Table 2.3.2-6 CCNPP Units 1 and 2 State of Maryland Water Appropriation Permits (Page 1 of 1)

Permit Number	Location	Limit (gpd (lpd))	Expires	Report	Aquifer	Wells	Well Depth (ft)
CA69G010 (05)	CCNPP	450,000/865,000 (1,073,425/3,374,381)	7/1/2012	Yes	Aquia	5	≈600
CA63G003 (07)	Camp Conoy	500/5,000 (1,892/18,927)	7/1/2012	No	Piney Point	4	≈350
CA83G008 (03)	Visitor's Center	300/500 (1,135/1,892)	7/1/2012	No	Piney Point	1	≈350
CA89G007 (02)	Firing Range	500/1,000 (1,892/3,785)	7/1/2012	No	Piney Point	1	≈350
CA89G107(01)	PUP Trailers	300/500 (1,351/1,892)	7/1/2012	N/A	Piney Point	1	≈350
None	Old Bay Farm	None	N/A	N/A	Aquia	1	≈600

Field Explanations

- Permit Number: MD Water Appropriation and Use Permit
- Location: Location of permitted site well(s) in CCNPP
- Limit: Daily average of gallons on a yearly basis / daily average of gallons for the month of maximum use
- Expires: Permit Expiration Date
- Report: Requirements to report semi-annual groundwater withdrawals
- Aquifer: Aquifer source
- Wells: Number of permitted site wells

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Table 2.3.2-7 CCNPP Units 1 and 2 Water Use Report, State of Maryland Water Appropriation Permit CA69G010 (05)
(Page 1 of 1)

	2001 gallons (liters)	2002 gallons (liters)	2003 gallons (liters)	2004 gallons (liters)	2005 gallons (liters)	2006 gallons (liters)
January		14,495,320 (54,870,755)	11,392,300 (43,124,546)	14,992,760 (56,753,770)	11,148,840 (42,202,950)	10,041,320 (38,010,531)
February		10,342,670 (39,151,264)	10,857,000 (41,098,215)	12,414,190 (64,992,821)	11,607,670 (43,939,810)	10,346,610 (39,166,179)
March		9,481,760 (35,892,366)	10,165,800 (38,481,739)	11,692,830 (44,262,176)	12,870,800 (48,721,277)	10,012,940 (37,903,101)
April		9.742,450 (36,879,185)	11,195,700 (42,380,334)	10,572,530 (40,021,379)	8,977,320 (33,982,852)	14,271,134 (54,022,118)
May		10,653,390 (40,327,468)	15,828,550 (59,917,579)	12,288,900 (52,343,689)	13,827,740 (52,343,689)	11,781,229 (44,596,803)
June		11,305,160 (42,794,685)	14,877,230 (56,316,441)	15,858,200 (60,029,817)	11,987,770 (45,378,645)	10,936,940 (41,400,821)
July	12,106,107 (45,826,600)	15,271,750 (57,809,862)	12,902,030 (48,839,496)	13,892,440 (52,588,606)	8,336,940 (31,558,750)	
August	13,012,084 (49,256,096)	13,006,370 (49,234,466)	12,537,070 (47,457,972)	13,045,600 (49,382,967)	87,86,380 (33,260,066)	
September	12,573,675 (47,596,537)	13,707,430 (51,888,267)	11,507,340 (43,560,020)	11,817,990 (44,735,958)	8,343,530 (31,583,696)	
October	11,603,068 (43,922,390)	11,100,240 (42,018,979)	10,885,500 (41,206,099)	13,004,910 (49,228,939)	9,394,250 (35,561,104)	
November	12,220,342 (46,259,026)	13,171,740 (49,860,459)	12,553,100 (47,518,652)	10,932,310 (41,383,295)	7,566,650 (28,642,886)	
December	11,051,880 (41,835,916)	10,740,610 (40,657,631)	14,021,400 (53,076,772)	11,456,340 (43,366,964)	9,629,400 (36,451,244)	
Annual Totals	**72,567,156 (274,696,567)**	**143,018,890 (541,385,391)**	**148,723,020 (562,977,872)**	**151,969,000 (575,265,243)**	**122,477,290 (463,626,976)**	**67,390,173 (255,099,555)**

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Table 2.3.2-8 Maryland Department of the Environment (MDE) Water Appropriation Permits for the Calvert Cliffs Nuclear Power Plant (Page 1 of 1)

Permit Number	Location	Limit gpd (lpd)	Expires	Report	Aquifer	Wells
CA69G010 (05)	CCNPP	450,000/865,000 (1,073,435/3,274,381)	7/1/2012	yes	Aquia	5
CA63G003 (07)	Camp Conoy	500/5,000 (1,892/18,297)	7/1/2012	no	Piney Point	4
CA83G008 (03)	Visitor's Center	300/500 (1,135/1,892)	7/1/2012	no	Piney Point	1
CA89G007 (02)	Rifle Range	500/1,000 (1,892/3,785)	7/1/2012	no	Piney Point	1
CA89G107(01)	PUP Trailers	300/500 (1,135/1,892)	7/1/2012	n/a	Piney Point	1
None	Old Bay Farm	None	n/a	n/a	Aquia	1

Field Explanations

Permit Number: MD Water Appropriation and Use Permit

Location: Area within CCNPP

Limit: Daily average of gallons on a yearly basis/daily average of gallons for the month of maximum use

Expires: Permit Expiration Date

Report: Requirements to report semi-annual groundwater withdrawals

Aquifer: Aquifer source

Wells: Permitted site wells

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Table 2.3.3-1 Summary of Water Quality Analytical Data and In-situ Measurements for CCNPP Streams and Ponds (Page 1 of 2)

Water Body	Units	Johns Creek		Goldstein Branch	Lake Conoy[a]				Pond 1[a]	Pond 2[a]	Lake Davies		
Parameter		JCUS -01	JCDS -01	GB-01	LC-01	LC-02	LC-02 DUP	LC-03	P-01	P-02	LD-01	LD-02	LD-03
Temperature[b]	°F (°C)	64 (18)	59 (15.5)	62 (16.9)	76 (24.9)	70 (21.3)	NA	70 (21.7)	65 (18.4)	63 (17.3)	68 (20)	70 (20.5)	71 (20.7)
Dissolved Oxygen[b]	ppm	6.4	6	6.7	7.6	6.1	NA	6.16	3.21	0.99	3.4	3.4	4
pH[b]	SU	6.4	7.63	7.4	7.8	7.72	NA	7.3	6.7	6.39	7.5	7.7	7.7
Conductivity[b]	µmhos/cm	50	484	737	66	63	NA	62	109	135	1566	1592	1591
Alkalinity	mg/L	3.5	76	100	14	8.5	4.5	4.5	30	56	330	280	270
Biological Oxygen Demand (BOD)	mg/L	<2.0	3.2	5.9	6.3	6.9	<2.0	4.5	18	14	9.8	7.2	9.1
Ammonia	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nitrate plus Nitrite-N	mg/L	<0.05	<0.05	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phosphorus Dissolved-P	mg/L	0.021	0.018	0.011	<0.01	0.021	<0.01	0.011	0.011	<0.01	0.22	0.19	0.21
Phosphorus Total-P	mg/L	0.029	0.032	0.079	0.17	0.038	0.067	0.035	0.18	0.095	0.36	0.31	0.29
Total Dissolved Solids	mg/L	30	280	440	35	67	20	48	41	51	980	950	980
Total Kjeldahl Nitrogen	mg/L	2	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	3.1	1.4	2.2	1.8	1.7
Total Organic Carbon	mg/L	5.5	4	3.9	6.1	5.8	5.6	5.7	6.3	6.4	15	16	16
Total Suspended Solids	mg/L	4	5	62 (16.9)	27	<5.0	<5.0	150	56	11	6	6.5	8

See footnotes at end of table.

[a]Lake Conoy is also known as the Camp Conoy Fishing Pond. Pond 1 and Pond 2 are the first and second impoundments downstream of the Camp Conoy Fishing Pond.

[b]Insitu measurements for Temperature, Dissolved Oxygen, pH, and Conductivity are for surface readings. Additional data collected at various depths in the two lakes are provided in Table 2.3.3-1 (Page 2 of 2).

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Table 2.3.3-1 Summary of Water Quality Analytical Data and In-situ Measurements for CCNPP Streams and Ponds (Page 2 of 2)

Water Body	Units	Lake Conoy			Lake Davies		
		LC-01	LC-02	LC-03	LD-01	LD-02	LD-03
Parameter - Surface							
Temperature	°F (°C)	76 (24.9)	70 (21.3)	70 (21.7)	68 (20)	70 (20.5)	71 (20.7)
Dissolved Oxygen	ppm	7.6	6.1	6.16	3.4	3.4	4
pH	SU	7.8	7.72	7.3	7.5	7.7	7.7
Conductivity	µmhos/cm	66	63	62	1566	1592	1591
Parameter – Mid-Depth							
Temperature	°F (°C)	NA	NA	70.6 (21.2)	68 (20)	68.4 (20.2)	68.5 (20.3)
Dissolved Oxygen	ppm	NA	NA	5.68	3.1	2.5	2.5
pH	SU	NA	NA	7.06	7.6	7.6	7.7
Conductivity	µmhos/cm	NA	NA	63	1581	1612	1581
Parameter - Bottom							
Temperature	°F (°C)	77.5 (25.3)	70.4 (21.34)	70.2 (21.2)	67.8 (19.9)	68.4 (20.2)	67.8 (19.9)
Dissolved Oxygen	ppm	6.7	5.88	5.06	2.2	2.6	2.2
pH	SU	7.5	7.44	6.77	7.5	7.6	7.7
Conductivity	µmhos/cm	65	62	62	1563	1608	1576

mg/L = Milligrams per liter
NA = Not applicable. There is no duplicate sampling for in-situ measurements.
µmhos/cm =Microsiemens per centimeter
ppm = Parts per million
SU = Standard Units (pH)

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Table 2.3.3-2 Summary of Pycnocline Data for Selected Chesapeake Bay Monitoring Stations, Water Year 2005
Page 1 of 1

Station ID	Fall		Winter		Spring		Summer		Yearly Average
	Max	Min	Max	Min	Max	Min	Max	Min	
Depth to Pycnocline in feet (meters)									
CB4.3C	37.7 (11.5)	27.9 (8.5)	57.4 (17.5)	11.5 (3.5)	41 (12.5)	11.5 (3.5)	41 (12.5)	14.8 (4.5)	29.2 (8.9)
CB4.3E	34.4 (10.5)	11.5 (3.5)	--	--	44.3 (13.5)	14.8 (4.5)	27.9 (8.5)	14.8 (4.5)	25.7 (7.8)
CB4.4	44.3 (13.5)	18 (5.5)	44.3 (13.5)	27.9 (8.5)	34.4 (10.5)	8.2 (2.5)	41 (12.5)	27.9 (8.5)	31.4 (9.6)
CB5.1	47.6 (14.5)	8.2 (2.5)	54.1 (16.5)	18 (5.5)	41 (12.5)	11.5 (3.5)	37.7 (11.5)	14.8 (4.5)	27.9 (8.5)
Thickness of Pycnocline in feet (meters)									
CB4.3C	16.4 (5)	9.8 (3)	29.5 (9)	3.3 (1)	29.5 (9)	9.8 (3)	23 (7)	3.3 (1)	16.2 (4.9)
CB4.3E	19.7 (6)	16.4 (5)	--	--	6.6 (2)	<3 (<1)	26.2 (8)	9.8 (3)	13.1 (4)
CB4.4	49.2 (15)	9.8 (3)	19.7 (6)	9.8 (3)	32.8 (10)	19.7 (6)	23 (7)	6.6 (2)	19.9 (6.1)
CB5.1	52.5 (16)	6.6 (2)	32.8 (10)	9.8 (3)	49.2 (15)	23 (7)	49.2 (15)	9.8 (3)	23.6 (7.2)

Note:
-- = No data

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{Table 2.3.3-3 Summary of Temperature Statistics (°F [°C]) for Selected Chesapeake Bay Monitoring Stations, Water Year 2005
(Page 1 of 1)

Seasonal Statistics	CB4.3W	CB4.3C	CB4.3E	CB4.4	CB5.1W	CB5.1
Fall – September, October, November						
Max	78.3 (25.7)	79.7 (26.5)	79.5 (26.4)	80.6 (27.0)	80.2 (26.8)	79.9 (26.6)
Min	66.6 (19.2)	56.7 (13.7)	66.4 (19.1)	58.1 (14.5)	53.2 (11.8)	58.3 (14.6)
Average	71.9 (22.2)	69.9 (21.1)	73.4 (23.0)	69.7 (21.0)	70.7 (21.5)	69.9 (21.1)
N	15	66	37	74	22	78
Winter – December, January, February						
Max	--	54.5 (12.5)	--	54.5 (12.5)	47.7 (8.7)	54.5 (12.5)
Min	--	34.9 (1.6)	--	35.1 (1.7)	35.6 (2.0)	35.1 (1.7)
Average	--	42.8 (6.0)	--	42.7 (6.0)	43.0 (6.1)	43.2 (6.2)
N	0	69	0	75	10	75
Spring – March, April, May						
Max	61.7 (16.5)	61.5 (16.4)	61.3 (16.3)	61.9 (16.6)	62.8 (17.1)	62.2 (16.8)
Min	38.7 (3.7)	38.3 (3.5)	38.1 (3.4)	38.1 (3.4)	36.9 (2.7)	38.1 (3.4)
Average	51.0 (10.6)	49.0 (9.4)	50.0 (10.0)	49.8 (9.9)	51.2 (10.7)	49.2 (9.6)
N	41	105	93	123	26	131
Summer – June, July, August						
Max	82.9 (28.3)	83.5 (28.6)	83.1 (28.4)	85.3 (29.6)	83.5 (28.6)	84.4 (29.1)
Min	71.6 (22.0)	60.6 (15.9)	60.8 (16.0)	60.6 (15.9)	61.0 (16.1)	61.0 (16.1)
Average	79.0 (26.1)	74.9 (23.9)	75.0 (23.9)	75.4 (24.1)	77.6 (25.3)	74.8 (23.8)
N	50	126	108	135	24	148

Notes:

N = Number of measurements
-- = No data

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{Table 2.3.3-4 Summary of Dissolved Oxygen Concentrations (mg/L) for Selected Chesapeake Bay Monitoring Stations, Water Year 2005
(Page 1 of 1)

Seasonal Statistics	CB4.3W	CB4.3C	CB4.3E	CB4.4	CB5.1W	CB5.1
Fall – September, October, November						
Max	9.1	9.2	8.1	8.6	10.1	8.3
Min	4.6	0.2	0.2	0.2	5.1	0.2
Average	7.627	4.556	4.414	4.773	7.059	4.674
N	15	66	37	74	22	78
Winter – December, January, February						
Max	--	13.6	--	13.2	13.8	13.3
Min	--	5.5	--	5.7	10.6	5.8
Average	--	10.122	--	9.889	11.980	9.852
N	0	69	0	75	10	75
Spring – March, April, May						
Max	13.2	12.6	12.5	12.8	13	12.3
Min	3.1	1.2	1.4	1.3	7.9	0.9
Average	9.283	7.062	7.670	7.020	10.727	7.096
N	41	105	93	123	26	131
Summer – June, July, August						
Max	10.2	10.4	9.2	9.8	9.7	8.6
Min	0.2	0.1	0.1	0.1	3.0	0.1
Average	5.746	2.729	2.756	2.673	6.421	2.106
N	50	126	108	135	24	148

Notes:

N = Number of measurements
-- = No data

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{Table 2.3.3-5 Summary of Salinity Statistics (parts per thousand) for Selected Chesapeake Bay Monitoring Stations, Water Year 2005
(Page 1 of 1)

Seasonal Statistics	CB4.3W	CB4.3C	CB4.3E	CB4.4	CB5.1W	CB5.1
Fall – September, October, November						
Max	14.87	20.78	20.29	21.55	15.41	21.83
Min	7.93	7.93	8.89	9.98	8.44	10.69
Average	11.13	15.59	14.50	16.03	12.60	16.60
N	15	66	37	74	22	78
Winter – December, January, February						
Max	--	18.83	--	19.87	10.24	20.08
Min	--	5.82	--	7.12	8.69	8.38
Average	--	13.17	--	14.73	9.66	15.32
N	0	69	0	75	10	75
Spring – March, April, May						
Max	11.8	19.11	18.14	19.52	10.69	20.01
Min	4.6	4.06	4.3	4.42	5.39	4.18
Average	8.37	12.42	11.78	13.30	8.78	14.15
N	41	105	93	123	25	131
Summer – June, July, August						
Max	15.07	21.48	20.64	22.18	15	21.9
Min	10.5	10.56	10.63	10.95	9.33	10.95
Average	11.98	15.83	15.45	16.38	12.46	17.38
N	50	126	108	135	24	148

Notes:

N = Number of measurements
-- = No data

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{Table 2.3.3-6 Summary of Water Quality Data for Selected Chesapeake Bay Monitoring Stations, Water Year 2005 (Page 1 of 5)

Monitoring Station ID	Seasonal Statistics	Water Quality Parameters									
		Ammonia (Filtered)	Filtered Nitrite	Filtered Nitrate	Total Organic Nitrogen	Ortho-phosphate	Total Phosphorus	pH	Specific Conductivity	Chlorophyll A	Total Suspended Solids
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	SU	µmhos/cm	µg/L	mg/L
CB4.3W	***Fall – September, October, November***										
	Max	0.014	0.0434	0.3727	0.5434	0.0117	0.063	8.3	24700	17.942	14.6
	Min	0.003	0.001	0.001	0.465	0.0027	0.034	7.7	14100	8.373	6.6
	Average	0.008	0.0219	0.1830	0.5180	0.0058	0.0439	8.127	18993	13.606	9.45
	N	4	4	4	5	4	4	15	15	4	4
	Winter – December, January, February										
	Max	--	--	--	--	--	--	--	--	--	--
	Min	--	--	--	--	--	--	--	--	--	--
	Average	--	--	--	--	--	--	--	--	--	--
	N	--	--	--	--	--	--	--	--	--	--
	Spring – March, April, May										
	Max	0.277	0.0197	0.971	0.679	0.0139	0.0792	8.4	20100	42.165	31.7
	Min	0.003	0.0058	0.376	0.398	0.002	0.0214	7.1	8700	3.289	3.3
	Average	0.086	0.0104	0.5766	0.5070	0.0042	0.0365	7.868	14744	16.293	11.26
	N	10	10	10	12	10	10	41	41	10	9
	Summer – June, July, August										
	Max	0.302	0.0091	0.1769	1.2507	0.0932	0.1223	8.5	25000	53.827	16.8
	Min	0.003	0.0002	0.0008	0.3551	0.0023	0.0257	7.2	18100	1.096	3.7
	Average	0.059	0.0025	0.0329	0.7025	0.0139	0.0597	8.018	20356	17.367	9.29
	N	12	12	13	17	12	12	50	50	12	12
CB4.3C	***Fall – September, October, November***										
	Max	0.185	0.2045	0.374	0.5364	0.067	0.085	8.2	33300	17.942	11.2
	Min	0.003	0.0192	0.0033	0.3418	0.0016	0.023	7.4	14100	0.897	2.8
	Average	0.036	0.0478	0.1679	0.4389	0.0163	0.0396	7.791	25676	6.205	6.31
	N	15	13	13	15	15	15	66	66	14	12
	Winter – December, January, February										

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{Table 2.3.3-6 Summary of Water Quality Data for Selected Chesapeake Bay Monitoring Stations, Water Year 2005 (Page 2 of 5)

Monitoring Station ID	Seasonal Statistics	Water Quality Parameters									
		Ammonia (Filtered)	Filtered Nitrite	Filtered Nitrate	Total Organic Nitrogen	Ortho-phosphate	Total Phosphorus	pH	Specific Conductivity	Chlorophyll A	Total Suspended Solids
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	SU	µmhos/cm	µg/L	mg/L
	Max	0.129	0.0196	0.7785	1.104	0.0107	0.062	8.3	30500	26.615	28.2
	Min	0.003	0.0041	0.0532	0.348	0.002	0.0172	7.6	10700	2.563	2.4
	Average	0.048	0.0105	0.3375	0.5908	0.0053	0.0322	7.893	22084	11.758	9.43
	N	15	15	15	16	15	15	69	69	15	12
	Spring – March, April, May										
	Max	0.281	0.0143	0.7953	0.817	0.0061	0.0475	8.5	30900	42.464	15.5
	Min	0.003	0.0058	0.0895	0.27	0.002	0.0195	7.1	7800	2.243	2.9
	Average	0.091	0.0095	0.4111	0.5362	0.0034	0.0312	7.639	20932	16.689	7.76
	N	25	25	25	28	25	25	105	105	25	23
	Summer – June, July, August										
	Max	0.326	0.0107	0.1977	0.664	0.0697	0.1008	8.6	34300	14.952	31.2
	Min	0.003	0.0002	0.0011	0.2938	0.0016	0.0208	7.1	18200	0.498	2.4
	Average	0.119	0.0029	0.0282	0.4795	0.0172	0.0467	7.630	26066	6.065	6.34
	N	30	29	32	35	30	29	126	126	30	24
CB4.3E	***Fall – September, October, November***										
	Max	0.094	0.0792	0.3495	0.558	0.0647	0.0961	8.2	32600	14.204	9.8
	Min	0.003	0.0002	0.0008	0.3609	0.0016	0.0207	7.4	15600	1.196	3.4
	Average	0.025	0.0277	0.1264	0.4470	0.0213	0.0484	7.746	24092	5.490	6.32
	N	8	8	9	10	8	8	37	37	8	5
	Winter – December, January, February										
	Max	--	--	--	--	--	--	--	--	--	--
	Min	--	--	--	--	--	--	--	--	--	--
	Average	--	--	--	--	--	--	--	--	--	--
	N	--	--	--	--	--	--	--	--	--	--
	Spring – March, April, May										
	Max	0.278	0.0145	0.77	0.793	0.008	0.0826	8.4	29500	41.866	51

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{Table 2.3.3-6 Summary of Water Quality Data for Selected Chesapeake Bay Monitoring Stations, Water Year 2005 (Page 3 of 5)

Monitoring Station ID	Seasonal Statistics	Water Quality Parameters									
		Ammonia (Filtered)	Filtered Nitrite	Filtered Nitrate	Total Organic Nitrogen	Ortho-phosphate	Total Phosphorus	pH	Specific Conductivity	Chlorophyll A	Total Suspended Solids
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	SU	µmhos/cm	µg/L	mg/L
	Min	0.003	0.0053	0.0975	0.389	0.0018	0.0173	7.1	8200	3.551	2.8
	Average	0.104	0.0090	0.3713	0.5088	0.0034	0.0338	7.714	19981	15.564	14.02
	N	20	20	20	21	20	19	93	93	20	14
	Summer – June, July, August										
	Max	0.344	0.0157	0.1648	0.6342	0.0725	0.1002	8.5	33100	17.045	15.9
	Min	0.003	0.0002	0.0006	0.2864	0.0019	0.0267	7	18300	0.797	2.4
	Average	0.143	0.0039	0.0220	0.4560	0.0221	0.0521	7.609	25519	6.509	6.58
	N	24	24	31	28	24	24	108	108	24	19
CB4.4	***Fall – September, October, November***										
	Max	0.167	0.1775	0.2951	0.597	0.0567	0.0752	8.2	34400	19.139	14.6
	Min	0.003	0.0003	0.0022	0.3156	0.0019	0.0236	7.4	17300	0.449	2.6
	Average	0.045	0.0596	0.0969	0.4291	0.0190	0.0430	7.839	26350	4.604	7.71
	N	15	14	14	17	15	15	74	74	15	10
	Winter – December, January, February										
	Max	0.12	0.0219	0.6152	1.0337	0.0149	0.1171	8.4	32000	34.39	98.3
	Min	0.003	0.0035	0.0386	0.3288	0.0006	0.0131	7.7	12800	2.392	4
	Average	0.043	0.0096	0.2136	0.5667	0.0050	0.0448	7.972	24407	14.113	30.40
	N	15	15	15	16	15	15	75	75	15	11
	Spring – March, April, May										
	Max	0.259	0.0203	0.8034	0.8573	0.0072	0.0694	8.6	31500	34.39	40.5
	Min	0.003	0.0045	0.0479	0.341	0.0015	0.0156	7.2	8400	5.607	2.6
	Average	0.106	0.0089	0.3094	0.5117	0.0034	0.0328	7.698	22265	16.387	11.09
	N	25	25	25	27	25	24	123	123	25	22
	Summer – June, July, August										
	Max	0.291	0.0131	0.1799	0.6933	0.0719	0.0986	8.5	35300	26.316	30.6
	Min	0.003	0.0002	0.001	0.2698	0.0017	0.0254	7	18800	0.748	2.4
	Average	0.145	0.0032	0.0225	0.4409	0.0225	0.0509	7.632	26868	5.239	8.78

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{Table 2.3.3-6 Summary of Water Quality Data for Selected Chesapeake Bay Monitoring Stations, Water Year 2005 (Page 4 of 5)

Monitoring Station ID	Seasonal Statistics	Water Quality Parameters									
		Ammonia (Filtered)	Filtered Nitrite	Filtered Nitrate	Total Organic Nitrogen	Ortho-phosphate	Total Phosphorus	pH	Specific Conductivity	Chlorophyll A	Total Suspended Solids
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	SU	µmhos/cm	µg/L	mg/L
	N	30	28	32	30	30	30	135	135	30	25
CB5.1	***Fall – September, October, November***										
	Max	0.145	0.1775	0.263	0.462	0.0545	0.0778	8.2	34800	11.214	28.8
	Min	0.003	0.0002	0.0012	0.3379	0.0028	0.0249	7.5	18400	0.897	3.2
	Average	0.041	0.0524	0.0856	0.4115	0.0150	0.0404	7.849	27200	5.177	7.46
	N	12	12	13	15	12	12	78	78	12	9
	Winter – December, January, February										
	Max	0.122	0.0196	0.4916	0.6394	0.0162	0.0579	8.4	32300	22.054	34.3
	Min	0.003	0.0032	0.0334	0.341	0.0006	0.0139	7.7	14800	2.35	3.1
	Average	0.034	0.0088	0.2247	0.4416	0.0043	0.0290	7.999	25295	10.527	8.55
	N	12	12	12	13	12	12	75	75	12	12
	Spring – March, April, May										
	Max	0.249	0.0152	0.8126	0.808	0.0067	0.0792	8.4	32200	27.412	59
	Min	0.003	0.0042	0.0464	0.316	0.0014	0.013	7.2	8000	5.981	2.4
	Average	0.084	0.0079	0.3169	0.4958	0.0033	0.0318	7.777	23550	15.697	10.91
	N	20	19	19	22	20	20	131	131	20	18
	Summer – June, July, August										
	Max	0.29	0.011	0.1768	0.6651	0.0689	0.1038	8.5	34900	16.148	23
	Min	0.003	0.0002	0.001	0.3094	0.0019	0.0229	7.1	18800	0.498	2.4
	Average	0.110	0.0025	0.0215	0.4504	0.0178	0.0464	7.593	28340	5.419	6.23
	N	24	23	28	28	24	24	148	148	24	18
CB5.1W	***Fall – September, October, November***										
	Max	0.055	0.1032	0.4085	0.9713	0.0159	0.0551	8.2	25500	8.22	12.4
	Min	0.003	0.0023	0.0021	0.357	0.0033	0.0239	7.6	14900	2.06	2.9
	Average	0.017	0.0349	0.1762	0.5540	0.0080	0.0358	7.968	21259	5.618	5.50
	N	25	25	25	32	25	25	22	22	25	24

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{Table 2.3.3-6 Summary of Water Quality Data for Selected Chesapeake Bay Monitoring Stations, Water Year 2005 (Page 5 of 5)

Monitoring Station ID	Seasonal Statistics	Water Quality Parameters									
		Ammonia (Filtered)	Filtered Nitrite	Filtered Nitrate	Total Organic Nitrogen	Ortho-phosphate	Total Phosphorus	pH	Specific Conductivity	Chlorophyll A	Total Suspended Solids
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	SU	µmhos/cm	µg/L	mg/L
	Winter – December, January, February										
	Max	0.024	0.0103	0.5711	0.583	0.0072	0.0314	8	17700	9.42	7.5
	Min	0.003	0.007	0.3857	0.35	0.0014	0.0134	7.9	15300	3.44	2.4
	Average	0.012	0.0091	0.4790	0.4710	0.0036	0.0228	7.990	16810	6.413	5.27
	N	10	10	10	13	10	10	10	10	9	7
	Spring – March, April, May										
	Max	0.107	0.0259	0.8964	0.684	0.0057	0.0639	8.4	18400	14.52	34.3
	Min	0.006	0.0063	0.3081	0.2881	0.0009	0.0121	7.7	10000	3.44	2.4
	Average	0.032	0.0100	0.5475	0.4773	0.0028	0.0229	8.042	15412	8.509	8.03
	N	30	30	30	30	30	30	26	25	30	24
	Summer – June, July, August										
	Max	0.209	0.0088	0.3435	0.9183	0.014	0.0637	8.5	24900	16.02	25.8
	Min	0.003	0.0002	0.0007	0.428	0.0023	0.0215	7.3	16300	3.29	5.2
	Average	0.031	0.0031	0.0644	0.6508	0.0047	0.0406	8.121	21075	8.606	9.37
	N	30	29	30	31	30	30	24	24	28	20
All Stations	***Annual***										
	Max	0.344	0.2045	0.971	1.2507	0.0932	0.1223	8.6	35300	53.827	98.3
	Min	0.003	0.0002	0.0006	0.2698	0.0006	0.0121	7	7800	0.449	2.4
	Average	0.074	0.0162	0.2014	0.5066	0.0103	0.0392	7.764	23978	9.764	9.06
	N	411	402	425	461	411	408	1631	1630	407	334

Notes:
µg/L = micrograms/liter
µmhos/cm = micromhos per centimeter
mg/L = milligrams/liter
N = Number of measurements
SU = Standard units (pH)
-- = No data

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{Table 2.3.3-7 Summary of 2005 Radiological Liquid Effluent Calvert Cliffs Nuclear Power Plant Units 1 and 2 (Page 1 of 3)

Nuclide Reported	Continuous Mode		Batch Mode		Continuous Mode		Batch Mode	
	1st QTR	2nd QTR	1st QTR Ci (Bq)	2nd QTR Ci (Bq)	3rd QTR	4th QTR	1st QTR Ci (Bq)	2nd QTR Ci (Bq)
Beryllium - 7	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Sodium - 24	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Chromium - 51	(1)	(1)	1.22E-04 (4.51E+06)	2.67E-04 (9.88E+06)	(1)	(1)	(1)	(1)
Manganese - 54	(1)	(1)	1.14E-05 (4.22E+05)	2.01E-05 (7.44E+05)	(1)	(1)	5.39E-06 (1.99E+05)	4.22E-06 (1.56E+05)
Iron - 55	(2)	(2)	7.88E-04 (2.92E+07)	6.51E-02 (2.41E+09)	(2)	(2)	1.81E-02 (6.70E+08)	2.71E-03 (1.00E+08)
Cobalt - 57	(1)	(1)	(1)	1.39E-06 (5.14E+04)	(1)	(1)	(1)	(1)
Cobalt - 58	(1)	(1)	1.23E-03 (4.55E+07)	1.00E-03 (3.70E+07)	(1)	(1)	1.21E-04 (4.48E+06)	3.97E-05 (1.47E+06)
Iron - 59	(1)	(1)	4.08E-06 (1.51E+05)	1.25E-05 (4.63E+05)	(1)	(1)	(1)	(1)
Cobalt - 60	(1)	(1)	2.57E-04 (9.51E+06)	1.21E-04 (4.48E+06)	(1)	(1)	1.99E-04 (7.36E+06)	1.67E-05 (6.18E+06)
Nickel - 63	(1)	(1)	3.17E-04 (1.17E+07)	4.92E-03 (1.82E+08)	(1)	(1)	7.82E-04 (2.89E+07)	1.40E-04 (5.18E+06)
Zinc - 65	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Strontium - 89	(1)	(1)	2.75E-04 (1.02E+07)	7.54E-05 (2.79E+06)	(1)	(1)	3.25E-05 (1.20E+06)	(1)
Strontium - 90	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Strontium - 92	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Niobium - 95	(1)	(1)	2.81E-05 (1.04E+06)	1.24E-04 (4.59E+06)	(1)	(1)	4.41E-06 (1.63E+05)	3.88E-06 (1.44E+05)
Zirconium - 95	(1)	(1)	2.30E-05 (8.51E+05)	8.81E-05 (3.26E+06)	(1)	(1)	4.38E-06 (1.62E+05)	1.95E-06 (7.22E+04)
Niobium - 97	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Zirconium - 97	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Molybdenum - 99	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

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{Table 2.3.3-7 Summary of 2005 Radiological Liquid Effluent Calvert Cliffs Nuclear Power Plant Units 1 and 2 (Page 2 of 3)

Nuclide Reported	Continuous Mode		Batch Mode		Continuous Mode		Batch Mode	
	1st QTR	2nd QTR	1st QTR Ci (Bq)	2nd QTR Ci (Bq)	3rd QTR	4th QTR	1st QTR Ci (Bq)	2nd QTR Ci (Bq)
Technetium - 99m	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Ruthenium - 103	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Rhodium - 105	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Ruthenium - 105	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Silver - 110m	(1)	(1)	(1)	(1)	(1)	(1)	9.78E-06 (3.62E+05)	(1)
Tin - 113	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Tin - 117m	(1)	(1)	6.10E-05 (2.26E+06)	6.72E-05 (2.49E+06)	(1)	(1)	(1)	(1)
Antimony - 122	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Antimony - 124	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Antimony - 125	(1)	(1)	8.57E-06 (3.17E+05)	(1)	(1)	(1)	(1)	(1)
Tellurium - 125m	(1)	(1)	5.68E-03 (2.10+08)	7.02E-03 (2.60E+08)	(1)	(1)	(1)	(1)
Tellurium - 132	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Iodine - 131	(1)	(1)	1.45E-04 (5.37E+06)	2.59E-06 (9.58E+04)	(1)	(1)	4.39E-06 (1.62E+05)	6.35E-06 (2.35E+05)
Iodine - 132	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Iodine - 133	(1)	(1)	2.32E-06 (8.58E+04)	4.38E-06 (1.62E+05)	(1)	(1)	4.91E-06 (1.82E+05)	4.24E-06 (1.57E+05)
Iodine - 135	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Cesium - 134	(1)	(1)	2.25E-05 (8.33E+05)	3.02E-05 (1.12E+06)	(1)	(1)	1.48E-05 (5.48E+05)	8.03E-06 (2.97E+05)
Cesium - 136	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Cesium - 137	(1)	(1)	4.58E-05 (1.69E+06)	3.49E-05 (1.29E+06)	(1)	(1)	1.97E-05 (7.29E+05)	3.17E-05 (1.17E+06)
Barium - 140	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

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{Table 2.3.3-7 Summary of 2005 Radiological Liquid Effluent Calvert Cliffs Nuclear Power Plant Units 1 and 2 (Page 3 of 3)

Nuclide Reported	Continuous Mode		Batch Mode		Continuous Mode		Batch Mode	
	1st QTR	2nd QTR	1st QTR Ci (Bq)	2nd QTR Ci (Bq)	3rd QTR	4th QTR	1st QTR Ci (Bq)	2nd QTR Ci (Bq)
Lanthanum - 140	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Cerium - 144	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Europium - 154	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Europium - 155	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Tungsten - 187	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Total for Period	(1)	(1)	9.02E-03 (3.34E+08)	7.89E-02 (2.92E+09)	(1)	(1)	1.93E-02 (7.14E+08)	2.97E-03 (1.10E+08)
Krypton - 85	(1)	(1)	(1)	(1)	(1)	(1)	(1)	6.42E-03 (2.38E+08)
Xenon - 131m	(1)	(1)	1.92E-03 (7.10E+07)	(1)	(1)	(1)	(1)	(1)
Xenon - 133	(1)	(1)	1.13E-01 (4.18E+09)	2.03E-03 (7.51E+07)	(1)	(1)	2.63E-03 (9.73E+07)	1.52E-02 (5.62E+08)
Xenon - 133m	(1)	(1)	6.99E-04 (2.59E+07)	(1)	(1)	(1)	(1)	(1)
Xenon - 135	(1)	(1)	5.28E-05 (1.95E+06)	(1)	(1)	(1)	(1)	(1)
Total for Period	(1)	(1)	1.15E-01 (4.26E+09)	2.03E-03 (7.51E+07)	(1)	(1)	2.63E-03 (9.73E+07)	2.17E-02 (8.03E+08)

From: Calvert Cliffs Nuclear Power Plant – Effluent and Waste Disposal, Annual Report, July 13, 2006.
(1) = Less than minimal detectable activity which meets the LLD requirement of ODCM Surveillance Requirement 4.11.1.1.1.
(2) = Continuous mode effluents are not analyzed for Iron-55.
Bq = Becquerel; 1 Bq = 3.7E+10 Curies
Ci = Curies
M = Metastable isotope.

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Table 2.3.3-8 Summary of Analytical Results for Chesapeake Bay Water Samples Collected during Ebb and Flood Tides at the Unit 1 and 2 Intake Structure, February – May 2007 (Page 1 of 2)

Parameter	EPA Test Method	Method Detection Limit	Ebb Tide 2/19/07	Flood Tide 2/20/07	Ebb Tide 3/05/07	Flood Tide 3/06/07	Ebb Tide 3/20/07	Flood Tide 3/20/07	Ebb Tide 4/17/07	Flood Tide 4/17/07	Ebb Tide 5/22/07	Flood Tide 5/22/07
Metals												
Aluminum	200.7	0.1 mg/L	0.26	0.19	ND (0.5)	ND (0.5)	ND (0.10)	0.12	0.4	0.33	ND (0.1)	ND (0.1)
Arsenic	200.8	0.0004 mg/L	0.035	0.041	0.03	0.028	0.02	0.022	0.02	0.02	ND (0.002)	ND (0.002)
Barium	200.8	0.001 mg/L	0.03	0.033	0.024	0.023	0.029	0.029	0.03	0.03	0.027	0.027
Calcium	200.7	0.5 mg/L	160	170	180	170	180	170	130	130	170	160
Copper	200.8	0.0004 mg/L	0.025	0.024	0.026	0.026	0.019	0.021	0.026	0.027	0.029	0.031
Iron, dissolved	200.7	0.01 mg/L	ND (0.01)	ND (0.01)	ND (0.05)	ND (0.05)	ND (0.10)	ND (0.10)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Iron, total	200.7	0.01 mg/L	0.22	0.12	2.7	0.36	0.042	0.082	0.55	0.46	0.041	0.1
Lead	200.8	0.0004 mg/L	0.0017	0.0018	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)
Manganese, dissolved	200.7	0.01 mg/L	ND (0.01)	ND (0.10)	ND (0.05)	ND (0.05)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Manganese, total	200.7	0.01 mg/L	ND (0.01)	ND (0.10)	ND (0.05)	ND (0.05)	ND (0.01)	ND (0.01)	0.021	0.015	0.069	0.064
Magnesium	200.7	0.1 mg/L	460	490	490	480	480	500	360	360	450	430
Potassium	200.7	0.1 mg/L	160	170	150	150	150	150	120	120	140	130
Sodium	200.7	1 mg/L	3,700	3,800	4,000	3,900	3,600	3,800	3,000	3,100	3,600	3,400
Strontium	200.7	0.005 mg/L	2.8	2.9	2.9	2.8	2.6	2.7	2	2.1	2.5	2.4
Vanadium	200.7	0.01 mg/L	ND (0.01)	ND (0.01)	ND (0.05)	ND (0.05)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Zinc	200.7	0.02 mg/L	ND (0.02)	ND (0.020)	ND (0.10)	ND (0.10)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	0.09
Non-Metals												
M alkalinity, as $CaCO_3$	310.1	1 mg/L	72	75	69	72	74	40	60	60	70	70
Ammonia as NH_3	350.2	1 mg/L	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1.0)	ND (1.0)
Biological Oxygen Demand (BOD_5)	405.1	2 mg/L	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (3)	3.7	ND (2.0)	ND (2.0)
Bromides	320.1_R3_83	1 mg/L	17	15	11	11	15	16	8.8	8.9	NR	NR
Chlorides	325.3	1 mg/L	6,500	6,700	7,200	6,500	6,600	7,000	4,900	5,000	6,600	6,500
Color (Color Units)	110.2	5 Color Units	10	5	15	10	5	5	ND (5)	ND (5)	15	10
Conductivity, (µmho/cm)	120.1	NA	28,000	29,000	20,000	20,000	19,000	20,000	15,000	15,000	21,000	23,000
Fluorides	340.2	0.1 mg/L	0.37	0.36	0.42	0.43	0.42	0.43	0.44	0.48	0.41	0.41
Hardness as $CaCO_3$	130.2	1 mg/L	3,400	4,000	3,600	3,200	4,500	3,300	2,400	2,200	4,300	3,100
Nitrates, as NO_3	353.2	0.05 mg/L	0.3	0.29	0.22	0.22	0.26	0.25	0.51	0.51	0.19	0.19
Nitrites, as NO_2	SM 4500	0.005 mg/L	0.0063	0.006	ND (0.005)	ND (0.005)	0.05	ND (0.005)	ND (0.005)	0.0057	0.011	0.012

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Table 2.3.3-8 Summary of Analytical Results for Chesapeake Bay Water Samples Collected during Ebb and Flood Tides at the Unit 1 and 2 Intake Structure, February – May 2007 (Page 2 of 2)

Parameter	EPA Test Method	Method Detection Limit	Ebb Tide 2/19/07	Flood Tide 2/20/07	Ebb Tide 3/05/07	Flood Tide 3/06/07	Ebb Tide 3/20/07	Flood Tide 3/20/07	Ebb Tide 4/17/07	Flood Tide 4/17/07	Ebb Tide 5/22/07	Flood Tide 5/22/07
Oil & grease (O&G)	1664	5 mg/L	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
pH (standard units)	150.1	1	7.7	7.8	7.8	7.8	7.5	7.2	7.6	7.2	8.5	8.4
Phosphorus, Total as P	SM 4500	0.01 mg/L	0.04	0.043	0.052	0.061	0.036	0.056	0.054	0.057	0.04	0.043
PO_4	SM 4500PE	0.01 mg/L	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	0.023	ND (0.01)	ND (0.01)
Silica, dissolved	200.7	0.5 mg/L	1.1	0.99	ND (2.5)	ND (2.5)	0.62	0.58	0.82	0.85	ND (0.5)	ND (0.5)
Silica, total	200.7	0.5 mg/L	2	1.8	ND (2.5)	ND (2.5)	1.1	1.2	2	1.8	0.61	0.69
Sulfates	375.4	1 mg/L	1,000	940	950	980	980	1,100	580	1,100	1,000	1,100
Total Organic Carbon (TOC)	415.1	1 mg/L	2.6	2.1	1.2	1.2	2.7	4.3	2.6	3.6	NR	NR
Total Dissolved Solids (TDS)	160.1	1 mg/L	12,000	12,000	14,000	11,000	12,000	11,000	15,000	14,000	18,000	13,000
Total Suspended Solids (TSS)	160.2	1 mg/L	12	11	21	23	17	18	28	25	7	8.5
Turbidity (NTU)	180.1	0.1 NTU	ND (0.1)	ND (0.1)	4	5.5	3.7	5.1	8.5	7.7	4.7	3.3

BOD_5 = Biological Oxygen Demand, corrected for dilution
M Alkalinity = Total alkalinity expressed as $CaCo_3$
NA = Not analyzed
ND ( ) = Not detected at the concentration reported inside the parentheses
NR = Not Reported as of June 14, 2007
NTU = Nephelometric Turbidity Unit
SM = Standard Method

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{Table 2.3.3-9 Summary of Analytical Results for Sediment Samples Collected in Chesapeake Bay Near the CCNPP Barge Slip - September 2006
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Analyte	Theshold Effects Level	Probable Effects Level	Units	Average Reporting Limit	CCNPP Unit 1	CCNPP Unit 2	CCNPP Unit 3
General Chemistry Parameters							
Ammonia	--	--	mg/kg	7.0	**6.1 J**	**6.8 J**	**4.9 J**
Total Kjeldahl Nitrogen	--	--	mg/kg	210	**186 J**	**316**	ND
Total Organic Carbon	--	--	mg/kg	752	**23600**	**30700**	**24100**
Total Phosphorus	--	--	mg/kg	140	**1080**	**1110**	**615**
Metals							
Arsenic	7.240	41.600	mg/kg	0.98	**1.2**	**1.1**	**0.95 J**
Cadmium	0.676	4.210	mg/kg	0.49	**0.17 J**	**0.20 J**	**0.18 J**
Chromium	52.300	160.400	mg/kg	0.49	**3.7**	**4.3**	**3.4**
Copper	18.700	108.200	mg/kg	2.40	**1.2 J**	**1.2 J**	**1.3J**
Lead	30.240	112.180	mg/kg	0.29	**1.1**	**1.4**	**1.2**
Mercury	0.130	0.696	mg/kg	0.33	ND	ND	ND
Zinc	124.000	271.000	mg/kg	2.00	**7.5**	**9.4**	**9.3**
Polyaromatic Hydrocarbons							
Acenaphthene	6.71	88.9	µg/kg	640	ND	ND	ND
Acenaphthylene	5.87	127.87	µg/kg	640	ND	ND	ND
Anthracene	46.85	245	µg/kg	640	ND	ND	ND
Benzo(a)anthracene	74.83	692.53	µg/kg	640	ND	ND	ND
Benzo(a)pyrene	88.81	763.22	µg/kg	640	ND	ND	ND
Benzo(b)fluoranthene	--	--	µg/kg	640	ND	ND	ND
Benzo(ghi)perylene	--	--	µg/kg	640	ND	ND	ND
Benzo(k)fluoranthene	--	--	µg/kg	640	ND	ND	ND
Chrysene	107.77	845.98	µg/kg	640	ND	ND	ND
Dibenzo(a,h)anthracene	6.22	134.61	µg/kg	640	ND	ND	ND

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{Table 2.3.3-9 Summary of Analytical Results for Sediment Samples Collected in Chesapeake Bay Near the CCNPP Barge Slip - September 2006
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Analyte	Theshold Effects Level	Probable Effects Level	Units	Average Reporting Limit	CCNPP Unit 1	CCNPP Unit 2	CCNPP Unit 3
Fluoranthene	112.82	1493.54	µg/kg	640	ND	ND	ND
Fluorene	21.17	144.35	µg/kg	640	ND	ND	ND
Naphthalene	34.57	390.64	µg/kg	640	ND	ND	ND
Phenanthrene	86.68	543.53	µg/kg	640	ND	ND	ND
Pyrene	152.66	1397.6	µg/kg	640	ND	ND	ND
PCB Congeners *							
PCB 90	--	--	µg/kg	0.24	ND	ND	ND
PCB 8	--	--	µg/kg	0.24	ND	ND	ND
PCB 18	--	--	µg/kg	0.24	**0.18 J**	**0.2 J, PG**	**0.27, PG**
PCB 28	--	--	µg/kg	0.24	ND	ND	ND
PCB 44	--	--	µg/kg	0.24	ND	ND	ND
PCB 49	--	--	µg/kg	0.24	ND	ND	ND
PCB 52	--	--	µg/kg	0.24	ND	ND	ND
PCB 66	--	--	µg/kg	0.24	ND	ND	ND
PCB 77	--	--	µg/kg	0.24	ND	ND	ND
PCB 87	--	--	µg/kg	0.24	ND	ND	ND
PCB 101	--	--	µg/kg	0.24	ND	ND	**0.058 J, PG**
PCB 105	--	--	µg/kg	0.24	ND	ND	ND
PCB 118	--	--	µg/kg	0.24	ND	ND	ND
PCB 126	--	--	µg/kg	0.24	ND	ND	ND
PCB 128	--	--	µg/kg	0.24	ND	ND	ND
PCB 138	--	--	µg/kg	0.24	ND	ND	ND
PCB 153	--	--	µg/kg	0.24	ND	ND	ND
PCB 156	--	--	µg/kg	0.24	ND	ND	ND
PCB 169	--	--	µg/kg	0.24	ND	ND	ND
PCB 170	--	--	µg/kg	0.24	ND	ND	ND

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{Table 2.3.3-9 Summary of Analytical Results for Sediment Samples Collected in Chesapeake Bay Near the CCNPP Barge Slip - September 2006
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Analyte	Theshold Effects Level	Probable Effects Level	Units	Average Reporting Limit	CCNPP Unit 1	CCNPP Unit 2	CCNPP Unit 3
PCB 180	--	--	µg/kg	0.24	ND	ND	ND
PCB 183	--	--	µg/kg	0.24	ND	ND	ND
PCB 184	--	--	µg/kg	0.24	ND	ND	ND
PCB 187	--	--	µg/kg	0.24	ND	ND	ND
PCB 195	--	--	µg/kg	0.24	ND	ND	ND
PCB 206	--	--	µg/kg	0.24	ND	ND	ND
PCB 209	--	--	µg/kg	0.24	ND	ND	ND
Chlorinated Pesticides							
4,4'-DDD	1.22	7.81	µg/kg	1.7	ND	ND	ND
4,4'-DDE	2.07	374.17	µg/kg	1.7	ND	ND	**0.18 J, PG**
4,4'-DDT	1.19	4.77	µg/kg	1.7	ND	ND	ND
Aldrin	--	--	µg/kg	1.7	**0.15 J, PG**	**0.17 J, PG**	**0.17 J, PG**
Alpha-BHC	--	--	µg/kg	1.7	ND	ND	ND
Alpha-Chlordane	--	--	µg/kg	1.7	ND	ND	ND
Beta-BHC	--	--	µg/kg	1.7	ND	ND	ND
Delta-BHC	--	--	µg/kg	1.7	ND	ND	ND
Dieldrin	0.715	4.3	µg/kg	1.7	ND	ND	ND
Endosulfan I	--	--	µg/kg	1.7	ND	ND	ND
Endosulfan II	--	--	µg/kg	1.7	ND	ND	ND
Endosulfan Sulfate	--	--	µg/kg	1.7	ND	ND	ND
Endrin	--	--	µg/kg	1.7	ND	ND	ND
Endrin Aldehyde	--	--	µg/kg	1.7	ND	**0.41 J, PG**	ND
Endrin Ketone	--	--	µg/kg	1.7	ND	ND	ND
Gamma-BHC (Lindane)	0.32	0.99	µg/kg	1.7	ND	ND	ND
Gamma-Chlordane	--	--	µg/kg	1.7	ND	ND	ND
Heptachlor	--	--	µg/kg	1.7	**0.29 J, PG**	**0.52 J**	**0.63 J**

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{Table 2.3.3-9 Summary of Analytical Results for Sediment Samples Collected in Chesapeake Bay Near the CCNPP Barge Slip - September 2006
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Analyte	Theshold Effects Level	Probable Effects Level	Units	Average Reporting Limit	CCNPP Unit 1	CCNPP Unit 2	CCNPP Unit 3
Heptachlor Epoxide	0.6	2.74	µg/kg	1.7	ND	ND	ND
Methoxychlor	--	--	µg/kg	3.2	ND	ND	ND
Toxaphene	--	--	µg/kg	66	ND	ND	ND
Semi-Volatile Organic Compounds							
1,2,4-Trichlorobenzene	--	--	µg/kg	640	ND	ND	ND
1,2-Dichlorobenzene	--	--	µg/kg	640	ND	ND	ND
1,2-Diphenylhydrazine	--	--	µg/kg	640	ND	ND	ND
1,3-Dichlorobenzene	--	--	µg/kg	640	ND	ND	ND
1,4-Dichlorobenzene	--	--	µg/kg	640	ND	ND	ND
2,4,6-Trichlorophenol	--	--	µg/kg	640	ND	ND	ND
2,4-Dichlorophenol	--	--	µg/kg	640	ND	ND	ND
2,4-Dimethylphenol	--	--	µg/kg	640	ND	ND	ND
2,4-Dinitrophenol	--	--	µg/kg	3100	ND	ND	ND
2,4-Dinitrotoluene	--	--	µg/kg	640	ND	ND	ND
2,6-Dinitrotoluene	--	--	µg/kg	640	ND	ND	ND
2-Chloronaphthalene	--	--	µg/kg	640	ND	ND	ND
2-Chlorophenol	--	--	µg/kg	640	ND	ND	ND
2-Methyl-4,6-Dinitrophenol	--	--	µg/kg	3100	ND	ND	ND
2-Nitrophenol	--	--	µg/kg	640	ND	ND	ND
3,3'-Dichlorobenzidine	--	--	µg/kg	3100	ND	ND	ND
4-Bromophenyl phenyl ether	--	--	µg/kg	640	ND	ND	ND
4-Chloro-3-methylphenol	--	--	µg/kg	640	ND	ND	ND
4-Chlorophenyl phenyl ether	--	--	µg/kg	640	ND	ND	ND
4-Nitrophenol	--	--	µg/kg	3100	ND	ND	ND
Benzidine	--	--	µg/kg	640	ND	ND	ND
Bis(2-Chloroethoxy)methane	--	--	µg/kg	640	ND	ND	ND

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{Table 2.3.3-9 Summary of Analytical Results for Sediment Samples Collected in Chesapeake Bay Near the CCNPP Barge Slip - September 2006
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Analyte	Theshold Effects Level	Probable Effects Level	Units	Average Reporting Limit	CCNPP Unit 1	CCNPP Unit 2	CCNPP Unit 3
Bis(2-Chloroethyl) ether	--	--	µg/kg	640	ND	ND	ND
Bis(2-Chloroisopropyl) ether	--	--	µg/kg	640	ND	ND	ND
Bis(2-Ethylhexyl) phthalate	--	--	µg/kg	640	ND	ND	ND
Butyl benzyl phthalate	--	--	µg/kg	640	ND	ND	ND
Diethyl phthalate	--	--	µg/kg	640	ND	ND	ND
Dimethyl phthalate	--	--	µg/kg	640	ND	ND	ND
Di-n-butyl phthalate	--	--	µg/kg	640	ND	ND	ND
Di-n-octyl phthalate	--	--	µg/kg	640	ND	ND	ND
Hexachlorobenzene	--	--	µg/kg	640	ND	ND	ND
Hexachlorobutadiene	--	--	µg/kg	640	ND	ND	ND
Hexachlorocyclopentadiene	--	--	µg/kg	3100	ND	ND	ND
Hexachloroethane	--	--	µg/kg	640	ND	ND	ND
Indeno(1,2,3-cd)pyrene	--	--	µg/kg	640	ND	ND	ND
Isophorone	--	--	µg/kg	640	ND	ND	ND
Nitrobenzene	--	--	µg/kg	640	ND	ND	ND
N-Nitrosodimethylamine	--	--	µg/kg	640	ND	ND	ND
N-Nitrosodi-n-propylamine	--	--	µg/kg	640	ND	ND	ND
N-Nitrosodiphenylamine	--	--	µg/kg	640	ND	ND	ND
Pentachlorophenol	--	--	µg/kg	3100	ND	ND	ND
Phenol	--	--	µg/kg	640	ND	ND	ND
Volatile Organic Compounds							
1,1,1-Trichloroethane	--	--	µg/kg	7	ND	ND	ND
1,1,2,2-Tetrachloroethane	--	--	µg/kg	7	ND	ND	ND
1,1,2-Trichloroethane	--	--	µg/kg	7	ND	ND	ND
1,1-Dichloroethane	--	--	µg/kg	7	ND	ND	ND
1,1-Dichloroethene	--	--	µg/kg	7	ND	ND	ND

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{Table 2.3.3-9 Summary of Analytical Results for Sediment Samples Collected in Chesapeake Bay Near the CCNPP Barge Slip - September 2006
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Analyte	Theshold Effects Level	Probable Effects Level	Units	Average Reporting Limit	CCNPP Unit 1	CCNPP Unit 2	CCNPP Unit 3
1,2-Dichloroethane	--	--	µg/kg	7	ND	ND	ND
1,2-Dichloropropane	--	--	µg/kg	7	ND	ND	ND
2-Chloroethyl vinyl ether	--	--	µg/kg	14	ND	ND	ND
Acrolein	--	--	µg/kg	140	ND	ND	ND
Acrylonitrile	--	--	µg/kg	140	ND	ND	ND
Benzene	--	--	µg/kg	7	ND	ND	ND
Bromodichloromethane	--	--	µg/kg	7	ND	ND	ND
Bromoform	--	--	µg/kg	7	ND	ND	ND
Bromomethane	--	--	µg/kg	7	ND	ND	ND
Carbon Tetrachloride	--	--	µg/kg	7	ND	ND	ND
Chlorobenzene	--	--	µg/kg	7	ND	ND	ND
Chloroethane	--	--	µg/kg	7	ND	ND	ND
Chloroform	--	--	µg/kg	7	ND	ND	ND
Chloromethane	--	--	µg/kg	7	ND	ND	ND
cis-1,3-Dichloropropene	--	--	µg/kg	7	ND	ND	ND
Dibromochloromethane	--	--	µg/kg	7	ND	ND	ND
Ethylbenzene	--	--	µg/kg	7	ND	ND	ND
Methylene Chloride	--	--	µg/kg	7	**4.5 J**	**5.0 J**	**4.5 J**
Tetrachloroethene	--	--	µg/kg	7	ND	ND	ND
Toluene	--	--	µg/kg	7	ND	ND	ND
Trans-1,2-Dichloroethene	--	--	µg/kg	7	ND	ND	ND
Trans-1,3-Dichloropropene	--	--	µg/kg	7	ND	ND	ND
Trichloroethene	--	--	µg/kg	7	ND	ND	ND
Vinyl Chloride	--	--	µg/kg	7	ND	ND	ND
Physical Properties							
Clay Percent	--	--	%	--	2.7	2.1	2.3

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{Table 2.3.3-9 Summary of Analytical Results for Sediment Samples Collected in Chesapeake Bay Near the CCNPP Barge Slip - September 2006
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Analyte	Theshold Effects Level	Probable Effects Level	Units	Average Reporting Limit	CCNPP Unit 1	CCNPP Unit 2	CCNPP Unit 3
Gravel Percent	--	--	%	--	5.1	4.6	1.5
Sand Percent	--	--	%	--	93.9	93.5	96
Silt Percent	--	--	%	--	–	–	0.2
Specific Gravity	--	--	%	--	2.681	2.667	2.679
Percent Solids	--	--	%	--	**71.6**	**67.3**	**73.4**

Notes:

Bolded values represent detected concentrations.
* PCB congeners used for Total PCB summation, as per Table 9-3 of the Inland Testing Manual (USEPA/USACE 1998)
J = compound was detected, but below the reporting limit (value is estimated)
ND = Not detected
PG = the percent difference between the original and confirmation second column analysis is greater than 40%}
– = <1%

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Table 2.3.3-10 Well Construction Data for Wells Sampled at CCNPP May 31, 2007 (Page 1 of 1)

Well	Ground Surface Elevation ft (m)	Well Pad Elevation ft (m)	Top of Casing Elevation ft (m)	Boring Depth ft (m)	Well Depth ft (m)	Screen Interval Depth ft (m)		Screen Interval Elevation ft (m)		Filterpack Interval Depth ft (m)		CCNPP Hydrostratigraphic Unit
						Top ft (m)	Bottom ft (m)	Top ft (m)	Bottom ft (m)	Top ft (m)	Bottom ft (m)	
OW 319A	103.13 (31.4)	103.31 (31.5)	104.91 (32)	35.0 (10.7)	32.0 (9.8)	20.0 (6.1)	30.0 (9.1)	83.1 (25.3)	73.1 (22.3)	15.0 (4.6)	35.0 (10.7)	Surficial Aquifer
OW 319B	103.53 (31.6)	103.85 (31.6)	105.35 (32.1)	85.0 (25.9)	82.0 (25)	70.0 (21.3)	80.0 (24.4)	33.5 (10.2)	23.5 (7.2)	65.0 (19.8)	85.0 (25.9)	Upper Chesapeake Unit
OW 752A	95.3 (29.0)	95.73 (29.2)	97.0 (29.6)	37.0 (11.3)	37.0 (11.3)	25.0 (7.6)	35.0 (10.7)	70.3 (21.4)	60.3 (18.4)	19.0 (5.6)	37.0 (11.3)	Surficial Aquifer
CCNPP Well No. 5	Not Available	Not Available	Not Available	Not Available	621 (190)	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Aquia

All elevations are in feet (m) above the North American Vertical Datum of 1927 (NAVD 27).

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Table 2.3.3-11 Summary of Analytical Results for Groundwater Well Sampling at CCNPP. May 31, 2007 (Page 1 of 2)

Parameter	Units	OW 752A Surficial Aquifer	OW 319A Surficial Aquifer	OW 319B Upper Chesapeake Unit	OW 319B Duplicate Upper Chesapeake Unit	CCNPP Well No. 5 Aquia Aquifer	Rinse Blank
Metals							
Arsenic	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Barium	mg/l	0.027	0.055	0.044	0.044	0.025	<0.010
Cadmium	mg/l	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Calcium	mg/l	1.5	9.2	85	85	7.0	0.62
Chromium	mg/l	<0.0049	0.025	<0.0031	<0.0030	<0.0025	<0.0025
Iron	mg/l	1.8	23	8.0	8.0	3.2	<0.10
Lead	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Magnesium	mg/l	1.4	3.2	3.1	3.1	2.3	<0.10
Mercury	mg/l	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	mg/l	1.5	3.7	2.4	2.4	10.0	<0.10
Selenium	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silicon	mg/l	6.3	13	16	16	5.3	2.3
Silver	mg/l	<0.012	<0.012	<0.001	<0.001	<0.012	<0.001
Sodium	mg/l	4.9	8.3	9.9	9.8	29	1.5
Non-metals							
Alkalinity, Bicarbonate	mg/l	<5	24.6	190	187	101	<5
Alkalinity, Total as $CaCO_3$	mg/l	<2.2	24.6	190	187	101	<2.2
Carbon Dioxide	mg/l	**	85.4	21.3	21	20	<5
Biologic Oxygen Demand	mg/l	<2	<3	<3	<3	<2	<2
Chemical Oxygen Demand	mg/l	21	24	26	28	26	<10
Chloride (Titrimetric, Mercuric Nitrate)	mg/l	4	10	10	12	2	<1
Color, True	color units	5	10	5	5	<5	<5
Enterococci	MPN/100ml	<1	410.6	2	<1	387.3	<1
Total Coliform	MPN/100ml	<1	17.1	<1	<1	1,299.70	<1
Fecal Coliform	MPN/100ml	<1	<1	<1	<1	<1	<1

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Table 2.3.3-11 Summary of Analytical Results for Groundwater Well Sampling at CCNPP. May 31, 2007 (Page 2 of 2)

Parameter	Units	OW 752A Surficial Aquifer	OW 319A Surficial Aquifer	OW 319B Upper Chesapeake Unit	OW 319B Duplicate Upper Chesapeake Unit	CCNPP Well No. 5 Aquia Aquifer	Rinse Blank
Hardness, Total	mg/L	29	190	300	300	120	9
Nitrogen, Ammonia	mg/L	<1	<1	<1	<1	<1	<1
Nitrogen, Organic	mg/L	<1	<1	<1	<1	<1	<1
Nitrogen, Total Kjeldahl	mg/L	<1	<1	<1	<1	<1	<1
Nitrogen, Nitrite	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrogen, Nitrate	mg/L	<0.050	2.9	<0.050	<0.050	<0.050	<0.050
Odor, Threshold	TON	<1	16	8	16	<1	<1
Ph*	SU	3.93	5.76	7.25	7.25	7.01	7.4
Phosphorus, Ortho	mg/L	<0.010	<0.010	<0.010	<0.010	0.010	<0.010
Phosphorus, Total	mg/L	0.031	0.064	0.081	0.034	0.041	<0.010
Total Dissolved Solids (TDS)	mg/L	92	110	230	310	210	<10
Total Suspended Solids (TSS)	mg/L	21	210	50	43	12	<2
Sulfate	mg/L	22	20	20	22	7.5	<1
Temperature	°F (°C)	65.2 (18.4)	69.3 (20.7)	63.2 (17.3)	63.2 (17.3)	68.0 (20.0)	69.1 (20.6)
Turbidity	NTU	7	60	49	37	4.1	<0.10

Notes:

SU = Standard Units (pH)
mg/L = Milligrams per liter
TON = Threshold odor number
MPN = Most probable number per 100
NTU = Nephelometric turbidity unit
* = Field Measurement
** = Carbon Dioxide could not be determined due to nondetected alkalinity and low pH

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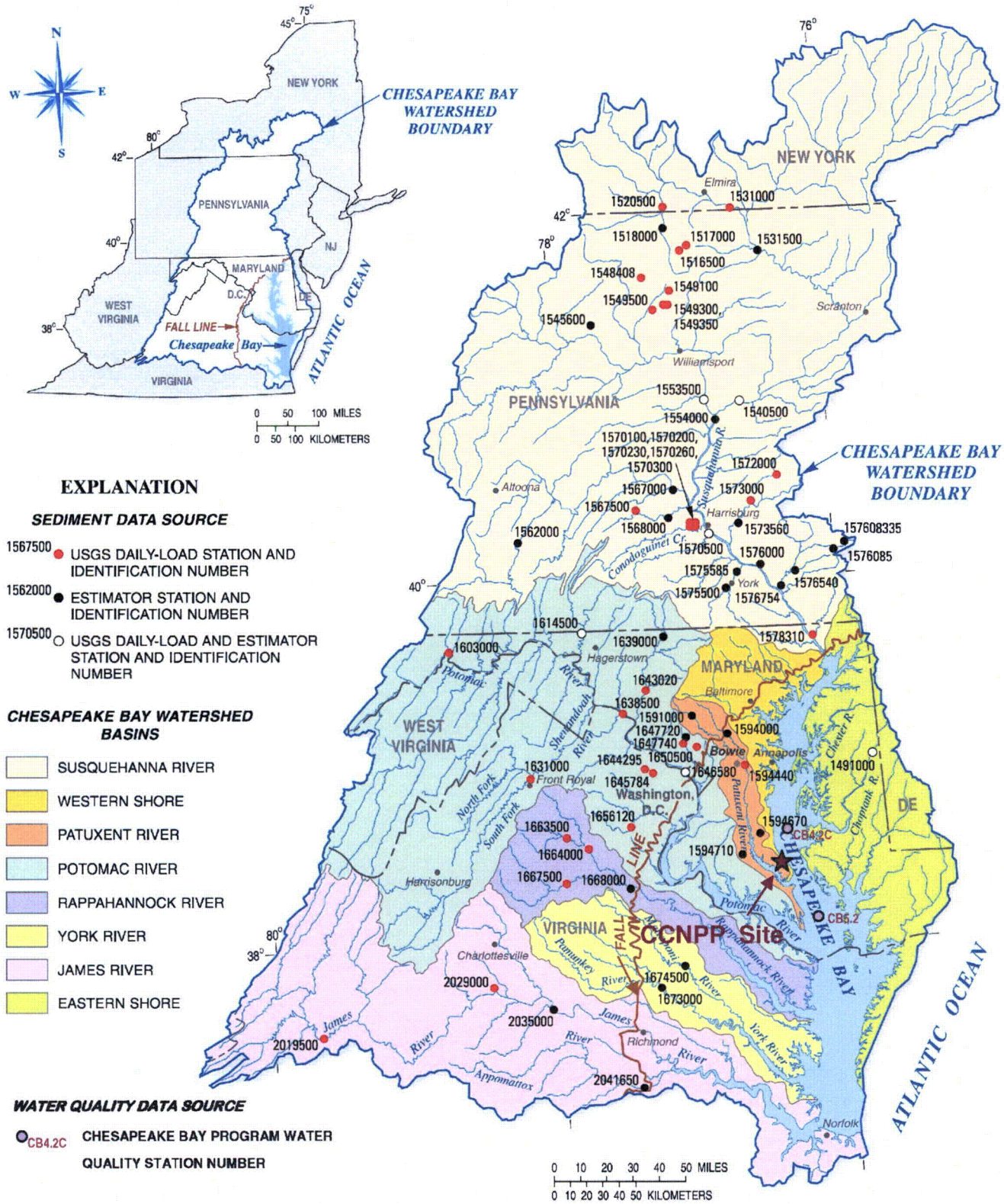


FIGURE 2.3.1-1 **Rev. 0**

CHESAPEAKE BAY WATERSHED

CCNPP UNIT 3 ER

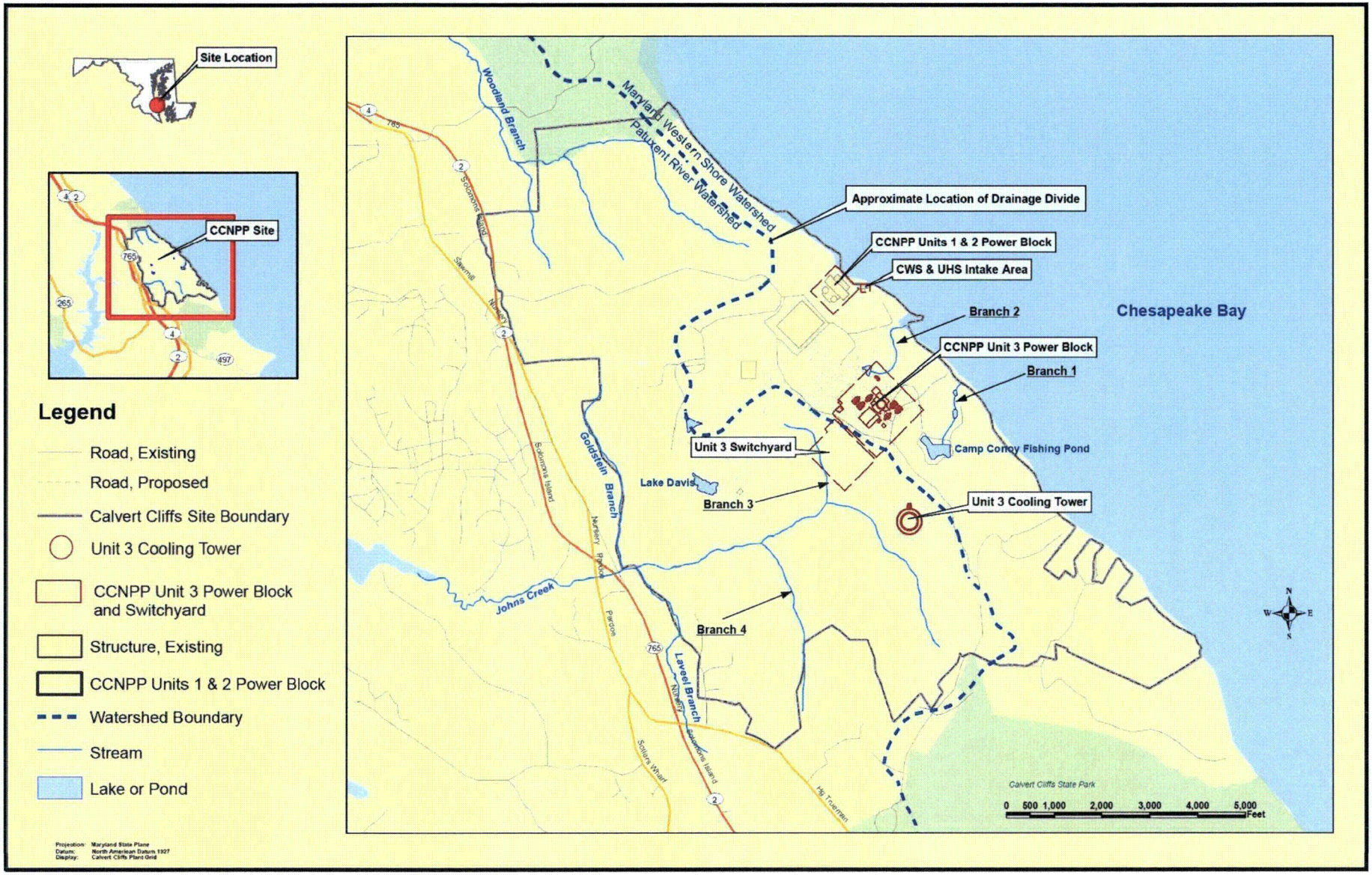


FIGURE 2.3.1-2 **Rev. 0**

CCNPP SITE AREA
TOPOGRAPHY AND DRAINAGE

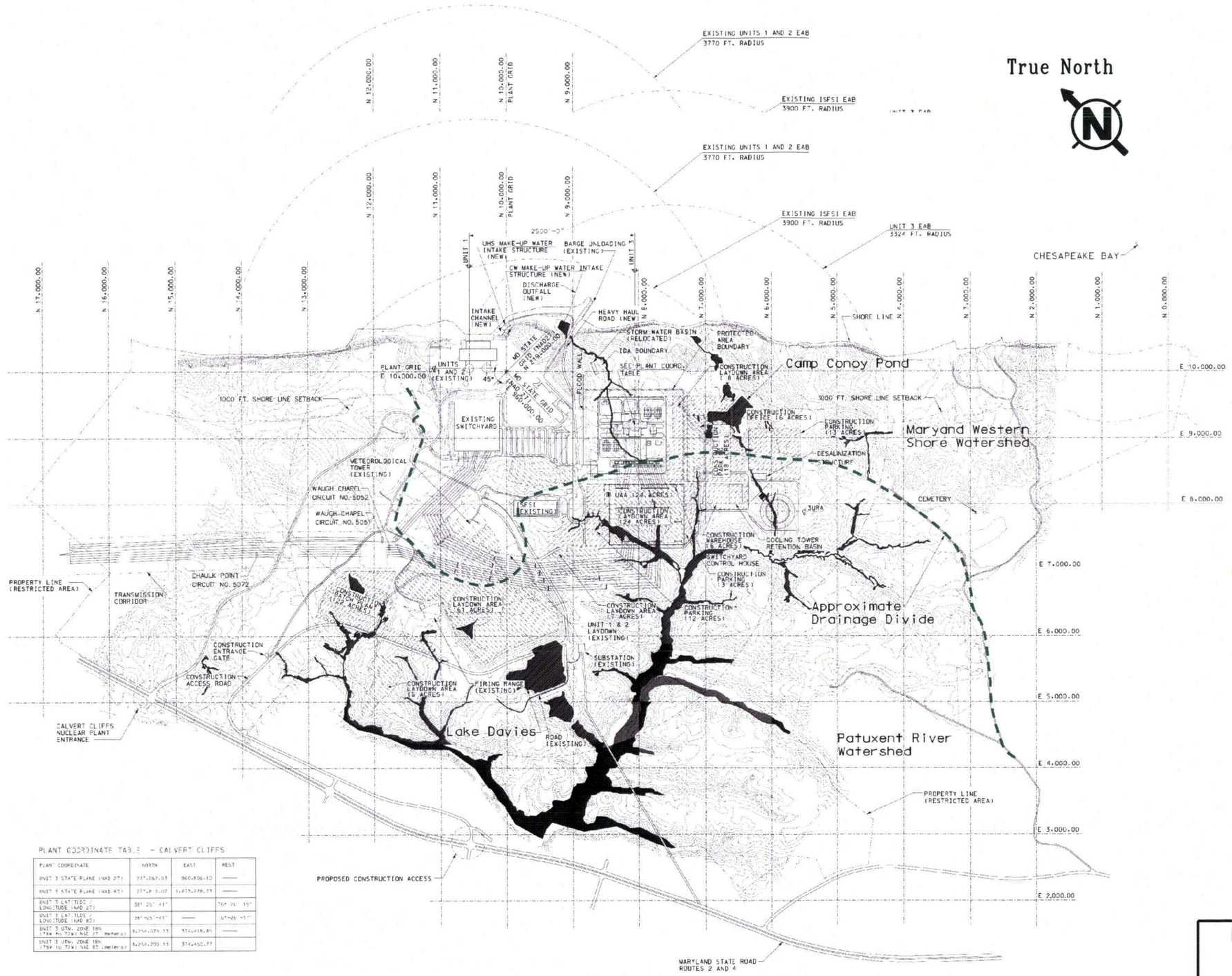
CCNPP UNIT 3 ER

Miles
0 0.2 0.4 0.8 1.2 1.6

FIGURE 2.3.1-3 **Rev. 0**

CCNPP SITE AND MAJOR DRAINAGE ROUTES (BASED ON USGS 7.5 MINUTE SERIES TOPOGRAPHIC MAP, COVE POINT QUADRANGLE, 1987)

CCNPP UNIT 3 ER



PLANT COORDINATE TABLE - CALVERT CLIFFS

PLANT COORDINATE	NORTH	EAST	WEST
UNIT 3 STATE PLANE (NAD 27)	317,067.53	960,806.10	——
UNIT 3 STATE PLANE (NAD 83)	337,8[illegible]2.07	1,473,378.79	——
UNIT 3 LATITUDE / LONGITUDE (NAD 27)	38° 26' 41"		76° 26' 19"
UNIT 3 LATITUDE / LONGITUDE (NAD 83)	38° 26' 41"	——	76° 26' 19"
UNIT 3 UTM, ZONE 18N (75W to 72W) NAD 27 (meters)	4,254,078.35	374,418.85	——
UNIT 3 UTM, ZONE 18N (75W to 72W) NAD 83 (meters)	4,254,299.11	374,450.77	

FIGURE 2.3.1-4 **Rev. 0**

CCNPP UNIT 3 SITE UTILIZATION PLOT PLAN

CCNPP UNIT 3 ER

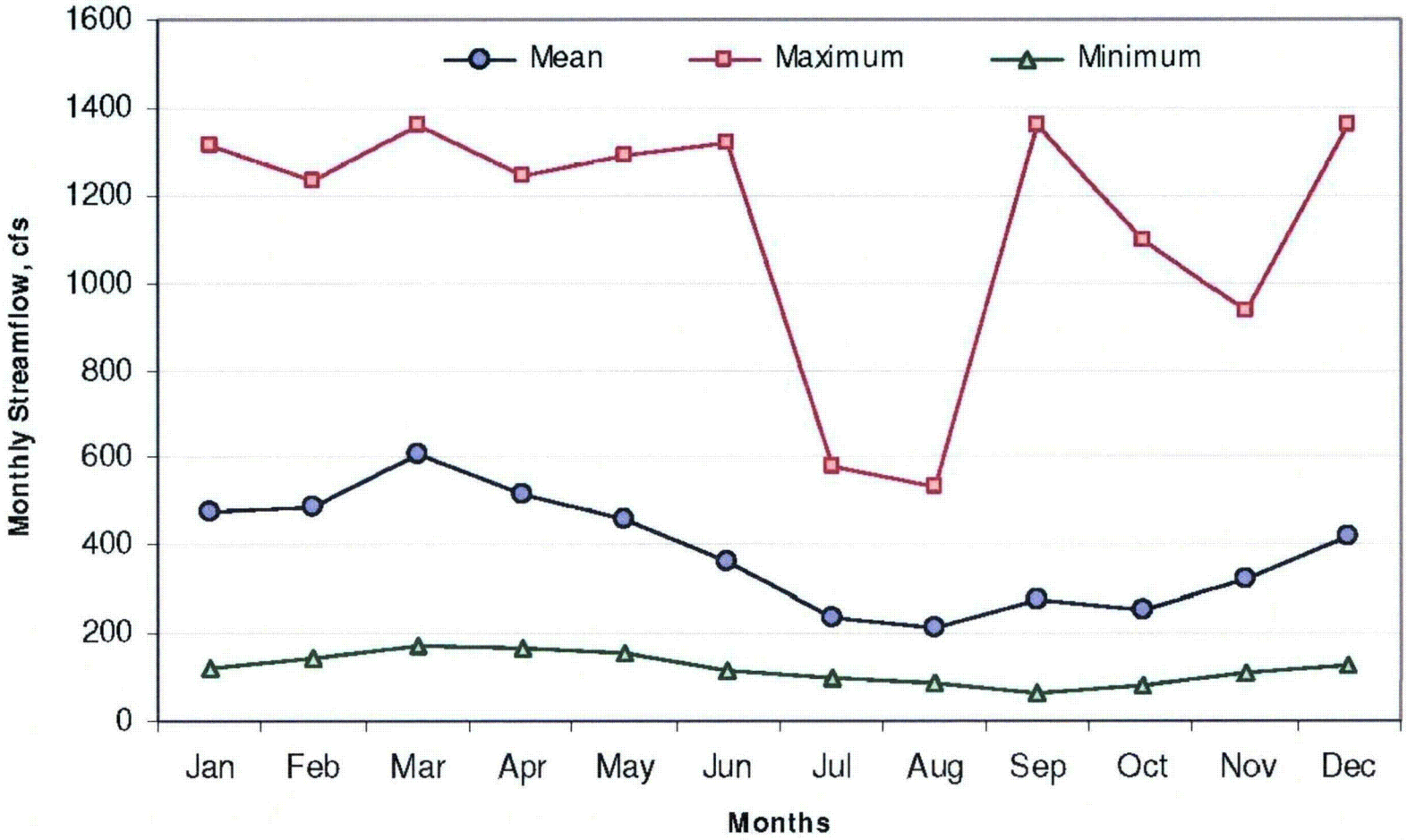


FIGURE 2.3.1-5 **Rev. 0**

MEAN, AVERAGE MAXIMUM AND AVERAGE MINIMUM MONTHLY STREAMFLOWS IN THE PATUXENT RIVER NEAR BOWIE, MD, USGS STATION NO. 01594440, PATUXENT RIVER AT BOWIE, MD (1977-06-01 through 2005-09-30)

CCNPP UNIT 3 ER

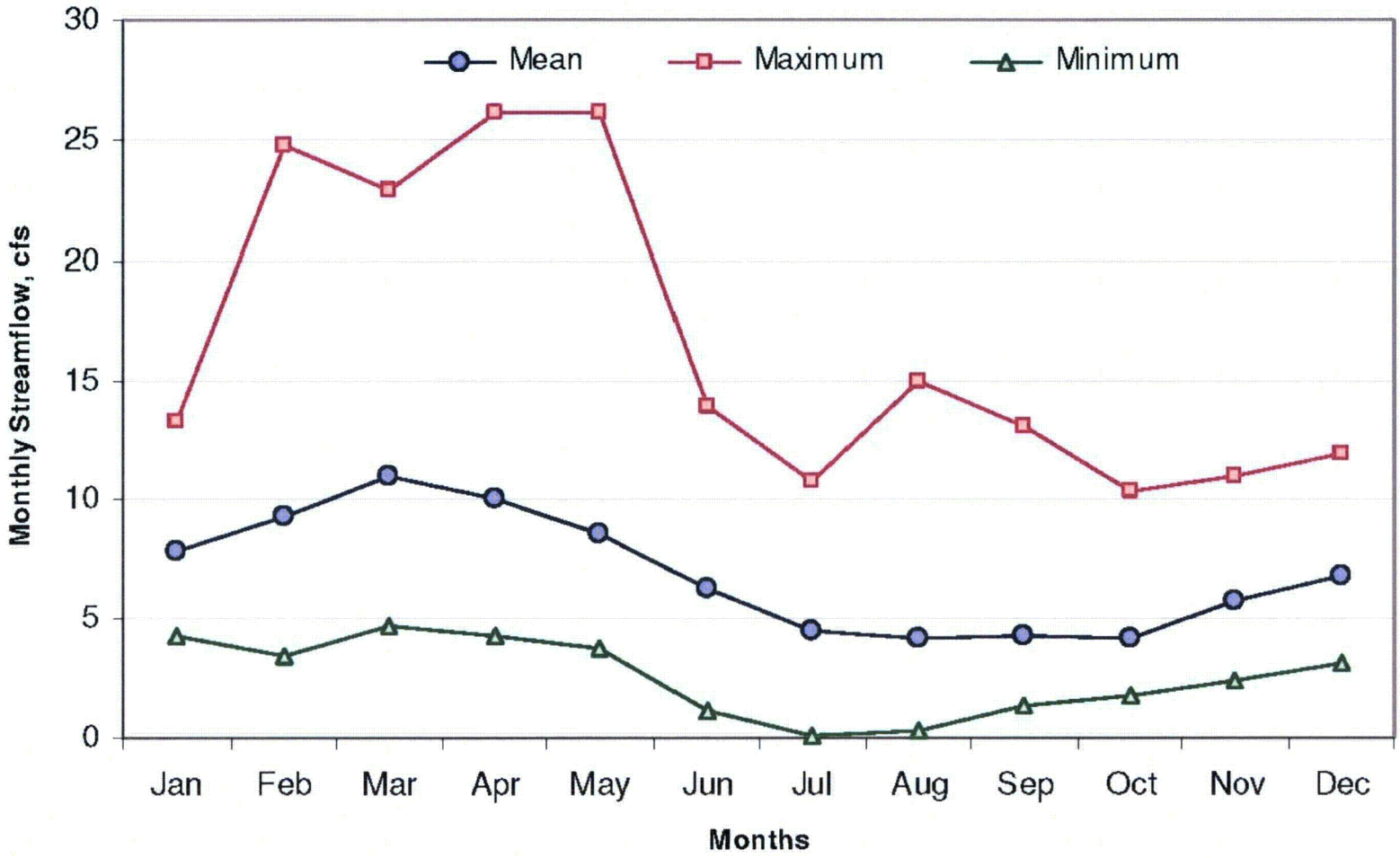


FIGURE 2.3.1-6 **Rev. 0**

MEAN, AVERAGE MAXIMUM AND AVERAGE MINIMUM MONTHLY STREAMFLOWS IN THE ST.LEONARD CREEK AT ST.LEONARD, MD, USGS STATION NO. 01594800, ST.LEONARD CREEK NEAR ST.LEONARD, MD (1956-12-01 through 2003-09-30)

CCNPP UNIT 3 ER

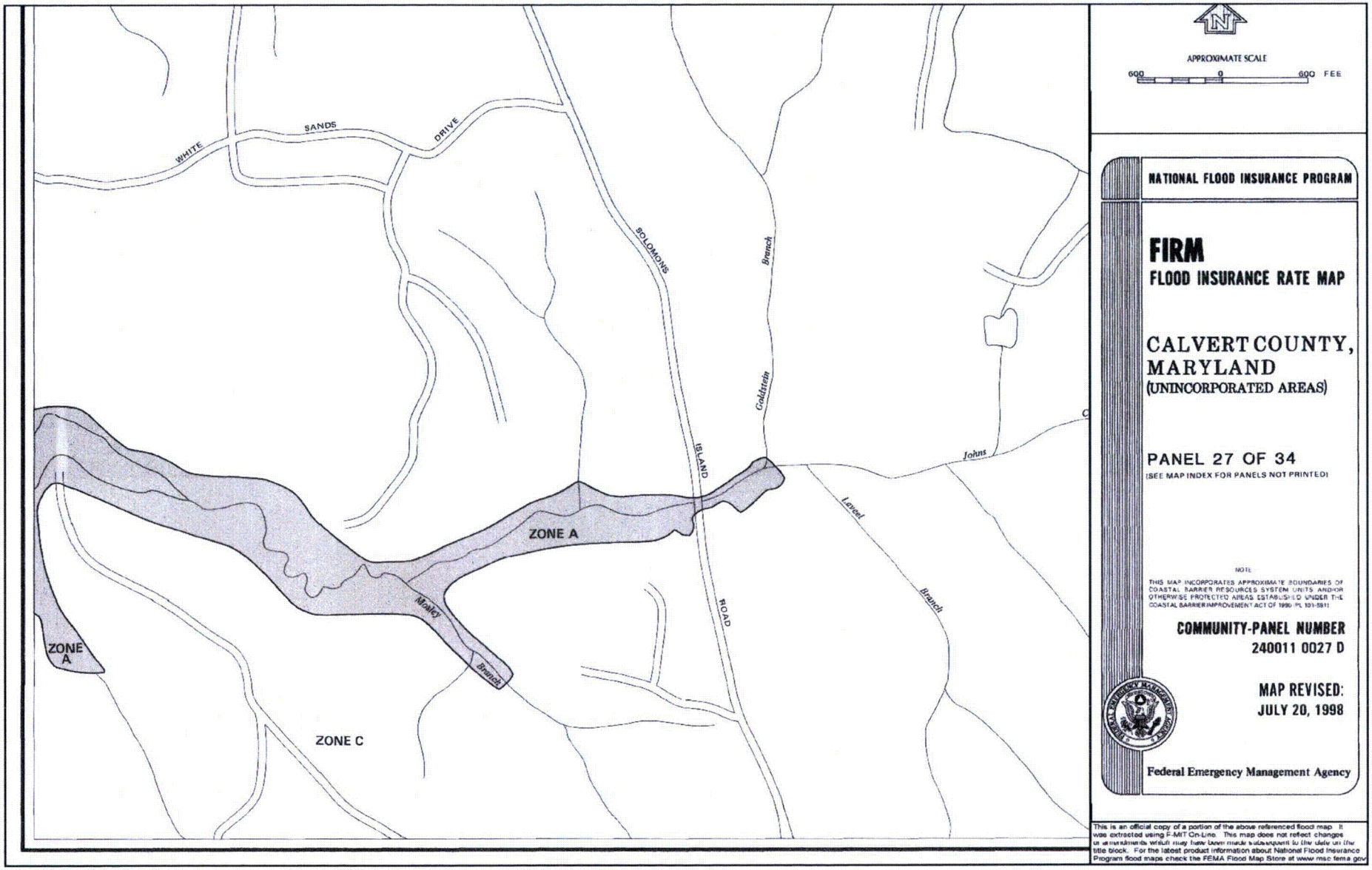


FIGURE 2.3.1-7 **Rev. 0**

FLOOD INSURANCE MAP
OF CALVERT COUNTY, MD
FOR PORTIONS OF JOHNS CREEK

CCNPP UNIT 3 ER

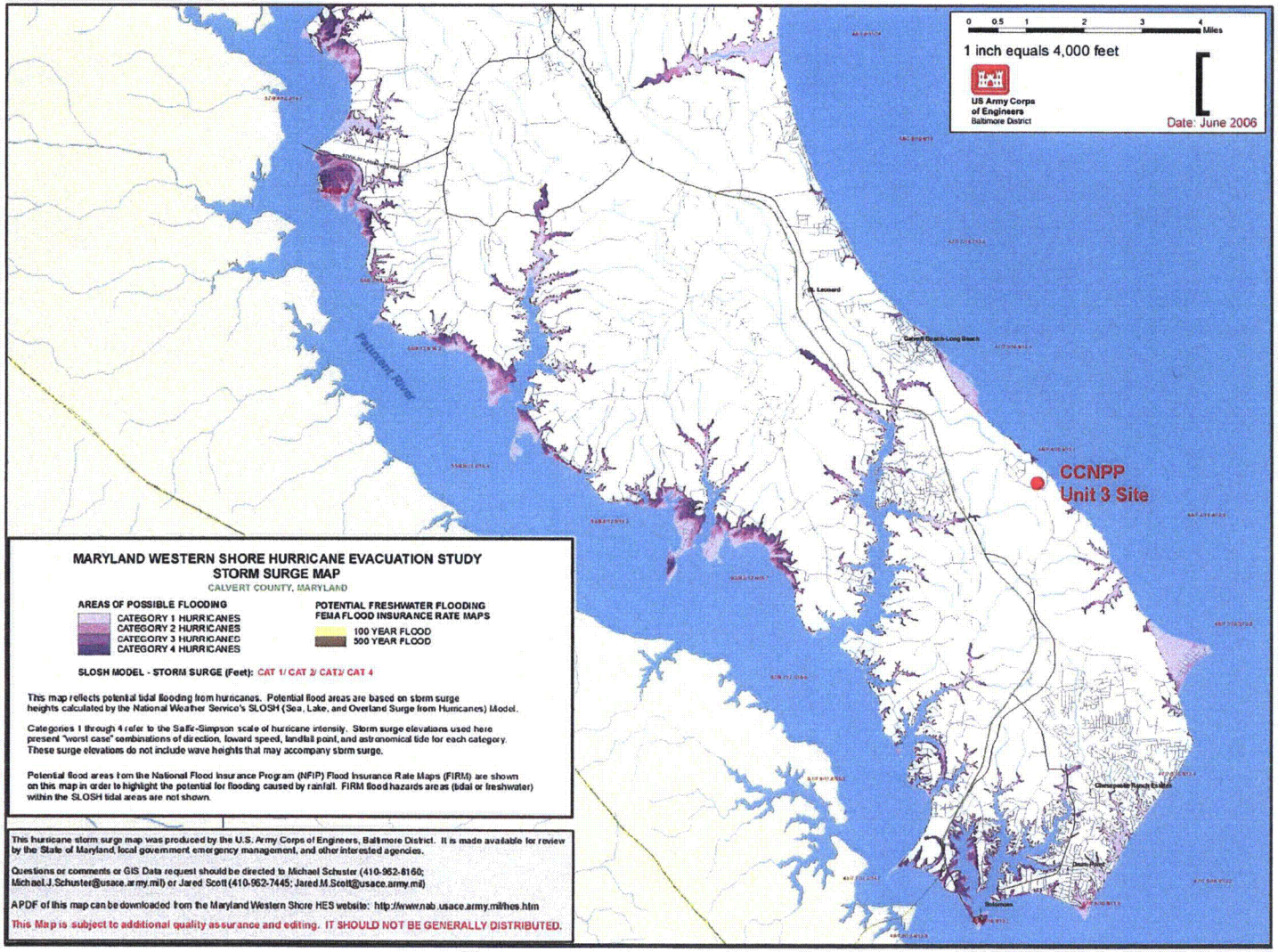


FIGURE 2.3.1-8 **Rev. 0**

STORM SURGE MAP OF
CALVERT COUNTY, MD

CCNPP UNIT 3 ER

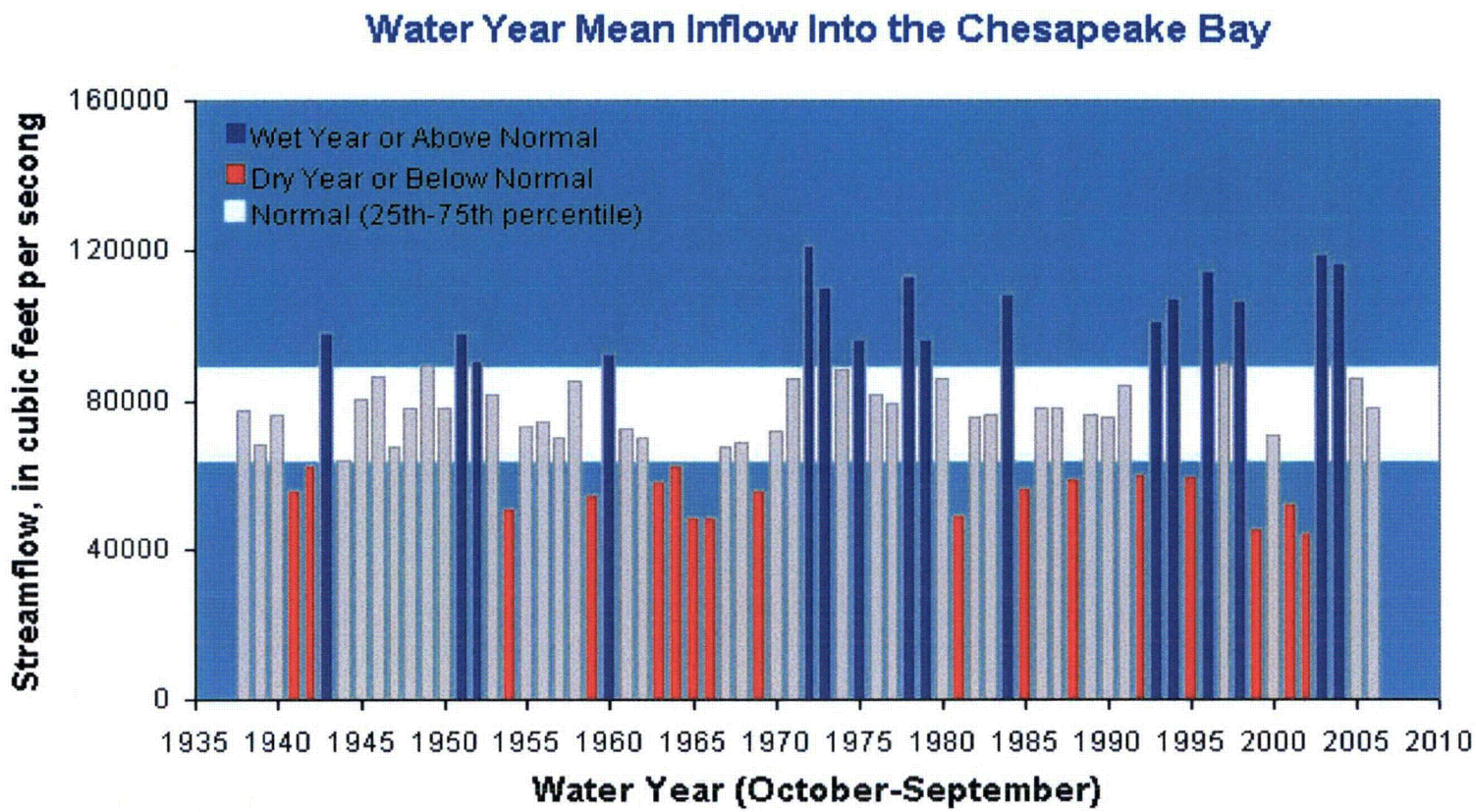


FIGURE 2.3.1-9 **Rev. 0**

MEAN ANNUAL FRESHWATER INFLOW INTO THE CHESAPEAKE BAY

CCNPP UNIT 3 ER

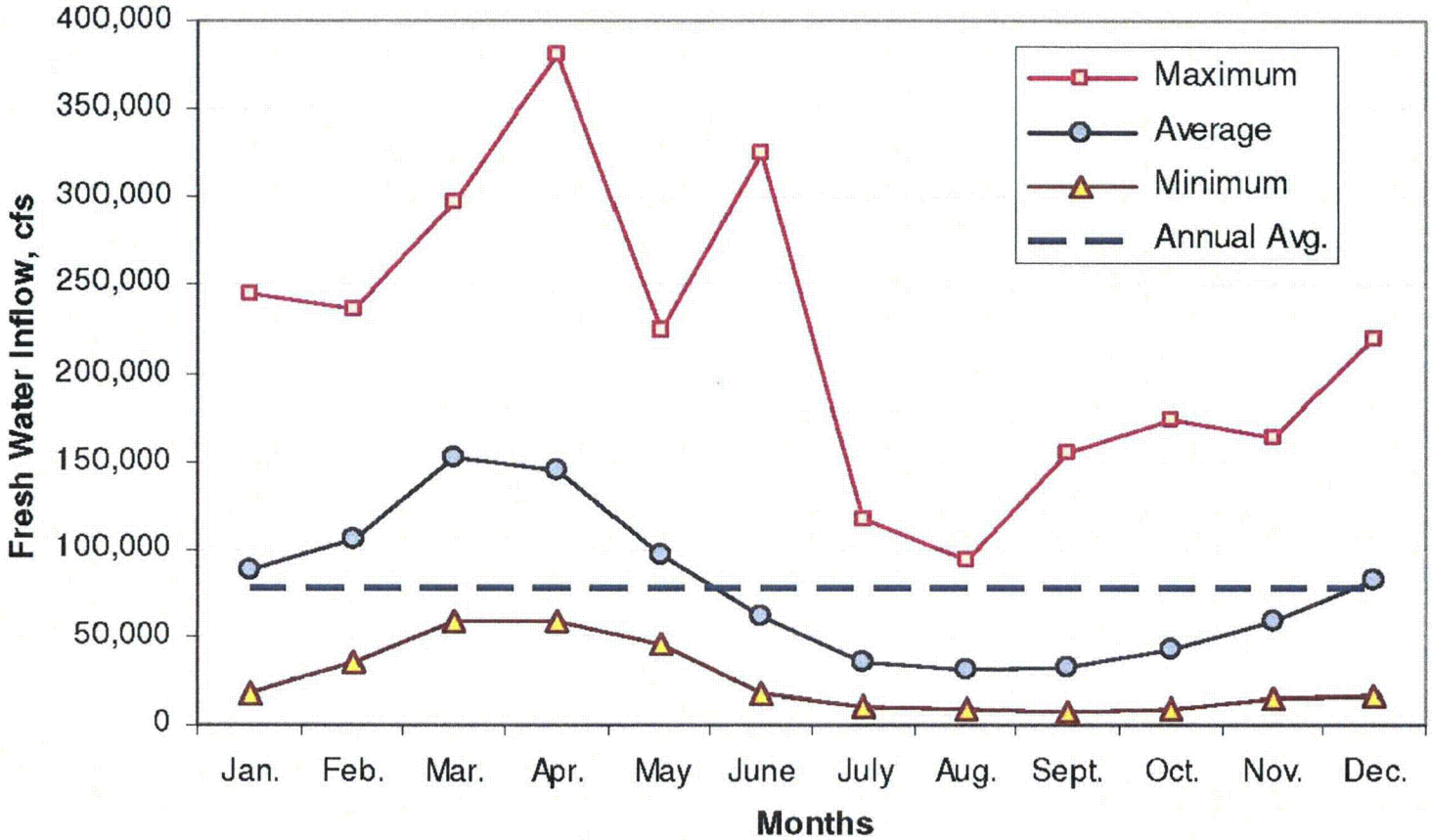


FIGURE 2.3.1-10 **Rev. 0**

MAXIMUM, AVERAGE AND MINIMUM OF MEAN MONTHLY FRESHWATER INFLOW TO THE CHESAPEAKE BAY FOR THE PERIOD FROM 1951 TO 2000 INCLUDING AVERAGE ANNUAL FRESHWATER INFLOW

CCNPP UNIT 3 ER

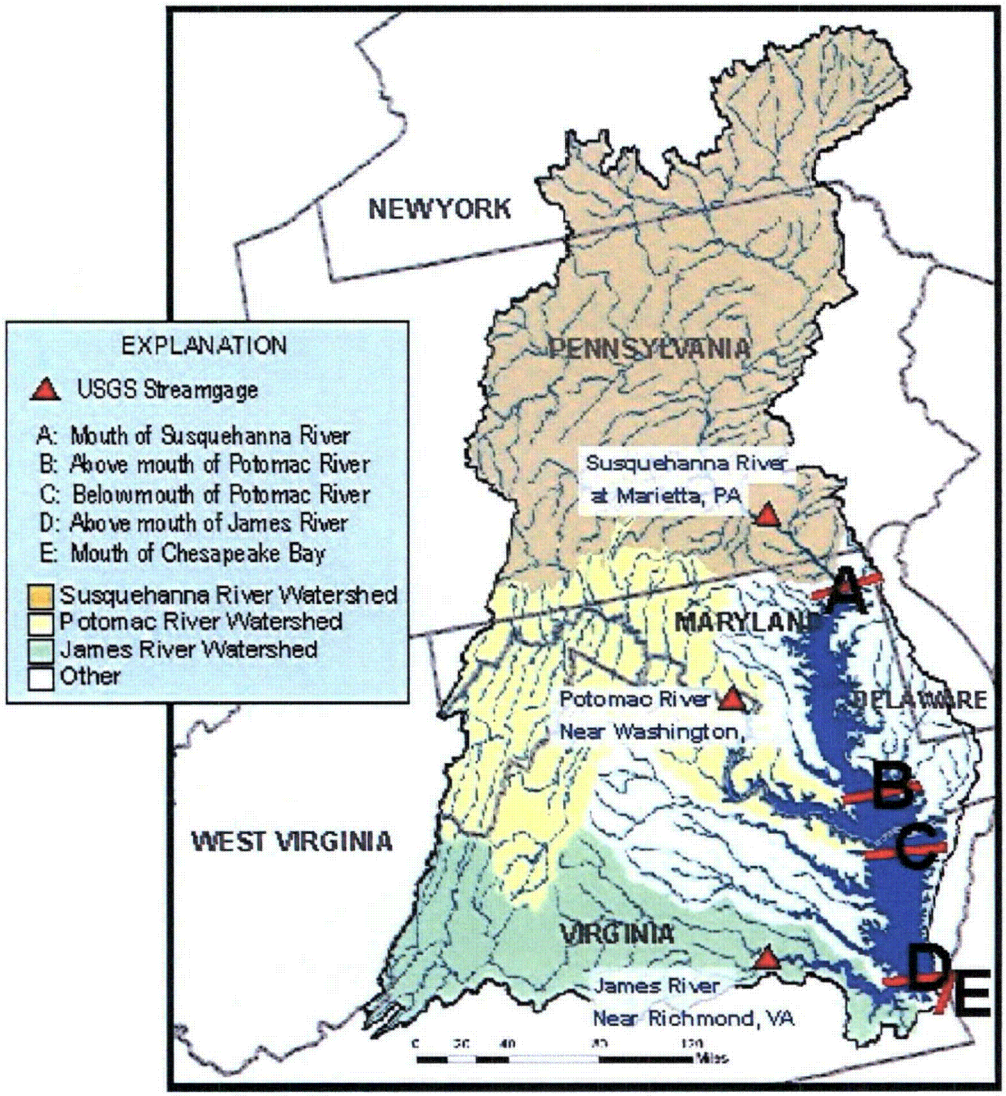


FIGURE 2.3.1-11 **Rev. 0**

CHESAPEAKE BAY REACHES FOR FRESHWATER INFLOW ESTIMATES AS IDENTIFIED BY USGS

CCNPP UNIT 3 ER

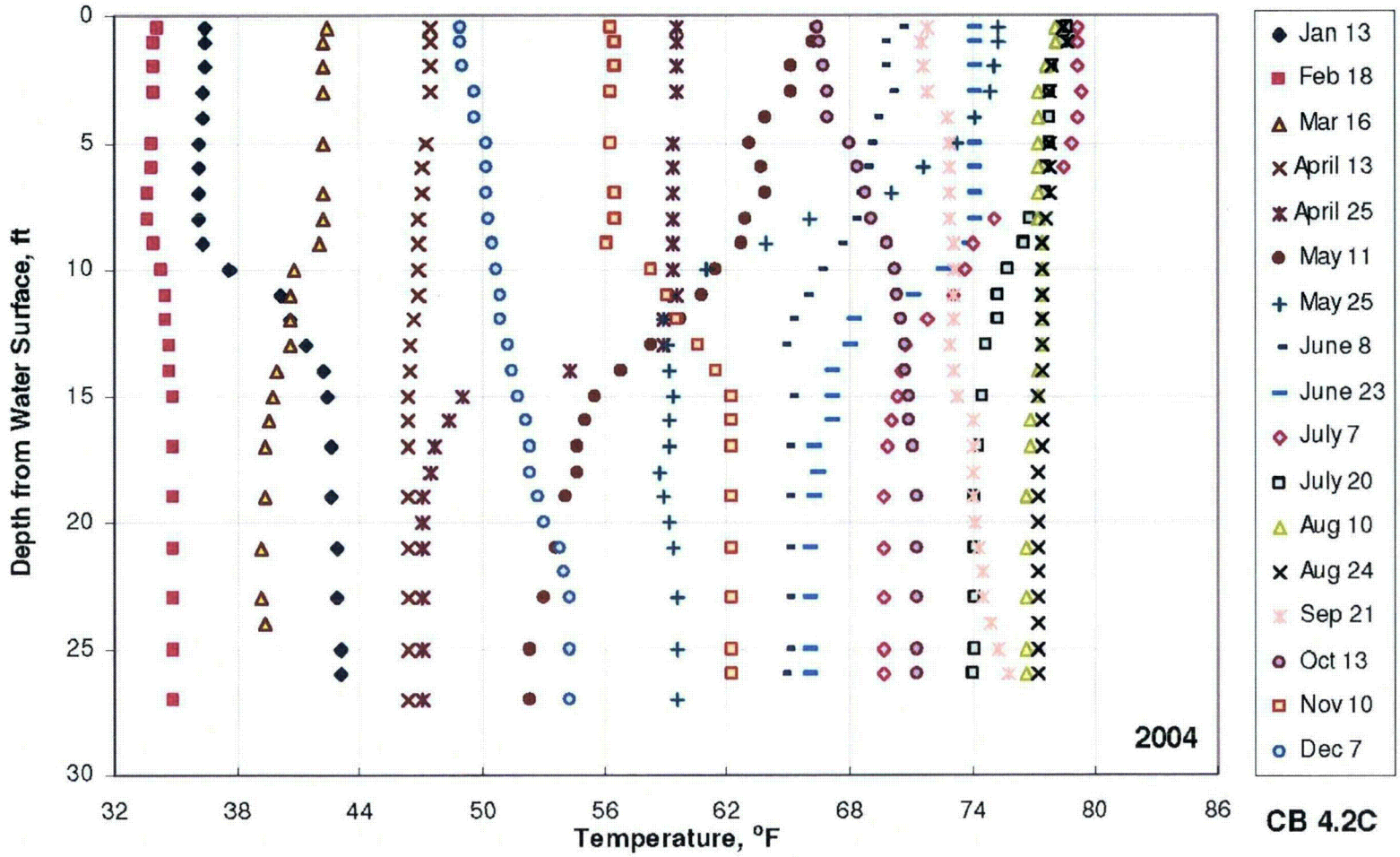


FIGURE 2.3.1-12 **Rev. 0**

WATER TEMPERATURE VERTICAL VARIATION, CHESAPEAKE BAY PROGRAM MONITORING STATION CB4.2C FOR 2004

CCNPP UNIT 3 ER

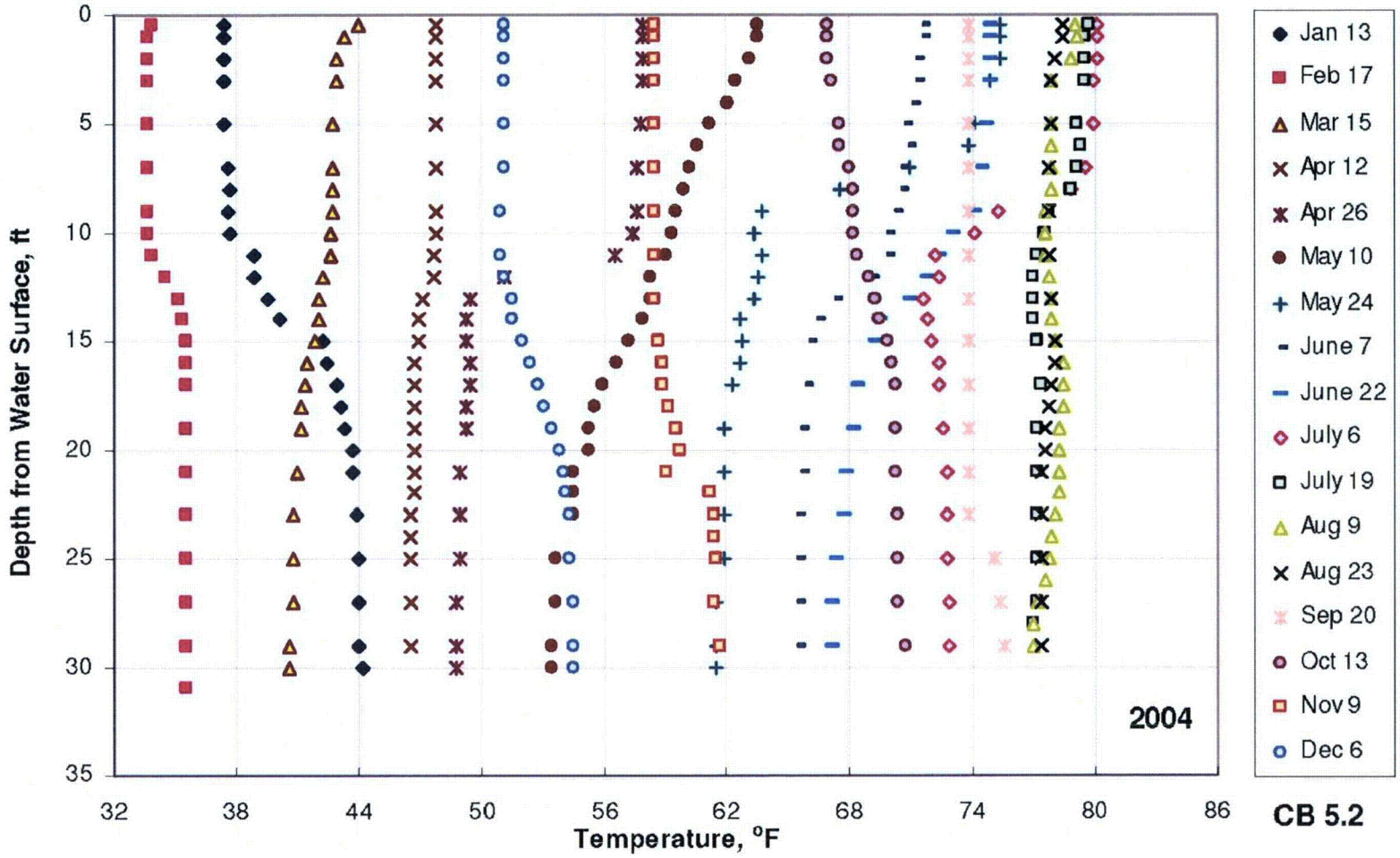


FIGURE 2.3.1-13 **Rev. 0**

WATER TEMPERATURE VERTICAL VARIATION, CHESAPEAKE BAY PROGRAM MONITORING STATION CB5.2 FOR 2004

CCNPP UNIT 3 ER

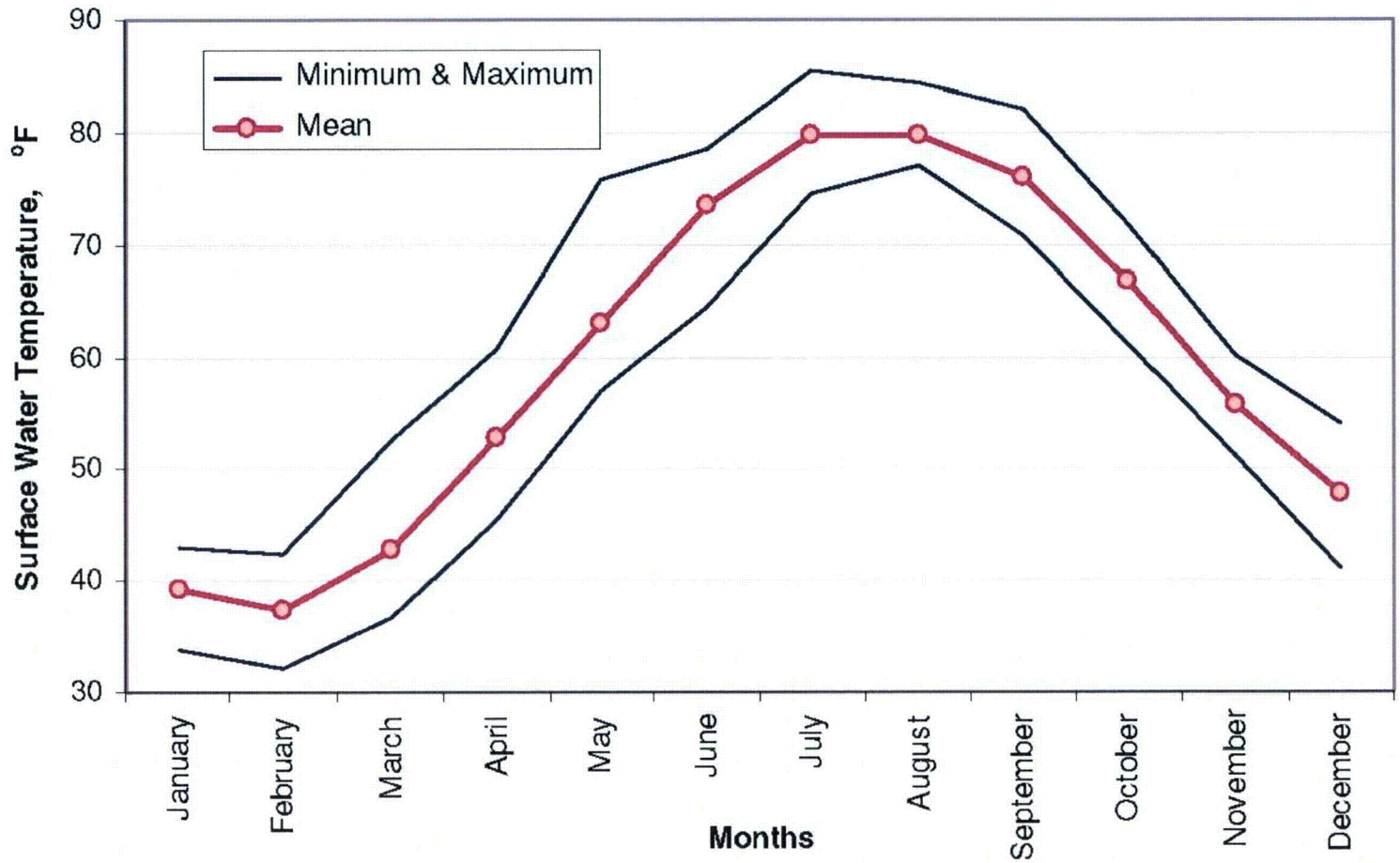


FIGURE 2.3.1-14 **Rev. 0**

MEAN MONTHLY WATER SURFACE TEMPERATURE, CHESAPEAKE BAY PROGRAM STATION CB5.2

CCNPP UNIT 3 ER

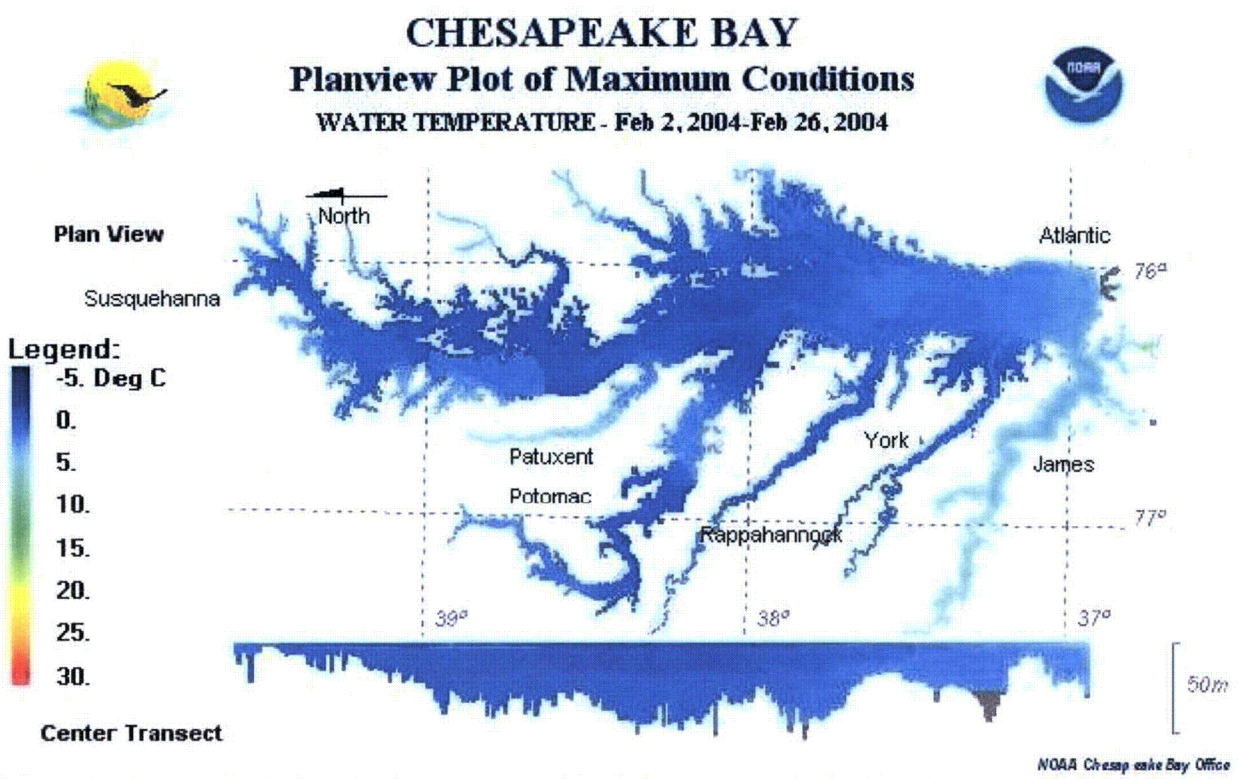


FIGURE 2.3.1-15 **Rev. 0**

CHESAPEAKE BAY TEMPERATURE VARIATION, PLAN AND SECTION VIEWS, FEBRUARY 2004 (MAXIMUM CONDITION)

CCNPP UNIT 3 ER

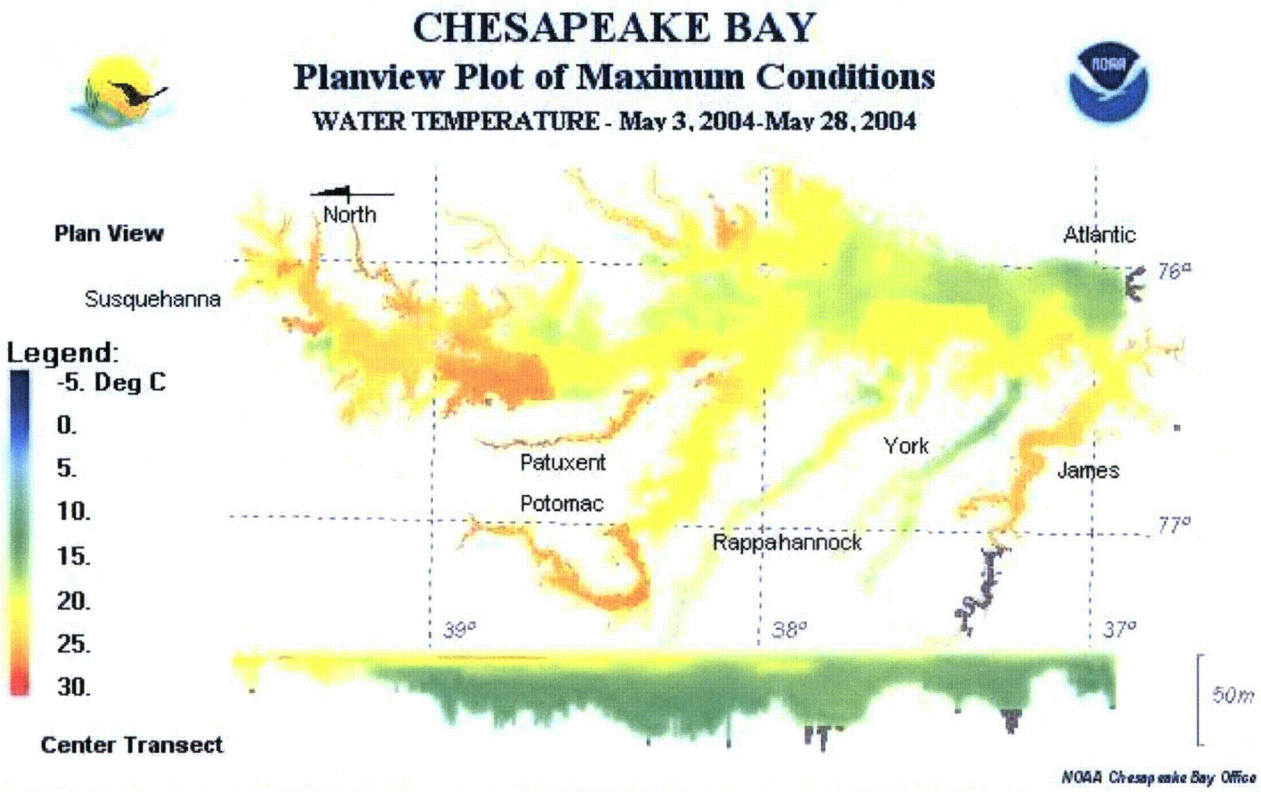


FIGURE 2.3.1-16 **Rev. 0**

CHESAPEAKE BAY TEMPERATURE VARIATION, PLAN AND SECTION VIEWS, MAY 2004 (MAXIMUM CONDITION)

CCNPP UNIT 3 ER

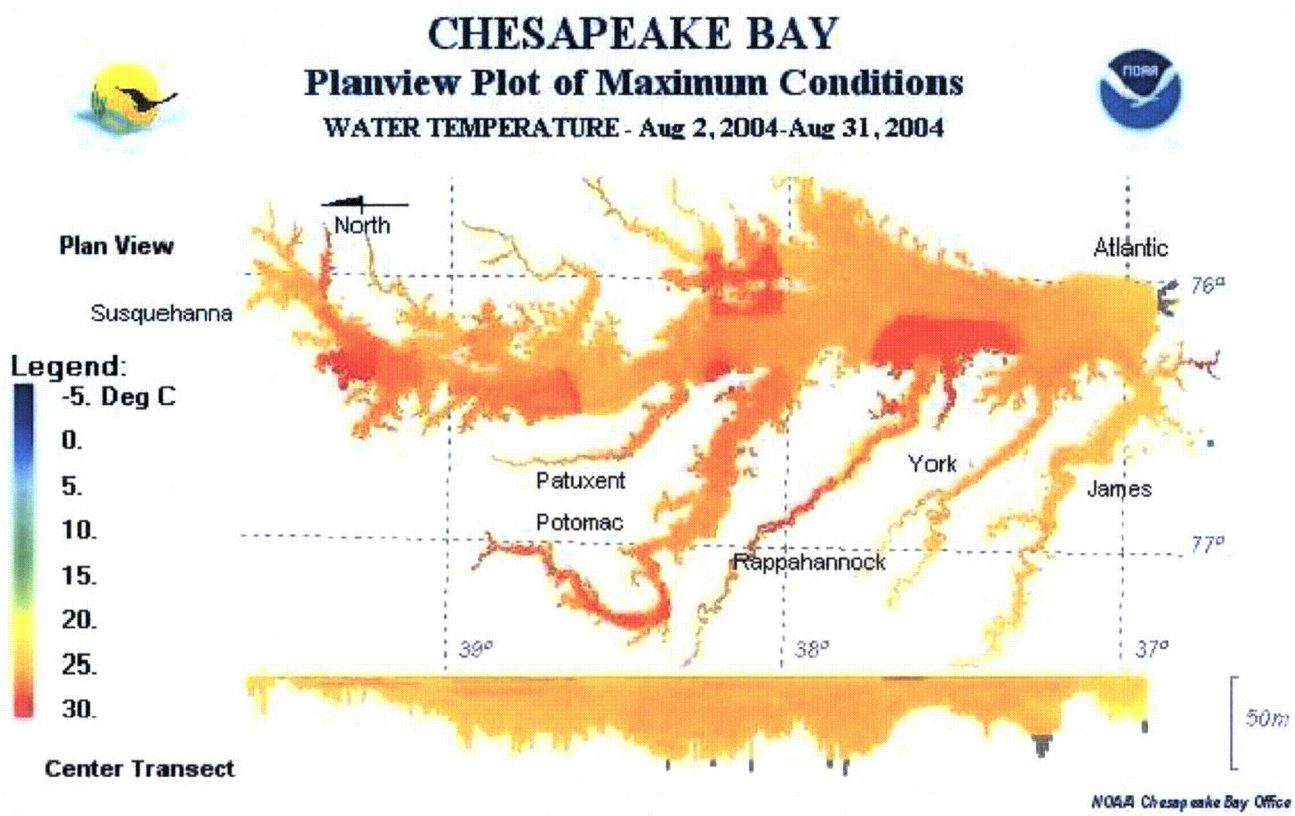


FIGURE 2.3.1-17 **Rev. 0**

CHESAPEAKE BAY TEMPERATURE VARIATION, PLAN AND SECTION VIEWS, AUGUST 2004 (MAXIMUM CONDITION)

CCNPP UNIT 3 ER

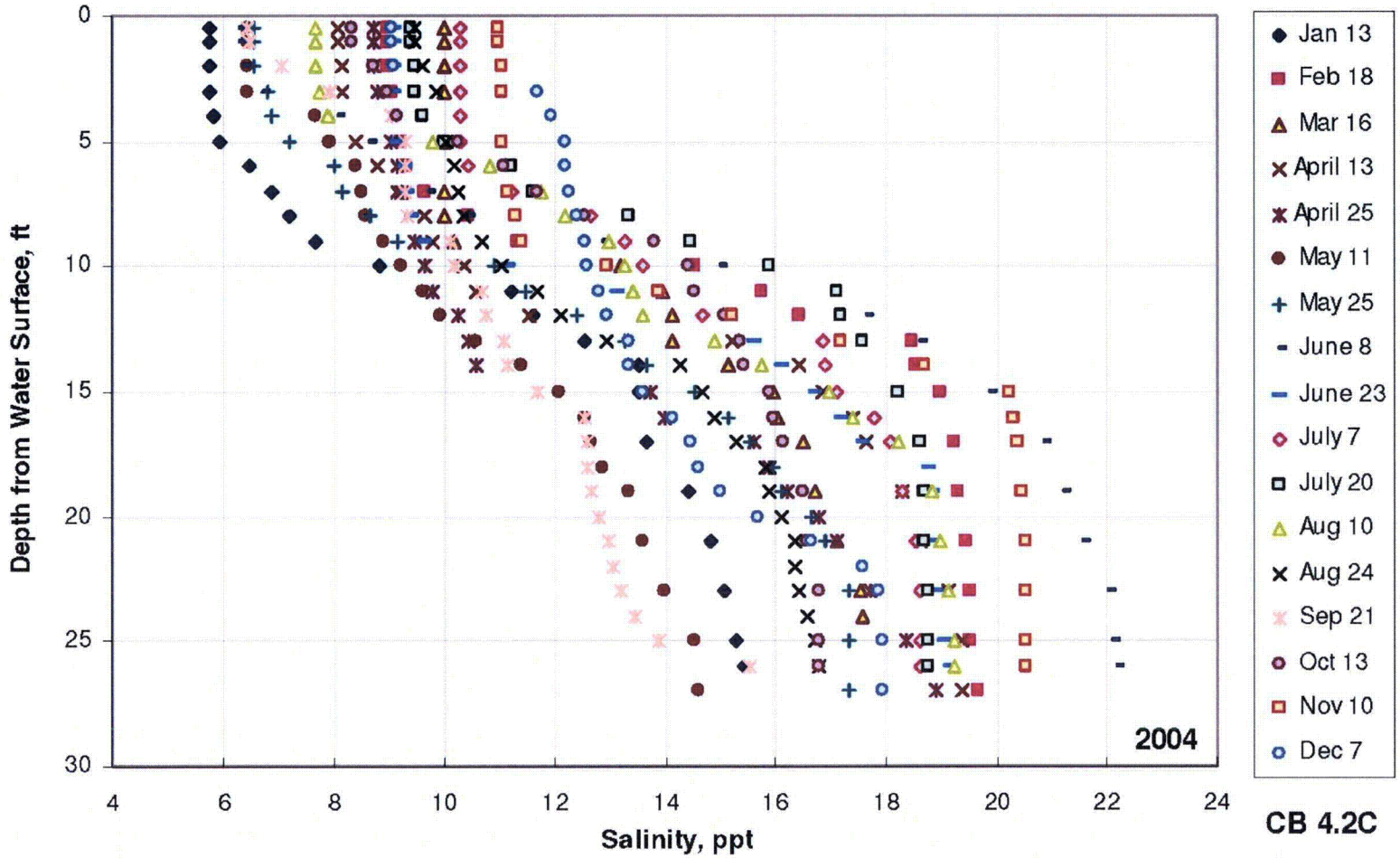


FIGURE 2.3.1-18 **Rev. 0**

SALINITY VERTICAL VARIATION, CHESAPEAKE BAY PROGRAM MONITORING STATION CB4.2C FOR 2004

CCNPP UNIT 3 ER

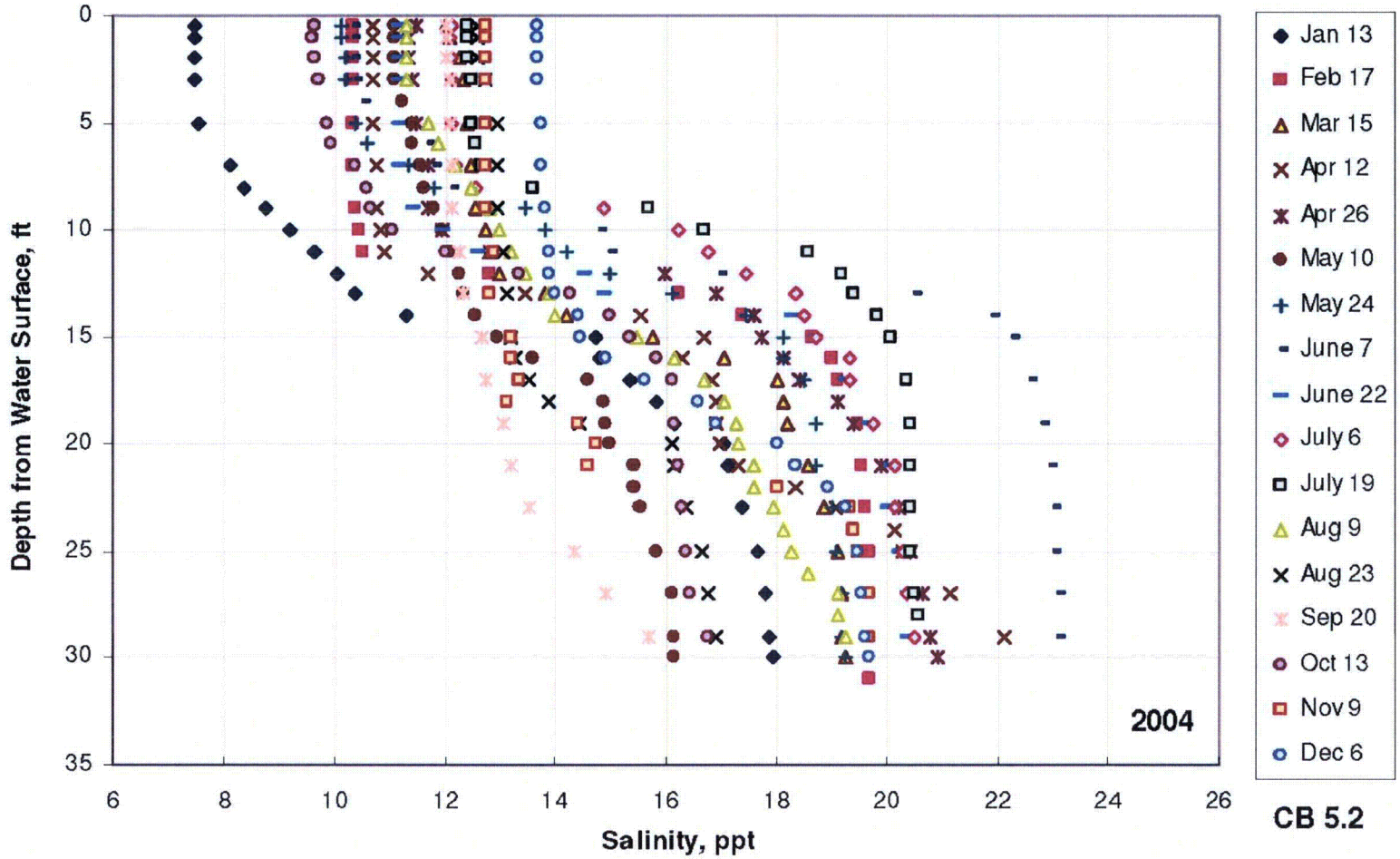


FIGURE 2.3.1-19 **Rev. 0**

SALINITY VERTICAL VARIATION, CHESAPEAKE BAY PROGRAM MONITORING STATION CB5.2 FOR 2004

CCNPP UNIT 3 ER

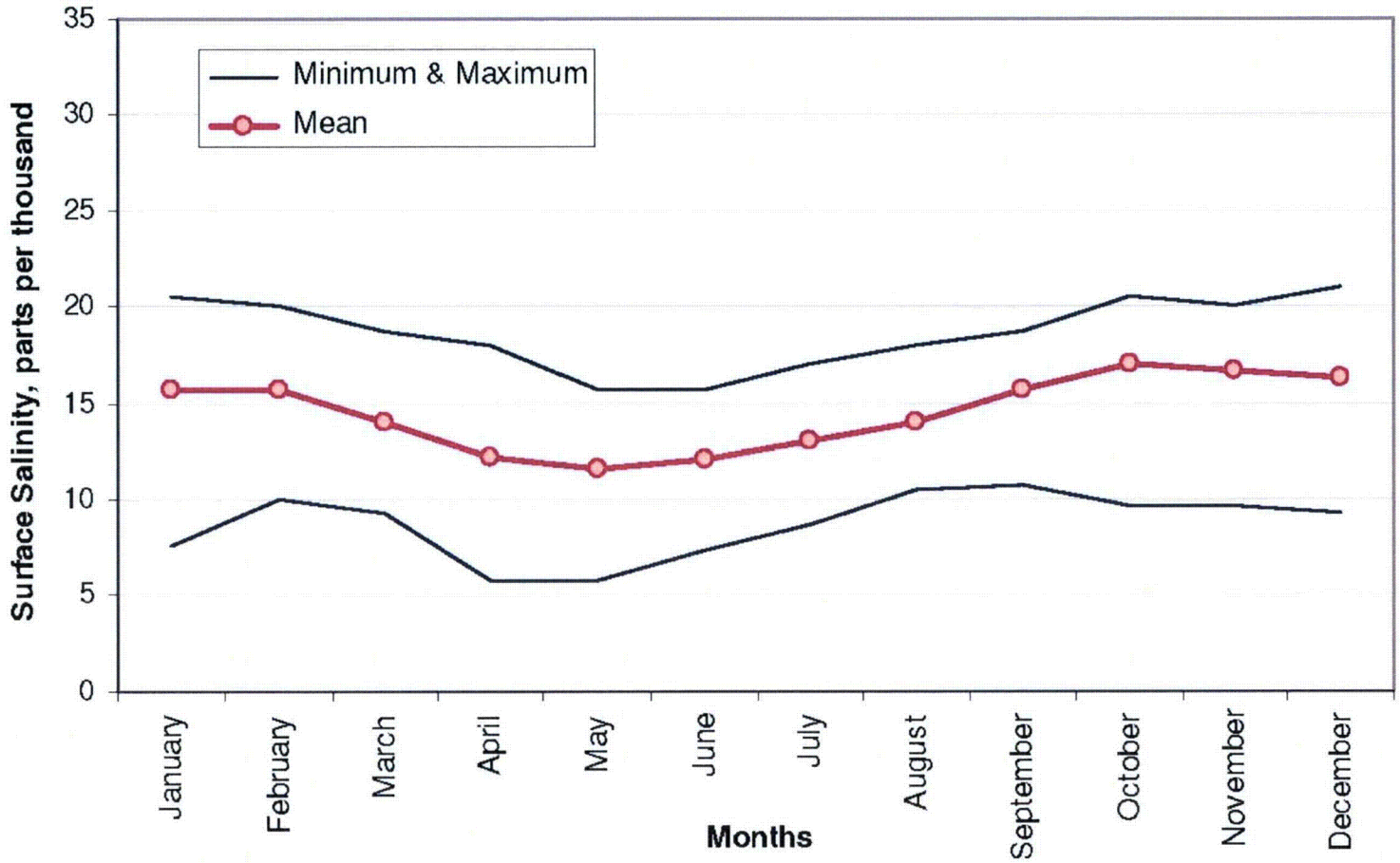


FIGURE 2.3.1-20 **Rev. 0**

MEAN MONTHLY WATER SURFACE SALINITY, CHESAPEAKE BAY PROGRAM STATION CB5.2

CCNPP UNIT 3 ER

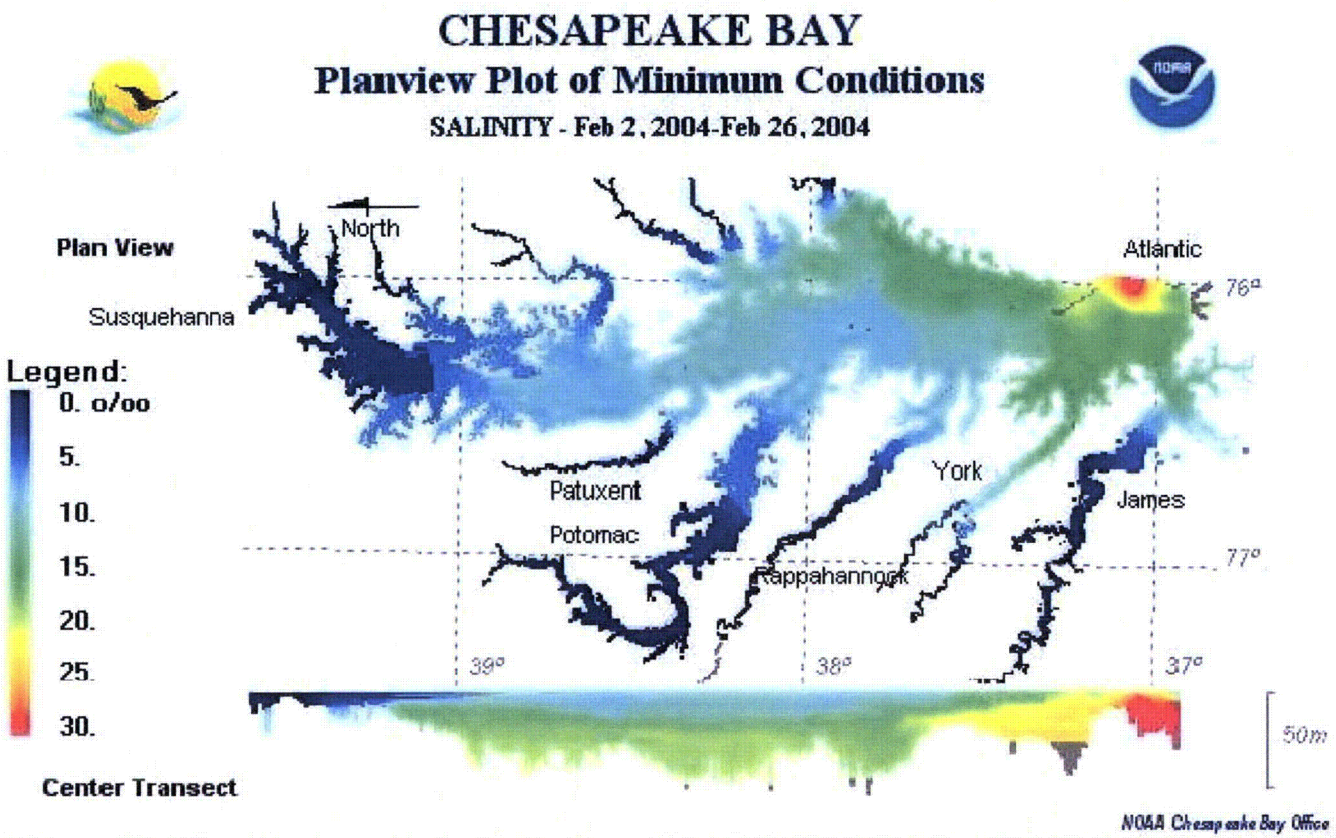


FIGURE 2.3.1-21 **Rev. 0**

CHESAPEAKE BAY SALINITY VARIATION, PLAN AND SECTION VIEWS, FEBRUARY 2004 (MINIMUM CONDITION)

CCNPP UNIT 3 ER

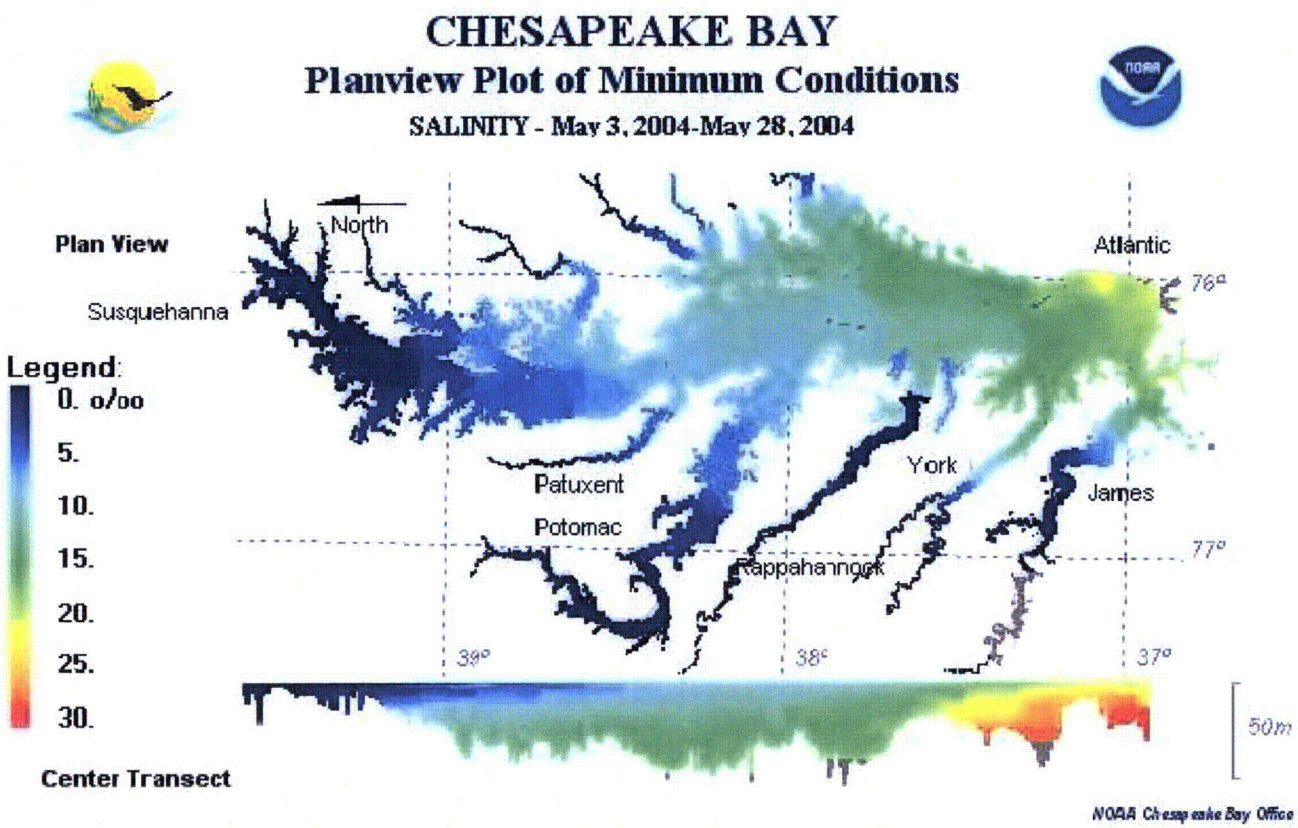


FIGURE 2.3.1-22 **Rev. 0**

CHESAPEAKE BAY SALINITY VARIATION, PLAN AND SECTION VIEWS, MAY 2004 (MINIMUM CONDITION)

CCNPP UNIT 3 ER

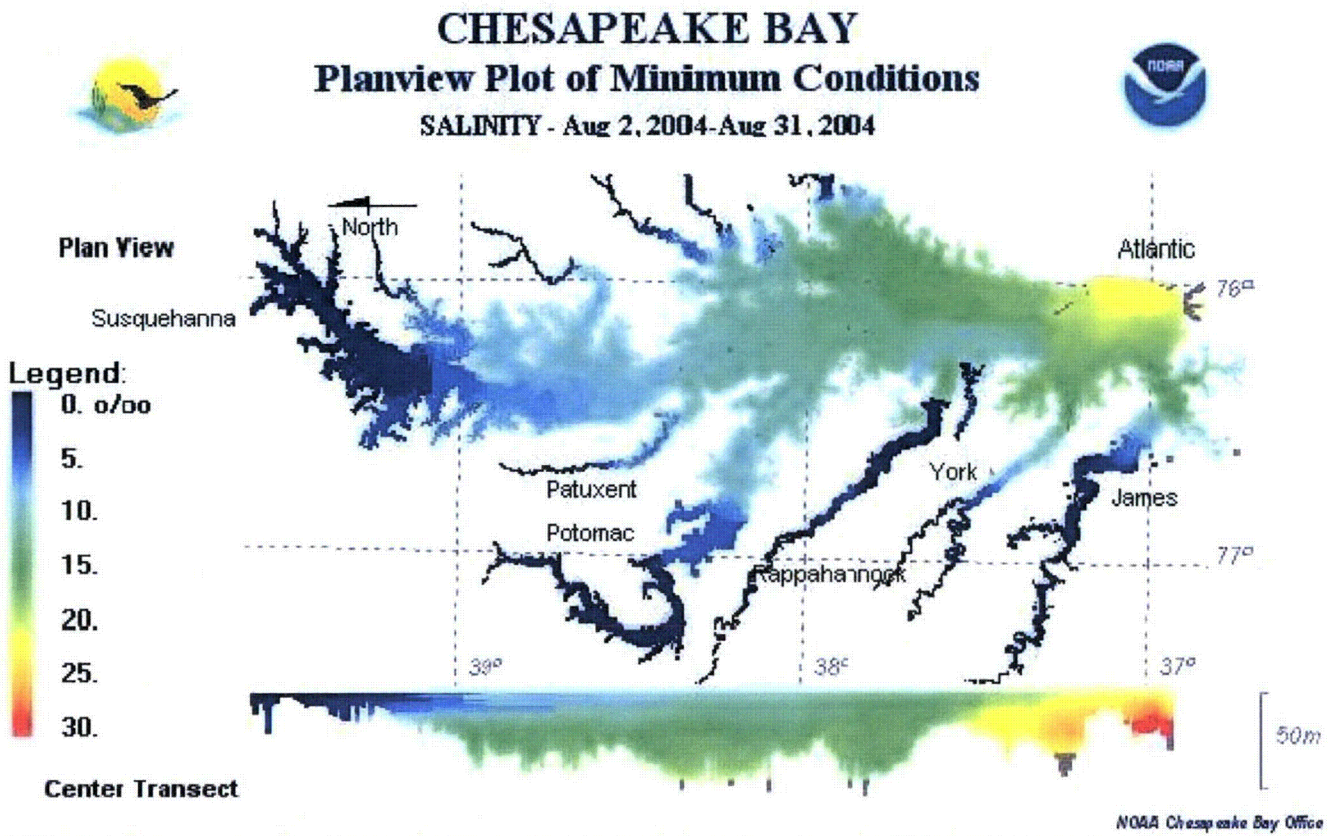


FIGURE 2.3.1-23 **Rev. 0**

CHESAPEAKE BAY SALINITY VARIATION, PLAN AND SECTION VIEWS, AUGUST 2004 (MINIMUM CONDITION)

CCNPP UNIT 3 ER

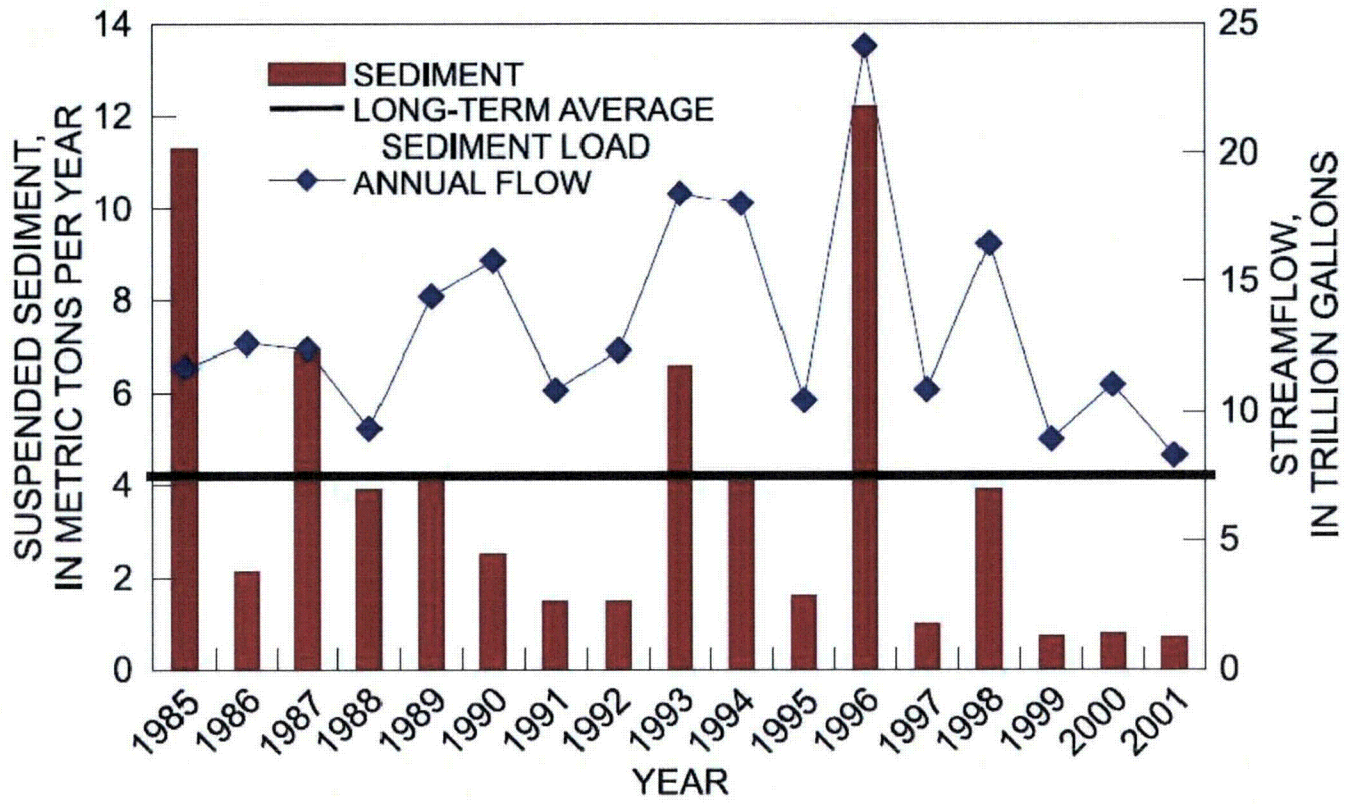


FIGURE 2.3.1-24 **Rev. 0**

COMBINED ANNUAL SUSPENDED LOADS AND RELATION TO ANNUAL FLOW FROM THE SUSQUEHANNA, POTOMAC AND JAMES RIVERS NEAR THE FALL LINE

CCNPP UNIT 3 ER

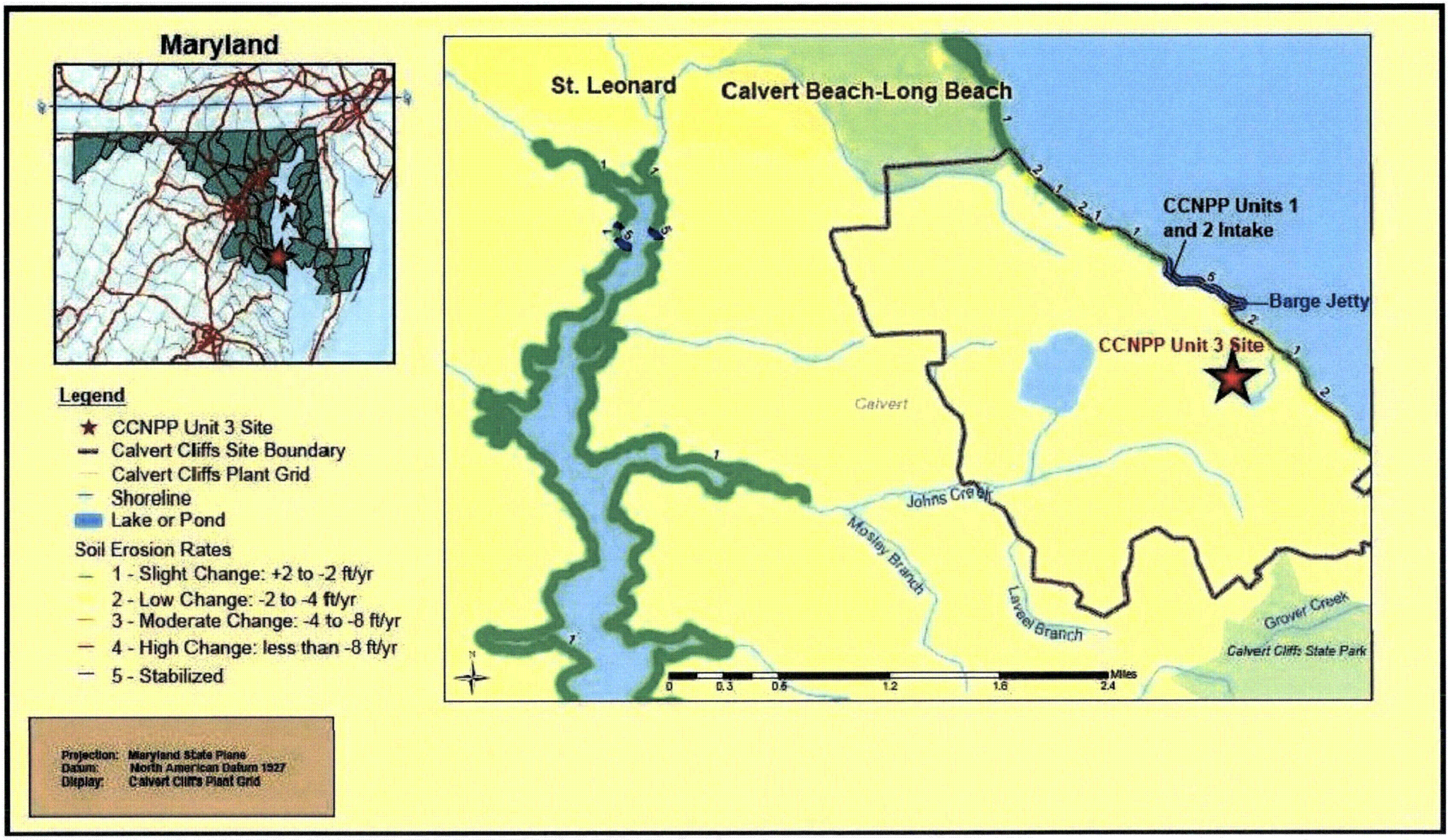
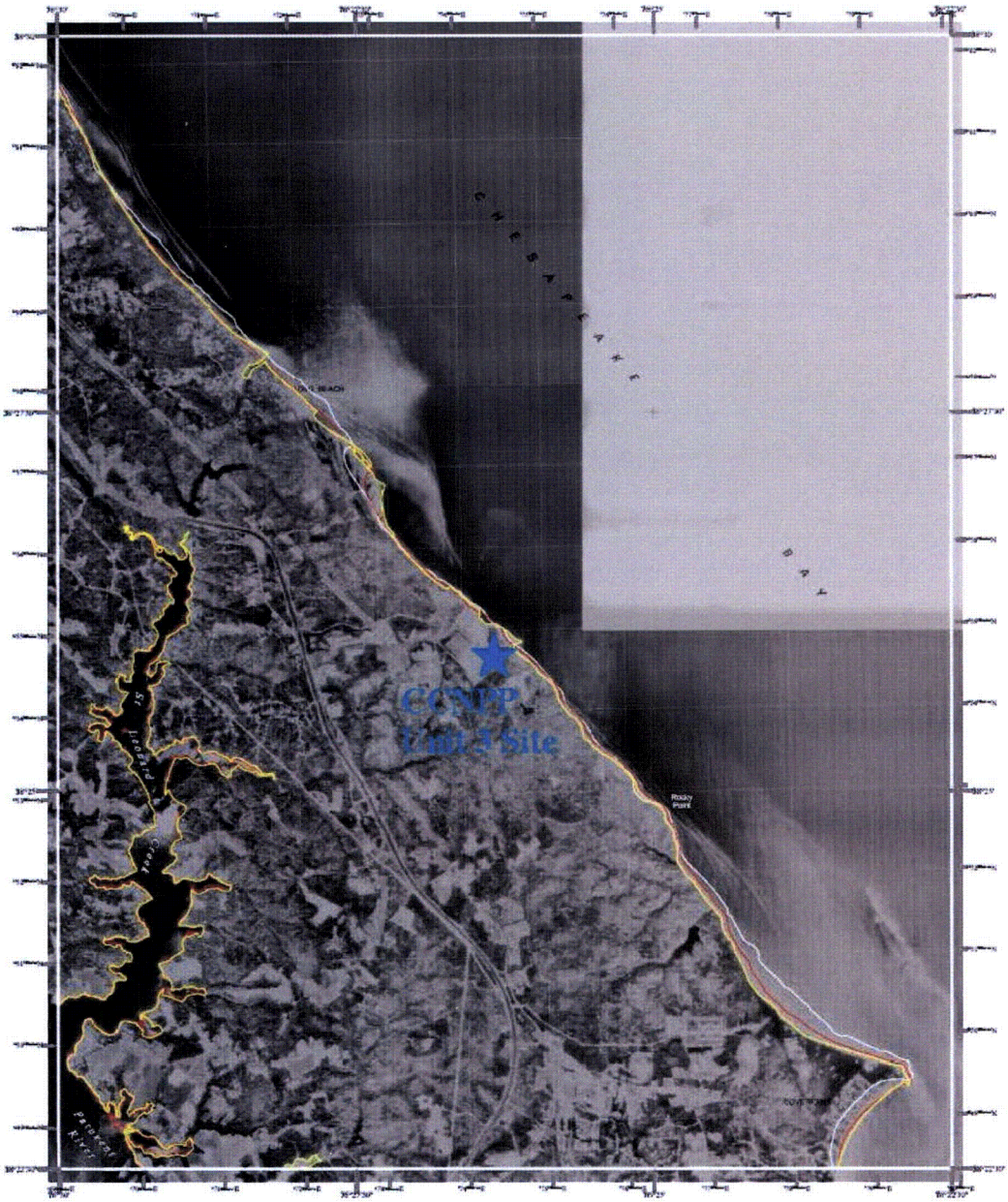


FIGURE 2.3.1-25 **Rev. 0**

ESTIMATED CHESAPEAKE BAY SHORELINE EROSION RATES NEAR CCNPP UNIT 3 SITE

CCNPP UNIT 3 ER

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

1 Point Patuxent
2 Lusby
3 Hutton
4 Broomes Island
5 Taylor Island
6 Holywood
7 Solomons Island
8 Benedict Island

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	Date of 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 INTmap by MicroImages, Inc.

Partial funding was provided by a grant from the National Oceanic and Atmospheric Administration (Award No. NA07OZ0158), administered by the Maryland Department of Natural Resources, Coastal Zone Management Program (CZM Grant M01-096 CZM 040).

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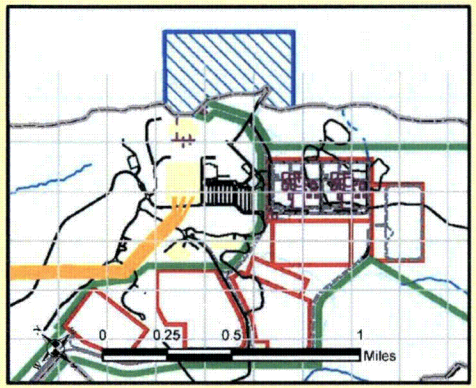
This document is available in alternative format upon request from a qualified individual with a disability.

FIGURE 2.3.1-26 Rev. 0

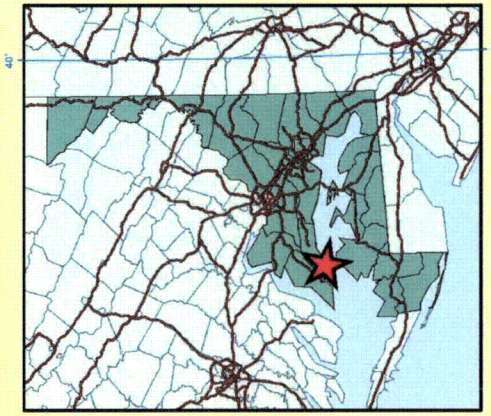
CHANGE IN THE CHESAPEAKE BAY SHORELINE POSITION NEAR THE CCNPP SITE BETWEEN 1848, 1942 AND 1993

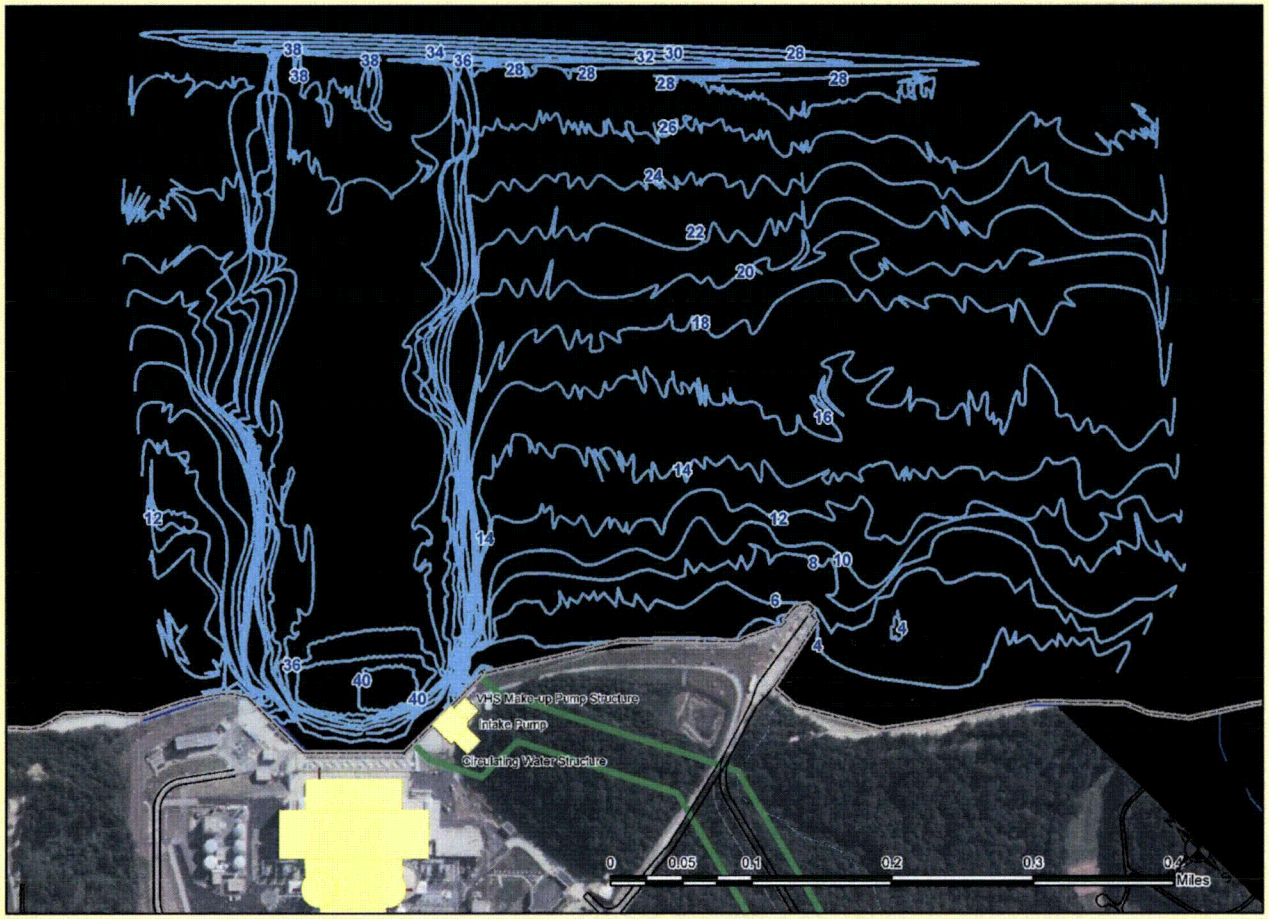
CCNPP UNIT 3 ER

Calvert Cliffs



Maryland





Legend

Baltimore Canyon (2 ft Incrmt)
Calvert Cliffs Site Boundary
Calvert Cliffs Plant Grid
Cooling Tower
Transmission Line
Road, Existing
Road, Proposed
Power Block
Stream Permanent
Stream, Intermittent
Shoreline
Structure, Existing
Lake or Pond
Reserve/Vista

Projection: Maryland State Plane
Datum: North American Datum 1927
Display: Calvert Cliffs Plant Grid

Note: The vertical elevation refers to the Mean Lower Low Water (MLLW) at the site.

The nearest location to the site where a datum relationship is available is Cove Point, MD, at which point the NVGD 29 datum is 0.01 ft below the Mean Lower Low Water (MLLW).

FIGURE 2.3.1-27 Rev. 0

CHESAPEAKE BAY BATHYMETRY NEAR THE EXISTING CCNPP UNITS 1 and 2 STRUCTURE AND THE EXISTING INTAKE CHANNEL

CCNPP UNIT 3 ER

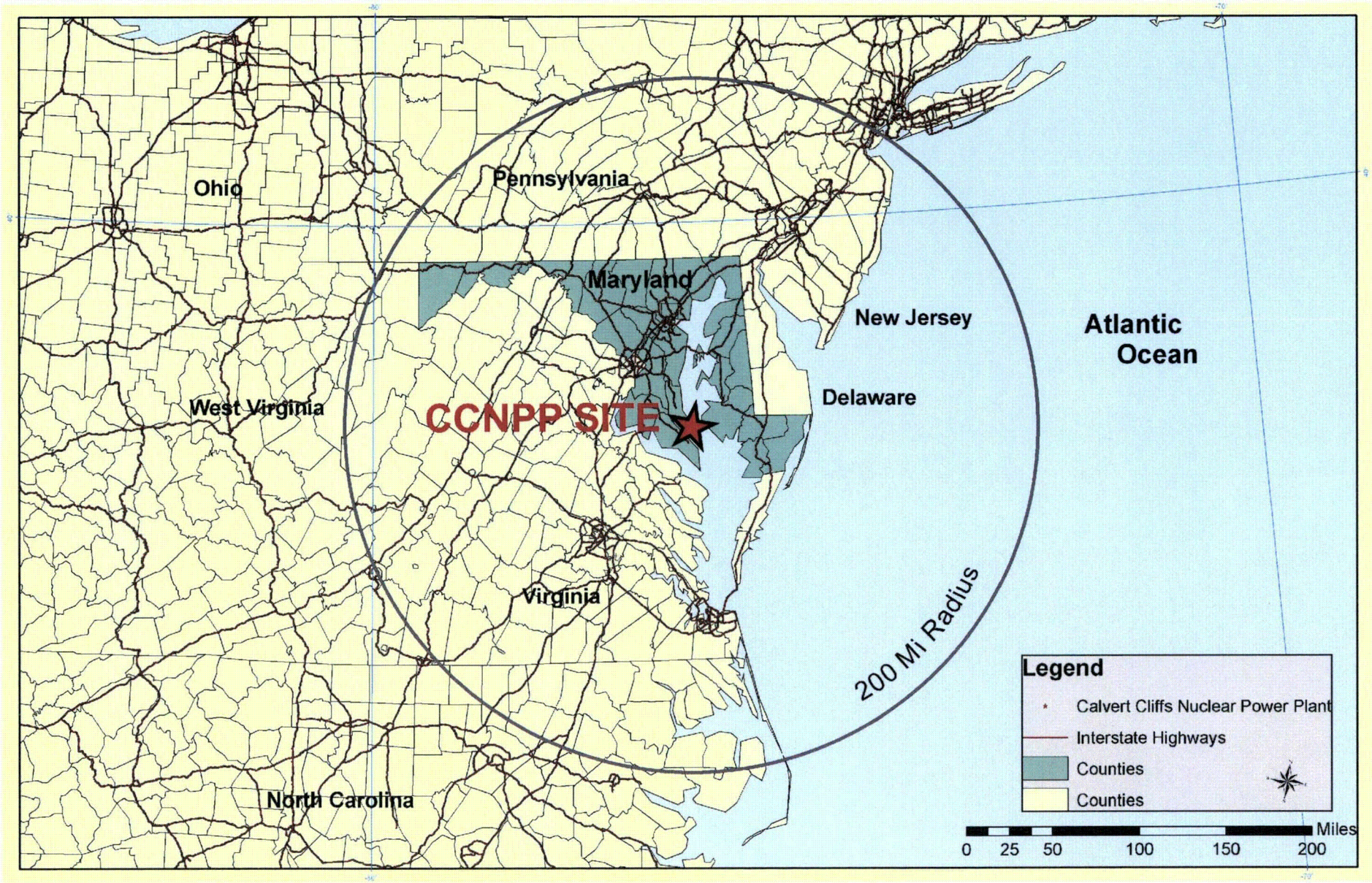
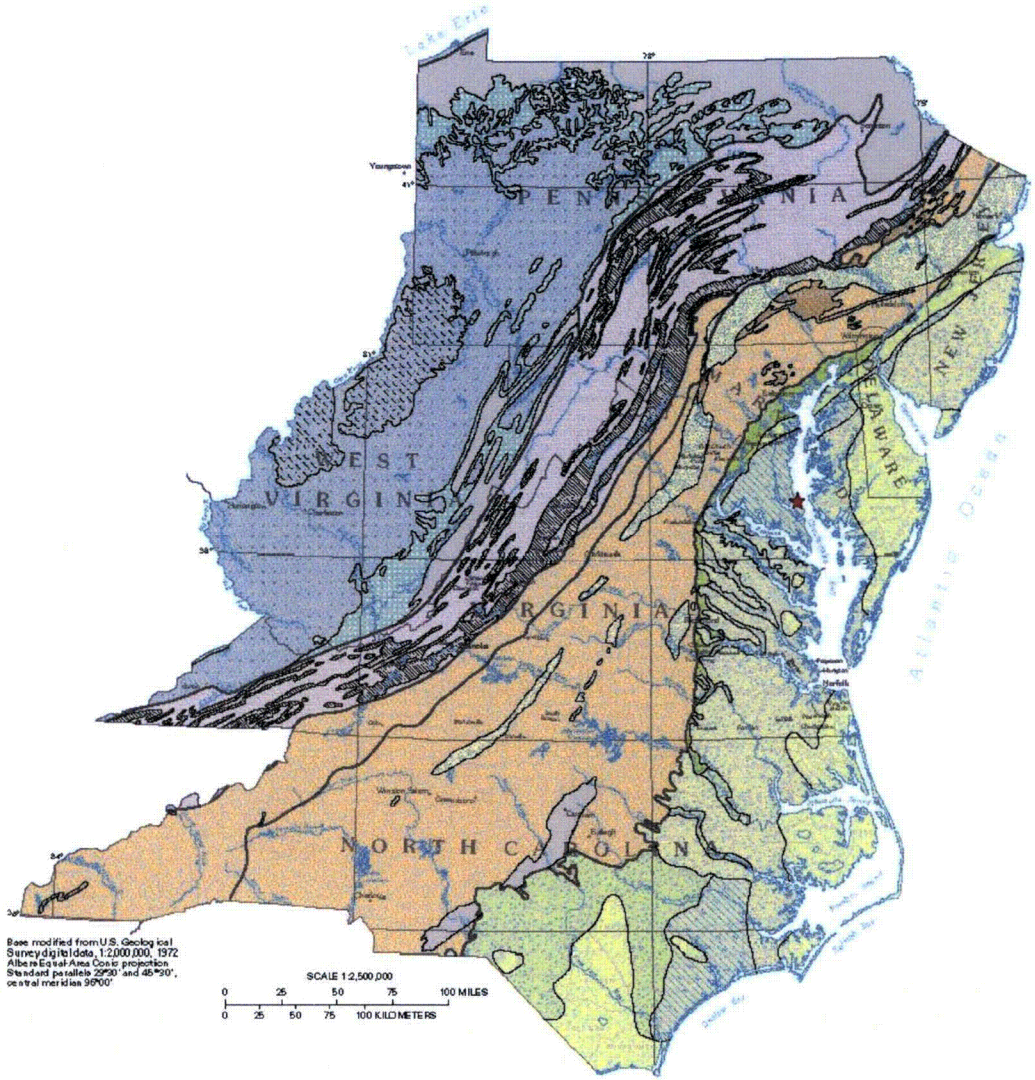


FIGURE 2.3.1-28 **Rev. 0**

LOCATION OF CCNPP AND 200 MILE RADIUS FROM THE PLANT SITE

CCNPP UNIT 3 ER



EXPLANATION

Northern Atlantic Coastal Plain aquifer system

- Surficial aquifer
- Chesapeake aquifer
- Castle Hayne–Aquia aquifer
- Severn–Magothy aquifer
- Peedee–upper Cape Fear aquifer
- Potomac aquifer

Piedmont and Blue Ridge aquifers

- Aquifers in early Mesozoic basins
- Carbonate-rock aquifers
- Crystalline-rock aquifers

Valley and Ridge aquifers—Carbonate-rock aquifers are patterned

Appalachian Plateaus aquifers

- Permian and Pennsylvanian aquifers—Permian aquifers are patterned
- Mississippian aquifers

Not a principal aquifer

Physiographic province boundary—

★ **CCNPP site location**

FIGURE 2.3.1-29 **Rev. 0**

MID–ATLANTIC REGIONAL PHYSIOGRAPHIC PROVINCES AND HYDROSTRATIGRAPHIC UNITS

CCNPP UNIT 3 ER

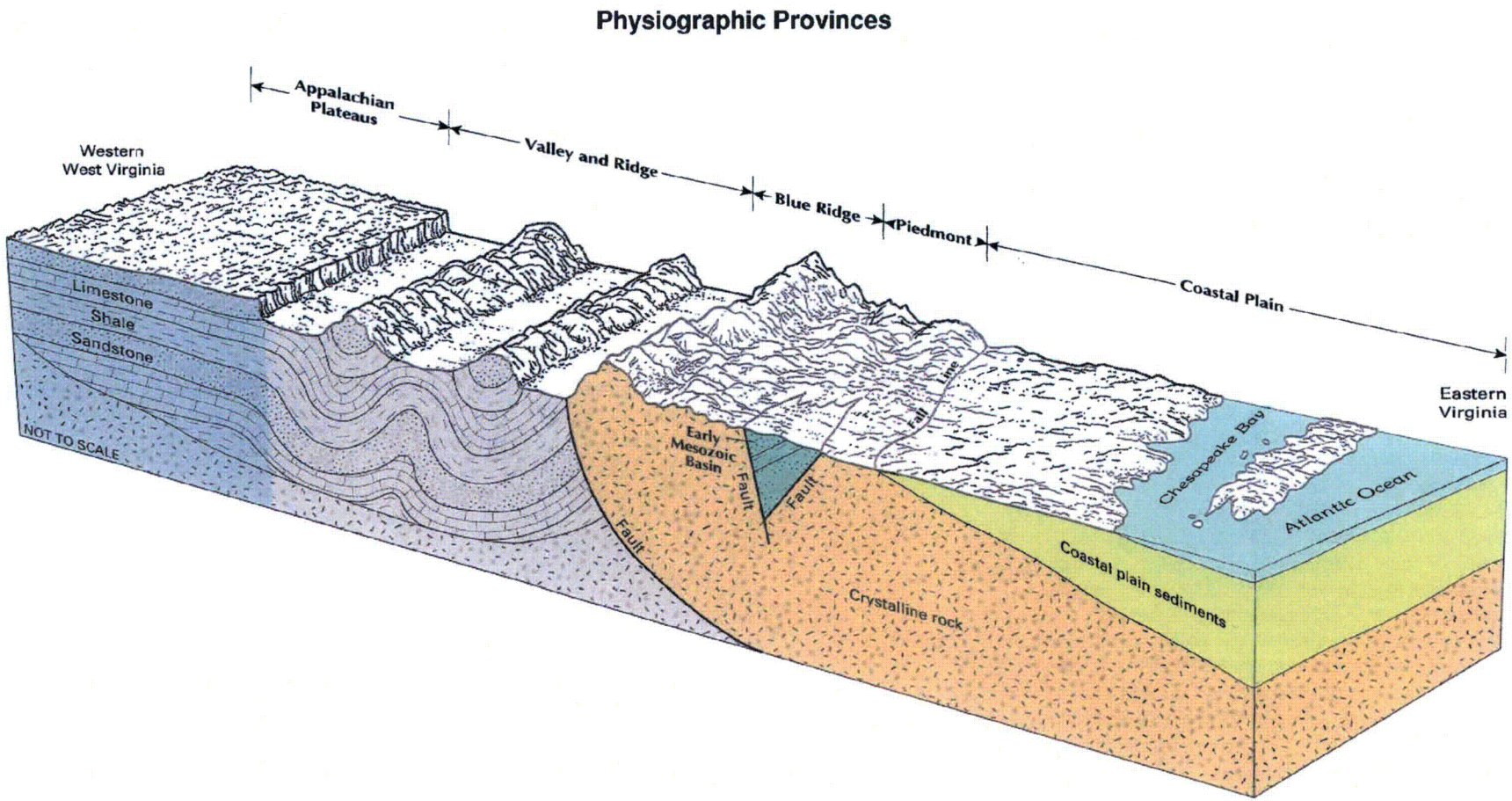


FIGURE 2.3.1-30 **Rev. 0**

SCHEMATIC GEOLOGIC CROSS SECTION THROUGH THE MID-ATLANTIC REGION

CCNPP UNIT 3 ER

ERATHEM	SYSTEM	SERIES	FORMATION			THICKNESS (feet)	LITHOLOGY	HYDROSTRATIGRAPHIC UNIT	
CENOZOIC	QUATERNARY	Holocene & Pleistocene	Lowland deposits			0-150	Sand, gravel, sandy clay, and clay.	SURFICIAL AQUIFER	
	NEOGENE	Pliocene	Upland deposits			0-85	Irregularly stratified cobbles, gravel, sand, and clay lenses.		
		Miocene	Chesapeake Group	St. Mary's Fm.		0-335	Sand, clayey sand, and sandy clay; fossiliferous and diatomaceous.	CHESAPEAKE CONFINING UNIT	
				Choptank Fm.					
				Calvert Fm.					
	PALEOGENE	Oligocene		Unnamed Oligocene Beds		0-5	Patchy distribution; clayey, glauconitic sand.	PINEY POINT-NANJEMOY AQUIFER	
		Eocene	Pamunkey Group	Piney Point Fm.		0-90	Sand, slightly glauconitic, with intercalated indurated layers; fossiliferous.		
				Nanjemoy Fm.		0-240	Glauconitic sand with clayey layers.		
		Paleocene		Marlboro Clay		0-30	Pink and gray clay.	NANJEMOY CONFINING UNIT	
				Aquia Fm.		30-205	Glauconitic, greenish to brown sand with indurated layers; fossiliferous.	AQUIA AQUIFER	
				Brightseat Fm.		0-40	Gray to dark-gray micaceous silty and sandy clay.	BRIGHTSEAT CONFINING UNIT	
MESOZOIC	CRETACEOUS	Upper	Monmouth Group	Formations undifferentiated		20-105	Sandy clay and sand, dark gray to black, with minor glauconitic; fossiliferous.		
			Matawan Group						
			Magothy Fm.			0-230	Light gray to white sand and fine gravel with interbedded clay layers; contains pyrite and lignite. Includes two sand units in southern Anne Arundel County where the formation is the thickest.	MAGOTHY AQUIFER	
		Lower	Potomac Group	Patapsco Fm.		0-1,200	Interbedded sand, clay, and sandy clay; color variegated, but chiefly hues of red, brown and gray; consists of several sandy intervals that function as separate aquifers.	Patapsco aquifer system	UPPER PATAPSCO CONFINING UNIT
									UPPER PATAPSCO AQUIFER
									MIDDLE PATAPSCO CONFINING UNIT
									LOWER PATAPSCO AQUIFER
				Arundel Fm.		0-400	Red, brown, and gray clay; in places contains ironstone nodules, carbonaceous remains, and lignite.	ARUNDEL CONFINING UNIT	
				Patuxent Fm.		100-600	Interbedded gray and ye low sand and clay; kaolinized feldspar and lignite common. Locally clay layers predominate.	PATUXENT AQUIFER	
PALEOZOIC / PRECAMBRIAN	Undifferentiated pre-Cretaceous consolidated-rock basement					Unknown	Igneous and metamorph c rocks; sandstone and shale.	NOT RECOGNIZED	

FIGURE 2.3.1-31 **Rev. 0**

SOUTHERN MARYLAND SCHEMATIC HYDROSTRATIGRAPHIC SECTION

CCNPP UNIT 3 ER

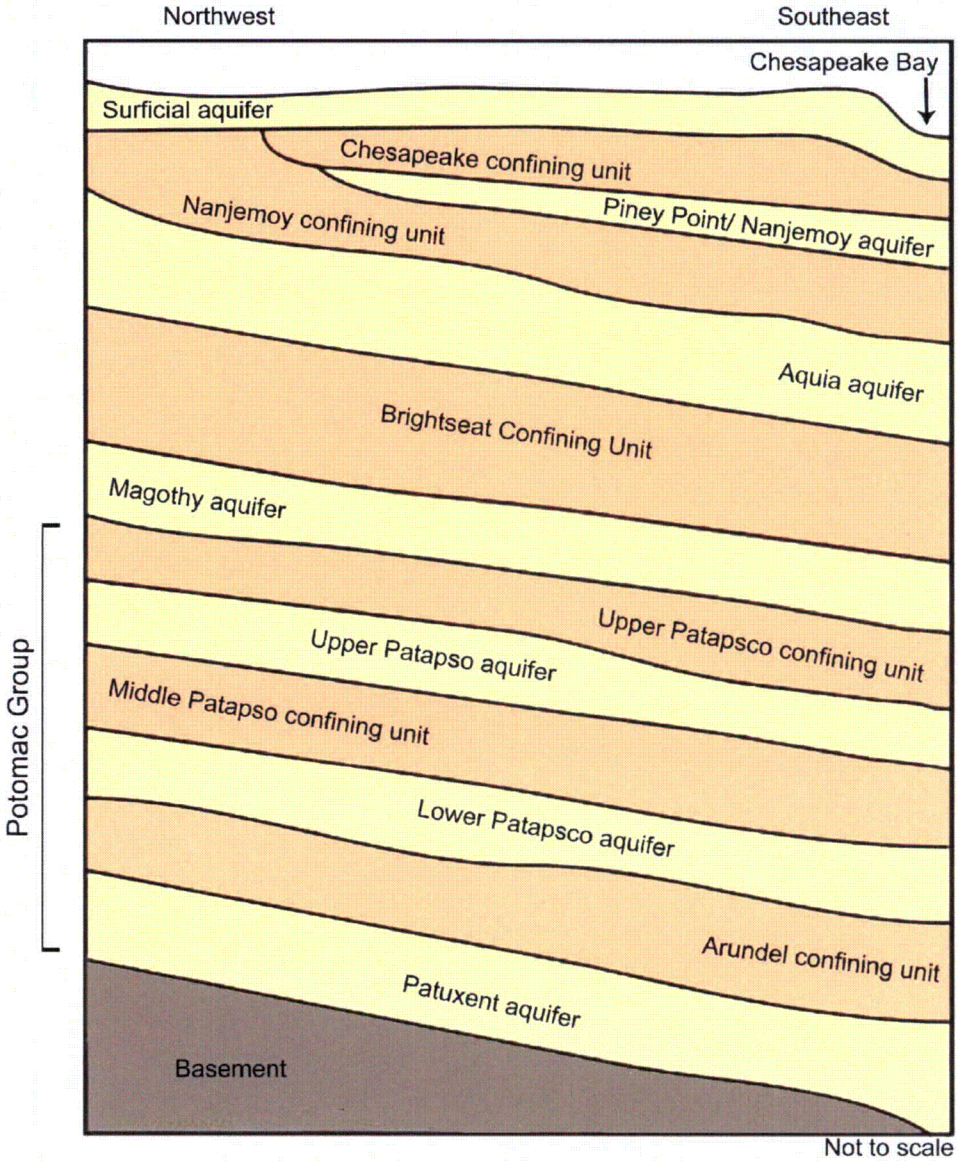


FIGURE 2.3.1-32 **Rev. 0**

SCHEMATIC CROSS-SECTION OF SOUTHERN MARYLAND HYDROSTRATIGRAPHIC UNITS

CCNPP UNIT 3 ER

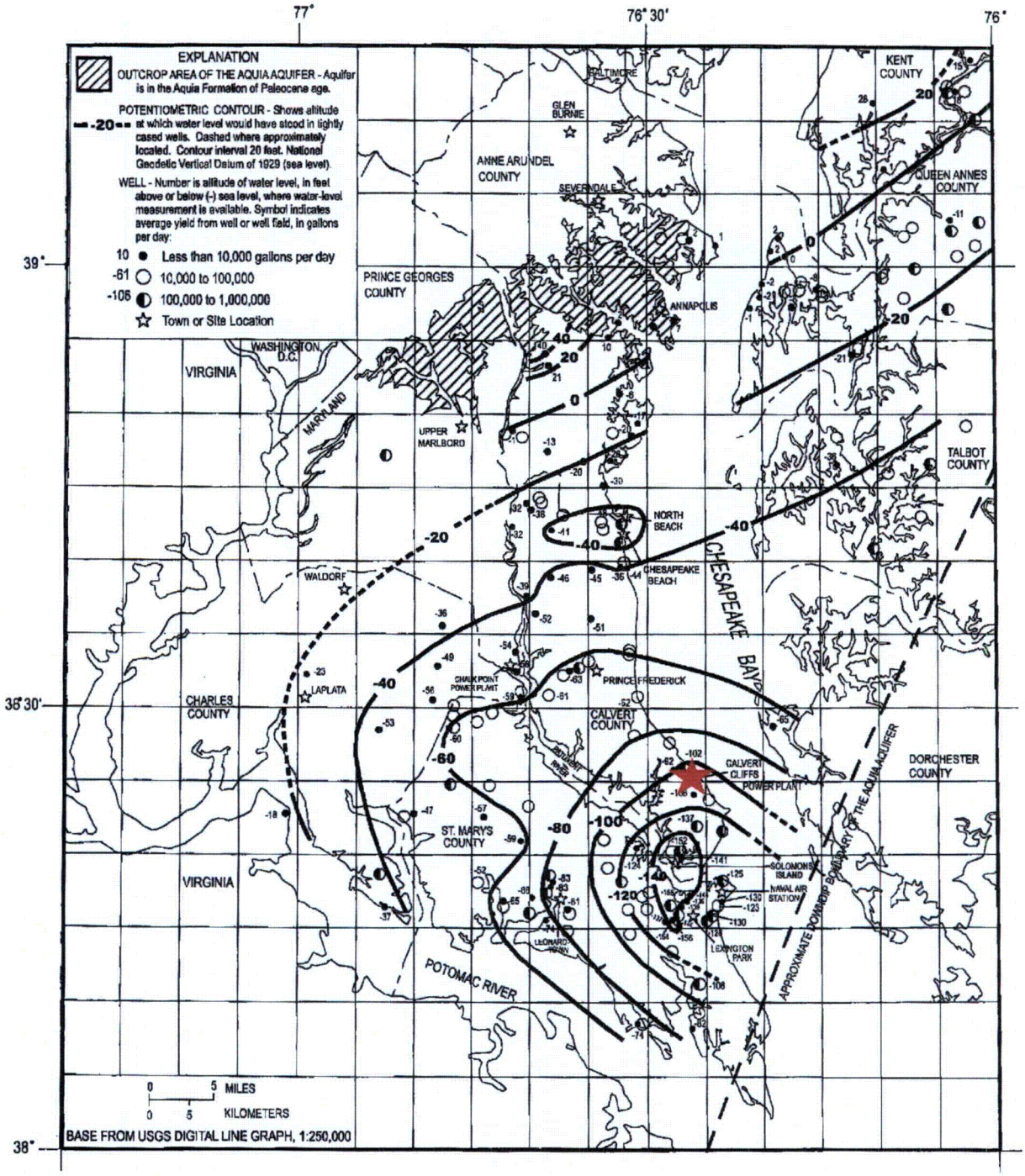


FIGURE 2.3.1-33 **Rev. 0**

POTENTIOMETRIC SURFACE OF THE AQUIA AQUIFER IN SOUTHERN MD, SEPT 2003

CCNPP UNIT 3 ER

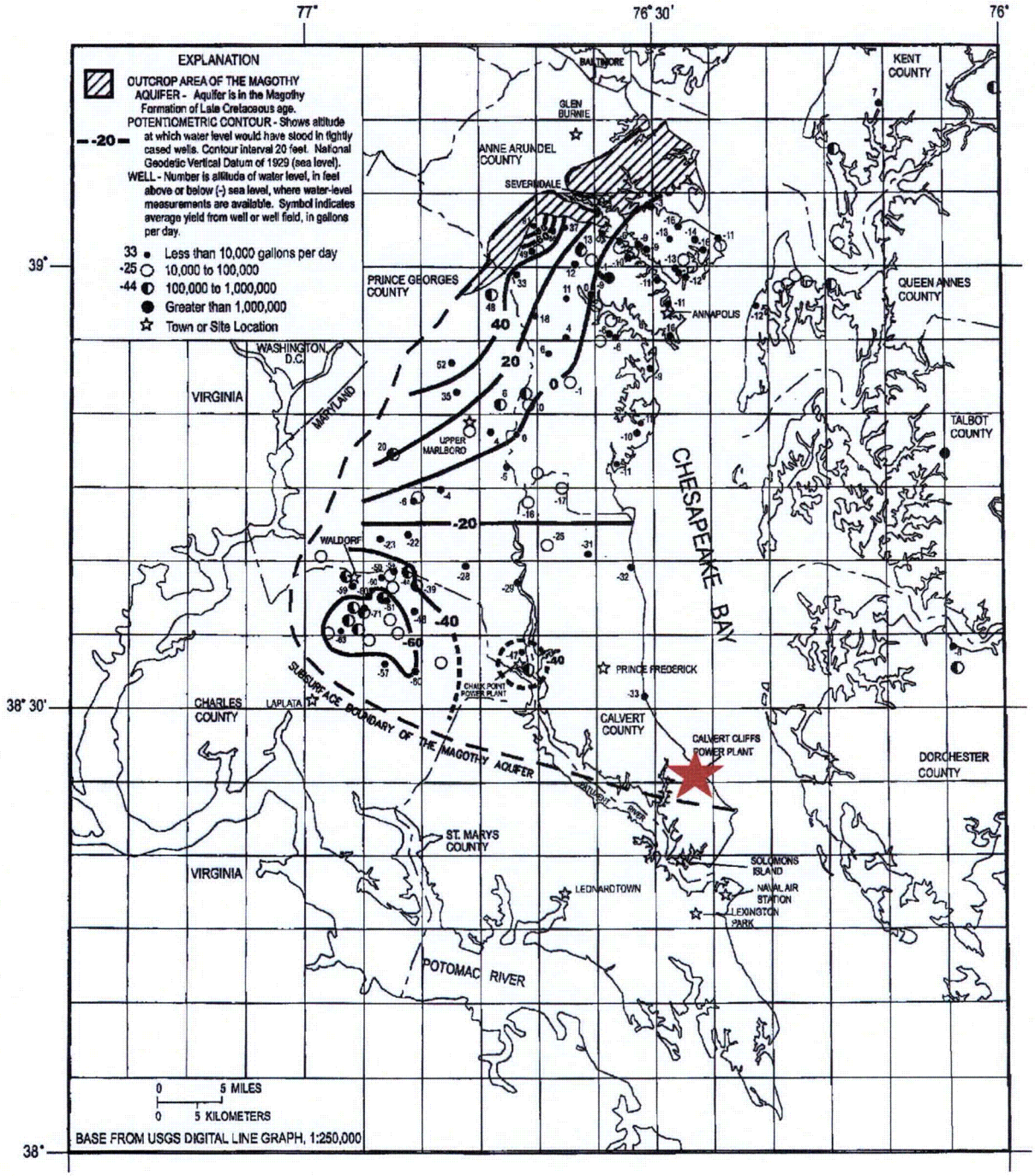


FIGURE 2.3.1-34 **Rev. 0**

POTENTIOMETRIC SURFACE OF THE MAGOTHY AQUIFER IN SOUTHERN MD, SEPT 2003

CCNPP UNIT 3 ER

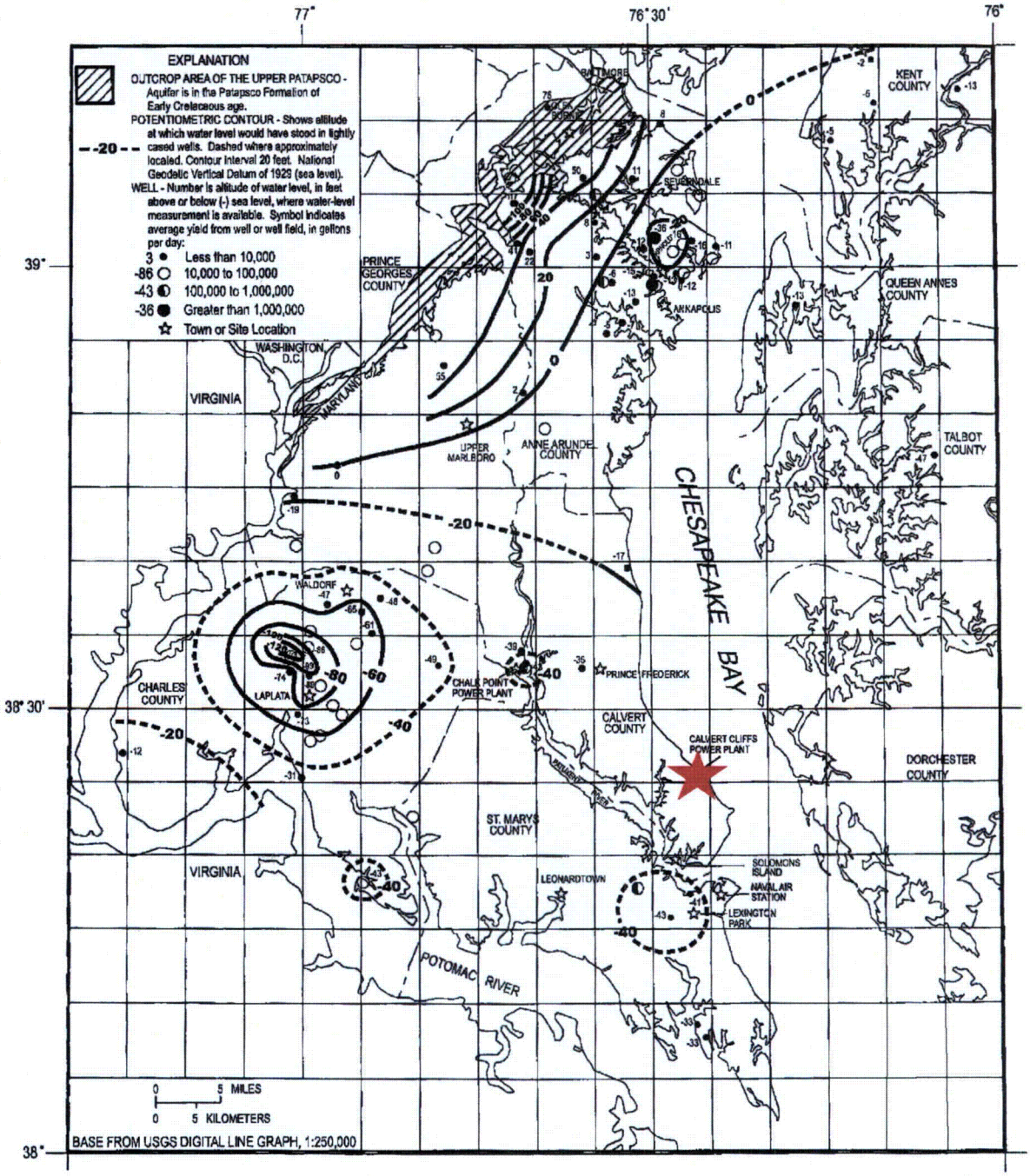


FIGURE 2.3.1-35 Rev. 0

POTENTIOMETRIC SURFACE OF THE UPPER PATAPSCO AQUIFER IN SOUTHERN MD, SEPTEMBER 2003

CCNPP UNIT 3 ER

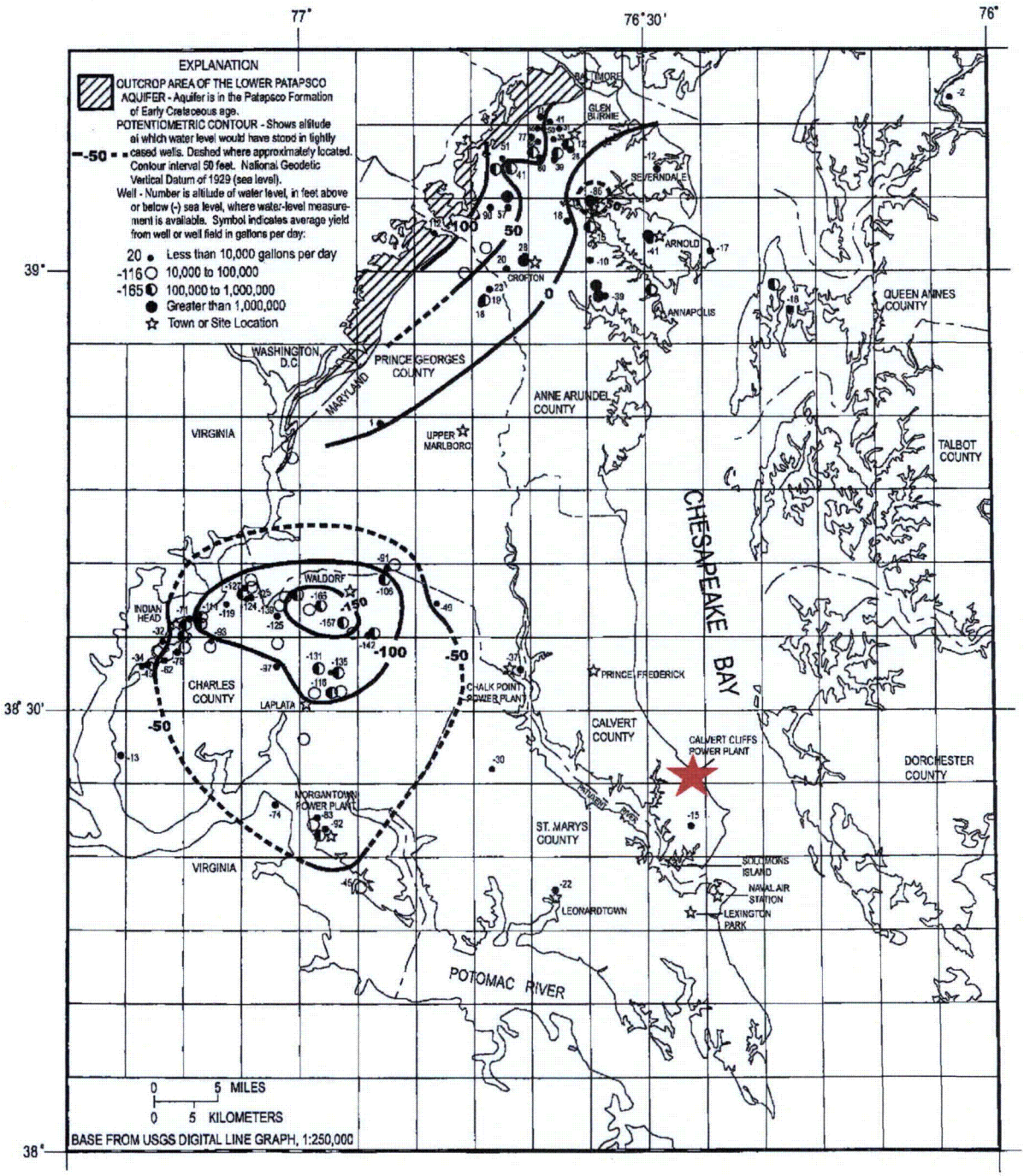
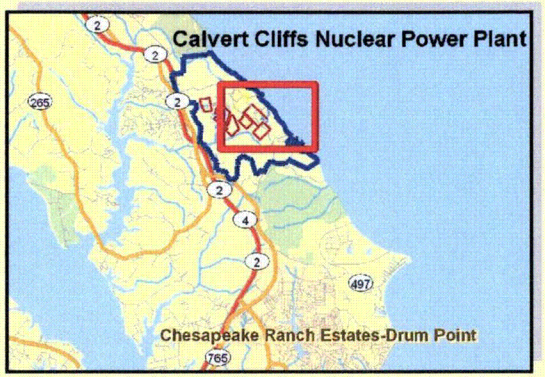
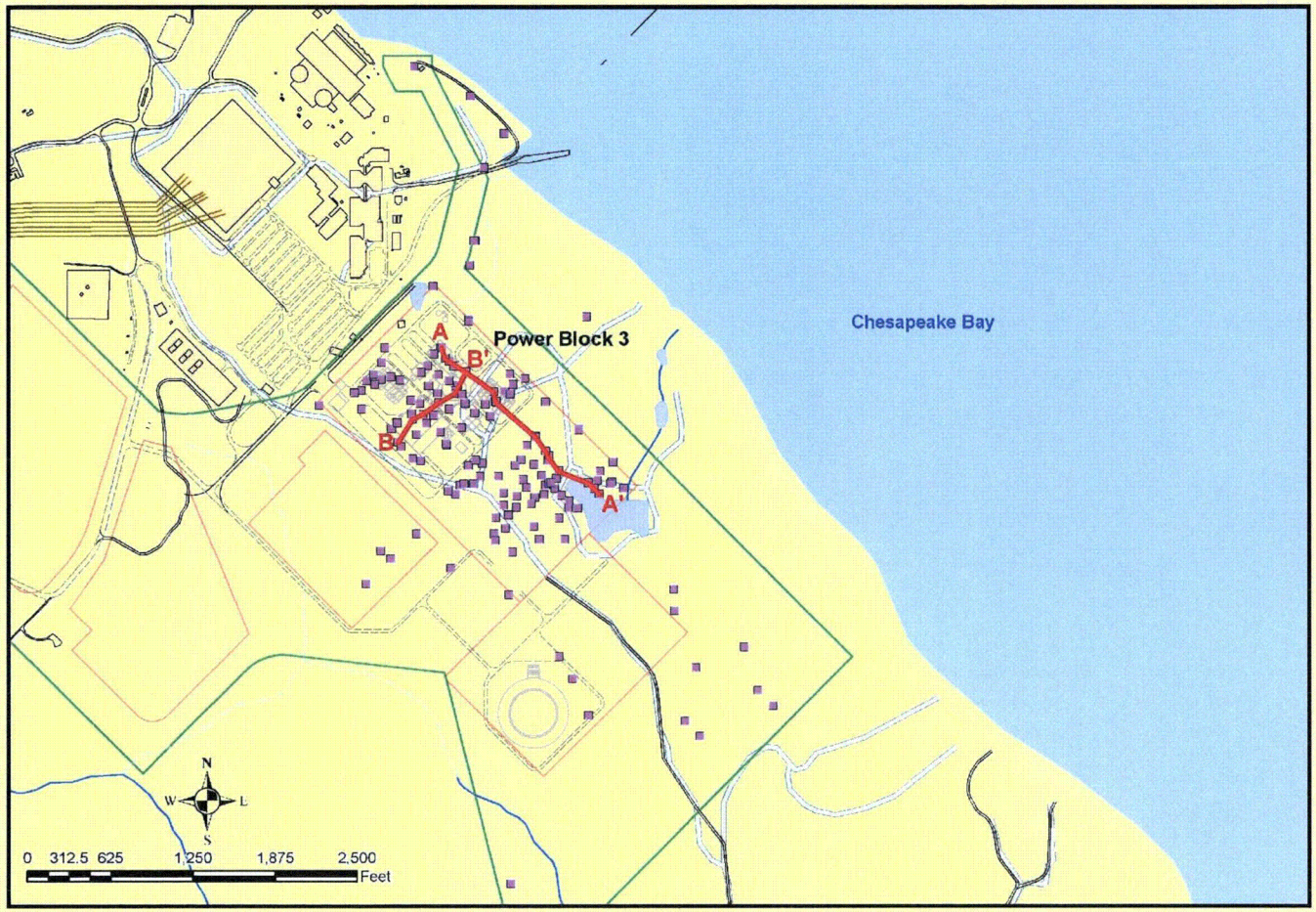


FIGURE 2.3.1-36 **Rev. 0**

POTENTIOMETRIC SURFACE OF THE LOWER PATAPSCO AQUIFER IN SOUTHERN MD, SEPTEMBER 2003

CCNPP UNIT 3 ER





Legend

Cross Section Line

Projection: Maryland State Plane
Datum: North American Datum 1927
Display: Calvert Cliffs Plant Grid

FIGURE 2.3.1-37 Rev. 0

CROSS-SECTION AND SOIL BORING AND LOCATIONS IN THE PROPOSED UNIT 3 POWER BLOCK AREA

CCNPP UNIT 3 ER

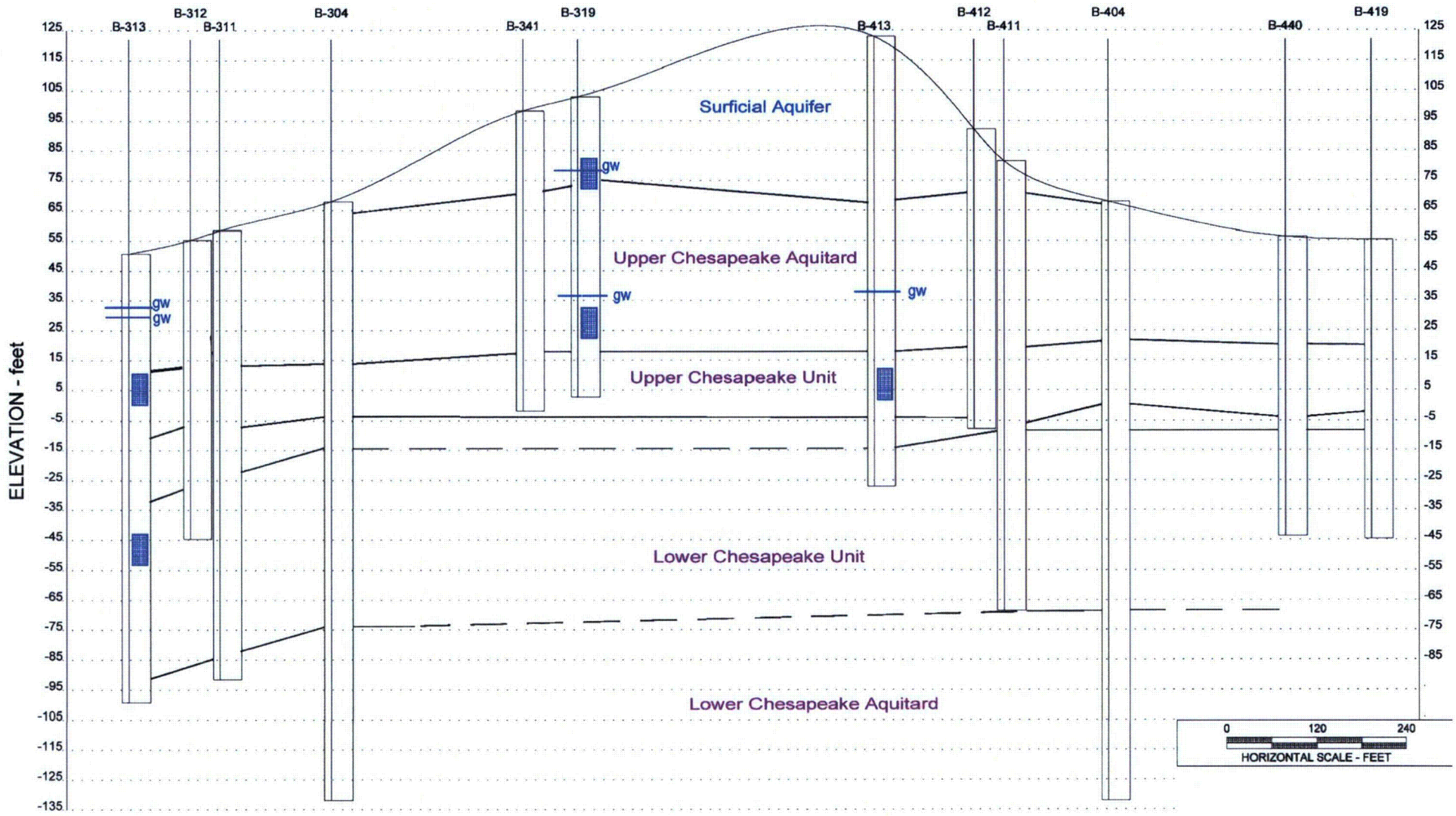


FIGURE 2.3.1-38 **Rev. 0**

CROSS-SECTION A-A THROUGH PROPOSED UNIT 3 POWER BLOCK AREA

CCNPP UNIT 3 ER

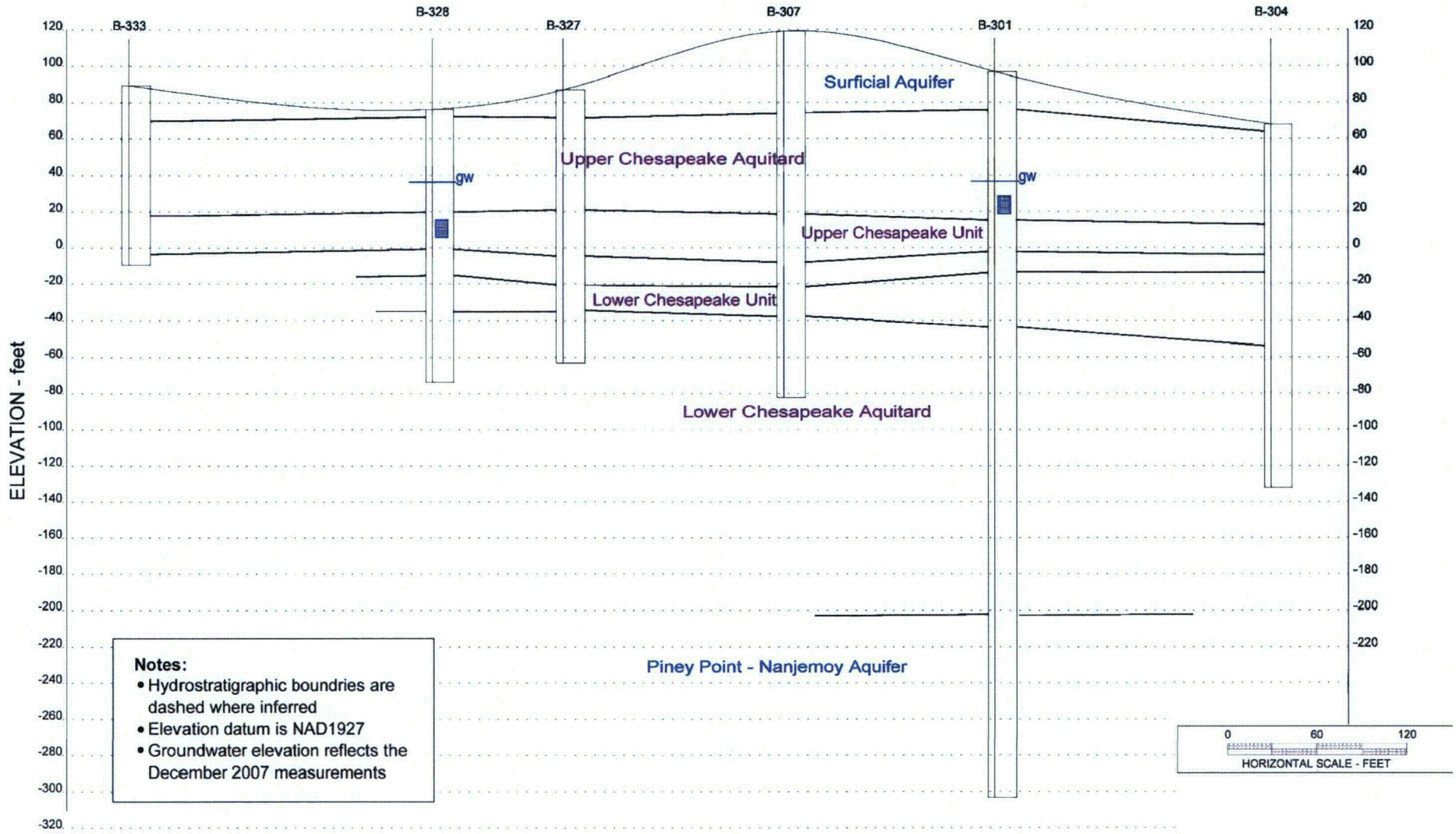
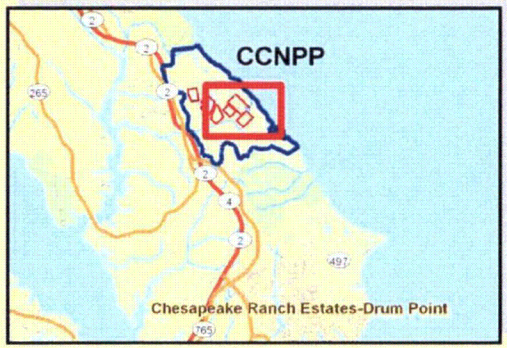
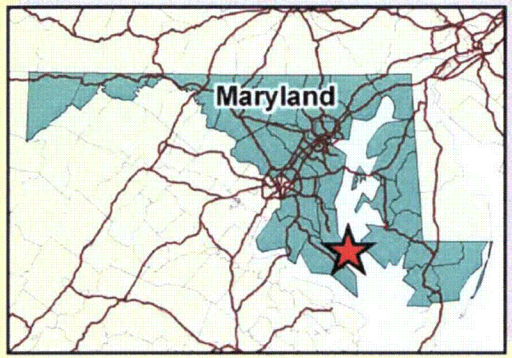


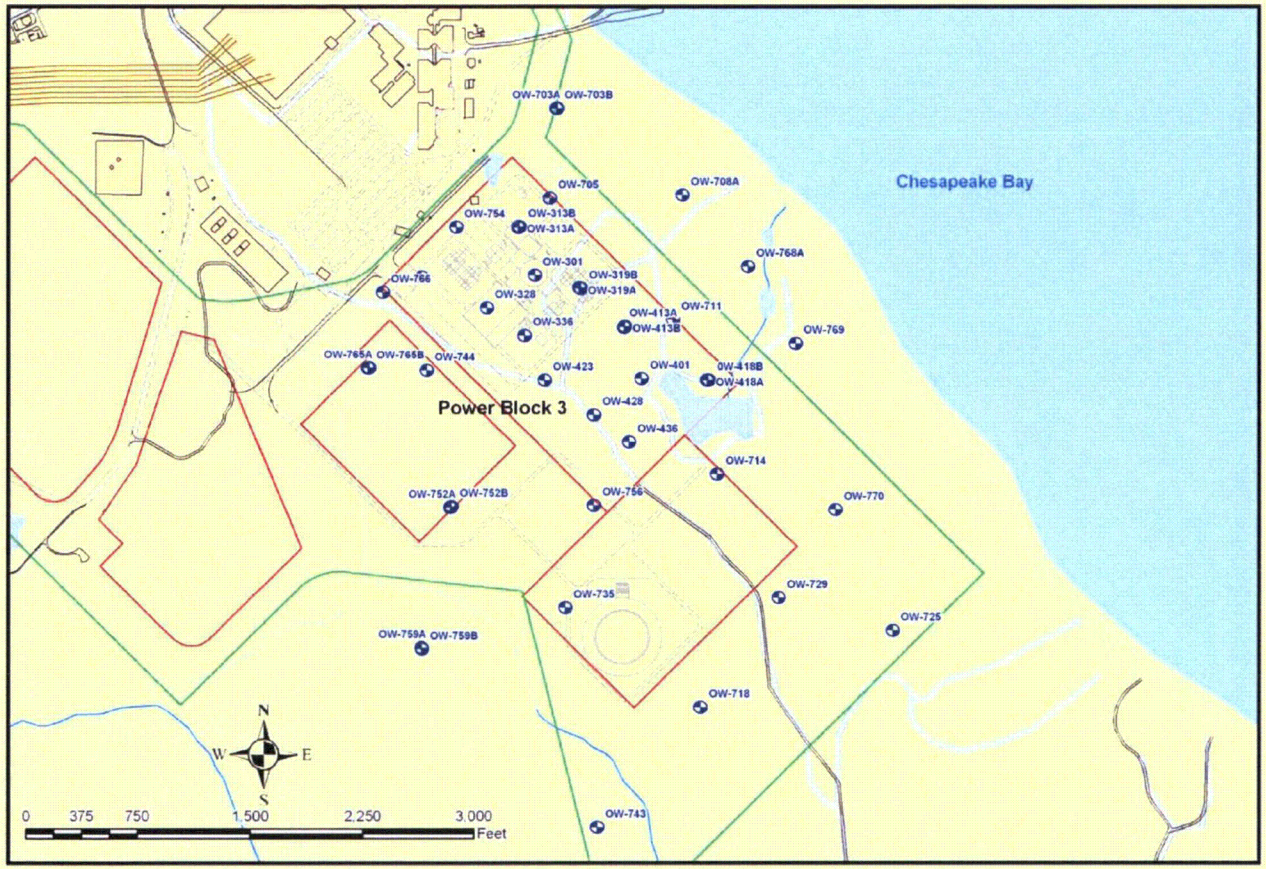
FIGURE 2.3.1-39 **Rev. 0**

SOUTHWEST–NORTHEAST CROSS–SECTION B–B' THROUGH PROPOSED UNIT 3 POWER BLOCK AREA

CCNPP UNIT 3 ER







Projection: Maryland State Plane
Datum: North American Datum 1927
Display: Calvert Cliffs Plant Grid

FIGURE 2.3.1-40 Rev. 0

GROUNDWATER OBSERVATION WELLS AND CROSS-SECTION LOCATIONS IN THE VICINITY OF CCNPP UNIT 3

CCNPP UNIT 3 ER

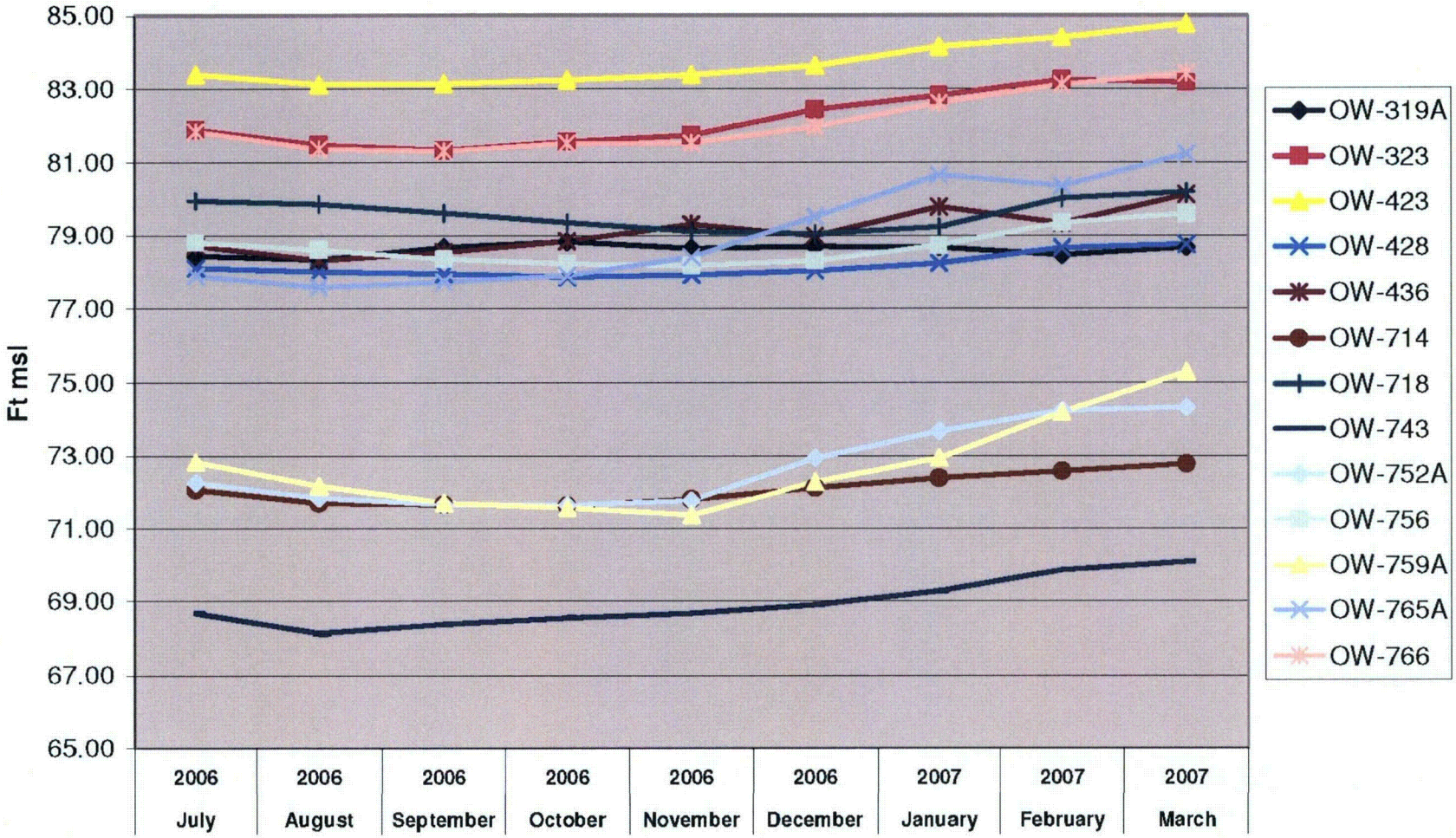


FIGURE 2.3.1-41 **Rev. 0**

GROUNDWATER ELEVATIONS FOR THE SURFICIAL AQUIFER, JULY 2006 THROUGH MARCH 2007

CCNPP UNIT 3 ER

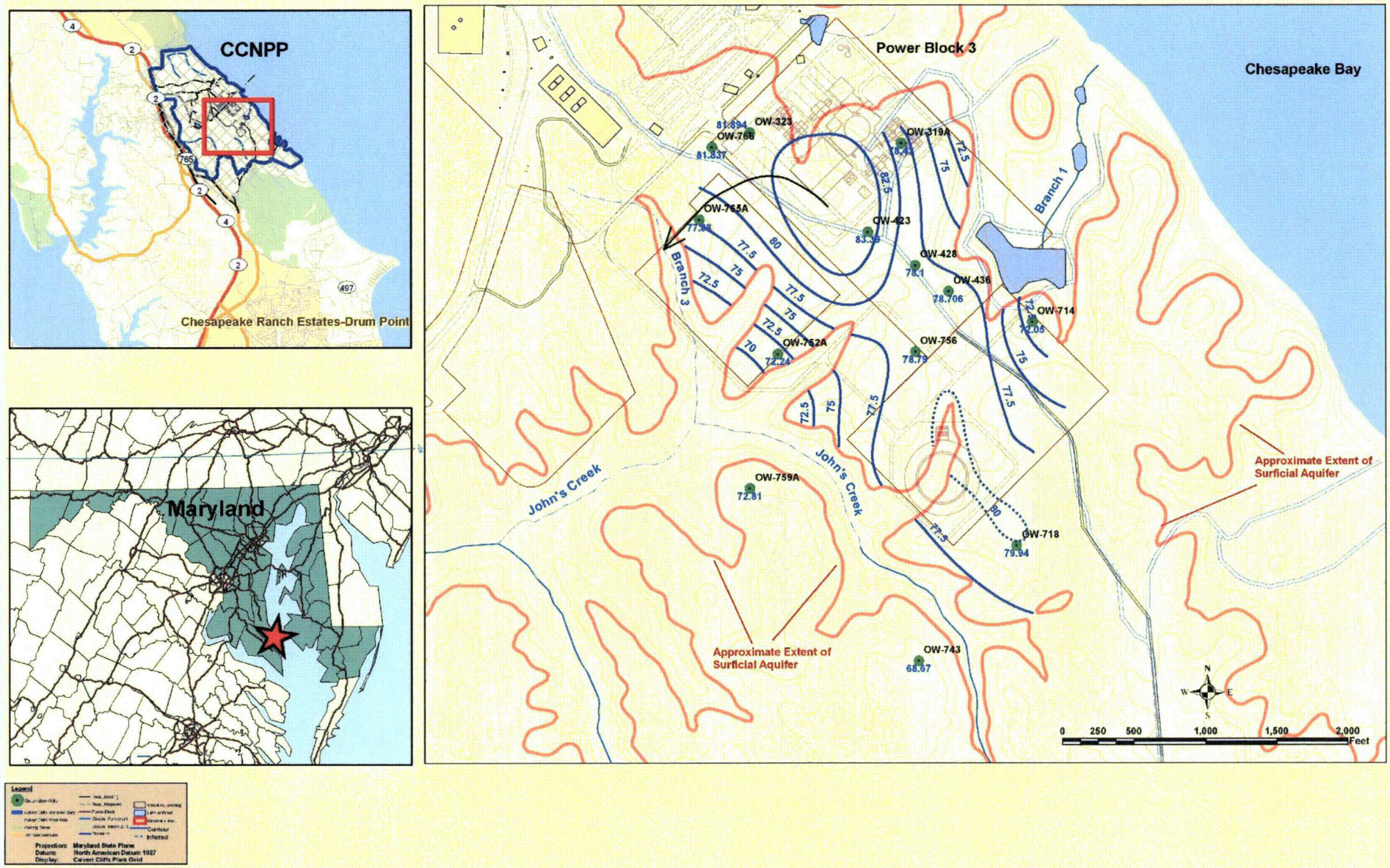


FIGURE 2.3.1-42 Rev. 0

WATER TABLE ELEVATION MAP AND GROUNDWATER FLOW DIRECTION FOR THE SURFICIAL AQUIFER, JULY 2006

CCNPP UNIT 3 ER

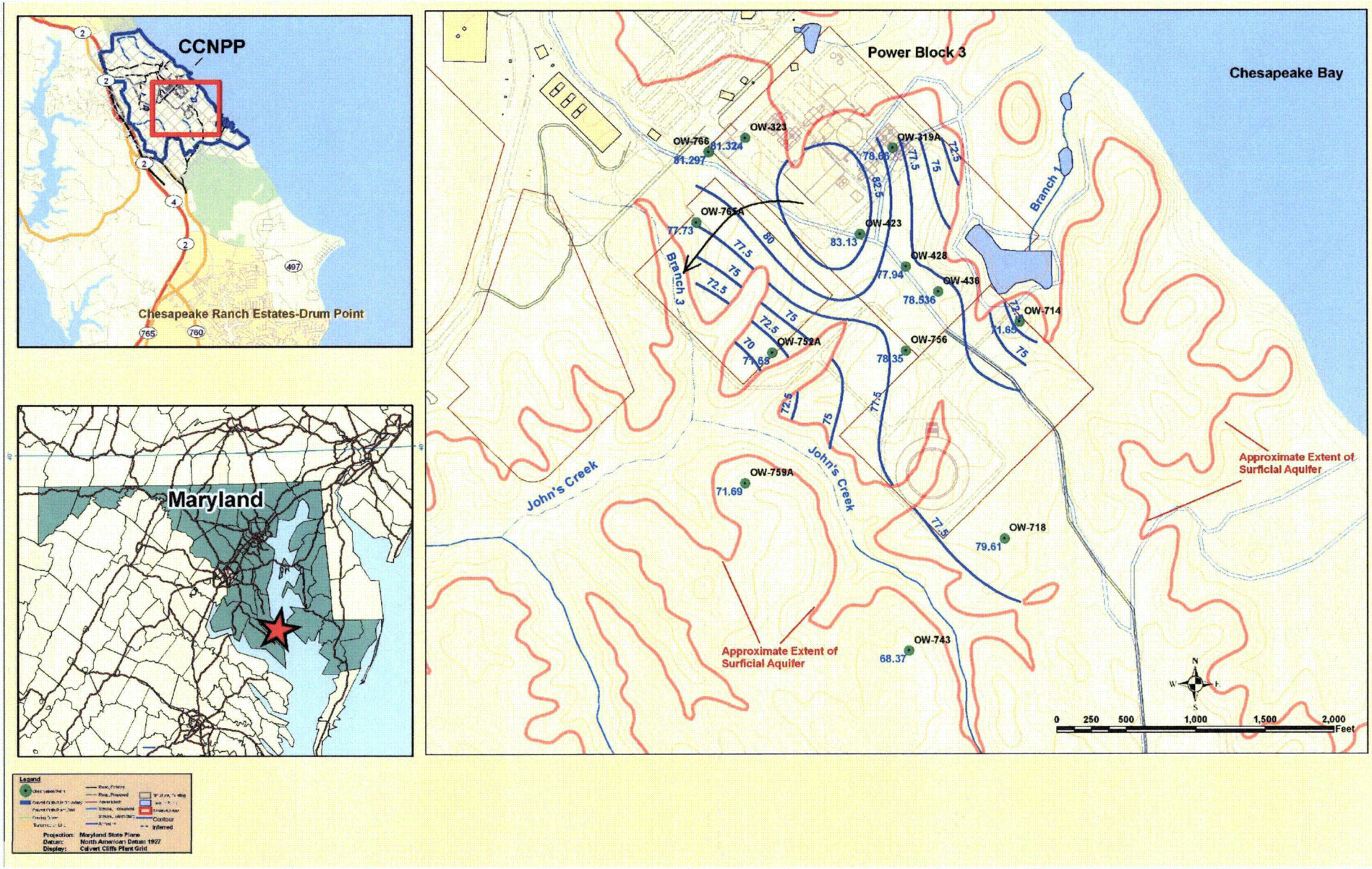
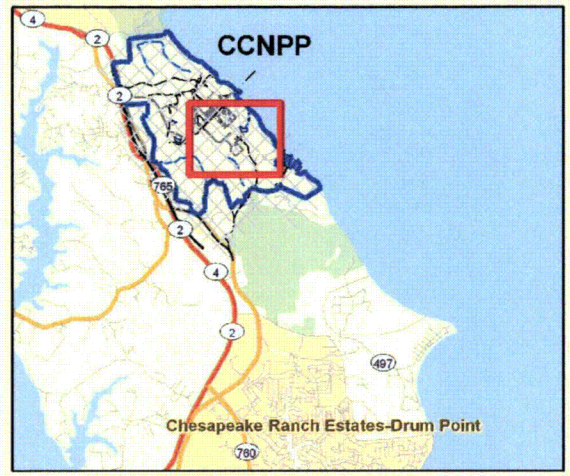
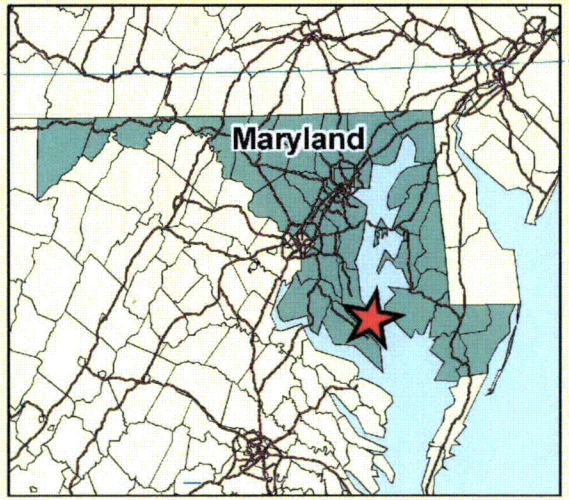


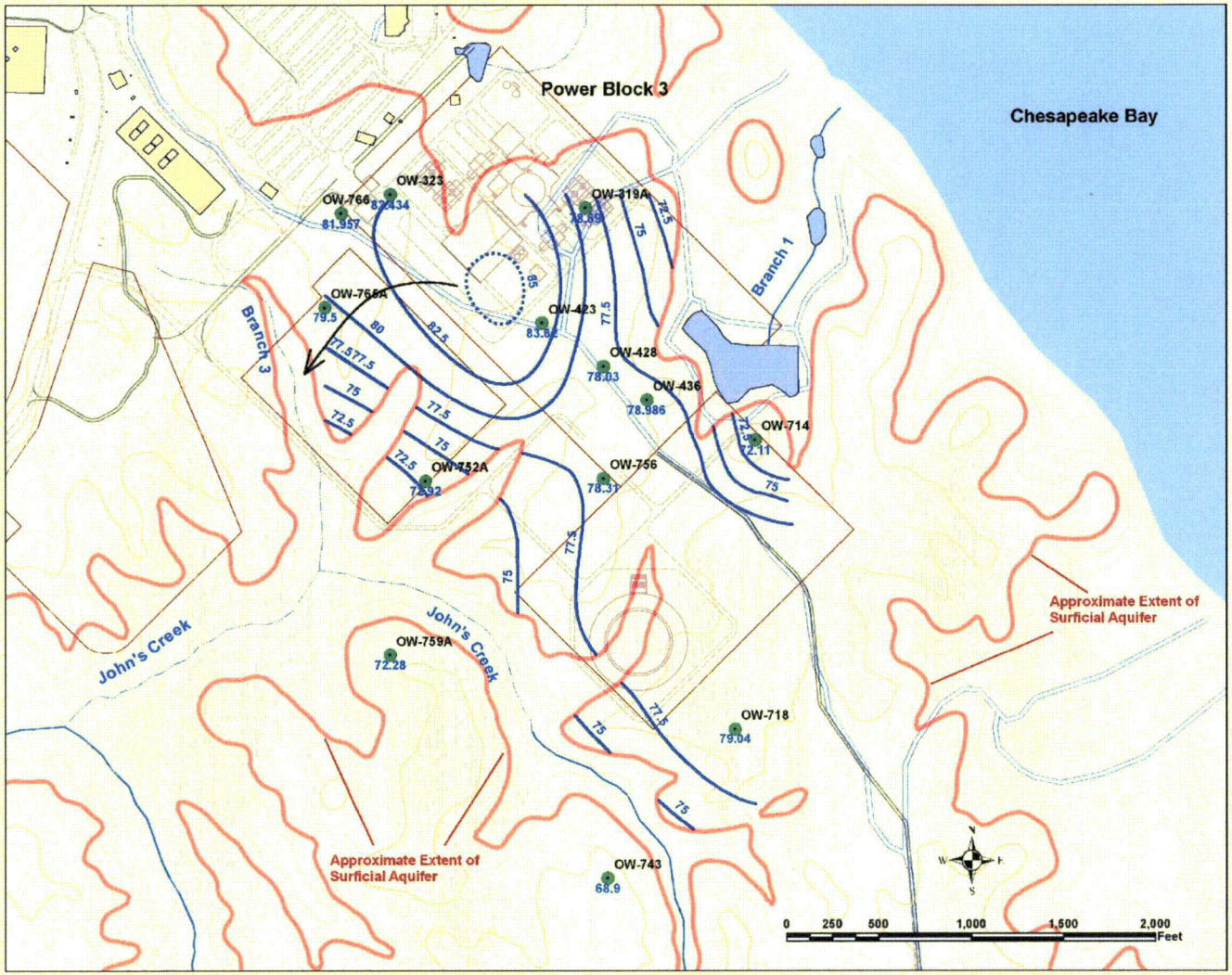
FIGURE 2.3.1-43 Rev. 0

WATER TABLE ELEVATION MAP AND GROUNDWATER FLOW DIRECTION FOR THE SURFICIAL AQUIFER, SEPTEMBER 2006

CCNPP UNIT 3 ER







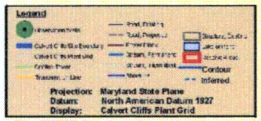


FIGURE 2.3.1-44 Rev. 0

WATER TABLE ELEVATION MAP AND GROUNDWATER FLOW DIRECTION FOR THE SURFICIAL AQUIFER, DECEMBER 2006

CCNPP UNIT 3 ER

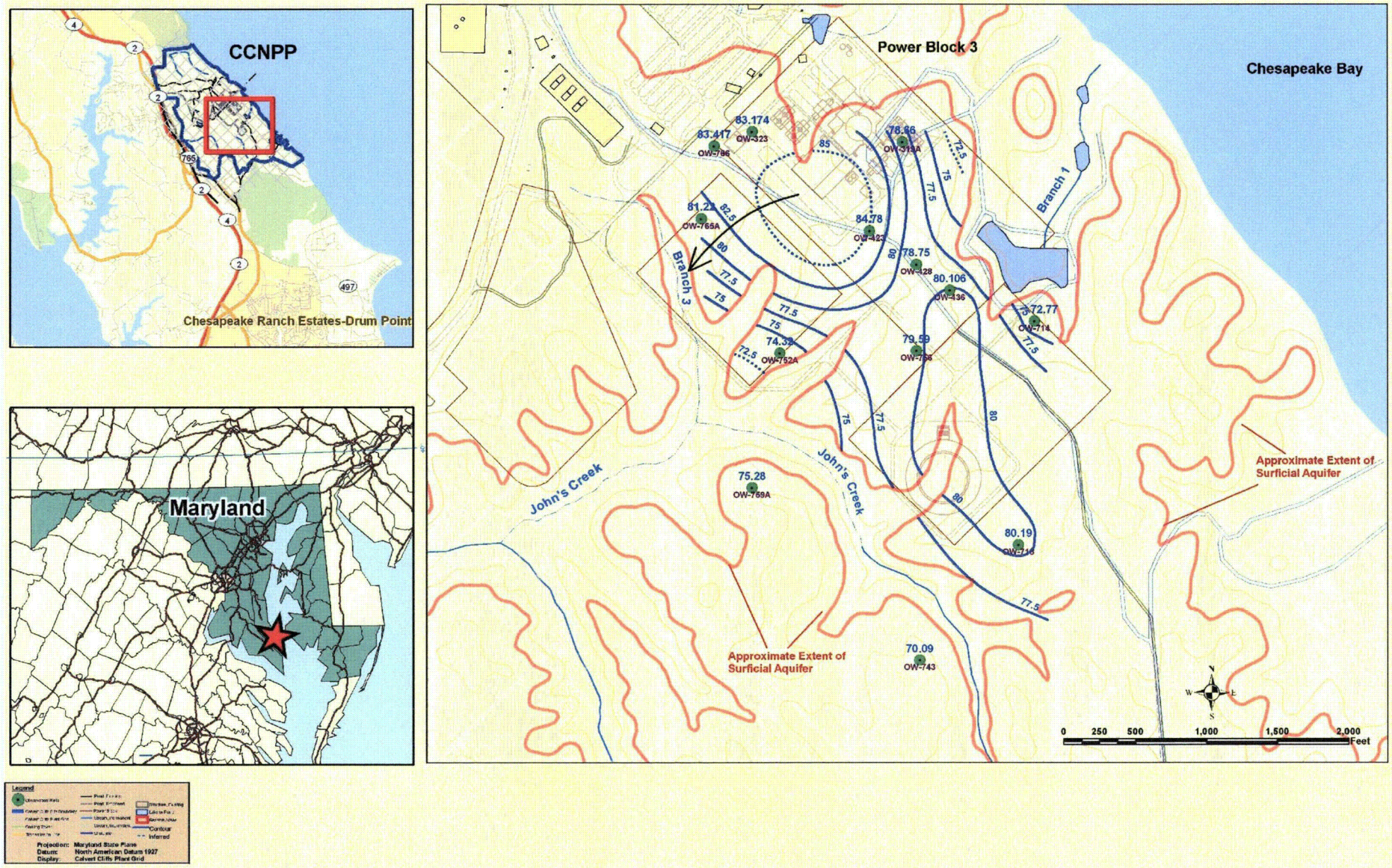


FIGURE 2.3.1-45 Rev. 0

WATER TABLE ELEVATION MAP AND GROUNDWATER FLOW DIRECTION FOR THE SURFICIAL AQUIFER, MARCH 2007

CCNPP UNIT 3 ER

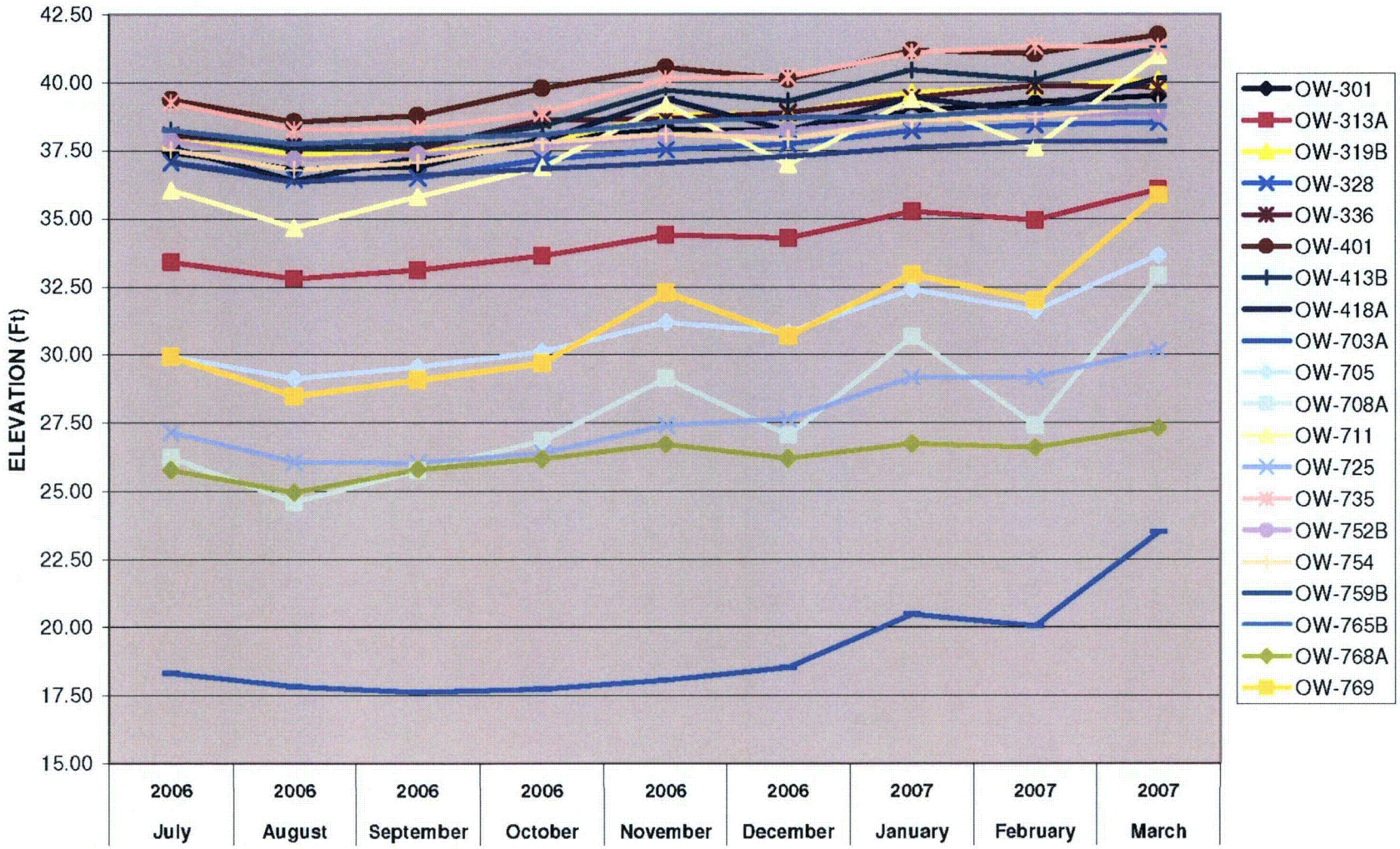


FIGURE 2.3.1-46 **Rev. 0**

GROUNDWATER ELEVATIONS FOR THE UPPER CHESAPEAKE UNIT, JULY 2006 THROUGH MARCH 2007

CCNPP UNIT 3 ER