310	900	211D	MAGOTHY FORMATION	02-13-11-01	NORTHERN HIGH SCHOOL & MIDDLE SCHOOL
CA	G	CA1972 G002	(05)	CALVERT COUNTY COMMISSIONERS	12/2001	Y	35,000	60,000	330	890	211D	MAGOTHY FORMATION	02-13-11-01	SHORES OF CALVERT SUBDIVISION
CA	G	CA1972 G003	(06)	TOWN OF CHESAPEAKE BEACH	12/2004	Y	630,000	1,100,000	310	930	125B	AQUIA FORMATION	02-13-10-05	CHESAPEAKE BEACH COMMUNITY SUPPLY - PDWIS# 004-0003
CA	G	CA1973 G001	(03)	HOWLIN JR., EDWARD, B.	09/2000	N	5,500	8,000	320	900	124C	NANJEMOY FORMATION	02-13-11-01	DUNKIRK VILLAGE SHOP/BUS CENTER - COMBINE CA73G001 & CA85G004
CA	G	CA1973 G002	(04)	CALVERT COUNTY COMMISSIONERS	07/2004	N	3,600	5,000	240	930	125B	AQUIA FORMATION	02-13-11-01	COLLEGE OF SOUTHERN MARYLAND CALVERT COUNTY - PDWIS# 1040049

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1973 G003	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	200	300	290	910	124C	NANJEMOY FORMATION	02-13-11-01	HUNTING CREEK ALTERNATIVE SCHOOL - PDWIS# 1040025
CA	G	CA1973 G004	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	2,000	3,000	260	920	125B	AQUIA FORMATION	02-13-10-05	BROOKS ADMINISTRATIVE CENTER - PDWIS# 1040006
CA	G	CA1973 G005	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	5,000	6,000	260	920	125B	AQUIA FORMATION	02-13-11-01	CALVERT COUNTRY & CALVERT ELEMENTARY SCHOOLS - PDWIS# 1040012
CA	G	CA1973 G006	(04)	CALVERT COUNTY COMMISSIONERS	12/2001	N	500	800	310	900	125B	AQUIA FORMATION	02-13-11-01	CHANEYVILLE TOURIST CENTER & FAIRVIEW BRANCH LIBRARY
CA	G	CA1973 G007	(02)	BD. OF CO. COMMISSIONERS OF CALVERT CO.	08/1996	N	800	1,300	310	920	125B	AQUIA FORMATION	02-13-10-05	MT. HOPE COMMUNITY CENTER
CA	G	CA1973 G008	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	5,000	10,000	260	920	125B	AQUIA FORMATION	02-13-11-01	CALVERT MIDDLE SCHOOL - PDWIS# 1040018
CA	G	CA1973 G009	(04)	CALVERT COUNTY PUBLIC SCHOOLS	06/2004	N	5,000	7,000	320	910	125B	AQUIA FORMATION	02-13-11-01	MT. HARMONY ELEMENTARY SCHOOL - PDWIS# 1040030
CA	G	CA1973 G010	(04)	CALVERT COUNTY PUBLIC SCHOOLS	07/1997	N	5,300	8,900	200	960	124E	PINEY POINT FORMATION	02-13-11-01	APPEAL ELEMENTARY - ONE WELL PRIMARY OTHER WELL FIRE SUPP/BACK-UP
CA	G	CA1973 G011	(04)	CALVERT COUNTY COMMISSIONERS	06/1995	N	500	800	230	930	124C	NANJEMOY FORMATION	02-13-11-01	FAMILY RESOURCE CENTER/HEAD START
CA	G	CA1973 G012	(01)	GLASCOCK, BEDFORD C.	12/1972	N	2,600	3,500	180	950	124E	PINEY POINT FORMATION	02-13-11-01	
CA	G	CA1973 G013	(05)	CALVERT COUNTY BOARD OF COMMISSIONERS	02/2002	Y	29,000	44,000	320	920	125B	AQUIA FORMATION	02-13-10-05	PARIS OAKS SUBDIVISION
CA	G	CA1973 G014	(07)	DOMINION COVE POINT LNG, LP	03/2004	Y	32,000	50,000	200	970	125B	AQUIA FORMATION	02-13-10-05	LIQUEFIED NATURAL GAS TERMINAL
CA	G	CA1973 G015	(04)	CALVERT COUNTY BOARD OF COMMISSIONERS	08/2003	N	700	1,000	260	920	124C	NANJEMOY FORMATION	02-13-10-05	PRINCE FREDERICK WASTEWATER TREATMENT PLANT
CA	G	CA1973 G017	(04)	BRANDYWINE CORPOREX PLAZA II LP	02/2004	N	1,500	2,000	310	900	125B	AQUIA FORMATION	02-13-11-01	RETAIL CENTER

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFf27	East-thouFf27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1974 G001	(03)	VAN DINE, PETER D.	10/1993	N	1,000	1,500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MERGANSER AIRCRAFT CORP.
CA	G	CA1974 G002	(05)	CALVERT COUNTY COMMISSIONERS	07/2000	Y	25,000	37,500	270	940	124C	NANJEMOY FORMATION	02-13-10-05	DARES BEACH - NANJEMOY
CA	G	CA1974 G003	(02)	GIBBONS, RICHARD, M.	05/1997	N	400	600	180	950	124E	PINEY POINT FORMATION	02-13-11-01	WATER FOR OFFICE
CA	G	CA1974 G004	(03)	JESCHKE, CRAIG, A.	10/1993	N	1,000	1,500	320	910	125B	AQUIA FORMATION	02-13-11-01	MEDICAL CENTER
CA	G	CA1974 G005	(06)	CALVERT COUNTY BOARD OF COMMISSIONERS, ,	05/1994	Y	245,000	370,000	260	920	125B	AQUIA FORMATION	02-13-11-01	PRINCE FREDERICK COMMUNITY WATER SUPPLY
CA	G	CA1974 G007	(03)	T H B MANAGEMENT SERVICES, LLC	02/2004	N	5,000	8,800	310	900	125B	AQUIA FORMATION	02-13-11-01	
CA	G	CA1974 G008	(03)	HUNTINGTOWN VOLUNTEER FIRE DEPARTMENT	05/1994	N	1,200	2,000	290	910	125B	AQUIA FORMATION	02-13-11-01	FIRE DEPT. & RESCUE SQUAD
CA	G	CA1974 G009	(03)	CALVERT COUNTY PUBLIC SCHOOLS	03/1997	N	3,000	4,000	230	930	125B	AQUIA FORMATION	02-13-11-01	MUTUAL ELEMENTARY SCHOOL
CA	G	CA1974 G102	(02)	CALVERT COUNTY COMMISSIONERS	07/2000	Y	25,000	37,500	270	940	125B	AQUIA FORMATION	02-13-10-05	DARES BEACH - AQUIA
CA	G	CA1975 G001	(04)	VERIZON MARYLAND INC.	03/2002	N	200	300	320	920	125B	AQUIA FORMATION	02-13-11-01	NORTH BEACH FACILITY #35078
CA	G	CA1975 G002	(03)	CALVERT COUNTY BOARD OF COMMISSIONERS	04/1998	N	1,000	5,000	260	910	125B	AQUIA FORMATION	02-13-11-01	OLD LANDFILL OFFICE BLDG
CA	G	CA1975 G004	(01)	UNIVERSITY OF MARYLAND	03/1976	N	1,000	1,500	250	900	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1975 G005	(03)	COLLIER, CHARLES	04/1998	N	1,100	2,200	270	910	124C	NANJEMOY FORMATION	02-13-11-01	LORD CALVERT BOWLING ALLEY
CA	G	CA1976 G005	(07)	CALVERT COUNTY COMMISSIONERS	07/2006	Y	6,300	23,800	250	910	125B	AQUIA FORMATION	02-13-11-01	HALLOWING POINT PARK - PDWIS# 1041185 (MAINT) & 1041015 (CONCESS)

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1976 G006	(05)	HARVEST FELLOWSHIP PRESBYTERIAN CHURCH	04/2001	N	100	200	210	960	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1976 G007	(02)	ALL SAINTS EPISCOPAL CHURCH	08/1996	N	200	300	300	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1976 G010	(02)	HARBOUR COAST INC.	09/1997	N	1,500	2,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESTAURANT/LOUNGE
CA	G	CA1976 G011	(03)	THE GOTT COMPANY	07/2000	N	200	300	200	960	124E	PINEY POINT FORMATION	02-13-11-01	NATIONS BANK - LUSBY BRANCH
CA	G	CA1977 G001	(02)	MARYLAND TOBACCO GROWERS ASSOCIATION	07/1987	N	500	600	290	910	124C	NANJEMOY FORMATION	02-13-11-01	R.K. AGRI SERVICES, INC.
CA	G	CA1977 G002	(03)	RAJA HAWIT, MD & RICHARD GHAFFAS, MD	02/1999	N	1,200	2,000	280	910	124C	NANJEMOY FORMATION	02-13-11-01	MEDICAL OFFICES
CA	G	CA1977 G005	(03)	FERRENZ, BRIAN, F.	06/2000	N	300	500	310	910	125B	AQUIA FORMATION	02-13-11-01	MT. HARMONY AUTO SERVICE - AUTO REPAIR
CA	G	CA1977 G006	(03)	DUNKIRK SUPPLY, INC.	06/1999	N	400	600	320	920	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK SUPPLY - TRUSS PLANT
CA	G	CA1977 G008	(03)	CALVERT COUNTY PUBLIC SCHOOLS	11/1999	N	7,500	10,000	210	960	125B	AQUIA FORMATION	02-13-11-01	SOUTHERN MIDDLE SCHOOL
CA	G	CA1977 G009	(03)	GLASCOCK, BEDFORD, C.	09/1999	N	1,500	2,000	180	950	124E	PINEY POINT FORMATION	02-13-11-01	SHOPPING CENTER
CA	G	CA1977 G011	(03)	MT. OLIVE UNITED METHODIST CHURCH	11/2004	N	200	300	260	920	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH - PDWIS# 104-1062
CA	G	CA1977 G016	(04)	CALVERT COUNTY COMMISSIONERS	03/2003	Y	33,000	45,000	260	910	125B	AQUIA FORMATION	02-13-11-01	CALVERT COUNTY DETENTION CENTER
CA	G	CA1977 G017	(03)	AMERICAN LEGION POST 274	06/2000	N	800	1,200	200	960	124E	PINEY POINT FORMATION	02-13-11-01	ARICK L. LORE POST 274, THE AMERICAN LEGION INC.
CA	G	CA1977 G018	(03)	DORAN, JOHN, T.	06/2000	N	1,000	1,500	250	910	124C	NANJEMOY FORMATION	02-13-11-01	R.T&E LAND - TRADE CENTER - OFFICE/WAREHOUSE BUILDING

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouF127	East-thouF127	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1977 G019	(03)	SOUTHERN MARYLAND ELECTRIC COOPERATIVE	12/1999	N	2,000	3,000	260	920	125B	AQUIA FORMATION	02-13-10-05	ELECTRIC UTILITY AT 901 DARES BEACH ROAD
CA	G	CA1978 G001	(03)	ST. PAUL UNITED METHODIST CHURCH	03/2001	N	600	800	200	960	124E	PINEY POINT FORMATION	02-13-10-05	CHURCH, PARSONAGE, DAY SCHOOL
CA	G	CA1978 G003	(03)	PARKERS CREEK WATER COMPANY	08/2000	N	2,700	4,600	250	930	124E	PINEY POINT FORMATION	02-13-10-05	PARKERS CREEK KNOLLS SUBD COMMUNITY SUPPLY
CA	G	CA1978 G004	(09)	BOARD OF COMMISSIONERS OF CALVERT COUNTY	12/1996	Y	128,600	214,700	320	930	125B	AQUIA FORMATION	02-13-10-05	SUMMIT, HIGHLANDS & CHESAPEAKE LIGHTHOUSE SBDNS.
CA	G	CA1978 G006	(02)	HILL, THOMAS	05/1997	N	1,000	1,500	310	910	125B	AQUIA FORMATION	02-13-11-01	OPTIMIST CLUB
CA	G	CA1978 G008	(04)	CALVERT COUNTY COMMISSIONERS	06/2003	Y	6,500	9,000	250	920	125B	AQUIA FORMATION	02-13-11-01	MASON ROAD/WOODRIDGE COMM. SUPPLY
CA	G	CA1978 G009	(03)	COOPERS UNITED METHODIST CHURCH	06/2000	N	200	300	320	900	125B	AQUIA FORMATION	02-13-11-01	CHURCH
CA	G	CA1978 G010	(02)	MC ALLUM, T., J.	03/2000	N	500	800	300	910	125B	AQUIA FORMATION	02-13-10-05	B & M MOBILE TUNE-UP
CA	G	CA1978 G011	(04)	CALVERT BEACH WATER COMPANY INC.	05/1998	Y	40,000	70,000	230	950	124E	PINEY POINT FORMATION	02-13-10-05	CALVERT BEACH PARK WEST SUBDIVISION
CA	G	CA1978 G012	(03)	FOWLER, GENEVIEVE, M.	09/2000	N	300	500	260	920	124C	NANJEMOY FORMATION	02-13-10-05	SEARS APPLIANCE STORE (FORMERLY A GROCERY STORE)
CA	G	CA1978 G013	(02)	OLIVET UNITED METHODIST CHURCH	05/1997	N	100	300	180	960	122	MIOCENE	02-13-11-01	
CA	G	CA1978 G015	(03)	THE CHRIST CHILD SOCIETY	04/2000	N	1,000	4,000	220	920	124C	NANJEMOY FORMATION	02-13-11-01	CHRIST CHILD SUMMER CAMP
CA	G	CA1979 G001	(04)	J.H. GRIBBLE & SONS, INC.	09/2002	N	9,600	9,800	250	920	125B	AQUIA FORMATION	02-13-10-05	CALVERT WELL DRILLING COMPANY
CA	G	CA1979 G002	(02)	ADAMS, R. SCOTT	10/2005	N	1,200	2,000	210	960	124E	PINEY POINT FORMATION	02-13-11-01	FRYING PAN RESTAURANT - PDWIS# 104-1036

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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1979 G003	(03)	SOLID GROUND FARM, INC.	06/2001	N	6,900	41,000	220	920	125B	AQUIA FORMATION	02-13-11-01	HORSE & ALFALFA FARM
CA	G	CA1979 G004	(05)	CALVERT COUNTY COMMISSIONERS	07/2006	Y	6,000	29,400	320	900	211D	MAGOTHY FORMATION	02-13-11-01	DUNKIRK DISTRICT PARK - PDWIS# 104-1013
CA	G	CA1979 G005	(03)	FRANKEL DMD, BENNETT, F.	01/2006	N	2,000	3,400	260	910	124C	NANJEMOY FORMATION	02-13-11-01	PRINCE FREDERICK PROFESSIONAL BLDG - PDWIS# 104-1095
CA	G	CA1979 G006	(02)	RIDGEWAY, JON R. AND PEGGY JO	09/1996	N	2,000	3,400	340	900	125B	AQUIA FORMATION	02-13-11-01	MULTI FAMILY APARTMENT UNIT
CA	G	CA1979 G008	(03)	CALVERT COUNTY BOARD OF COMMISSIONERS	06/2001	N	600	2,000	240	920	124C	NANJEMOY FORMATION	02-13-11-01	BATTLE CREEK CYPRESS SWAMP NATURE CENTER
CA	G	CA1979 G009	(03)	RANDLE CLIFF COMMUNITY CHURCH	06/2001	N	100	300	300	930	124C	NANJEMOY FORMATION	02-13-10-05	
CA	G	CA1979 G010	(02)	TOWN OF CHESAPEAKE BEACH	09/1996	N	1,000	1,500	320	930	124C	NANJEMOY FORMATION	02-13-10-05	TOWN ROADS BUILDING
CA	G	CA1979 G011	(02)	DODSON, JOSEPH, S.	08/1996	N	400	600	250	920	124C	NANJEMOY FORMATION	02-13-10-05	KEN MAR LIQUORS
CA	G	CA1979 G013	(02)	BETHEL WAY OF THE CROSS CHURCH	09/1996	N	500	2,500	300	910	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH
CA	G	CA1980 G001	(02)	HILL & JOHN PRINCIPE, ROBERT	07/1996	N	500	800	340	900	125B	AQUIA FORMATION	02-13-11-01	LIQUOR STORE & DELI
CA	G	CA1980 G003	(03)	JOHNSON ACRES WATER COMPANY	05/2003	N	3,200	5,400	220	940	124C	NANJEMOY FORMATION	02-13-11-01	JOHNSON ACRES SUBD - COMMUNITY SUPPLY
CA	G	CA1980 G004	(03)	CALVERT COUNTY SPORTSMEN'S CLUB, INC.	08/2002	N	300	500	250	920	124C	NANJEMOY FORMATION	02-13-11-01	CLUB
CA	G	CA1980 G005	(03)	VERIZON MARYLAND INC.	03/2002	N	100	200	230	930	124E	PINEY POINT FORMATION	02-13-11-01	PORT REPUBLIC/MUTUAL FACILITY #34087
CA	G	CA1980 G008	(02)	SHELDON, NANETTE	07/1990	N	1,200	2,000	300	930	124C	NANJEMOY FORMATION	02-13-10-05	RANDLE CLIFFS COMMUNITY SUPPLY

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1980 G009	(01)	SKIP JACK, INC.	11/1980	N	500	800	180	960	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1980 G010	(02)	DRUM POINT YACHT CLUB, INC.	11/1990	N	600	1,000	190	960	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1981 G001	(06)	CALVERT COUNTY COMMISSIONERS	06/2006	Y	3,300	21,100	200	970	124E	PINEY POINT FORMATION	02-13-10-05	COVE POINT PARK-1041186(MAINT)/1041111(CONCESSION)/104-1255(POOL)
CA	G	CA1981 G003	(03)	MT. HARMONY UNITED METHODIST CHURCH	12/2003	N	300	400	320	910	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1981 G006	(02)	EMMANUEL SEVENTH-DAY ADVENTIST CHURCH	07/1991	N	100	300	260	920	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH
CA	G	CA1981 G008	(01)	SOLID ROCK CHURCH OF OUR LORD JESUS CHRI	09/1981	N	400	600	250	930	124E	PINEY POINT FORMATION	02-13-10-05	
CA	G	CA1981 G010	(02)	CHRISTIAN BIBLE CENTER, INCORPORATED	09/1991	N	300	500	280	920	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1981 G011	(03)	MC CARTNEY, LABEN, J.	11/2005	N	300	500	260	920	124C	NANJEMOY FORMATION	02-13-11-01	PENN AUTO
CA	G	CA1981 G012	(03)	MERILLAT, STEPHEN M.	01/2004	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	AQUA MAINTENANCE SERVICES
CA	G	CA1981 G014	(02)	HARBOR HILLS CITIZENS ASSOCIATION, INC.	09/1991	N	300	1,000	230	920	124C	NANJEMOY FORMATION	02-13-11-01	MARINA
CA	G	CA1981 G015	(03)	ERSOY, OSMAN Z.	10/2003	N	300	500	270	910	124C	NANJEMOY FORMATION	02-13-11-01	O'BRIEN REALTY
CA	G	CA1981 G016	(02)	CALVERT BANK & TRUST COMPANY	09/1996	N	300	500	310	900	125B	AQUIA FORMATION	02-13-11-01	BANK BRANCH OFFICE - CHANEYVILLE
CA	G	CA1982 G001	(03)	FLAG HARBOR PARTNERSHIP	10/2004	N	1,000	4,000	230	950	124E	PINEY POINT FORMATION	02-13-10-05	MARINA - 165 SLIPS/2 EMPLOYEES/POOL - PDWIS# 104-1099
CA	G	CA1982 G002	(03)	PADGETT, BASCOMBE, G.	05/2004	N	6,800	10,200	270	900	125B	AQUIA FORMATION	02-13-11-01	RESIDENTIAL GWHP W/RECHARGE WELL

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1982 G003	(04)	THOMPSON, PAUL	07/2005	N	3,000	5,000	290	930	124C	NANJEMOY FORMATION	02-13-10-05	RESIDENTIAL GWHP W/RECHARGE WELL
CA	G	CA1982 G004	(03)	PRINCE FREDERICK MOTOR COMPANY, INC.	03/2004	N	900	1,500	260	920	124E	PINEY POINT FORMATION	02-13-10-05	AUTO SALES & SERVICE
CA	G	CA1982 G006	(03)	FIRST LUTHERAN CHURCH	09/2001	N	300	500	300	910	125B	AQUIA FORMATION	02-13-11-01	CHURCH
CA	G	CA1982 G007	(04)	M & D PARTNERS, LLC.	12/2004	N	7,500	12,500	250	900	125B	AQUIA FORMATION	02-13-11-01	HALLOWING POINT MOBILE HOME PARK - PDWIS# 004-0208
CA	G	CA1982 G008	(03)	CALVERT SKATING ASSOCIATES, INC.	01/2006	N	1,000	1,500	310	900	125B	AQUIA FORMATION	02-13-11-01	CALVERT ROLLER SKATING CENTER - PDWIS# 104-1018
CA	G	CA1982 G010	(03)	SOUTHERN MARYLAND OIL, INC.	10/2005	N	200	300	320	910	125B	AQUIA FORMATION	02-13-11-01	PETROLEUM PRODUCTS DISTRIBUTOR
CA	G	CA1983 G002	(02)	THE FIRST NATIONAL BANK OF MARYLAND	09/1996	N	300	500	260	920	124C	NANJEMOY FORMATION	02-13-11-01	BANK
CA	G	CA1983 G005	(03)	WEBER, KARL & DEBORAH	04/2005	N	300	500	270	920	124C	NANJEMOY FORMATION	02-13-11-01	CHARLES F. WEBER CO., INC
CA	G	CA1983 G006	(03)	CHRIST EPISCOPAL CHURCH	07/2005	N	800	1,500	240	930	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH/PARISH HOUSE/RESIDENCE - PDWIS# 104-1115
CA	G	CA1983 G007	(02)	CHURCH OF CHRIST AT PRINCE FREDERICK	12/2000	N	500	800	290	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1983 G008	(03)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	N	300	500	220	960	124E	PINEY POINT FORMATION	02-13-10-05	CALVERT CLIFFS POWER PLANT - VISTORS CENTER
CA	G	CA1983 G009	(03)	DUNKIRK SUPPLY INC.	08/1997	N	1,400	2,300	310	910	125B	AQUIA FORMATION	02-13-11-01	RETAIL LUMBER YARD
CA	G	CA1983 G011	(03)	RICKER, MICHAEL	01/2006	N	5,000	9,000	200	960	124E	PINEY POINT FORMATION	02-13-11-01	POTABLE/SANITARY & COMMERCIAL GWHP - PDWIS# 104-1023
CA	G	CA1983 G013	(03)	CALVERT COUNTY PUBLIC SCHOOLS	11/1999	N	100	200	310	900	125B	AQUIA FORMATION	02-13-11-01	WELL-NORTHERN HS WWTP & WELL-CONCESSION STAND/FIELD IRRIGATION

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1983 G014	(03)	MATTHEWS, GAYLE B. & STELLA J.	06/2001	N	3,000	6,000	220	950	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP - NO RETURN
CA	G	CA1984 G001	(02)	BUCKINGHAM, MICHAEL, H.	02/1994	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	BAY METAL WORKS
CA	G	CA1984 G002	(02)	MCLELLAND, SLATEN, A.	08/1996	N	3,000	3,500	340	900	125B	AQUIA FORMATION	02-13-11-01	GROUNDWATER HEAT PUMP
CA	G	CA1984 G003	(03)	BOARD OF COMMISSIONERS OF CALVERT CO.	03/2006	Y	550,000	825,000	190	960	125B	AQUIA FORMATION	02-13-11-01	SOLOMONS ISLAND/LUSBY COMMUNITY WATER SUPPLY
CA	G	CA1984 G005	(01)	ASBURY COMMUNITY CHURCH, INC.	06/1984	N	100	300	250	910	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA1984 G007	(02)	DASH IN FOOD STORES, INC.	05/1996	N	500	1,000	320	910	125B	AQUIA FORMATION	02-13-11-01	CONVENIENCE STORE
CA	G	CA1984 G008	(02)	KING, ESTATE OF BOYD	08/1996	N	500	800	260	920	124C	NANJEMOY FORMATION	02-13-11-01	RADIO SHACK - CALVERT VILLAGE SHOPPING CENTER
CA	G	CA1984 G010	(02)	EASTERN & ST. JOHN U.M.C.	07/1996	N	400	700	200	960	124E	PINEY POINT FORMATION	02-13-11-01	EAST JOHN YOUTH CENTER
CA	G	CA1984 G012	(02)	FIRST BAPTIST CHURCH, ,	08/1996	N	300	1,000	250	920	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH
CA	G	CA1984 G013	(02)	CHURCH OF JESUS CHRIST OF LDS, CALVERT BRANCH	08/1997	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS
CA	G	CA1984 G015	(02)	MORRIS, MICHAEL F., AND SHARON	09/1999	N	4,000	7,000	320	900	125B	AQUIA FORMATION	02-13-11-01	GWHP - RECHARGE WELL
CA	G	CA1984 G016	(04)	STROCON, INC.	07/2002	N	1,300	1,800	310	910	125B	AQUIA FORMATION		02-13-11-01
CA	G	CA1984 G017	(02)	MULLER, KENNETH, M.	08/1996	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	MT. HARMONY PROFESSIONAL CENTER
CA	G	CA1985 G001	(03)	MARYLAND HISTORICAL TRUST	10/2004	N	5,700	7,300	210	940	124E	PINEY POINT FORMATION	02-13-11-01	JEFFERSON PATTERSON PARK & MUSEUM - PDWIS# 104-1131

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland (Page 52 of 79)

County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1985 G002	(03)	TALPALAR ET AL, JAY, & BEVERLY	12/2005	N	800	1,200	290	910	125B	AQUIA FORMATION	02-13-11-01	7-11 & PIZZA SHOP/CARPET STORE/VIDEO RENTAL - NEW WELL AQUIA
CA	G	CA1985 G003	(02)	SOUTHERN MARYLAND ISLAMIC CENTER	08/2000	N	300	500	270	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1985 G005	(02)	DEPARTMENT OF NATURAL RESOURCES	01/1999	N	500	600	250	900	125B	AQUIA FORMATION	02-13-11-01	SOUTHERN SERVICE CENTER
CA	G	CA1985 G006	(02)	HOWLIN, EDWARD, B.	08/1997	N	1,400	2,000	320	900	125B	AQUIA FORMATION	02-13-11-01	PROFESSIONAL BUILDING - PDWIS# 104-1201
CA	G	CA1985 G008	(02)	THOMAS DEVENNEY	08/1997	N	700	1,200	320	900	125B	AQUIA FORMATION	02-13-11-01	PEACHTREE COURT CENTER
CA	G	CA1985 G009	(02)	LAKE, WILLIAM, B.	11/2001	N	2,000	4,000	220	950	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP - OVERBOARD DISCHARGE
CA	G	CA1985 G010	(02)	BOWLES, JOHN	06/1998	N	300	450	330	890	125B	AQUIA FORMATION	02-13-11-01	BUILDING CONTRACTOR
CA	G	CA1985 G011	(02)	MILLER, JAMES, A.	11/2001	N	2,500	4,000	220	950	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP
CA	G	CA1985 G012	(03)	EDWARD B. HOWLIN, INC.	03/2003	N	9,800	16,000	320	920	124C	NANJEMOY FORMATION	02-13-11-01	CONCRETE BATCH PLANT - PROCESS WATER AND POTABLE
CA	G	CA1985 G014	(02)	CALVERT LIGHTHOUSE TABERNACLE	07/2002	N	300	500	260	930	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1985 G015	(02)	CALVERT COUNTY PUBLIC SCHOOLS	11/1997	N	2,200	3,500	310	910	125B	AQUIA FORMATION	02-13-10-05	SUNDERLAND ELEMENTARY SCHOOL
CA	G	CA1985 G016	(02)	ZION HILL CHURCH OF GOD IN CHRIST	07/2000	N	300	500	190	960	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH
CA	G	CA1985 G017	(02)	CONNOR, ROBERT & DARLENE	11/1998	N	300	500	240	910	124C	NANJEMOY FORMATION	02-13-11-01	RAY GROCERY STORE
CA	G	CA1985 G018	(02)	GROVER, JUNE, L.	04/1998	N	300	500	240	940	124E	PINEY POINT FORMATION	02-13-10-05	PLUMBING SHOP

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouF127	East-thouF127	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1986 G001	(02)	CLEARY & CARL G. BROWN, FRANK, J.	04/1998	N	1,100	1,900	310	910	124C	NANJEMOY FORMATION	02-13-11-01	BROWN-CLEARY OFFICE BLDG- CUSTOM HOME BUILDER & ANIMAL HOSPITAL
CA	G	CA1986 G002	(02)	BESCHE OIL COMPANY, INC.	04/1998	N	300	500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	LUSBY SUNOCO GAS STATION AND REPAIR GARAGE
CA	G	CA1986 G005	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	05/1998	N	350	500	230	940	124E	PINEY POINT FORMATION	02-13-11-01	TRASH COMPACTOR
CA	G	CA1986 G006	(02)	HUNTINGTOWN UNITED METHODIST CHURCH	06/2000	N	300	500	290	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1986 G007	(04)	CALVERT COUNTY COMMISSIONERS	03/2006	Y	30,000	45,000	230	940	125B	AQUIA FORMATION	02-13-11-01	ST. LEONARD MUNICIPAL SUPPLY - PDWIS# 004-0013
CA	G	CA1986 G008	(02)	ELLIS, JOHN	12/1998	N	2,500	4,000	330	900	125B	AQUIA FORMATION	02-13-11-01	GWHP
CA	G	CA1986 G009	(02)	TAYLOR, WILLIAM, R.	11/1998	N	3,000	5,000	270	920	124C	NANJEMOY FORMATION	02-13-11-01	GWHP AND SOME LIVESTOCK WATERING (CHANGE IN TYPE)
CA	G	CA1986 G010	(02)	PRINCE FREDERICK CONGREGATION OF JEHOVAH	08/2000	N	200	300	280	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1986 G011	(02)	BENNETT, CHARLES & GAIL	03/1999	N	300	500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	MEDICAL SERVICES
CA	G	CA1986 G012	(02)	CALVERT COUNTY GOVERNMENT	03/2001	N	900	1,500	200	980	124E	PINEY POINT FORMATION	02-13-10-05	COVE POINT LIGHT RESIDENCES
CA	G	CA1986 G013	(03)	SILPASUVAN, SUWAT	02/2006	N	500	800	270	910	124C	NANJEMOY FORMATION	02-13-11-01	CALVERT PROFESSIONAL PARK - DOCTORS OFFICES - PDWIS# 104-1204
CA	G	CA1986 G014	(02)	SHERIDAN ET AL, DANIEL, P.	10/1998	N	1,000	1,500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	LAZY J'S TAVERN
CA	G	CA1986 G015	(02)	BOARD OF COMMISSIONERS CALVERT COUNTY	06/2000	N	100	1,500	260	920	125B	AQUIA FORMATION	02-13-10-05	COURTHOUSE STANDBY WELL - PDWIS #104-0083
CA	G	CA1986 G016	(02)	BURKE, ALAN,	10/1998	N	500	800	200	960	124E	PINEY POINT FORMATION	02-13-11-01	GUIDO'S RESTAURANT

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouF:27	East-thouF:27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1986 G017	(02)	WENTWORTH NURSERY, INC.	08/2004	N	1,500	4,500	250	920	124C	NANJEMOY FORMATION	02-13-10-05	POTABLE/SANITARY & NURSERY IRRIGATION - 1 AC
CA	G	CA1987 G001	(01)	STOKES, PAUL	03/1987	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	PAUL STOKES & SONS, INC. (PLUMBING)
CA	G	CA1987 G004	(02)	FIRE DEPARTMENT & RESCUE SQUAD INC., HUNTINGTOWN VOLUNTEER	08/2000	N	100	150	290	910	124C	NANJEMOY FORMATION	02-13-11-01	HUNTINGTOWN POST OFFICE
CA	G	CA1987 G005	(02)	DUNKIRK ASSOCIATES, LLC,	06/2002	N	3,000	4,500	320	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK TOWN SQUARE SHOPPING CENTER
CA	G	CA1987 G006	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	04/2000	N	500	1,000	230	950	124E	PINEY POINT FORMATION	02-13-99-98	FLAG PONDS PARK
CA	G	CA1987 G007	(01)	MARYLAND TOBACCO GROWERS ASSOCIATION	07/1987	N	350	500	290	910	124C	NANJEMOY FORMATION	02-13-11-01	JOHN'S OPEN PIT BAR-B-QUE
CA	G	CA1987 G008	(02)	EDSINGER, ROBERT	11/2004	N	2,000	4,000	230	920	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/RECHARGE WELL
CA	G	CA1987 G009	(01)	STEVENSON, DOUGLAS	08/1987	N	300	500	310	910	125B	AQUIA FORMATION	02-13-11-01	STEVENSON POOLS OFFICE
CA	G	CA1987 G010	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	05/1998	N	1,000	5,000	290	930	124C	NANJEMOY FORMATION	02-13-10-05	PLUM POINT TRASH COMPACTOR SITE
CA	G	CA1987 G011	(03)	SINGH, RAGHUVIR	11/2004	N	100	300	290	910	124C	NANJEMOY FORMATION	02-13-11-01	LIQUOR STORE
CA	G	CA1987 G012	(02)	SUNTRUST BANK	11/2001	N	300	400	320	900	125B	AQUIA FORMATION	02-13-11-01	SUNTRUST BANK
CA	G	CA1987 G014	(01)	MOORE, SEWELL	10/1987	N	7,000	14,500	220	940	124E	PINEY POINT FORMATION	02-13-11-01	GROUND WATER HEAT PUMP
CA	G	CA1987 G015	(02)	WILLIS, MICHAEL & LORI	01/2000	N	3,000	5,000	260	940	124C	NANJEMOY FORMATION	02-13-10-05	GROUND WATER HEAT PUMP

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1987 G016	(01)	BEVERLY, LINWOOD	01/1988	N	3,000	5,000	240	930	124E	PINEY POINT FORMATION	02-13-11-01	GROUND WATER HEAT PUMP
CA	G	CA1987 G017	(02)	GOLLUB, MELVIN	11/1999	N	100	200	250	910	124C	NANJEMOY FORMATION	02-13-11-01	RADIO STATION - WMJS
CA	G	CA1987 G018	(02)	MOORE, SEWELL, T.	01/2000	N	3,000	5,000	220	940	124E	PINEY POINT FORMATION	02-13-11-01	GWHP - RECHARGE WELL
CA	G	CA1987 G019	(02)	BOWEN, EDWARD, L.	03/2000	N	500	800	250	930	124E	PINEY POINT FORMATION	02-13-10-05	JACK & JILL DAY CARE CENTER
CA	G	CA1987 G020	(01)	ABNER, ROBERT	03/1988	N	100	200	310	930	125B	AQUIA FORMATION	02-13-10-05	MARINA
CA	G	CA1988 G001	(02)	HEGARTY KOPICKI INCORPORATED	06/2000	N	300	500	290	910	124C	NANJEMOY FORMATION	02-13-11-01	OFFICE
CA	G	CA1988 G002	(02)	GRIBBLE, JOSEPH, H.	06/2002	N	4,000	6,000	180	970	124E	PINEY POINT FORMATION	02-13-10-05	GROUND WATER HEAT PUMP
CA	G	CA1988 G003	(02)	GRACE BRETHREN CHURCH	12/1996	N	600	1,000	320	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH & PARSONAGE
CA	G	CA1988 G004	(02)	BAY STATE INSULATION INC.	06/2000	N	200	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	INSULATION CONTRACTOR
CA	G	CA1988 G005	(01)	CARROLL WESTERN CHURCH	04/1988	N	300	500	240	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH
CA	G	CA1988 G006	(02)	T. AND T. LUMBER COMPANY, INC.	03/2001	N	800	1,200	240	930	124E	PINEY POINT FORMATION	02-13-11-01	?
CA	G	CA1988 G007	(01)	SPARROW, DOUG	10/1988	N	3,000	6,000	260	910	124C	NANJEMOY FORMATION	02-13-11-01	GROUND WATER HEAT PUMP
CA	G	CA1988 G008	(03)	MYCHALUS, IHOR & ANNE	11/2001	N	3,000	5,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GROUND WATER HEAT PUMP SYSTEM
CA	G	CA1988 G009	(03)	THE TOWN OF NORTH BEACH,	09/2006	Y	185,000	300,000	320	930	125B	AQUIA FORMATION	02-13-10-05	MUNICIPAL SUPPLY - PDWIS# 004-0030

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1988 G010	(01)	PENN, JAMES & PATRICIA	12/1988	N	300	500	250	910	124C	NANJEMOY FORMATION	02-13-11-01	PATTI'S QUICK SHOP
CA	G	CA1989 G002	(03)	KUNST, MARY ANN AND JAMES W.	11/2005	N	3,000	6,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/RECHARGE WELL
CA	G	CA1989 G003	(03)	SELECT PRODUCTS, INC.	07/2001	N	100	200	180	960	124E	PINEY POINT FORMATION	02-13-11-01	MARINA
CA	G	CA1989 G004	(02)	SELECT PRODUCTS, INC.	07/2001	N	6,000	12,000	180	960	122H	MIOCENE SERIES	02-13-11-01	CATAMARANS RESTAURANT - GWHP
CA	G	CA1989 G005	(01)	FLORIA, JOSEPH	04/1989	N	3,000	6,000	300	910	124C	NANJEMOY FORMATION	02-13-11-01	GROUND WATER HEAT PUMP
CA	G	CA1989 G007	(02)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	N	500	1,000	220	960	124E	PINEY POINT FORMATION	02-13-11-01	RIFLE RANGE -DRINKING FOUNTAIN, SINK, LAWN IRRIGATION
CA	G	CA1989 G008	(03)	HOWLIN, JR., EDWARD, B.	01/2005	N	21,000	33,200	320	900	211D	MAGOTHY FORMATION	02-13-11-01	SHOPPES @ APPLE GREEN - PDWIS # 104-0076
CA	G	CA1989 G009	(02)	HUDSON JR., JOHN, W.	06/2001	N	300	500	270	910	125B	AQUIA FORMATION	02-13-11-01	HUDSON'S SUNOCO & MINI MART INC.
CA	G	CA1989 G010	(02)	COLUMBIA INVESTMENTS, LLC	10/2003	N	500	800	270	910	124C	NANJEMOY FORMATION	02-13-11-01	AUTO BODY REPAIR
CA	G	CA1989 G011	(02)	CERRITO FAMILY PROPERTIES LLC	07/2001	N	1,000	1,500	340	900	125B	AQUIA FORMATION	02-13-11-01	RETAIL, OFFICE AND SERVICES
CA	G	CA1989 G012	(02)	SNEADE, WILLIAM, D.	06/2001	N	500	700	320	920	125B	AQUIA FORMATION	02-13-10-05	HARDWARE STORE
CA	G	CA1989 G013	(02)	WILLIAMS, JENNIFER	11/2005	N	1,000	1,600	270	910	124C	NANJEMOY FORMATION	02-13-11-01	FIRST IMPRESSIONS DAYCARE - PDWIS# 104-0054
CA	G	CA1989 G015	(01)	RICHARD & PHYLLIS HORSMON	09/2001	N	3,000	12,000	220	940	112	PLEISTOCENE	02-13-11-01	NURSERY
CA	G	CA1989 G016	(02)	CALVERT ELKS LODGE #2620	07/2001	N	500	800	260	920	124C	NANJEMOY FORMATION	02-13-10-05	MEETING HALL

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1989 G017	(03)	CHESAPEAKE CHURCH	11/2005	N	1,100	2,200	300	910	124C	NANJEMOY FORMATION	02-13-11-01	CHURCH & SHILOH CHRISTIAN ACADEMY PDWIS# 104-1176
CA	G	CA1989 G018	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	06/1998	N	1,000	5,000	200	960	124E	PINEY POINT FORMATION	02-13-11-01	APPEAL/LUSBY COMPACTOR SITE
CA	G	CA1989 G019	(03)	JEFFERSON, AGNES	12/2004	N	100	300	210	960	124E	PINEY POINT FORMATION	02-13-11-01	D.J.'S MARKET-PDWIS# 104-1029 (INACTIVE) - PROP FOR SALE
CA	G	CA1989 G020	(03)	CALVERT COUNTY PUBLIC SCHOOLS	12/2002	N	6,000	9,000	280	920	125B	AQUIA FORMATION	02-13-11-01	PLUM POINT ELEMENTARY SCHOOL
CA	G	CA1989 G021	(02)	RAYMOND-WOOD FUNERAL HOME, P.A.	10/2005	N	500	700	320	900	125B	AQUIA FORMATION	02-13-11-01	FUNERAL HOME AND FLORIST SHOP - PDWIS# 104-1190
CA	G	CA1989 G022	(02)	J & K INVESTMENT ASSOCIATES, L.L.C.	12/2001	N	900	1,500	320	900	125B	AQUIA FORMATION	02-13-11-01	OFFICE BLDG - 10020 SOUTHERN MARYLAND BLVD
CA	G	CA1989 G023	(02)	WAYSON, MORGAN	09/2002	N	6,100	10,000	310	910	125B	AQUIA FORMATION	02-13-11-01	OFFICE/WAREHOUSE SPACE/SAMES INDUSTRIAL CENTER
CA	G	CA1989 G107	(01)	CALVERT CLIFFS NUCLEAR POWER PLANT, INC.	07/2000	N	300	500	220	960	124E	PINEY POINT FORMATION	02-13-11-01	PUP TRAILERS - NON-POTABLE SUPPLY ONLY
CA	G	CA1990 G001	(02)	QUALITY BUILT HOMES, INC.	10/2003	N	600	1,200	220	950	112	PLEISTOCENE	02-13-11-01	
CA	G	CA1990 G004	(03)	GIGLIOTTI, FELIX	09/2003	N	2,500	5,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	GWHP
CA	G	CA1990 G005	(02)	CALVERT COUNTY PUBLIC SCHOOLS	12/2002	N	5,000	7,000	280	920	125B	AQUIA FORMATION	02-13-11-01	PLUM POINT MIDDLE SCHOOL
CA	G	CA1990 G006	(02)	GRAY, BRUCE	05/1997	N	1,000	2,800	280	930	124C	NANJEMOY FORMATION	02-13-10-05	GWHP - RETURN WELL
CA	G	CA1990 G008	(04)	DUNKIRK MARKET PLACE LLC,	07/2004	Y	15,000	30,000	320	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK MARKET PLACE - 1 WELL - PDWIS# 1040064
CA	G	CA1990 G009	(02)	BOWEN, DOUGLAS R.	11/2002	N	200	300	270	910	124C	NANJEMOY FORMATION	02-13-11-01	WASHING FARM EQUIPMENT.

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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CA	G	CA1990 G010	(02)	CALVERT COUNTY COMMISSIONERS	12/2002	N	300	500	250	910	124C	NANJEMOY FORMATION	02-13-11-01	WASTE WATER TREATMENT PLANT.
CA	G	CA1990 G011	(02)	RIVERA III, MODESTO S.	12/2002	N	300	500	260	920	124C	NANJEMOY FORMATION	02-13-11-01	MEDICAL OFFICE BUILDING.
CA	G	CA1990 G012	(02)	KATZENBERGER, FRANK & KATHI	01/2003	N	300	500	220	960	124E	PINEY POINT FORMATION	02-13-11-01	FRANK'S GARAGE INC.
CA	G	CA1990 G013	(02)	CRANE JR., JOHN, T.	01/2003	N	300	500	210	960	124E	PINEY POINT FORMATION	02-13-11-01	GROCERY STORE
CA	G	CA1990 G014	(04)	DONALDSON, STEVEN, E.	09/2005	N	3,000	6,000	180	160	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/RETURN WELL
CA	G	CA1990 G015	(03)	MURRAY, JR., RAYMOND, W.	09/2005	N	3,000	6,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/ RECHARGE WELL
CA	G	CA1990 G016	(02)	RADEACKAR, RANDY,	10/1996	N	3,000	6,000	180	960	122	MIOCENE	02-13-11-01	GWHP.
CA	G	CA1990 G017	(02)	EASTERN UNITED METHODIST CHURCH	11/2002	N	300	500	190	960	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH
CA	G	CA1991 G005	(02)	CROSSROAD CHRISTIAN CHURCH, INC.	07/2003	N	1,200	1,800	230	940	125B	AQUIA FORMATION	02-13-11-01	CHURCH & SCHOOL
CA	G	CA1991 G006	(02)	MT. GETHSEMANE BAPTIST CHURCH	09/2006	N	100	200	290	920	124C	NANJEMOY FORMATION	02-13-10-05	CHURCH - PDWIS# 104-1129
CA	G	CA1991 G008	(02)	MOUNT HOPE METHODIST CHURCH	07/2004	N	100	300	300	910	125B	AQUIA FORMATION	02-13-10-05	
CA	G	CA1991 G023	(02)	AMERICAN LEGION POST #85	04/2004	N	100	300	290	910	125B	AQUIA FORMATION	02-13-11-01	AMERICAN LEGION
CA	G	CA1991 G024	(02)	COLLINS CONTROLS, INC.	11/2003	N	500	1,000	210	960	124E	PINEY POINT FORMATION	02-13-11-01	WAREHOUSE-ELECTRICAL AND MASONRY CONTRACTORS
CA	G	CA1991 G028	(02)	CALVERT COUNTY PUBLIC SCHOOLS	01/2004	N	4,400	6,600	200	960	124C	NANJEMOY FORMATION	02-13-11-01	PATUXENT ELEMENTARY SCHOOL

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFf27	East-thouFf27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1992 G002	(02)	CHOICE HOME CENTER, INC.	01/2006	N	300	500	310	900	125B	AQUIA FORMATION	02-13-11-01	FLOORING CENTER
CA	G	CA1992 G010	(02)	BECKER BROTHERS ENTERPRISES	07/1996	N	13,100	21,800	290	940	124C	NANJEMOY FORMATION	02-13-10-05	55-LOT BREEZY POINT ESTATES SUBDIVISION
CA	G	CA1992 G024	(02)	SAFEWAY INC.	07/2004	N	8500	11,800	320	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK MARKET PLACE SAFEWAY - PDWIS# 1040069
CA	G	CA1992 G027	(02)	CALVERT COUNTY COMMISSIONERS	06/2004	N	400	700	200	970	124C	NANJEMOY FORMATION	02-13-11-01	FIRE SUBSTATION NO. 3A
CA	G	CA1992 G029	(02)	ABDALLA, ET AL, NAJAH,	03/1996	N	10,700	17,800	230	930	124E	PINEY POINT FORMATION	02-13-11-01	MILLS POND SUBDIVISION
CA	G	CA1992 G035	(03)	QUALITY BUILT HOMES, INC.	04/1997	N	14,700	24,600	280	930	124C	NANJEMOY FORMATION	02-13-10-05	WILBURN ESTATES SUBD - ADD 20 LOTS TO PLATTED 42
CA	G	CA1992 G037	(02)	RAY ENTERPRISES, INC., ,	08/1995	N	7,200	12,100	220	920	124C	NANJEMOY FORMATION	02-13-11-01	WILLIAMS WHARF PLANTATION - 30 LOT SBDN
CA	G	CA1992 G039	(02)	STONE, LOUIS, P.	01/2005	N	600	900	210	930	124E	PINEY POINT FORMATION	02-13-11-01	2 APARTMENTS
CA	G	CA1993 G007	(02)	SOUTHERN CALVERT BAPTIST CHURCH	07/2005	N	1,000	2,000	190	960	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH - PDWIS# 1041161
CA	G	CA1993 G008	(02)	MORGAN STATE UNIVERSITY	03/2005	N	2,000	3,000	210	940	124E	PINEY POINT FORMATION	02-13-11-01	ENVIRONMENTAL RESEARCH FACILITY
CA	G	CA1993 G010	(02)	STALLINGS, LARRY R. & JUDY C.	12/2005	N	400	700	290	920	124C	NANJEMOY FORMATION	02-13-10-05	THE ANOINTED HANDS HAIR SALON/STALLING NAT'L ENTER/TRAILER
CA	G	CA1993 G011	(03)	FDI POSTAL PROPERTIES II, INC.	03/2006	N	300	500	320	910	124C	NANJEMOY FORMATION	02-13-11-01	OWINGS POST OFFICE
CA	G	CA1993 G020	(02)	TYRRELL, BRENDA	11/2005	N	1,800	3,000	320	920	125B	AQUIA FORMATION	02-13-11-01	PRIMETIME CHILDRENS CENTER
CA	G	CA1993 G033	(02)	BOWEN, GORDON, F.	08/2005	N	300	400	290	910	124C	NANJEMOY FORMATION	02-13-11-01	BOWEN'S GROCERY - PDWIS# 104-1008

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1993 G035	(01)	GRANADOS, MICHAEL & ROBERT	08/1993	N	8700	70,000	270	900	125B	AQUIA FORMATION	02-13-11-01	GRANADOS FARMS
CA	G	CA1993 G038	(03)	BAYLINE BUILDERS & DEVELOPERS, INC.	03/2004	N	8,800	14,700	290	930	125B	AQUIA FORMATION	02-13-10-05	37-LOT HOLBROOK ESTATES SECT II SUBD
CA	G	CA1993 G039	(04)	JLH GROUP, LLC	09/2004	N	1,000	1,900	260	910	124C	NANJEMOY FORMATION	02-13-11-01	DUPONT BLDG - PARK PLACE LOT 7RR - OFFICE & SUITES
CA	G	CA1993 G040	(02)	BUCKLER, GORMAN, A.	08/2005	N	4,800	7,900	270	910	124C	NANJEMOY FORMATION	02-13-11-01	BUCKLER MOBILE HOME PARK - PDWIS# 004-0209
CA	G	CA1993 G041	(01)	GRANADOS, MICHAEL & ROBERT	08/1993	N	8700	70,000	270	900	122	MIOCENE	02-13-11-01	GRANADOS FARMS
CA	G	CA1993 G044	(02)	EVELYN NESTOR	05/1997	N	8,800	14,800	230	930	124E	PINEY POINT FORMATION	02-13-11-01	LOST MILL SBDN.
CA	G	CA1993 G045	(02)	MATHEW, MD, SCARIA	10/2005	N	300	500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	MEDICAL OFFICE
CA	G	CA1993 G048	(04)	NAVAL AIR STATION	04/2006	Y	80,000	150,000	180	950	125B	AQUIA FORMATION	02-13-11-01	CENTRAL SUPPLY FOR PATUXENT NAVAL AIR STATION
CA	G	CA1994 G004	(02)	NRL - CHESAPEAKE BAY DETACHMENT	02/2006	Y	25,000	51,000	300	930	125B	AQUIA FORMATION	02-13-10-05	CHESAPEAKE BY DETACHMENT - CHESAPEAKE BEACH - PDWIS# 004-0019
CA	G	CA1994 G008	(02)	THE GOTT COMPANY	03/2006	N	500	700	200	960	124E	PINEY POINT FORMATION	02-13-11-01	"FASTOP" MINI-MART #54 - PDWIS# 104-1180
CA	G	CA1994 G009	(02)	MARYLAND DEPARTMENT OF TRANSPORTATION	08/1994	N	300	500	260	910	124C	NANJEMOY FORMATION	02-13-11-01	PRINCE FREDERICK VEHICLE EMISSION TESTING FACILITY
CA	G	CA1994 G011	(02)	CRAIG, JANET, L.	03/2006	N	1,500	3,000	290	910	125B	AQUIA FORMATION	02-13-11-01	DAYCARE FACILITY - PDWIS# 104-0084
CA	G	CA1994 G023	(01)	MATHEWS, SCARIA	06/1994	N	300	500	200	960	122	MIOCENE	02-13-11-01	MEDICAL BUILDING
CA	G	CA1994 G025	(02)	WLHSPE, LLC	11/2005	N	100	300	320	920	125B	AQUIA FORMATION	02-13-11-01	FRIENDLY SELF STORAGE

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1994 G026	(03)	CALVERT COUNTY FAIR, INCORPORATED	05/2006	N	2,200	8,000	250	910	124C	NANJEMOY FORMATION	02-13-11-01	CALVERT COUNTY FAIR GROUNDS (104-1110)
CA	G	CA1994 G028	(03)	CALVERT COUNTY COMMISSIONERS	03/2006	Y	6,000	9,500	290	910	125B	AQUIA FORMATION	02-13-11-01	COMMUNITY SUPPLY - TARA SUBD - 25 HOMES - PDWIS# 004-0034
CA	G	CA1994 G033	(02)	HENNON, JR., JAMES, F.	07/1995	N	3,400	5,600	270	930	124C	NANJEMOY FORMATION	02-13-11-01	14L GARRETT ACRES SUBDIVISION
CA	G	CA1994 G039	(01)	CEDAR BEACH HOMEOWNERS ASSOC., INC.	08/1994	N	100	300	250	900	124C	NANJEMOY FORMATION	02-13-11-01	CEDAR BEACH COMMUNITY PIER
CA	G	CA1994 G044	(01)	CALVERT COUNTY COMMISSIONERS	10/1994	N	300	500	210	930	124C	NANJEMOY FORMATION	02-13-11-01	BROOMES ISLAND COMMUNITY CENTER
CA	G	CA1994 G052	(02)	SCHMEISER, HAROLD R. & LAURIE T.	07/2006	N	600	1,000	230	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK ANIMAL HOSPITAL - PDWIS# 104-1239
CA	G	CA1994 G057	(01)	WILLOWS DEVELOPMENT COMPANY	12/1994	N	6,400	10,700	290	940	124C	NANJEMOY FORMATION	02-13-10-05	WILLOWS BEACH HOME SBDN
CA	G	CA1995 G003	(01)	WALKER, DONALD, C.	02/1995	N	250	300	310	910	125B	AQUIA FORMATION	02-13-11-01	YESTERYEAR FURNISHINGS, INC.
CA	G	CA1995 G004	(01)	PERRY, THOMAS, C.	02/1995	N	6,000	10,000	340	900	125B	AQUIA FORMATION	02-13-11-01	HARNISHAN SBDN
CA	G	CA1995 G005	(02)	THE SHOPPES AT DUNKIRK, LLC	07/2005	N	5,600	8,100	320	900	125B	AQUIA FORMATION	02-13-11-01	COUNTRY PLAZA SHOPPING CENTER - PDWIS# 104-1152
CA	G	CA1995 G006	(02)	GRACE, MARK & PEGGY	08/1998	N	2,500	10,000	300	890	125B	AQUIA FORMATION	02-13-11-01	PITCH & PUT GOLF COURSE T & GREENS ONLY 9 HOLES
CA	G	CA1995 G010	(01)	PENWICK VILLAGE LIMITED PARTNERSHIP	03/1995	N	2,000	2,500	330	900	125B	AQUIA FORMATION	02-13-11-01	CALVERT GATEWAY CITGO
CA	G	CA1995 G011	(01)	GREEN, SR., GEORGE	03/1995	N	2,900	4,900	290	930	124C	NANJEMOY FORMATION	02-13-10-05	THE ESTATE OF LEROY GREEN
CA	G	CA1995 G019	(02)	BOARD OF COMMISSIONERS OF CALVERT COUNTY	07/2005	Y	10,000	15,000	200	960	125B	AQUIA FORMATION	02-13-11-01	SOUTHERN PINES SENIOR - TIED TO SOLOMONS/LUSBY PDWIS# 004-0002

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CA	G	CA1995 G026	(01)	PAINTER, WILLIE	01/1996	N	10,000	16,700	300	920	125B	AQUIA FORMATION	02-13-10-05	SUNDERLEIGH SBDN (42 LOTS)
CA	G	CA1995 G030	(03)	CALVERT COUNTY COMMISSIONERS	11/2000	Y	14,700	24,600	290	910	125B	AQUIA FORMATION	02-13-11-01	WALNUT CREEK COMMUNITY SUPPLY (PHASE III)
CA	G	CA1995 G031	(01)	SOUTHERN MARYLAND OIL, INCORPORATED	07/1995	N	300	500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	LUSBY TEXACO
CA	G	CA1995 G032	(01)	CHAFFEE, CHRIS	07/1995	N	3,400	5,600	260	910	124C	NANJEMOY FORMATION	02-13-11-01	14L CHAFFEE PROPERTY SBDN
CA	G	CA1995 G035	(01)	DUNLAP, STEVEN, H.	07/1995	N	2,700	4,400	230	930	124E	PINEY POINT FORMATION	02-13-11-01	STRATHEMOOR 11L SBDN
CA	G	CA1995 G040	(01)	DINARDO, BRIAN	07/1995	N	1,000	4,000	220	930	124E	PINEY POINT FORMATION	02-13-11-01	SOUTHERN MD GREENHOUSE - NURSERY (PLANTS)
CA	G	CA1995 G047	(01)	PRALEY, EDWARD	09/1995	N	3,400	5,600	270	910	124C	NANJEMOY FORMATION	02-13-11-01	14 LOT HUNTINGTOWN SOUTH SBDN
CA	G	CA1995 G048	(01)	LEE FUNERAL HOME, INC.	09/1995	N	500	800	310	900	125B	AQUIA FORMATION	02-13-11-01	LEE FUNERAL HOME
CA	G	CA1995 G049	(02)	MURRAY, J., D.	11/1996	N	11,500	19,200	320	910	125B	AQUIA FORMATION	02-13-11-01	48-LOT CABIN BRANCH SBDN
CA	G	CA1995 G051	(01)	CLEARY, SR., FRANK,	11/1995	N	2,700	4,400	310	900	125B	AQUIA FORMATION	02-13-11-01	11L WILLIAMS PROPERTY SUBDIVISION
CA	G	CA1995 G055	(01)	GATES, JR., ANDREW G.,	10/1995	N	300	500	300	910	124C	NANJEMOY FORMATION	02-13-11-01	GATES GREENHOUSE
CA	G	CA1995 G057	(03)	CASTLETON COMMUNITY ASSOCIATION INC.	10/2002	N	300	500	280	920	124C	NANJEMOY FORMATION	02-13-11-01	CASTLETON SBDN - LAWN IRRIGATION & MAKE-UP WATER FOR FOUNTAIN
CA	G	CA1995 G059	(01)	COX, MAURICE,	12/1995	N	300	500	260	910	124C	NANJEMOY FORMATION	02-13-11-01	OFFICE
CA	G	CA1995 G060	(01)	BROWN, THOMAS PARRAN III/MELVIN,	12/1995	N	5,000	8,000	240	940	124E	PINEY POINT FORMATION	02-13-11-01	20- LOT SUBDIVISION

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CA	G	CA1995 G062	(01)	WOOD, FRANK	12/1995	N	500	800	320	910	125B	AQUIA FORMATION	02-13-11-01	SISK AUTO BODY
CA	G	CA1996 G005	(01)	VENTURE UPHOLSTERY, INC.	02/1996	N	400	700	310	910	124C	NANJEMOY FORMATION	02-13-11-01	COMMERCIAL TRUCK SEAT SALES/UPHOLSTERY
CA	G	CA1996 G008	(01)	ALEXANDER, R. BROOKE KAINE AND RICHA	02/1997	N	27,500	45,800	270	930	124C	NANJEMOY FORMATION	02-13-11-01	RESUBDIVISION OF 71 PLATTED LOTS INTO 115 LOTS
CA	G	CA1996 G009	(01)	MILL BRANCH LLC, C/O MORGAN RUSSELL	02/1996	N	6,200	10,300	300	900	124C	NANJEMOY FORMATION	02-13-11-01	26 LOT SUBDIVISION
CA	G	CA1996 G015	(01)	HOMES AMERICA CORPORATION	03/1996	N	400	700	300	910	124C	NANJEMOY FORMATION	02-13-10-05	CHIPS TOWING SERVICE
CA	G	CA1996 G016	(01)	DOUBLE D FITNESS CENTER	04/1996	N	800	1,300	260	910	124C	NANJEMOY FORMATION	02-13-11-01	HEALTH AND FITNESS CENTER
CA	G	CA1996 G018	(02)	HOWLIN, EDWARD, B.	06/1996	N	8,800	14,700	310	920	124C	NANJEMOY FORMATION	02-13-10-05	37 LOT ASPEN WOODS SUBD
CA	G	CA1996 G019	(01)	WATHEN, KENNETH, L.	04/1996	N	500	800	230	940	124E	PINEY POINT FORMATION	02-13-11-01	SELF-STORAGE FACILITY AND APARTMENT
CA	G	CA1996 G020	(01)	CALVERT MEMORIAL HOSPITAL	04/1996	N	2,600	4,000	330	900	125B	AQUIA FORMATION	02-13-11-01	PHYSICIAN'S OFFICE BUILDING
CA	G	CA1996 G021	(04)	WELLONS, III & DIANE L. WELLONS, L. THOMAS	07/2005	N	500	800	260	910	124C	NANJEMOY FORMATION	02-13-11-01	LOT #2 - FUTURE COMMERCIAL ESTABLISHMENT
CA	G	CA1996 G022	(04)	WELLONS, III & DIANE WELLONS, L. THOMAS	07/2005	N	500	800	260	910	124C	NANJEMOY FORMATION	02-13-11-01	LOT #3 - FUTURE COMMERCIAL ESTABLISHMENT
CA	G	CA1996 G023	(04)	WELLONS, III & DIANE L. WELLONS, L. THOMAS	07/2005	N	500	800	260	910	124C	NANJEMOY FORMATION	02-13-11-01	LOT #4 - FUTURE COMMERCIAL ESTABLISHMENT
CA	G	CA1996 G025	(02)	TROTT, RAYMOND, G.	04/1998	N	2,600	4,300	280	900	124C	NANJEMOY FORMATION	02-13-11-01	11-LOT SUBD
CA	G	CA1996 G026	(03)	CALVERT COUNTY BOARD OF COMMISSIONERS	03/2000	Y	37,000	61,000	320	910	125B	AQUIA FORMATION	02-13-11-01	CROSS POINT COMMUNITY SUPPLY - CHANGE OF OWNER

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1996 G036	(02)	GODSGRACE 1652, LLC	12/2004	N	500	800	310	900	125B	AQUIA FORMATION	02-13-11-01	OFFICE BUILDING PDWIS# 104-1209
CA	G	CA1996 G039	(01)	THE CARROLL INDEPENDENT FUEL COMPANY	07/1996	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	CITGO GAS/SERVICE STATION
CA	G	CA1996 G044	(01)	GROVER, RUTH	09/1996	N	7100	11,900	320	910	124C	NANJEMOY FORMATION	02-13-11-01	30 LOT SUBD
CA	G	CA1996 G045	(01)	MARQUESS, ELINOR, J.	09/1996	N	6,700	11,200	300	910	124C	NANJEMOY FORMATION	02-13-11-01	28 LOT SUBD
CA	G	CA1996 G046	(01)	WARD, DOROTHY, T.	09/1996	N	3,300	5,500	280	920	124C	NANJEMOY FORMATION	02-13-11-01	14 LOT SUBD
CA	G	CA1996 G049	(01)	APPLE CREEK DEVELOPMENT CORPORATION	09/1996	N	4,000	6,700	240	910	124E	PINEY POINT FORMATION	02-13-11-01	17L APPLE CREEK SUBD
CA	G	CA1996 G050	(01)	BUTTON, LELIA, M.	09/1996	N	8,800	14,700	230	930	124E	PINEY POINT FORMATION	02-13-11-01	37 LOT AUGUST RUN SUBD
CA	G	CA1996 G052	(02)	TYRRELL, BRENDA	11/2005	N	2,000	3,300	320	920	125B	AQUIA FORMATION	02-13-11-01	PRIMETIME YOUTH ACTIVITY CENTER
CA	G	CA1996 G055	(02)	CALVERT ANIMAL WELFARE LEAGUE	05/2004	N	1,000	2,500	260	910	125B	AQUIA FORMATION	02-13-11-01	CALVERT ANIMAL WELFARE LEAGUE
CA	G	CA1996 G058	(01)	IRN, INC.	11/1996	N	300	500	190	960	124E	PINEY POINT FORMATION	02-13-11-01	DOWELL STORAGE
CA	G	CA1996 G241	(01)	TWIN SHIELDS GOLF CLUB, INC.	07/2005	N	300	600	340	900	125B	AQUIA FORMATION	02-13-11-01	CONCESSION(CLUB HOUSE) & BATHROOMS - PDWIS# 1041096
CA	G	CA1997 G001	(01)	KING, EUNICE	09/1997	N	11,200	18,600	300	900	125B	AQUIA FORMATION	02-13-11-01	OAKMOUNT MANOR RES SUBD
CA	G	CA1997 G002	(01)	MCINTYRE, DONALD	01/1997	N	1,000	1,600	270	910	124C	NANJEMOY FORMATION	02-13-11-01	NURSERY
CA	G	CA1997 G010	(02)	GEORGE MATHEWS & ASSOCIATES	04/1998	N	2,100	3,500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	3-LOT COMMERCIAL SUBD "LUSBY TOWN SQUARE"

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1997 G014	(01)	LEWIS, DAVID, R	04/1997	N	2,900	4,800	320	890	125B	AQUIA FORMATION	02-13-11-01	12 LOT SUBD
CA	G	CA1997 G017	(01)	HARDESTY, MAURICE	05/1997	N	2,800	4,700	300	910	125B	AQUIA FORMATION	02-13-11-01	13-LOT CHANCELLORS RUN SUBD
CA	G	CA1997 G019	(01)	LEWIS, DAVID, R.	05/1997	N	2,900	4,700	320	890	125B	AQUIA FORMATION	02-13-11-01	12-LOT LOVING FARM SUBD
CA	G	CA1997 G020	(01)	MELVIN BROWN - EUGENE SMITH	06/1997	N	5,200	8,800	200	950	124E	PINEY POINT FORMATION	02-13-11-01	SUBDIVISION
CA	G	CA1997 G023	(01)	GLENN BOWEN, ROBERT FOWLER, &	08/1997	N	8,100	13,500	270	920	124C	NANJEMOY FORMATION	02-13-11-01	34 LOT SUBDIVISION - LOTTIES REST
CA	G	CA1997 G026	(01)	TANAVAGE, LEE, C.	07/1997	N	8,400	12,000	200	960	124E	PINEY POINT FORMATION	02-13-11-01	GENERIC SHOPPING, TAVERN, OFFICE BUILDING, BANK
CA	G	CA1997 G027	(01)	COLLINSON, RICHARD	08/1997	N	8,300	14,000	240	910	124E	PINEY POINT FORMATION	02-13-11-01	35-LOT FOX FIELD SUBDIVISION
CA	G	CA1997 G028	(01)	APOSTOLIC FAITH CHURCH	08/1997	N	300	500	320	910	125B	AQUIA FORMATION	02-13-11-01	CHURCH
CA	G	CA1997 G029	(01)	FAI-MAR CORPORATION	08/1997	N	1,200	1,600	270	910	124C	NANJEMOY FORMATION	02-13-11-01	FULL SERVICE CAR WASH
CA	G	CA1997 G030	(01)	ISLAND BAY L.L.C.	09/1997	N	2,900	4,800	220	940	124E	PINEY POINT FORMATION	02-13-11-01	ISLAND CREEK SUBD
CA	G	CA1997 G031	(01)	QUALITY BUILT HOMES, INC.	09/1997	N	1,200	2,000	230	930	124E	PINEY POINT FORMATION	02-13-11-01	ADDITION TO PREV. RECORDED 38-LOT SUBD THAT WAS NEVER PERMITTED
CA	G	CA1997 G032	(01)	GOLDSTEIN, LOUIS, L.	09/1997	N	200	300	240	930	124C	NANJEMOY FORMATION	02-13-11-01	FLOWER STAND
CA	G	CA1997 G034	(01)	MULFORD SR. & WILLIAM FOWLER, RICHAR	09/1997	N	300	500	250	910	124C	NANJEMOY FORMATION	02-13-11-01	BARSTOW POST OFFICE
CA	G	CA1997 G035	(02)	KOPICKI & MICHAEL HEGARTY, CHESTER	02/2002	N	6,000	10,000	290	910	125B	AQUIA FORMATION	02-13-11-01	FARM VALLEY NURSERY -

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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CA	G	CA1997 G036	(01)	FOWBOWLSTONE L.L.P.	10/1997	N	8,100	13,500	270	930	124C	NANJEMOY FORMATION	02-13-11-01	35-LOT RES. SUBD
CA	G	CA1997 G038	(01)	WARD, S., CHESTER	01/1998	N	4,600	7,700	320	920	124C	NANJEMOY FORMATION	02-13-10-05	20-LOT SUBD OF L.E. WARD PROPERTY
CA	G	CA1997 G039	(01)	FINLEY, ELLIOTT, C.	01/1998	N	3,000	5,000	300	910	124C	NANJEMOY FORMATION	02-13-11-01	13-LOT SUBD
CA	G	CA1997 G040	(01)	JOY, WAYNE, H.	01/1998	N	5,000	8,100	190	970	124E	PINEY POINT FORMATION	02-13-11-01	21-LOT SUBD
CA	G	CA1998 G001	(01)	EASTERN PETROLEUM CORPORATION	02/1998	N	300	500	340	900	125B	AQUIA FORMATION	02-13-11-01	AMOCO GAS STATION (EP5)
CA	G	CA1998 G002	(01)	MCKAY MANAGEMENT AND INVESTMENT COMPANY	02/1998	N	9,000	15,000	200	960	124E	PINEY POINT FORMATION	02-13-11-01	SOUTH CALVERT MARKETPLACE - GROCERY STORE AND RETAIL STORES
CA	G	CA1998 G003	(01)	VAN HOY, DAVID	04/1998	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	CENTURY 21 REAL ESTATE OFFICE
CA	G	CA1998 G004	(01)	SMITHVILLE UNITED METHODIST CHURCH	05/1998	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	REPLACEMENT WELL- NO PREVIOUS PERMIT LOCATED
CA	G	CA1998 G006	(01)	CALVERT COUNTY BOARD OF COMMISSIONERS	05/1998	N	1,000	5,000	280	910	124C	NANJEMOY FORMATION	02-13-11-01	HUNTINGTOWN COMPACTOR SITE
CA	G	CA1998 G009	(01)	PARRAN, JR., THOMAS	05/1998	N	9,500	15,800	230	950	124E	PINEY POINT FORMATION	02-13-11-01	PARRAN'S GRANT SECTION II - 41 LOT SUBD
CA	G	CA1998 G010	(01)	EMMANUEL BAPTIST CHURCH	06/1998	N	300	500	280	910	125B	AQUIA FORMATION	02-13-11-01	CHURCH
CA	G	CA1998 G011	(01)	JOHNSON, LANKFORD	06/1998	N	500	800	230	930	124E	PINEY POINT FORMATION	02-13-11-01	BROTHERS JOHNSON INC.
CA	G	CA1998 G013	(01)	WAYSON JR., MORGAN	07/1998	N	500	800	310	910	125B	AQUIA FORMATION	02-13-11-01	SELF STORAGE RENTAL
CA	G	CA1998 G014	(01)	HENNIG FAMILY LIMITED PARTNERSHIP	09/1998	N	13,700	22,900	230	940	124E	PINEY POINT FORMATION	02-13-11-01	59-LOT ORIOLE LANDING SBDN

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA1998 G015	(02)	LOGAN, RICHARD, EDWARD	08/1998	N	2,600	4,300	230	930	124E	PINEY POINT FORMATION	02-13-11-01	11-LOT RES. SUBD. - CHANGE IN LAND OWNERSHIP
CA	G	CA1998 G016	(01)	SUNDERLAND LTD PARTNERSHIP	08/1998	N	500	2,000	300	910	124C	NANJEMOY FORMATION	02-13-11-01	CONTRACTING OFFICE & WAREHOUSE
CA	G	CA1998 G017	(01)	MARRICK PROPERTIES,INC.	02/2000	N	27,000	44,000	330	900	125B	AQUIA FORMATION	02-13-11-01	113-LOT SBDN
CA	G	CA1998 G018	(01)	BLANCADO, RICHARD	08/1998	N	7,100	42,000	230	910	124C	NANJEMOY FORMATION	02-13-11-01	IRRIGATION AND POND FILLING
CA	G	CA1998 G019	(01)	CARTER, SR., ROBERT	09/1998	N	2,300	3,900	300	900	124C	NANJEMOY FORMATION	02-13-11-01	PRESENTLY 10 LOT RES. SUBD., 6 FORMER LOTS ALREADY SOLD,MORE LAND
CA	G	CA1998 G022	(01)	HORSMON, RICHARD, A.	09/1998	N	3,500	5,900	220	940	122	MIOCENE	02-13-11-01	HORSMON, R., BELLE GROVE SUBD LOTS 6 - 20/ CA92G012 LOT1-5 INACT.
CA	G	CA1998 G023	(01)	HOWSARE, WILLIAM	09/1998	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	6 EMPLOYEES
CA	G	CA1998 G025	(01)	GOTT COMPANY	09/1998	N	500	700	230	940	124E	PINEY POINT FORMATION	02-13-11-01	FAST STOP GAS AND CONVENIENCE STORE
CA	G	CA1998 G026	(01)	PITCHER, CARL, L.	11/1998	N	4,000	20,000	230	930	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENCE/IRRIGATION
CA	G	CA1998 G028	(02)	BUCKINGHAM, MICHAEL, H.	07/2001	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	BAY METAL WORKS INC.
CA	G	CA1998 G030	(01)	BEE'S AUTO SUPPLY INCORPORATED OF PRINCE	11/1998	N	300	500	250	920	124C	NANJEMOY FORMATION	02-13-10-05	BEE'S AUTO SUPPLY - NEW WELL - CANNOT LOCATE EXISTING PERMIT
CA	G	CA1998 G031	(01)	DUNKIRK BAPTIST CHURCH	11/1998	N	300	500	330	900	125B	AQUIA FORMATION	02-13-11-01	DUNKIRK BAPTIST CHURCH
CA	G	CA1998 G124	(01)	J. ALLEN SWANN	08/1999	Y	45,000	272,000	310	890	211D	MAGOTHY FORMATION	02-13-11-01	IRRIGATION MAGOTHY AQUIFER
CA	G	CA1999 G002	(01)	WEEMS, CLAUDE, RONALD	02/1999	N	300	500	230	940	124E	PINEY POINT FORMATION	02-13-11-01	DICKSON'S EMPORIUM (FLOWER & GIFT SHOP)

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CA	G	CA1999 G004	(01)	TOCHTERMANN, WILLIAM	02/1999	N	500	800	210	930	124E	PINEY POINT FORMATION	02-13-11-01	BILL'S MARINA
CA	G	CA1999 G005	(01)	RUSSELL, MORGAN	03/1999	N	1,500	2,500	300	910	124C	NANJEMOY FORMATION	02-13-10-05	EXCAVATING COMPANY
CA	G	CA1999 G007	(01)	WOOD, GARY	03/1999	N	9,500	16,000	200	970	124E	PINEY POINT FORMATION	02-13-11-01	41-LOT FOXHOLE RESIDENTIAL SUBDIVISION
CA	G	CA1999 G011	(01)	SWANN, HAZEL, M.	07/1999	N	4,200	7,000	310	890	124C	NANJEMOY FORMATION	02-13-11-01	PATUXENT SUNSET SUBDIVISION (18-LOT)
CA	G	CA1999 G012	(01)	RAUSCH, MYRTLE, M.	07/1999	N	300	500	320	910	124C	NANJEMOY FORMATION	02-13-11-01	RAUSCH FUNERAL HOME
CA	G	CA1999 G013	(01)	YANNONE, JOHN, J.	07/1999	N	1,000	1,500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	CAR WASH AND AUTOMOTIVE CENTER
CA	G	CA1999 G014	(01)	OGLE, CLARISSA	07/1999	N	6,500	10,800	280	920	124C	NANJEMOY FORMATION	02-13-11-01	SINGLE FAMILY DWELLING
CA	G	CA1999 G015	(01)	TEDDER, RICHARD, C.	07/1999	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	RICH'S QUICK LUBE LLC
CA	G	CA1999 G016	(01)	GOLDSTEIN, PHILIP, T.	08/1999	N	9,300	15,500	230	940	124E	PINEY POINT FORMATION	02-13-11-01	OLD GLORY 40-L RES. SUBD
CA	G	CA1999 G017	(02)	US POSTAL SERVICE	10/1999	N	200	300	240	940	124E	PINEY POINT FORMATION	02-13-10-05	US POST OFFICE, 4 EMPL, WELL REPLACE-NEW BLDG-PREV NOT PERMITTED
CA	G	CA1999 G018	(02)	CALVERT COUNTY COMMISSIONERS	02/2002	Y	38,200	64,000	280	920	125B	AQUIA FORMATION	02-13-11-01	COMMUNITY SUPPLY - MARLEY RUN SUBD
CA	G	CA1999 G021	(01)	VAN HOY, DAVID	12/1999	N	5,800	9,700	280	900	124C	NANJEMOY FORMATION	02-13-11-01	OAKWOOD MANOR 25-L RESIDENTIAL SUBDIVISION
CA	G	CA1999 G022	(01)	EL-DAMALOUJI, ISSAM, F.	12/1999	N	4,000	6,600	280	920	124C	NANJEMOY FORMATION	02-13-11-01	20-LOT BARAKAT RESIDENTIAL SUBD - 17 WELLS
CA	G	CA2000 G001	(01)	GOTT JR, JOHN, M.	02/2000	N	4,600	7,700	230	920	124C	NANJEMOY FORMATION	02-13-11-01	20-L DEER RUN SUBD (RESIDENTIAL)

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CA	G	CA2000 G002	(01)	NORFOLK, DALE & ANN	02/2000	N	3,900	6,600	320	920	124C	NANJEMOY FORMATION	02-13-10-05	17-L NORFOLK PLACE SUBD (RESIDENTIAL)
CA	G	CA2000 G004	(01)	KENT, SARAH	04/2000	N	4,400	7,400	280	910	124C	NANJEMOY FORMATION	02-13-11-01	CHANCE POINT RESIDENTIAL SUBD
CA	G	CA2000 G005	(01)	THOMPSON, SHIRLEY, E.	04/2000	N	4,900	8,100	280	920	124C	NANJEMOY FORMATION	02-13-11-01	21-LOT HUNTING CREEEK HILLS RESIDENTIAL SUBD
CA	G	CA2000 G006	(01)	MC CONKEY, KELLY, D.	05/2000	N	4,500	20,000	330	900	125B	AQUIA FORMATION	02-13-11-01	MC CONKEY - VOLUNTARY AGRICULTURE
CA	G	CA2000 G007	(01)	KAINE, BROOKE	11/2000	N	11,000	18,500	320	910	125B	AQUIA FORMATION	02-13-11-01	47-LOT RESIDENTIAL COVENANT CREEK SUBD
CA	G	CA2000 G008	(01)	SUSAN CHAN	06/2000	N	300	500	300	910	124C	NANJEMOY FORMATION	02-13-11-01	ROUTES 2 & 4 LIQUORS
CA	G	CA2000 G009	(02)	MURPHY DEVELOPMENT LLC	07/2003	N	2,000	3,500	300	910	124C	NANJEMOY FORMATION	02-13-11-01	RETAIL CENTER FOR 5 BUSINESSES - ONE TO BE FLOOR SYSTEMS
CA	G	CA2000 G010	(01)	JLH GROUP LLC	06/2000	N	900	1,500	260	910	124C	NANJEMOY FORMATION	02-13-11-01	RETAIL WAREHOUSES - TO BE LEASED
CA	G	CA2000 G011	(02)	POUNSBERRY, RONALD & SHEREE	03/2004	N	1,500	2,500	290	910	125B	AQUIA FORMATION	02-13-11-01	SLEEPY HOLLOW DAYCARES AND RESIDENCE
CA	G	CA2000 G014	(02)	DUNKIRK VOLUNTEER FIRE DEPARTMENT, INC.	09/2002	N	1,000	2,500	320	900	125B	AQUIA FORMATION	02-13-11-01	3170 WEST WARD RD - DUNKIRK VFD NEW SITE
CA	G	CA2000 G015	(02)	OSBORNE PROPERTIES LLC	09/2002	N	1,500	3,000	320	900	125B	AQUIA FORMATION	02-13-11-01	10200 SOUTHERN MD BLVD - ARBYS
CA	G	CA2000 G016	(01)	BECKMAN, INC.	07/2000	N	2,000	5,000	310	900	124C	NANJEMOY FORMATION	02-13-11-01	LANDSCAPING BUSINESS/COMMERCIAL NURSERY/HYDROSEEDING
CA	G	CA2000 G018	(02)	CHIARAMONTE, FRANCIS, P.	09/2002	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	3180 WEST WARD RD - LOT 4 DUNKIRK COMMERCIAL PARK
CA	G	CA2000 G019	(03)	HOPEWELL PROPERTIES, LLC.	11/2006	N	900	1,700	320	900	125B	AQUIA FORMATION	02-13-11-01	10000 FT*2 OFFICE BUILDING

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CA	G	CA2000 G020	(03)	CALVERT INVESTMENT PROPERTIES, L.L.C.	07/2005	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	3185 WEST WARD RD - LOT 2 DUNKIRK COMMERCIAL PARK
CA	G	CA2000 G021	(02)	CHIARAMONTE, FRANCIS, P.	09/2002	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	3195 WEST WARD RD - LOT 1 DUNKIRK COMMERCIAL PARK
CA	G	CA2000 G024	(01)	BRISCOE, CROFTON	10/2000	N	200	300	210	940	124C	NANJEMOY FORMATION	02-13-11-01	LIVESTOCK & POTABLE
CA	G	CA2000 G027	(01)	JONES SR., PHILLIP	11/2000	N	200	300	280	910	124C	NANJEMOY FORMATION	02-13-11-01	LIVESTOCK WATERING
CA	G	CA2000 G028	(01)	CALVERT COUNTY COMMISSIONERS	12/2000	N	100	200	280	920	124C	NANJEMOY FORMATION	02-13-11-01	MARLEY RUN REC. AREA-SNACK STAND
CA	G	CA2001 G001	(01)	SNEADE, DAVE	01/2001	N	400	700	200	960	124E	PINEY POINT FORMATION	02-13-11-01	SNEADES ACE HARDWARE
CA	G	CA2001 G002	(01)	KELLY, PATRICK	01/2001	N	100	200	280	930	124C	NANJEMOY FORMATION	02-13-10-05	LIVESTOCK WATERING
CA	G	CA2001 G003	(01)	HUMM, ET.AL., JOSEPH	03/2001	N	9300	15,300	310	900	124C	NANJEMOY FORMATION	02-13-11-01	SINGLE FAMILY RESIDENTIAL SUBDIVISION
CA	G	CA2001 G004	(01)	MORRIS, JR., JAMES, S.	03/2001	N	8,100	13,600	300	990	125B	AQUIA FORMATION	02-13-11-01	CLAIREMONT-SINGLE FAMILY RESIDENTIAL
CA	G	CA2001 G005	(01)	MORGAN WAYSON, JR.	05/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MORGAN WAYSON, JR. DUNKIRK BUS.CENT LOT1
CA	G	CA2001 G006	(01)	MORGAN WAYSON, JR.	05/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MORGAN WAYSON, JR. DUNKIRK BUS.CENT. LOT 2
CA	G	CA2001 G007	(02)	NSM REALTY, LLC	12/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	DUNKIRK BUSINESS CENTER, LOT 3
CA	G	CA2001 G008	(02)	J & J DEVELOPMENT CORPORATION	05/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE DEVELOPMENT
CA	G	CA2001 G009	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 5

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFf27	East-thouFf27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA2001 G010	(02)	QUALITY INVESTORS, LLC	06/2004	N	100	300	310	910				DUNKIRK BUSINESS CTR LOT 6
CA	G	CA2001 G011	(02)	BCJJ, LLC	06/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	DUNKIRK BUS CTR - LOT #7 - 635 KEITH LANE
CA	G	CA2001 G012	(02)	BCJJ, LLC	06/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	DUNKIRK BUSINESS CENTER - LOT #8 - 615 KEITH LANED
CA	G	CA2001 G013	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 9
CA	G	CA2001 G014	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 10
CA	G	CA2001 G015	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 11
CA	G	CA2001 G016	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 12
CA	G	CA2001 G017	(02)	WAYSON,JR., MORGAN	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE - DUNKIRK BUS.CENT. LOT 13
CA	G	CA2001 G018	(04)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	12/2005	N	1,400	2,500	310	910	125B	AQUIA FORMATION	02-13-11-01	LOT 14, DUNKIRK BUS. CTR - 7 UNITS - WELL DRILLED TO AQUIA
CA	G	CA2001 G021	(01)	ARMIGER, MILTON, W.	07/2001	N	9,100	15,100	280	910	124C	NANJEMOY FORMATION	02-13-11-01	ARMIGER
CA	G	CA2001 G022	(02)	TAYLOR BUSINESS CENTER, LLC	11/2004	N	300	500	310	910	124C	NANJEMOY FORMATION	02-13-11-01	7640 INVESTMENT CT, LOT #8
CA	G	CA2001 G024	(01)	MORGAN WAYSON, JR.	09/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MORGAN WAYSON, JR. 7656 INVESTMENT CT, LOT #10
CA	G	CA2001 G025	(02)	DRURY, ROBERT & MICHELLE	10/2002	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA2001 G026	(03)	PHIPPS, W., SCOTT	05/2006	N	200	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	CHESAPEAKE INDUSTRIES - 7672 INVESTMENT CT LOT #12R

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouF27	East-thouF27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA2001 G028	(03)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	09/2004	N	100	300	310	910	125B	AQUIA FORMATION	02-13-11-01	AUTO REPAIR BUSINESS/7665 INVESTMENT CT/N CAL IND PK LOT 15
CA	G	CA2001 G029	(02)	TRUMPY PROPERTIES, LLC	12/2002	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	
CA	G	CA2001 G031	(03)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	12/2005	N	3,000	4,500	310	910	125B	AQUIA FORMATION	02-13-11-01	7632 INVESTMENT CT, LOT 4RR - WELL DRILLED TO AQUIA
CA	G	CA2001 G032	(02)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	09/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE BUSINESS, JR. 7673 INVESTMENT CT, LOT #14R
CA	G	CA2001 G033	(02)	MICHAEL H. BUCKINGHAM	07/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MICHAEL BUCKINGHAM 7600 INVESTMENT CT, LOT #1
CA	G	CA2001 G034	(01)	MICHAEL H. BUCKINGHAM	07/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	MICHAEL H. BUCKINGHAM INVESTMENT COURT, LOT #5
CA	G	CA2001 G035	(01)	VAN WIE BUILDERS, INC.	10/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	VAN WIE BULDERS, INC. 7601 INVESTMENT CT, LOT #22R
CA	G	CA2001 G036	(01)	CONSTANTINE, CHRIS	07/2001	N	3,700	6,200	300	930	124C	NANJEMOY FORMATION	02-13-01-05	CONSTANTINE
CA	G	CA2001 G038	(01)	KEIR, KENNETH, G.	09/2001	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	KEN KEIR RACE CARS
CA	G	CA2001 G039	(02)	KEIR, KENNETH, G.	10/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	AUTO REPAIR - N. CALVERT IND PARK LOT 2
CA	G	CA2001 G040	(02)	SCHWENK, JOHN, P.	10/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE BUSINESS @ 7615 GINGER LANE
CA	G	CA2001 G041	(02)	SCHWENK, JOHN, P.	10/2004	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	FUTURE BUSINESS @ 7625 GINGER LANE
CA	G	CA2001 G042	(01)	COLLEGE OF SOUTHERN MARYLAND	09/2001	N	1300	3,000	260	910	124C	NANJEMOY FORMATION	02-13-11-01	PRINCE FREDERICK
CA	G	CA2001 G043	(01)	CONSTANTINE, CHRIS, G.	09/2001	N	3,700	6,200	300	930	124C	NANJEMOY FORMATION	02-13-10-05	SINGLE FAMILY RESIDENCE SUBDIVISION

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA2001 G044	(01)	HANCE, TOM	10/2001	N	600	800	240	930	124E	PINEY POINT FORMATION	02-13-11-01	FARM AND GREENHOUSE
CA	G	CA2001 G047	(01)	RAUSH FUNERAL HOME	11/2001	N	350	500	230	930	124E	PINEY POINT FORMATION	02-13-11-01	RAUSH FUNERAL HOME
CA	G	CA2001 G048	(01)	SELLERS, PAUL	10/2001	N	600	900	240	940	124E	PINEY POINT FORMATION	02-13-11-01	LIVESTOCK WATERING
CA	G	CA2001 G049	(01)	YANNONE, JOHN, J.	12/2001	N	1,000	1,500	200	960	124E	PINEY POINT FORMATION	02-13-11-01	AUTOMOTIVE SERVICE
CA	G	CA2002 G001	(01)	CALVERT COUNTY PUBLIC SCHOOLS	10/2003	Y	15,500	38,000	290	910	125B	AQUIA FORMATION	02-13-11-01	HUNTINGTON HIGH SCHOOL
CA	G	CA2002 G002	(02)	LITTEN, CURTIS & VIALONDA	08/2005	N	1,200	2,000	290	910	125B	AQUIA FORMATION	02-13-11-01	VET&ANIMAL HOSPITAL/DANCE INSTRUCT/PAINT CONTR
CA	G	CA2002 G003	(01)	RODBELL, LARRY	02/2002	N	400	500	260	930	125B	AQUIA FORMATION	02-13-11-01	DOG KENNEL
CA	G	CA2002 G006	(01)	GERTZ, RODNEY	04/2002	N	1,000	1,500	220	950	124E	PINEY POINT FORMATION	02-13-11-01	RODNEY GERTZ - SAW MILL DUST CONTROL
CA	G	CA2002 G007	(01)	PETRALIAE, SALVATORE	04/2002	N	300	900	300	920	125B	AQUIA FORMATION	02-13-11-01	SALVATORE
CA	G	CA2002 G009	(02)	BAYSIDE LAND DEVELOPMENT, LLC	05/2006	N	500	900	270	910	125B	AQUIA FORMATION	02-13-11-01	BAYSIDE TOYOTA-CHEVROLET - PDWIS #104-1230
CA	G	CA2002 G010	(01)	PENWICK VILLAGE, L.L.C.	10/2003	Y	32,000	48,000	320	900	211D	MAGOTHY FORMATION	02-13-11-01	COMMERCIAL DEVELOPMENT - CALVERT GATEWAY
CA	G	CA2002 G013	(02)	CALVERT COUNTY BOARD OF COMMISSIONERS	03/2004	N	500	600	290	940	125B	AQUIA FORMATION	02-13-10-05	BREEZY PT BEACH BATHHOUSE & SNACK BAR - PDWIS #1041154
CA	G	CA2002 G016	(02)	WAWA, INC.	10/2005	N	800	1,700	320	900	125B	AQUIA FORMATION	02-13-11-01	WAWA CONVENIENCE STORE-PDWIS# 104-1248
CA	G	CA2002 G017	(01)	CHIARAMONTE, FRANCIS, P.	09/2002	N	300	500	320	900	125B	AQUIA FORMATION	02-13-11-01	CHIARAMONTE - 3180 FERRY LANDING RD

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County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA2002 G018	(01)	7 ELEVEN, INC.	09/2002	N	500	800	300	910	124C	NANJEMOY FORMATION	02-13-10-05	7-ELEVEN STORE #2543-33340
CA	G	CA2002 G020	(01)	WOOD, CHARLES	11/2002	N	2,600	4,300	300	910	124C	NANJEMOY FORMATION	02-13-11-01	COXCOMBE ESTATES SUBDIVISION
CA	G	CA2002 G021	(01)	SAFEWAYM INC.	12/2002	N	200	300	320	900	125B	AQUIA FORMATION	02-13-11-01	GASOLINE SERVICE STATION
CA	G	CA2002 G113	(01)	CALVERT COUNTY BOARD OF COMMISSIONERS	03/2004	N	1,000	2,000	290	940	124C	NANJEMOY FORMATION	02-13-10-05	BREEZY PT CAMPGROUND BATHHOUSE & LOWER CAMPGROUNDS PDWIS #1040072
CA	G	CA2003 G001	(01)	MASK, CRAIG	02/2003	N	2,600	15,700	230	920	124E	PINEY POINT FORMATION	02-13-11-01	VEG IRRIGATION
CA	G	CA2003 G004	(01)	CVS DUNKIRK MARKETPLACE, L.L.C.	03/2003	N	300	500	320	900	124C	NANJEMOY FORMATION	02-13-11-02	CVS STORE # 1881 - 10095 WARD ROAD
CA	G	CA2003 G005	(01)	BRIGHT, WYLMA AND ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION
CA	G	CA2003 G006	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION
CA	G	CA2003 G007	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	LOT 3 - BRIGHT PROPERTY INDUSTRIAL SUBDIVISION
CA	G	CA2003 G008	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION LOT 4
CA	G	CA2003 G009	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION LOT 5
CA	G	CA2003 G010	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION
CA	G	CA2003 G011	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION LOT 7
CA	G	CA2003 G012	(01)	BRIGHT, WYLMA & ELDON	03/2003	N	100	200	320	920	125B	AQUIA FORMATION	02-13-10-05	BRIGHT PROPERTY INDUSTRIAL SUBDIVISION LOT 8

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County	GorS	WAPID	Rev-t4	Owner	EffDate-t7	ReptCode	AGPD	MGPD	North-thouF127	East-thouF127	AquiCd	AquiNam	Basin	Remarks
CA	G	CA2003 G014	(01)	CALVERT CO. BD OF COMMISSIONERS	04/2003	N	300	500	180	950	124E	PINEY POINT FORMATION	02-13-11-01	SOLOMONS WWTP - HEADWORKS SITE
CA	G	CA2003 G015	(01)	CALVERT CO. BD OF COMMISSIONERS	04/2003	N	600	1,200	200	960	124C	NANJEMOY FORMATION	02-13-11-01	SOLOMONS WWTP-APPEAL SITE
CA	G	CA2003 G016	(01)	EDWARD B. HOWLIN, INC.	06/2003	N	4,300	7,900	320	920	125B	AQUIA FORMATION	02-13-11-01	EDWARD B. HOWLIN INC. - OFFICES/WAREHOUSES
CA	G	CA2003 G017	(01)	CHESAPEAKE HIGHLANDS MEMORIAL GARDENS	08/2003	N	8,000	16,000	240	930	125B	AQUIA FORMATION	02-13-11-01	CHESAPEAKE HIGHLANDS MEMORIAL GARDEN
CA	G	CA2003 G018	(02)	WAYSON, MORGAN	04/2006	N	1,000	1,500	310	910	125B	AQUIA FORMATION	02-13-11-01	SOLID WASTE RECYCLING/TRUCKING/MILLWRIGHT/CONTRACTORS
CA	G	CA2003 G019	(01)	WOOD, SR., CHARLES	11/2003	N	2,600	4,200	300	910	124C	NANJEMOY FORMATION	02-13-11-01	11 LOT SINGLE FAMILY RESIDENTIAL SUBDIV.
CA	G	CA2003 G021	(02)	HAMPSHIRE, ANTHONY	03/2004	N	500	800	290	910	125B	AQUIA FORMATION	02-13-11-01	CHESAPEAKE MONTESSORI - HAMPSHIRE
CA	G	CA2004 G005	(01)	CHARLOTTE RUSSELL & WINDMILL. L.L.C.	02/2004	N	800	1,600	300	910	125B	AQUIA FORMATION	02-13-10-05	RETAIL CENTER
CA	G	CA2004 G006	(01)	TOWNE, KAREN	02/2004	N	100	300	320	920	125B	AQUIA FORMATION	02-13-11-01	KAREN TOWNE
CA	G	CA2004 G007	(01)	CALVERT COUNTY BOARD OF COMMISSIONERS	03/2004	N	2,000	4,000	210	960	124E	PINEY POINT FORMATION	02-13-11-05	BGE FIELD FACILITY - PARKS & REC
CA	G	CA2004 G008	(01)	MATTESON, JOHN	05/2004	N	300	500	250	920	124C	NANJEMOY FORMATION	02-13-10-05	MATTESON SUPPLY - GAS/MOTOR REPAIR/SUPPLY
CA	G	CA2004 G009	(01)	FISHER/TOM LANTZ, MARK	07/2004	N	3,100	12,200	320	910	125B	AQUIA FORMATION	02-13-11-01	GRAYS FIELD FOUNDATION - RECREATION FIELD IRRIGATION
CA	G	CA2004 G010	(01)	CALVERT TRASH SERVICE, INCORPORATED	08/2004	N	200	400	310	910	124C	NANJEMOY FORMATION	02-13-11-01	CALVERT TRASH
CA	G	CA2004 G012	(01)	LAVERENZ, TERRY	10/2004	N	200	2,500	240	920	124C	NANJEMOY FORMATION	02-13-11-01	LIVESTOCK WATERING - 17 HORSES

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CA	G	CA2004 G013	(01)	EWALT FAMILY, LLC	11/2004	N	100	200	230	920	124C	NANJEMOY FORMATION	02-13-11-01	EWALT FAMILY LLC PRIVATE PIER
CA	G	CA2004 G014	(01)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	11/2004	N	300	500	290	910	124C	NANJEMOY FORMATION	02-13-11-01	BANK & VACANT RETAIL SLOT
CA	G	CA2004 G015	(01)	CALVERT COUNTY COMMISSIONERS	02/2005	N	100	200	240	920	124E	PINEY POINT FORMATION	02-13-11-01	GRAYS ROAD RECREATION AREA - DOG EXERCISE AREA
CA	G	CA2005 G001	(01)	LYSNE, MARK, A.	02/2005	N	100	200	240	920	124C	NANJEMOY FORMATION	02-13-11-01	RESIDENTIAL GREENHOUSE IRRIGATION
CA	G	CA2005 G002	(01)	CHURCH BY THE CHESAPEAKE, INC.	02/2005	N	600	1,200	240	930	124E	PINEY POINT FORMATION	02-13-11-01	CHURCH
CA	G	CA2005 G003	(01)	RUSSELL, MARY	03/2005	N	200	500	280	930	124C	NANJEMOY FORMATION	02-13-10-05	LUCKY CRICKET FARM - HORSES
CA	G	CA2005 G004	(01)	WILLIAMS ROAD DEVELOPMENT, L.L.C.	10/2006	N	34,800	58,200	260	910	125B	AQUIA FORMATION	02-13-11-01	152-L COLLEGE STATION SUBD
CA	G	CA2005 G005	(01)	HEALEY, PAT & TONI	04/2005	N	900	1,500	290	910	125B	AQUIA FORMATION	02-13-11-01	NOAH'S ARK LEARNING CENTER - PDWIS# 104-0080
CA	G	CA2005 G006	(01)	THE TIDEWATER SCHOOL, INC.	04/2005	N	800	1,300	290	910	124C	NANJEMOY FORMATION	02-13-11-01	THE TIDEWATER SCHOOL - PDWIS# 104-0067
CA	G	CA2005 G010	(01)	HARMS DEVELOPMENT, LLC	09/2006	N	8,900	14,900	270	930	124C	NANJEMOY FORMATION	02-13-11-01	39-L FARMS @ HUNTING CREEK SUBD (#LOTS REDUCED FROM 179 APF ORD)
CA	G	CA2005 G011	(02)	SMTCCAC, INC.	11/2005	N	900	1,500	280	910	125B	AQUIA FORMATION	02-13-11-02	CARROLL VICTORIA LODGE (PDWIS #104-0071)
CA	G	CA2005 G016	(01)	FAIRVIEW CENTRE, INC.	08/2005	N	3,400	5,000	310	900	125B	AQUIA FORMATION	02-13-11-01	FAIRVIEW SOUTH - 7 UNIT SHOPPING CENTER
CA	G	CA2005 G017	(01)	CLEARY, FRANK	08/2005	N	300	6,000	310	890	125B	AQUIA FORMATION	02-13-11-01	FRIDAY'S CREEK VINEYARD/WINERY - 400 VINES
CA	G	CA2005 G018	(01)	MARKETPLACE PROFESSIONAL CENTER, L.L.C.	08/2005	N	2,500	3,700	320	900	125B	AQUIA FORMATION	02-13-11-01	OFFICES - PDWIS# 1041210

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CA	G	CA2005 G019	(01)	BRINSON, JENNIFER	10/2005	N	1,100	2,000	320	910	124C	NANJEMOY FORMATION	02-13-11-01	IMAGINE NATIONS EARLY LEARNING CENTER - PDWIS# 104-0081
CA	G	CA2005 G020	(01)	MS. BEV'S PLACE LLC	10/2005	N	1,400	2,300	330	900	125B	AQUIA FORMATION	02-13-11-01	MS. BEVS PLACE DAYCARE - PDWIS# 104-0004
CA	G	CA2005 G021	(01)	ALLEN, DOUG & SUSAN	11/2005	N	1,000	2,000	220	940	124E	PINEY POINT FORMATION	02-13-11-01	LIVESTOCK WATERING - VARIETY
CA	G	CA2005 G022	(02)	JESUS THE GOOD SHEPHERD,	10/2006	N	2,000	3,000	320	900	125B	AQUIA FORMATION	02-13-11-01	CHURCH & SCHOOL - PDWIS# 104-1184 ADDING A 3RD WELL
CA	G	CA2005 G023	(01)	BIGSBY, TINA	11/2005	N	700	1100	270	920	124C	NANJEMOY FORMATION	02-13-11-01	MISS TINA'S DAY CARE - PDWIS# 104-0052
CA	G	CA2005 G024	(01)	WAYSON LAND HOLDINGS LTD. PARTNERSHIP	11/2005	N	100	300	310	910	124C	NANJEMOY FORMATION	02-13-11-01	COMMERCIAL FLEX SPACE
CA	G	CA2005 G025	(01)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	04/2006	N	1,600	2,900	310	910	124C	NANJEMOY FORMATION	02-13-11-01	ANNAPOLIS SOUTH MARINE LOT 1
CA	G	CA2005 G026	(01)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	11/2005	N	800	1,300	320	920	125B	AQUIA FORMATION	02-13-10-05	PARIS OAKS CENTER - PDWIS# 104-1070
CA	G	CA2005 G028	(01)	BROTHERS' JOHNSON, INC.	12/2005	N	300	600	230	930	124E	PINEY POINT FORMATION	02-13-11-01	LIVESTOCK WATERING - CATTLE
CA	G	CA2005 G029	(01)	WHITE SANDS CORPORATION	12/2005	N	1,500	2,500	210	950	124E	PINEY POINT FORMATION	02-13-11-01	WHITE SANDS RESTAURANT/VERA FREEMAN - PDWIS# 1041150
CA	G	CA2005 G030	(01)	WAYSON LAND HOLDINGS LIMITED PARTNERSHIP	04/2006	N	3,500	5,000	220	950	124E	PINEY POINT FORMATION	02-13-11-01	CALVERT CLIFFS BUSINESS CENTER-FLEX SPACE-PDWIS# 104-0089
CA	G	CA2006 G001	(01)	WELLS, WALTER AND SUSAN HANCE-	03/2006	N	500	900	220	910	124C	NANJEMOY FORMATION	02-13-11-01	LIVESTOCK WATERING - 70 TOTAL CATTLE/HORSES
CA	G	CA2006 G002	(01)	CALVERT LLC.	04/2006	N	5,300	8,800	310	920	124C	NANJEMOY FORMATION	02-13-10-05	23-L EAGLE'S TRACE SUBD
CA	G	CA2006 G006	(01)	GREATER MOUNT ZION, INCORPORATED	05/2006	N	2,500	4,000	250	910	124C	NANJEMOY FORMATION	02-13-11-01	GREATER MT. ZION BAPTIST CHURCH - PDWIS# 104-0090

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
(Page 78 of 79)

County	GorS	WAPID	Rev-f4	Owner	EffDate-f7	ReptCode	AGPD	MGPD	North-thouFt27	East-thouFt27	AquiCd	AquiNam	Basin	Remarks
CA	G	CA2006 G007	(01)	LOWER MARLBORO UNITED METHODIST CHURCH	05/2006	N	100	300	300	890	125B	AQUIA FORMATION	02-13-11-04	CHURCH
CA	G	CA2006 G012	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 1
CA	G	CA2006 G013	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 2
CA	G	CA2006 G014	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 3
CA	G	CA2006 G015	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 4
CA	G	CA2006 G016	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 5
CA	G	CA2006 G017	(01)	BTIP, LLC	07/2006	N	300	500	320	920	124C	NANJEMOY FORMATION	02-13-11-01	BRIGHT PROPERTY INDUSTRIAL SUBD LOT 6
CA	G	CA2006 G018	(01)	RIDDLE, RITA	09/2006	N	100	300	210	940	124E	PINEY POINT FORMATION	02-13-11-01	HORSE FARM WATERING
CA	G	CA2006 G019	(01)	ACCIPITER, COURTNEY	09/2006	N	200	400	290	910	124C	NANJEMOY FORMATION	02-13-11-01	OLD TOWN AUTOMOBILE - CAR SALES
CA	G	CA2006 G021	(01)	GALLAHAN, WILLIAM, ALTON	09/2006	N	6,000	9900	250	920	125B	AQUIA FORMATION	02-13-10-05	26-LOT GALLAHAN'S CHOICE RES SUBDD
CA	G	CA2006 G023	(01)	MILLER, LAWRENCE	11/2006	N	2,000	4,000	180	960	124E	PINEY POINT FORMATION	02-13-11-01	RESIDENTIAL GWHP W/ RECHARGE WELL

Table 2.4.12-6: Listing of Maryland Department of the Environment (MDE) Water Appropriations Permits for Calvert County, Maryland
(Page 79 of 79)

Field Explanations

County: CA is Calvert County

GorS: Ground or Surface water appropriate

WAPID: Permit ID

rev-t4: Permit Revision

Owner: Owner or the property

EffDate-t7: Effective date of last revision of the permit

ReptCode: Does the permit have to report pumpage

AGPD: Permit quantity as gallons per day (gpd) - yearly average

MGPD:

- Ground water is a average use during the month of maximum use
- Surface water is average use during day of maximum use

North-thouFt27: Location information, thousands of feet north of the origin, Maryland State Plane 1927. Normal accuracy is to the nearest 10,000 ft.

East-thouFt27: Location information, thousands of feet east of the origin, Maryland State Plane 1927. Normal accuracy is to the nearest 10,000 ft.

AquiCd:

- Groundwater is the aquifer identification code
- Surface water is the stream identification code.

AquiNam:

- Groundwater is the aquifer name
- Surface water is the stream name

Basin: Eight digit basin code

Remark: Remarks

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
(Page 1 of 26)

Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
BEACHES WATER COMPANY	CALVERT	1800	Groundwater	Active		MD0040009
BUCKLER MOBILE HOME PARK	CALVERT	65	Groundwater	Active		MD0040209
CALVERT BEACH - DECATUR STREET	CALVERT	350	Groundwater	Active		MD0040024
CALVERT BEACH / FOREST TRAIL	CALVERT	100	Groundwater	Active		MD0040020
CALVERT MOBILE HOME PARK	CALVERT	80	Groundwater	Active		MD0040206
CAVALIER COUNTRY	CALVERT	400	Groundwater	Active		MD0040002
CHESAPEAKE BEACH	CALVERT	3000	Groundwater	Active		MD0040003
CHESAPEAKE HEIGHTS (BAYSIDE FOREST)	CALVERT	850	Groundwater	Active		MD0040018
CHESAPEAKE RANCH ESTATES	CALVERT	9750	Groundwater	Active		MD0040004
CROSS POINT SUBDIVISION	CALVERT	462	Groundwater	Active		MD0040052
DARES BEACH	CALVERT	600	Groundwater	Active		MD0040005
HALLOWING POINT TRAILER PARK	CALVERT	100	Groundwater	Active		MD0040208
HUNTING HILLS	CALVERT	150	Groundwater	Active		MD0040006
JOHNSON ACRES WATER CO	CALVERT	50	Groundwater	Active		MD0040032
KENWOOD BEACH	CALVERT	350	Groundwater	Active		MD0040007

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
(Page 2 of 26)

Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
LAKEWOOD	CALVERT	200	Groundwater	Active		MD0040008
MARLEY RUN	CALVERT	171	Groundwater	Active		MD0040053
NORTH BEACH	CALVERT	3000	Groundwater	Active		MD0040030
PARIS OAKS / DAYS END	CALVERT	275	Groundwater	Active		MD0040010
PARKERS CREEK KNOLLS	CALVERT	60	Groundwater	Active		MD0040031
PINE TRAILER PARK	CALVERT	65	Groundwater	Active		MD0040210
PRINCE FREDERICK	CALVERT	3150	Groundwater	Active		MD0040011
REGENCY MANOR MOBILE HOME PARK	CALVERT	224	Groundwater	Active		MD0040202
SCIENTISTS CLIFFS	CALVERT	425	Groundwater	Active		MD0040014
SHORES OF CALVERT	CALVERT	400	Groundwater	Active		MD0040015
SOLOMONS	CALVERT	2700	Groundwater	Active		MD0040027
SOLOMONS RECREATION CENTER	CALVERT	1200	Groundwater	Active		MD0040023
SOUTHERN PINES ELDERLY HOUSING	CALVERT	93	Groundwater	Active		MD0040033
ST. LEONARD	CALVERT	200	Groundwater	Active		MD0040013
SUMMIT/HIGHLANDS	CALVERT	800	Groundwater	Active		MD0040026

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
TAPESTRY NORTH	CALVERT	60	Groundwater	Active		MD0040205
TARA SUBDIVISION	CALVERT	75	Groundwater	Active		MD0040034
WALNUT CREEK	CALVERT	168	Groundwater	Active		MD0040035
WESTERN SHORES	CALVERT	155	Groundwater	Active		MD0040016
WHITE SANDS	CALVERT	100	Groundwater	Active		MD0040017
WOODBRIDGE - MASON ROAD	CALVERT	100	Groundwater	Active		MD0040025
ACCENT MOBILE HOME PARK	CALVERT	25	Groundwater	Closed	9/1/1981	MD0000069
ALL SAINTS DAY CARE CENTER	CALVERT	38	Groundwater	Closed	9/1/1981	MD0000875
ANCHORAGE TRAILER PARK	CALVERT	32	Groundwater	Closed	2/1/1988	MD0040203
ANCHORAGE TRAILER PARK	CALVERT	32	Groundwater	Closed	9/1/1981	MD0002691
BAY VIEW MANOR TRAILER PARK	CALVERT	142	Groundwater	Closed	9/1/1981	MD0002483
BAY VIEW MOBILE MANOR	CALVERT	100	Groundwater	Closed	1/1/2006	MD0040204
BEACHES WATER CO	CALVERT	400	Groundwater	Closed	10/1/1990	MD0040029
BROOKS DAY CARE CENTER	CALVERT	30	Groundwater	Closed	9/1/1981	MD0000892
CALVERT CHRISTIAN SCHOOL AND	CALVERT	200	Groundwater	Closed	9/1/1981	MD0000895

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
CALVERT CO NURSING CENTER	CALVERT	50	Groundwater	Closed	9/1/1981	MD0002688
CALVERT COUNTY NURSING CENTER	CALVERT	100	Groundwater	Closed	7/1/1993	MD0040201
CALVERT COUNTY NURSING CENTER	CALVERT	41	Groundwater	Closed	9/1/1981	MD0000898
CALVERT MEMORIAL HOSPITAL	CALVERT	78	Groundwater	Closed	9/1/1981	MD0000903
CALVERT MOBILE HOMES PARK	CALVERT	60	Groundwater	Closed	9/1/1981	MD0002693
CAVALIER COUNTRY WATER ASSOC I	CALVERT	436	Groundwater	Closed	9/1/1981	MD0002686
CHESAPEAKE BEACH	CALVERT	640	Groundwater	Closed	9/1/1981	MD0002270
CHESAPEAKE RANCH WATER CO INC	CALVERT	1448	Groundwater	Closed	9/1/1981	MD0002551
CIRCLE S TRAILER PARK	CALVERT	28	Groundwater	Closed	6/1/1981	MD0002639
DARES BEACH WATER COMPANY	CALVERT	644	Groundwater	Closed	9/1/1981	MD0002687
FRISCOE TRAILER PARK	CALVERT	84	Groundwater	Closed	9/1/1981	MD0002692
GRAY-RAY CENTER	CALVERT	30	Groundwater	Closed	9/1/1981	MD0000935
HUNTING HILLS ESTATES	CALVERT	124	Groundwater	Closed	9/1/1981	MD0002325
KENWOOD BEACH WATER SYSTEM	CALVERT	320	Groundwater	Closed	9/1/1981	MD0002719
LAKEWOOD	CALVERT	60	Groundwater	Closed	9/1/1981	MD0002326

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
(Page 5 of 26)

Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
LONG BEACH WATER CO	CALVERT	1244	Groundwater	Closed	9/1/1981	MD0002720
PINE TRAILER PARK	CALVERT	84	Groundwater	Closed	9/1/1981	MD0002690
PRNC FRED-CALV CO SAN DIST INC	CALVERT	500	Groundwater	Closed	9/1/1981	MD0002685
RANDLE CLIFF HEAD START CENTER	CALVERT	30	Groundwater	Closed	9/1/1981	MD0000969
REGENCY MANOR MOBILE PARK	CALVERT	108	Groundwater	Closed	2/1/1988	MD0002327
SAINT LEONARD DEV CORP INC	CALVERT	160	Groundwater	Closed	9/1/1981	MD0002755
SCIENTISTS CLIFFS SERVICE CO I	CALVERT	651	Groundwater	Closed	9/1/1981	MD0002677
SHORES OF CALVERT WAT ASSC INC	CALVERT	260	Groundwater	Closed	9/1/1981	MD0002678
WESTERN SHORES	CALVERT	120	Groundwater	Closed	9/1/1981	MD0002721
WHITE SANDS CORPORATION	CALVERT	56	Groundwater	Closed	9/1/1981	MD0002552
APPEAL ELEMENTARY SCHOOL	CALVERT	569	Groundwater	Active		MD1040001
BAYSIDE CHEVROLET BUICK INC.	CALVERT	34	Groundwater	Active		MD1041230
BREEZY POINT SNACKBAR	CALVERT	25	Groundwater	Active		MD1040092
BROOKS ADMINISTRATION BUILDING	CALVERT	106	Groundwater	Active		MD1040006
CALVERT CAREER CENTER	CALVERT	800	Groundwater	Active		MD1040011

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
CALVERT CLIFFS NUCLEAR - OFFICE BUILDING	CALVERT	362	Groundwater	Active		MD1040055
CALVERT CLIFFS NUCLEAR - PROTECTED AREA	CALVERT	482	Groundwater	Active		MD1040002
CALVERT CO. INDUSTRIAL PARK	CALVERT	100	Groundwater	Active		MD1040051
CALVERT COUNTRY & CALVERT ELEMENTARY	CALVERT	900	Groundwater	Active		MD1040012
CALVERT COUNTY EMERGENCY CENTER	CALVERT	30	Groundwater	Active		MD1040083
CALVERT COUNTY JAIL	CALVERT	150	Groundwater	Active		MD1040013
CALVERT GATEWAY + MCDONALD # 16243	CALVERT	25	Groundwater	Active		MD1040079
CALVERT HIGH SCHOOL	CALVERT	1450	Groundwater	Active		MD1040016
CALVERT MIDDLE SCHOOL	CALVERT	675	Groundwater	Active		MD1040018
CALVERTON SCHOOL	CALVERT	500	Groundwater	Active		MD1040022
CARDINAL HICKEY ACADEMY/JESUS THE GOOD	CALVERT	380	Groundwater	Active		MD1041184
CARROLL VICTORIA LODGE - HUNTINGTOWN	CALVERT	87	Groundwater	Active		MD1040071

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
CHESAPEAKE MONTESSORI LIMITED	CALVERT	77	Groundwater	Active		MD1040053
CROSSROAD CHRISTIAN CHURCH & DAYCARE	CALVERT	133	Groundwater	Active		MD1041163
DOMINION COVE POINT LNG, LP	CALVERT	55	Groundwater	Active		MD1040077
DUNKIRK BUSINESS CENTER I	CALVERT	250	Groundwater	Active		MD1041027
DUNKIRK MARKET PLACE	CALVERT	50	Groundwater	Active		MD1040064
DUNKIRK MEDICAL CENTER	CALVERT	200	Groundwater	Active		MD1040070
DUNKIRK SAFEWAY STORE #1129	CALVERT	25	Groundwater	Active		MD1040069
DUNKIRK TOWN SQUARE SHOPPING CENTER	CALVERT	40	Groundwater	Active		MD1041094
DUNKIRK VILLAGE SHOPPING CENTER	CALVERT	25	Groundwater	Active		MD1041077
FAIRVIEW CENTRE, INC.	CALVERT	30	Groundwater	Active		MD1040086
FIRST IMPRESSIONS DAYCARE CENTER	CALVERT	40	Groundwater	Active		MD1040054
HUNTING CREEK ALTERNATIVE SCHOOL	CALVERT	60	Groundwater	Active		MD1040025
HUNTINGTOWN ELEMENTARY SCHOOL	CALVERT	609	Groundwater	Active		MD1040027
HUNTINGTOWN HIGH SCHOOL	CALVERT	1540	Groundwater	Active		MD1040075

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
IMAGINE NATIONS EARLY LEARNING CENTER	CALVERT	60	Groundwater	Active		MD1040081
JEFFERSON PATTERSON PARK & MUSEUM	CALVERT	35	Groundwater	Active		MD1041131
KID'S FARM, INC.	CALVERT	105	Groundwater	Active		MD1040084
LAURIAN BUILDING	CALVERT	30	Groundwater	Active		MD1040088
LYONS CREEK SHOPPING CENTER	CALVERT	95	Groundwater	Active		MD1041151
MARKETPLACE PROFESSIONAL CENTER, LLC	CALVERT	110	Groundwater	Active		MD1041210
MISS TINA DAY CARE	CALVERT	40	Groundwater	Active		MD1040052
MS. BEV'S PLACE	CALVERT	75	Groundwater	Active		MD1040004
MT. HARMONY ELEMENTARY SCHOOL	CALVERT	706	Groundwater	Active		MD1040030
MUTUAL ELEMENTARY SCHOOL	CALVERT	894	Groundwater	Active		MD1040032
NAVAL RESEARCH LAB., CHESAPEAKE BAY DIV.	CALVERT	200	Groundwater	Active		MD0040019
NOAH'S ARK LEARNING CENTER	CALVERT	63	Groundwater	Active		MD1040080
NORTHERN MIDDLE & HIGH SCHOOLS	CALVERT	2470	Groundwater	Active		MD1040034
PATUXENT ELEMENTARY SCHOOL	CALVERT	637	Groundwater	Active		MD1040066

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
PLUM POINT ELEMENTARY SCHOOL	CALVERT	615	Groundwater	Active		MD1040063
PLUM POINT MIDDLE SCHOOL	CALVERT	881	Groundwater	Active		MD1040065
PRIME TIME YOUTH ACTIVITY CENTER	CALVERT	99	Groundwater	Active		MD1040091
SHILOH CHRISTIAN ACADEMY	CALVERT	74	Groundwater	Active		MD1041176
SLEEPY HOLLOW DAYCARE	CALVERT	65	Groundwater	Active		MD1040074
SNEADE'S ACE HARDWARE (LUSBY)-DAVLYN LLC	CALVERT	40	Groundwater	Active		MD1040085
SNEADES HARDWARE (OWINGS) - DAVLYN LLC	CALVERT	40	Groundwater	Active		MD1041134
SOLOMONS WASTEWATER TREATMENT PLANT	CALVERT	27	Groundwater	Active		MD1040078
SOUTHERN MIDDLE SCHOOL	CALVERT	745	Groundwater	Active		MD1040038
SUNDERLAND ELEMENTARY SCHOOL	CALVERT	481	Groundwater	Active		MD1040041
THE SHOPPES AT DUNKIRK LLC - COUNTRY PLZ	CALVERT	60	Groundwater	Active		MD1041152
THE TIDEWATER SCHOOL	CALVERT	61	Groundwater	Active		MD1040067
BEACH ELEMENTARY (0040003)	CALVERT	25	Groundwater	Closed	7/1/1992	MD1040003
BEAVERS NURSERY 2	CALVERT	22	Groundwater	Closed	5/1/1994	MD1040005

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
BROOKS CHILD DEVELOPMENT CT.	CALVERT	62	Groundwater	Closed	7/1/1995	MD1040007
BUSY BEE NURSERY INC.	CALVERT	45	Groundwater	Closed	2/1/2003	MD1040009
BUSY LITTLE BEAVERS	CALVERT	25	Groundwater	Closed	12/1/1989	MD1040010
CALVERT CO. BOE	CALVERT	25	Groundwater	Closed	3/1/1991	MD1040042
CALVERT ELEMENTARY (1040012)	CALVERT	25	Groundwater	Closed	7/1/1992	MD1040015
CALVERT MEMORIAL HOSPITAL	CALVERT	25	Groundwater	Closed	7/1/1993	MD1040017
CALVERT NURSING CENTER	CALVERT	130	Groundwater	Closed	12/1/1989	MD1040019
CALVERT SR. HIGH/VO TECH.	CALVERT	25	Groundwater	Closed	3/1/1991	MD1040021
COLLEGE OF SOUTHERN MD - CALVERT CAMPUS	CALVERT	501	Groundwater	Closed	5/1/2005	MD1040049
CROSS POINT	CALVERT	25	Groundwater	Closed	8/1/1999	MD1040073
GRACE BRETHERN SCHOOL	CALVERT	25	Groundwater	Closed	9/1/1990	MD1040024
ISLAND CREEK COMMUNITY CENTER	CALVERT	85	Groundwater	Closed	1/1/2006	MD1040068
KIDDIE CORRAL	CALVERT	22	Groundwater	Closed	12/1/1994	MD1040028
LITTLE FLOCK DAY CARE	CALVERT	25	Groundwater	Closed	5/1/1994	MD1040029
NORTHERN HIGH (1040034)	CALVERT	25	Groundwater	Closed	6/1/1991	MD1040033

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
(Page 11 of 26)

Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
RAGGEDY ANN & ANDYS	CALVERT	25	Groundwater	Closed	3/1/1991	MD1040035
RANDLE CLIFF HEAD START CENTER	CALVERT	25	Groundwater	Closed	12/1/1989	MD1040036
ST PAULS UM PRESCHOOL	CALVERT	25	Groundwater	Closed	3/1/1991	MD1040039
STATE HIGHWAY ADMINISTRATION	CALVERT	50	Groundwater	Closed	12/1/1993	MD1040062
TOPAZ MARINE CORP	CALVERT	25	Groundwater	Closed	6/1/1991	MD1040040
7-11 SUNDERLAND	CALVERT	25	Groundwater	Active		MD1041236
7TH DAY ADVENTIST CHURCH OF PR. FRED.	CALVERT	25	Groundwater	Active		MD1041177
ADAMS RIBS	CALVERT	195	Groundwater	Active		MD1041076
ALL SAINTS EPISCOPAL CHURCH	CALVERT	502	Groundwater	Active		MD1041160
AMERICAN LEGION POST 206	CALVERT	25	Groundwater	Active		MD1041080
AMERICAN LEGION POST 274	CALVERT	25	Groundwater	Active		MD1041002
APOSTOLIC FAITH CHURCH	CALVERT	25	Groundwater	Active		MD1041144
BAY BREEZE STATE PARK	CALVERT	25	Groundwater	Active		MD1041235
BENNETT & BATONG MEDICAL	CALVERT	25	Groundwater	Active		MD1041198
BETHEL WAY CHURCH	CALVERT	25	Groundwater	Active		MD1041005

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
(Page 12 of 26)

Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
BILL'S BOAT RENTAL	CALVERT	25	Groundwater	Active		MD1041004
BOWENS GROCERY	CALVERT	25	Groundwater	Active		MD1041008
BREEZY POINT BATHHOUSE	CALVERT	56	Groundwater	Active		MD1040072
BREEZY POINT BEACH/CAMP	CALVERT	25	Groundwater	Active		MD1041154
BREEZY POINT GRILL WINE & SPIRITS	CALVERT	0	Groundwater	Active		MD1041181
BREEZY PT BEACH CLUB MARINA	CALVERT	25	Groundwater	Active		MD1041009
BRIDGE DINER	CALVERT	25	Groundwater	Active		MD1041010
BRIGHT CENTER EAST	CALVERT	25	Groundwater	Active		MD1041237
BRIGHT CENTER WEST	CALVERT	250	Groundwater	Active		MD1041028
BROWN CLEARY BUILDING (CALVERT ANIMAL)	CALVERT	25	Groundwater	Active		MD1041238
BURNOUTS BAR & GRILL / STETSONS	CALVERT	0	Groundwater	Active		MD1041055
CALVARY BIBLE CHURCH	CALVERT	25	Groundwater	Active		MD1041164
CALVARY UNITED APOSTOLIC CHURCH	CALVERT	25	Groundwater	Active		MD1041113
CALVERT ARUNDEL MEDICAL	CALVERT	25	Groundwater	Active		MD1041197
CALVERT CLIFFS NUCLEAR - BALLFIELD	CALVERT	25	Groundwater	Active		MD1040058

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
CALVERT CLIFFS NUCLEAR - CAMP CONOY POOL	CALVERT	200	Groundwater	Active		MD1040059
CALVERT CLIFFS STATE PARK	CALVERT	25	Groundwater	Active		MD1041012
CALVERT DENTAL ASSOCIATES	CALVERT	25	Groundwater	Active		MD1041199
CALVERT ELKS LODGE	CALVERT	25	Groundwater	Active		MD1041215
CALVERT LIGHTHOUSE TABERNACLE	CALVERT	25	Groundwater	Active		MD1041165
CALVERT MEDICAL CENTER	CALVERT	25	Groundwater	Active		MD1041228
CALVERT PROFESSIONAL BUILDING	CALVERT	212	Groundwater	Active		MD1041204
CALVERT SKATING CENTER	CALVERT	25	Groundwater	Active		MD1041018
CAMP CONOY EAGLES DEN	CALVERT	25	Groundwater	Active		MD1041019
CHINA KING RESTAURANT	CALVERT	25	Groundwater	Active		MD1041145
CHRIST CHURCH PARISH HOUSE	CALVERT	25	Groundwater	Active		MD1041115
CHURCH OF CHRIST	CALVERT	25	Groundwater	Active		MD1041116
CHURCH OF LATTER DAY SAINTS	CALVERT	25	Groundwater	Active		MD1041117
CJ'S FOOD STORE	CALVERT	25	Groundwater	Active		MD1041023
COOPER UM CHURCH	CALVERT	25	Groundwater	Active		MD1041025

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
COVE POINT PARK MAINTENANCE BLDG	CALVERT	25	Groundwater	Active		MD1041186
COVE POINT PARK SNACK BAR	CALVERT	25	Groundwater	Active		MD1041111
CURTIS LITTEN - RIDGEWAY BUILDING	CALVERT	45	Groundwater	Active		MD1041254
CVS DUNKIRK	CALVERT	25	Groundwater	Active		MD1041222
CYPRESS SWAMP NATURE CENTER	CALVERT	25	Groundwater	Active		MD1041221
DASH IN OWINGS	CALVERT	25	Groundwater	Active		MD1041026
DOMINOS PIZZA-HUNTINGTOWN	CALVERT	25	Groundwater	Active		MD1041223
DON'S GENERAL STORE	CALVERT	25	Groundwater	Active		MD1041065
DOUBLE D'S SPORTS	CALVERT	42	Groundwater	Active		MD1041200
DUNKIRK ANIMAL HOSPITAL	CALVERT	25	Groundwater	Active		MD1041239
DUNKIRK BAPTIST CHURCH	CALVERT	303	Groundwater	Active		MD1041226
DUNKIRK CITGO	CALVERT	704	Groundwater	Active		MD1041167
DUNKIRK DISTRICT PARK	CALVERT	25	Groundwater	Active		MD1041013
DUNKIRK SUPPLY - LUSBY	CALVERT	25	Groundwater	Active		MD1041240
DUNKIRK SUPPLY - TRUSS PLANT	CALVERT	25	Groundwater	Active		MD1041242

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
DUNKIRK SUPPLY OWINGS	CALVERT	25	Groundwater	Active		MD1041241
DUNKIRK VOL FIRE DEPT	CALVERT	25	Groundwater	Active		MD1041031
EAST JOHN YOUTH CENTER	CALVERT	25	Groundwater	Active		MD1041034
EMMANUAL BAPTIST CHURCH	CALVERT	310	Groundwater	Active		MD1041120
EMMANUEL SEVENTH DAY ADVENTIST CHURCH	CALVERT	25	Groundwater	Active		MD1041168
EMMANUEL U M CHURCH	CALVERT	25	Groundwater	Active		MD1041033
ETERNAL BUZZ TATTOO PARLOR	CALVERT	25	Groundwater	Active		MD1041250
FAIRVIEW CENTER	CALVERT	25	Groundwater	Active		MD1041098
FASTOP #54	CALVERT	225	Groundwater	Active		MD1041180
FASTOP #56	CALVERT	1207	Groundwater	Active		MD1041170
FIRST BAPTIST CHURCH	CALVERT	25	Groundwater	Active		MD1041218
FIRST LUTHERAN CHURCH	CALVERT	25	Groundwater	Active		MD1041121
FLAG HARBOR POOL	CALVERT	167	Groundwater	Active		MD1041099
FLAVOR OF THE SOUTH CAFE	CALVERT	69	Groundwater	Active		MD1041052
FRYING PAN	CALVERT	25	Groundwater	Active		MD1041036

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
GATEWAY CENTER	CALVERT	25	Groundwater	Active		MD1041213
GATEWAY NORTH	CALVERT	25	Groundwater	Active		MD1041037
GENTLE FAMILY DENTISTRY	CALVERT	25	Groundwater	Active		MD1041214
GRACE BRETHREN CHURCH - EAST WING	CALVERT	608	Groundwater	Active		MD1041101
GRACE BRETHREN CHURCH - WEST WING	CALVERT	25	Groundwater	Active		MD1041219
GRAY-RAY AMER LEGION POST #220	CALVERT	25	Groundwater	Active		MD1041039
GREATER BIBLE WAY CHURCH	CALVERT	19	Groundwater	Active		MD1041040
GUIDOS RESTAURANT	CALVERT	25	Groundwater	Active		MD1041125
HALLOWING POINT PARK	CALVERT	25	Groundwater	Active		MD1041015
HALLOWING POINT PARK MAINTENANCE BLDG	CALVERT	25	Groundwater	Active		MD1041185
HARVEST FELLOWSHIP	CALVERT	25	Groundwater	Active		MD1041232
HEGARTY AND KOPICKI BUILDING	CALVERT	25	Groundwater	Active		MD1041243
HOPKINS & WAYSON / EXPRESSIONS CATERING	CALVERT	25	Groundwater	Active		MD1040087
HOWLIN BUILDING	CALVERT	25	Groundwater	Active		MD1041201

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
HUDSON'S SUNOCO	CALVERT	25	Groundwater	Active		MD1041046
HUNTINGTOWN MEDICAL BUILDING	CALVERT	90	Groundwater	Active		MD1041227
HUNTINGTOWN NORTH/FLOOR SYSTEMS	CALVERT	125	Groundwater	Active		MD1041234
HUNTINGTOWN PLAZA SHOPPING CENTER	CALVERT	25	Groundwater	Active		MD1041093
HUNTINGTOWN UM CHURCH	CALVERT	25	Groundwater	Active		MD1041049
HUNTINGTOWN VOL FIRE DEPT	CALVERT	25	Groundwater	Active		MD1041050
ISLAND CREEK PROPERTIES	CALVERT	25	Groundwater	Active		MD1041127
J & J PHYSICAL THERAPY	CALVERT	25	Groundwater	Active		MD1041211
JEHOVAHS WITNESS OF PRINCE FREDERICK	CALVERT	25	Groundwater	Active		MD1041123
JLH BUILDING	CALVERT	25	Groundwater	Active		MD1041244
KINGS LANDING CAMP	CALVERT	25	Groundwater	Active		MD1041053
KINGS LANDING POOL	CALVERT	25	Groundwater	Active		MD1041140
LEE FUNERAL HOME	CALVERT	303	Groundwater	Active		MD1041187
LEN'S MARKET/MARINA	CALVERT	25	Groundwater	Active		MD1041056
LORD CALVERT BOWL	CALVERT	25	Groundwater	Active		MD1041059

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
LUSBY SUNOCO	CALVERT	25	Groundwater	Active		MD1041195
MARLEY RUN RECREATION AREA	CALVERT	25	Groundwater	Active		MD1041158
MATTESON SUPPLY COMPANY	CALVERT	2	Groundwater	Active		MD1041252
MIDDLEHAM & ST PETERS PARISH	CALVERT	25	Groundwater	Active		MD1041162
MT GETHSEMANE BAPTIST CHURCH	CALVERT	25	Groundwater	Active		MD1041129
MT HARMONY UMC	CALVERT	54	Groundwater	Active		MD1041231
MT HOPE CENTER	CALVERT	25	Groundwater	Active		MD1041103
MT OLIVE UM CHURCH	CALVERT	25	Groundwater	Active		MD1041062
NEW CALVERT CO FAIRGROUND	CALVERT	25	Groundwater	Active		MD1041202
OPTIMISTS CLUB BINGO	CALVERT	25	Groundwater	Active		MD1041229
PARIS CENTER (FKA GRIFFITHS)	CALVERT	25	Groundwater	Active		MD1041070
PATUXENT CAMPSITES	CALVERT	37	Groundwater	Active		MD1041066
PETERS UM CHURCH	CALVERT	25	Groundwater	Active		MD1041069
PRINCE FREDERICK PROFESSIONAL BLDG	CALVERT	120	Groundwater	Active		MD1041095
RAUSCH FUNERAL HOME OWINGS	CALVERT	20	Groundwater	Active		MD1041188

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
RAUSCH FUNERAL HOME PORT REPUBLIC	CALVERT	55	Groundwater	Active		MD1041189
RAYMOND FUNERAL HOME	CALVERT	25	Groundwater	Active		MD1041190
REID BUILDING	CALVERT	25	Groundwater	Active		MD1041182
ROUTE 231 CITGO	CALVERT	25	Groundwater	Active		MD1041174
ROUTE 260 AMOCO	CALVERT	25	Groundwater	Active		MD1041166
SAFEWAY GAS STATION	CALVERT	25	Groundwater	Active		MD1041247
SCHEIBELS CONSTRUCTION	CALVERT	43	Groundwater	Active		MD1041245
SEWELL FUNERAL HOME	CALVERT	25	Groundwater	Active		MD1041191
SMECO BUILDING	CALVERT	193	Groundwater	Active		MD1041203
SMITHVILLE U M CHURCH	CALVERT	25	Groundwater	Active		MD1041133
SOLID ROCK CHURCH	CALVERT	25	Groundwater	Active		MD1041079
SOUTHERN CALVERT BAPTIST CHURCH	CALVERT	86	Groundwater	Active		MD1041161
ST EDMONDS UM CHURCH	CALVERT	25	Groundwater	Active		MD1041081
ST NICHOLAS LUTHERAN	CALVERT	25	Groundwater	Active		MD1041233
ST PAUL UM CHURCH	CALVERT	25	Groundwater	Active		MD1041137

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
STONEYS CRAB HOUSE	CALVERT	25	Groundwater	Active		MD1041148
TASTY KWIK	CALVERT	25	Groundwater	Active		MD1041074
THE PAVILLION AT GODSGRACE	CALVERT	25	Groundwater	Active		MD1041209
THE QUILTING ROOM (FRMLY ISLAMIC CENTER)	CALVERT	25	Groundwater	Active		MD1041172
TOWN & COUNTRY LIQUORS/BARBER SHOP	CALVERT	2	Groundwater	Active		MD1041251
TOWN CENTER AMOCO	CALVERT	25	Groundwater	Active		MD1041175
TWIN SHIELDS GOLF CLUB	CALVERT	25	Groundwater	Active		MD1041086
WATERS MEMORIAL UM CHURCH	CALVERT	25	Groundwater	Active		MD1041089
WAWA #573	CALVERT	10	Groundwater	Active		MD1041248
WHITE SANDS RESTAURANT	CALVERT	25	Groundwater	Active		MD1041150
WINDSORS EZ STOP	CALVERT	25	Groundwater	Active		MD1041171
WORLD GYM	CALVERT	10	Groundwater	Active		MD1041253
7-ELEVEN DUNKIRK	CALVERT	25	Groundwater	Closed	8/1/1999	MD1041043
AMER LEGION POST 206	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041157
ANDREA'S CATERING	CALVERT	25	Groundwater	Closed	3/1/1993	MD1041001

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
B G & E (FIRING RANGE)	CALVERT	25	Groundwater	Closed	8/1/1999	MD1040057
BARSTOW PROFESSIONAL BUILDING	CALVERT	25	Groundwater	Closed	1/1/2002	MD1041216
BAYSIDE MARKET	CALVERT	25	Groundwater	Closed	3/1/1993	MD1021297
BETTY SUE'S CONFECTIONARY	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041107
BG&E VISITOR CENTER	CALVERT	200	Groundwater	Closed	5/1/2002	MD1040056
BISHOPS STAND	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041006
BJ'S BAKERY	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041007
BROOKS UM CHURCH	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041011
C & B TEXACO	CALVERT	25	Groundwater	Closed	3/31/2006	MD1041192
CALVARY BAPTIST CHURCH	CALVERT	25	Groundwater	Closed	11/1/1999	MD1041108
CALVERT CAFE	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041109
CALVERT CLIFFS NUCLEAR CONFERENCE CENTER	CALVERT	100	Groundwater	Closed	10/1/2004	MD1040060
CALVERT COUNTY FAIRGROUND	CALVERT	25	Groundwater	Closed	1/1/2002	MD1041110
CALVERT MARINA	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041112
CALVERT MEATS	CALVERT	25	Groundwater	Closed	8/1/1999	MD1041017

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
CARROLL WESTERN UM CHURCH	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041022
CHESAPEAKE HILLS COUNTRY CLUB	CALVERT	25	Groundwater	Closed	8/1/1999	MD1041183
CHESSIES HUNTINGTOWN	CALVERT	25	Groundwater	Closed	8/1/1999	MD1041048
CHRIST CHILD CAMP	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041020
CHRIST CHILD CAMP POOL	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041153
CHRISTIAN BIBLE CENTER	CALVERT	25	Groundwater	Closed	11/1/1999	MD1041114
CHURCH OF GOD	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041173
CORNER STONE BAPTIST CHURCH	CALVERT	25	Groundwater	Closed	11/1/1999	MD1041159
COUNTRY CUTS	CALVERT	25	Groundwater	Closed	3/1/1993	MD1041097
COUNTRY DOCKS	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041073
DJ'S MINI MART	CALVERT	25	Groundwater	Closed	1/1/2002	MD1041029
DODSONS GROCERY	CALVERT	25	Groundwater	Closed	8/1/2000	MD1041030
DUNKIRK AMOCO	CALVERT	25	Groundwater	Closed	8/1/2000	MD1041194
DUNKIRK COMMUNITY CHAPEL	CALVERT	25	Groundwater	Closed	11/1/1999	MD1041118
DUNKIRK MARKET PLACE (SEE 104-0064)	CALVERT	25	Groundwater	Closed	3/31/2006	MD1041178

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
DUNKIRK SEAFOOD MARKET	CALVERT	25	Groundwater	Closed	11/1/1999	MD1041143
DUNKIRK URGENT CARE CENTER	CALVERT	25	Groundwater	Closed	3/31/2006	MD1041196
EASTERN U M CHURCH	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041032
FAMILY MEDICINE	CALVERT	25	Groundwater	Closed	12/1/2000	MD1041225
FRANCHI'S RESTAURANT	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041035
GASHOP 2	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041100
GATSBY DOCKSIDE GALLERY	CALVERT	25	Groundwater	Closed	9/1/1988	MD1041038
HAWKINS GROCERY DUNKIRK	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041042
HIGH'S-PARIS SHOPPING CENTER	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041045
HULIO'S CHUCKWAGON	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041047
IGA FOODLINER	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041102
IGA NORTH BEACH	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041051
ISLAND CREEK HEADSTART	CALVERT	25	Groundwater	Closed	3/31/2006	MD1041217
J & J FOODS	CALVERT	25	Groundwater	Closed	6/1/2001	MD1041024
J & J RESTAURANT	CALVERT	100	Groundwater	Closed	3/1/1993	MD1041146

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
JENEVAS CAKES	CALVERT	25	Groundwater	Closed	2/1/2006	MD1041224
JOE & THELMA CATERING	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041155
KNOTTY PINE BAR & GRILL	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041054
LAKE SNACK BAR	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041156
LICKEDY SPLITS	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041141
LILLIE'S CATERING SERVICE	CALVERT	25	Groundwater	Closed	9/1/1988	MD1041057
LITTLE PONDEROSA OWINGS	CALVERT	25	Groundwater	Closed	9/1/1988	MD1041058
MARKETPLACE PROFESSIONAL BUILDING	CALVERT	25	Groundwater	Closed	3/1/2001	MD1041212
MARYLAND TOBACCO GROWERS ASSOC	CALVERT	25	Groundwater	Closed	9/1/1988	MD1041126
MOTHER BROWN'S GROCERY	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041060
MS. LIZZIES	CALVERT	25	Groundwater	Closed	3/1/1993	MD1041128
MT HOPE UM CHURCH	CALVERT	25	Groundwater	Closed	2/1/2006	MD1041061
N. BEACH STORE & OFFICES	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041064
NEPTUNE'S	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041063
NORTH BEACH POST OFFICE	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041104

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
NORTH BEACH TOWN OFFICES	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041147
OASIS SNACK BAR	CALVERT	25	Groundwater	Closed	3/1/1993	MD1041130
OHALLORANS BAR & GRILL	CALVERT	25	Groundwater	Closed	8/1/1999	MD1041096
OLIVET UNITED METHODIST CHURCH	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041169
PATUXENT UM CHURCH	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041067
PENWICK HOUSE	CALVERT	25	Groundwater	Closed	1/1/2002	MD1041068
PIZZA OVEN	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041071
PLATER'S TAVERN	CALVERT	25	Groundwater	Closed	1/1/1998	MD1081071
PLUM POINT UM CHURCH	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041072
R & J LIQUORS	CALVERT	25	Groundwater	Closed	1/1/2002	MD1041078
R & W MARKET	CALVERT	25	Groundwater	Closed	3/1/1993	MD1041132
R/K AGRICULTURAL CENTER	CALVERT	25	Groundwater	Closed	11/1/1999	MD1041142
RANDLE CLIFF MARKET	CALVERT	25	Groundwater	Closed	8/1/2000	MD1041075
S & S SEAFOOD	CALVERT	25	Groundwater	Closed	11/1/2000	MD1041149
SNELLS FEED STORE	CALVERT	25	Groundwater	Closed	11/1/1999	MD1041135

Table 2.4.12-7 Listing of U.S. Environmental Protection Agency (US EPA) SDWIS Community, Non-Transient Non-Community, and Transient Non-Community Water Systems in Calvert County, Maryland
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Listing of US EPA SDWIS Community Water Systems in Calvert County, Maryland						
Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Date Closed	Water System ID
SOLOMONS CHARGE UNITED METHODIST	CALVERT	25	Groundwater	Closed	11/1/1999	MD1041179
SOUTHERN COMMUNITY CENTER	CALVERT	25	Groundwater	Closed	3/31/2006	MD1041220
ST ANTHONYS CHURCH	CALVERT	25	Groundwater	Closed	8/1/1999	MD1041136
ST JOHNS UM CHURCH	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041082
SURREY INN	CALVERT	25	Groundwater	Closed	9/1/2000	MD1041205
TRUEMAN H.B. LUMBER CO.	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041138
TWIN BEACH COMM. CENTER	CALVERT	25	Groundwater	Closed	12/1/1996	MD1041085
WARDS MEMORIAL METHODIST CHURCH	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041139
WARREN DENTON SEAFOOD	CALVERT	25	Groundwater	Closed	1/1/2002	MD1041088
WEEMS BUILDING	CALVERT	25	Groundwater	Closed	3/1/1993	MD1041090
WEEMS TAVERN	CALVERT	25	Groundwater	Closed	2/1/1999	MD1041091
WHITE SANDS POOL	CALVERT	25	Groundwater	Closed	3/31/2006	MD1041206
ZION HILL CHURCH OF CHRIST	CALVERT	25	Groundwater	Closed	5/1/2005	MD1041106