

APPENDIX C
**2006 CTL Engineering Report: The Economic Costs and
Environmental Benefits**



MARYLAND DEPARTMENT OF THE ENVIRONMENT



BUREAU OF MINES

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**A REPORT ON THE
MARYLAND ACID MINE DRAINAGE REMEDIATION PROGRAM
ECONOMIC COSTS AND ENVIRONMENTAL BENEFITS***

ANALYSES (1992- 2006) AND PROJECTIONS (2006 - 2030)

* This is an Abridged Version of the Entire Report.
A Full Working Version is Available at the Bureau of Mines.

March 6, 2008

PREPARED BY



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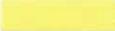
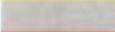
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**A REPORT ON THE
MARYLAND ACID MINE DRAINAGE
REMEDIATION PROGRAM**

***Economic Costs and Environmental Benefits
Analyses (1992 – 2006) and Projections (2006-2030)***

SNAPSHOT OF PROGRAM ACCOMPLISHMENTS

- From 1993 –2006, a total of 28 abandoned mine drainage treatment systems installed at a cost of \$7.2 million.
- Systems have improved water quality in 81 miles of western Maryland streams; with over 47 miles recovered as viable fishing destinations.
- Cost of operation and maintenance of these systems has reached an average of \$500,000 annually.
- Economic benefits derived from the program are estimated at \$1.5 million annually for the recovery of fishable streams in the economically poor region of Maryland Appalachia.
- Current funds authorized to support continued operation and maintenance of these systems are expended by 2014.

EXECUTIVE SUMMARY REPORT

The Maryland Department of the Environment, Water Management Administration, Bureau of Mines (Bureau) is authorized under Environment Article Title 15 and COMAR 26.20 to protect the public and the environment from the potential impacts of coal mining and to promote the restoration and enhancement of active and pre-law abandoned mine lands and water resources. The Bureau strives to improve water quality in Maryland's western mountain streams damaged by acid mine drainage (AMD). AMD is a legacy of historic coal mining operations that were not subject to current regulatory protections. Many of these impaired streams flow to the much-prized Chesapeake Bay. The Bureau accomplishes this by developing cooperative partnerships with industry, government agencies, and citizen groups, and utilizing current and best technologies to abate and treat AMD. The Maryland Abandoned Mine Inventory estimated in 1979 that 450 miles of streams were impaired by the single most significant environmental impact in western Maryland -- the *unabated AMD* from pre-law coal mining operations.

In 1992, the Federal Office of Surface Mining (OSM), under the authority of the Surface Mine Control and Reclamation Act of 1977 (SMCRA), initiated a new program in the eastern coal-producing states--the Appalachian Clean Streams Initiative (CSI). CSI funds were distributed annually from 1995 through 2007. This program became an invaluable source of critical seed money for securing additional environmental grants and forming valuable partnerships. The CSI program funding terminated after 2007 as part of the reauthorization of SMCRA and will directly impact the Maryland AMD program partnering capability. Given that this program provided an annual source of funding to support numerous partnerships for AMD remediation, the Bureau became actively committed to cleaning up impaired streams and rivers in Allegany and Garrett Counties. By 2006, the Bureau, by partnering with federal, state, local, and private entities, had invested \$7.2 million to install 28 acid mine drainage control systems that are treating over 81 miles of streams and rivers impaired by pre-law coal mining in Maryland. This successful improvement of the water quality through the construction and ongoing operation of AMD treatment systems is well documented for western Maryland streams. Since 1993, these systems have removed over 28,000,000 pounds of acidity, returning miles of stream to clean water standards. An additional benefit of operating these systems has been the removal of over 677,000 pounds of iron and 69,000 pounds of aluminum, allowing for the recovery of native and stocked fish populations and the growth of related recreational activities once thought impossible in several large watersheds.

The improvements in stream water quality have allowed for the recovery of biological communities and the reintroduction of trout in Cherry Creek, the North Branch of the Potomac River (North Branch), the Youghiogheny River and Georges Creek. Construction of a new doser and 4 passive-type treatment systems are planned over the next three years in the mainstem of Aaron Run, a tributary of the North Branch, as part of an effort to delist 303(d) streams and restore habitat for the Eastern Brook Trout. The Maryland AMD remediation program is recognized nationally as a highly successful though relatively small program that has achieved notable environmental improvement in the abatement of AMD. The future of this highly successful remediation work is at risk without the assurance of a dedicated source of funding as the core of the program.

Acid mine drainage remediation has a high operating cost attached to most installed systems, specifically active systems like dosers. Dosers are the preferred method of addressing the large, high flow, metal laden discharges from abandoned deep mines. To date, ten active dosing systems have been installed at a total construction cost of \$2.1 million and are operating in three watersheds with an annual operating cost of \$284K for lime dosing materials, weekly maintenance and water sample collection and analysis. Since 1993, the doser systems alone have been responsible for removing 25,362,000 pounds of acidity from western Maryland waterways. In addition, the Maryland program has constructed eighteen in-ground "passive" type neutralizing systems in five watersheds at a total construction cost of \$3.2 million and currently incur an annual operating cost of \$83K for maintenance, water sample collection and analysis. Since 1995, the passive technologies have removed 3,036,000 pounds of acidity from western Maryland waterways. The watershed-wide Aarons Run Remediation Project is projected to cost \$1.5 million in construction costs and will incur an additional cost of \$33K annually for operation and maintenance upon completion in 2009.

The Bureau currently covers operation and maintenance (O/M) program costs with the existing 30% Set Aside Account (Account) that is an interest bearing account intended to support AMD remediation activities under Maryland's Abandoned Mine Land Program. Each year a designated amount of funds from the federal abandoned mine land program grant are added into the Account. The total cost for managing and operating the AMD program, which includes technical and professional staff, is projected at \$487K by FY08 and will increase with the completion of the pending projects under development to \$516K by FY09. These figures are based upon no growth or no new systems going on line after FY09, only on operating and maintaining the status quo. At the current rate of expenditure, with no new systems after FY09, the Account will be unable to cover the entire annual O/M costs after 2014. The growing programmatic problem is that the allowable grant annual allocation each year for O/M does not cover the total O/M annual costs. This results in a future depletion of the Account Balance. To ensure the viability of the resource, it is vital to provide a stable source of funding for the ongoing operation and maintenance of the systems currently in place and pending and not allow the streams to revert to historic acidic conditions.

To date, of the 81 miles of stream improved with mine drainage controls in western Maryland, a total of 47 stream miles in Cherry Creek, Georges Creek, the Youghiogheny River, and the North Branch, along with the 952-acre Jennings Randolph Lake are becoming a prime destination for trout, bass, or walleye fishing and associated recreational activities such as boating, camping, or hiking. John Long, Natural Resources Conservation Service, used the economic factors of Willingness to Pay and Travel Cost Estimates from studies by Anthony Fedler in 1987 and Boyle et al. in 1998, to calculate the economic benefit of a mile of trout stream. The calculated value was between \$30,835 and \$35,270 per mile of trout stream in western Maryland. Using this figure, the potential economic benefits derived from restoring these 47 miles derives a value between \$1.5M and \$1.7M annually. This potential for economic vitality and commercial growth are reminders that although cleaning up impaired streams may have an annual O&M cost, these AMD treatment facilities can create long-range financial gain and improve quality of life for Maryland citizens, their communities, and the many visitors to the region. More than 370 stream miles remain impaired with AMD and in need of water quality improvements. Through continued and dedicated funding of the AMD Program, all of Maryland will continue to benefit as more clean water flows from western Maryland to the Chesapeake Bay.



PROJECT SCOPE AND DESCRIPTION

CTL Engineering of West Virginia, Inc. was retained by the Maryland Department of the Environment, Bureau of Mines to provide business services in conjunction with the Acid Mine Drainage Remediation Program in the State of Maryland.

The ultimate goal of this Project was to define the benefits realized by the Program and project the future benefits and fiscal needs to sustain the success of the Program through CY2030. The Project involved the compilation of available data for both the operational and pending AMD Treatment Systems. This required development of a resource to document and summarize the benefits, capital costs, operation and maintenance costs and program specific costs within the Bureau that pertained to the AMD Treatment Systems.

The format of the resource required it to be 1) "user-friendly" to maximize its use by Bureau personnel; 2) flexible to allow for modifications and alterations as changes occur; 3) expandable to accept additional data types that can enhance the realistic future projections; and 4) provide a data base for actual information as it occurs in order to document and project from an historic perspective.

Close coordination with Bureau personnel was required to provide and expound on the available data, define the parameters to be utilized in the resource and develop the reports that will allow them to make the resource a viable tool for the Acid Mine Drainage Program in Maryland.

The final report provides summaries of the benefits and cost data in multiple formats in order to evaluate the performance and needs of the systems by operational status and or design type. While the AMD Systems are generally site and quality specific, this resource will allow for decisions on future systems to be made from an historic prospective that is environmentally and fiscally sound.

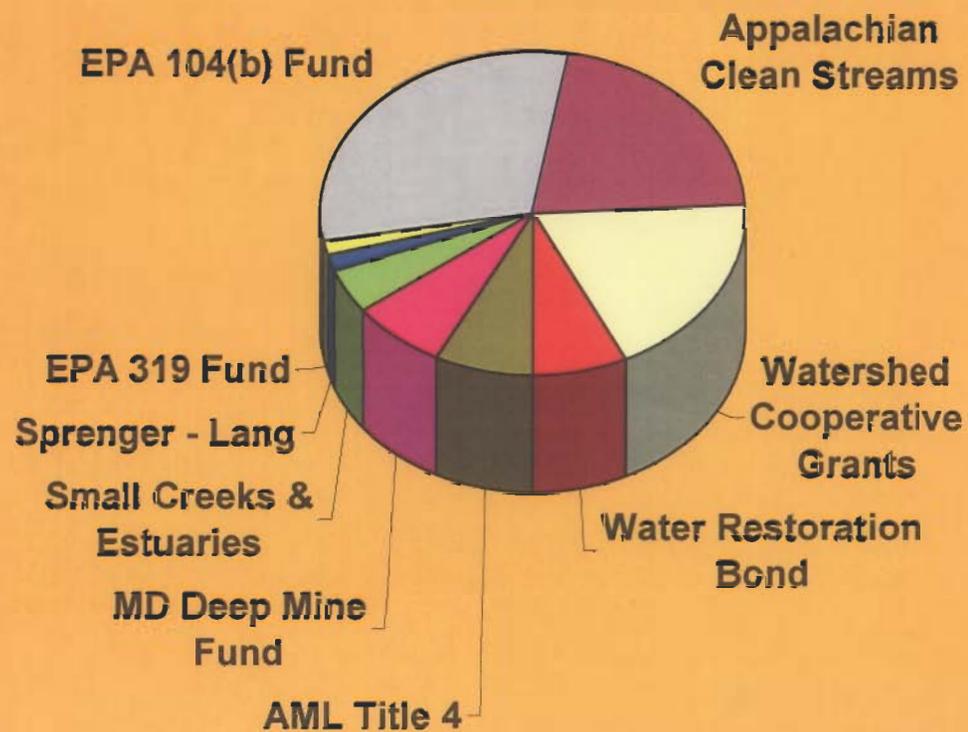


SECTION 1

PROGRAM SUMMARY



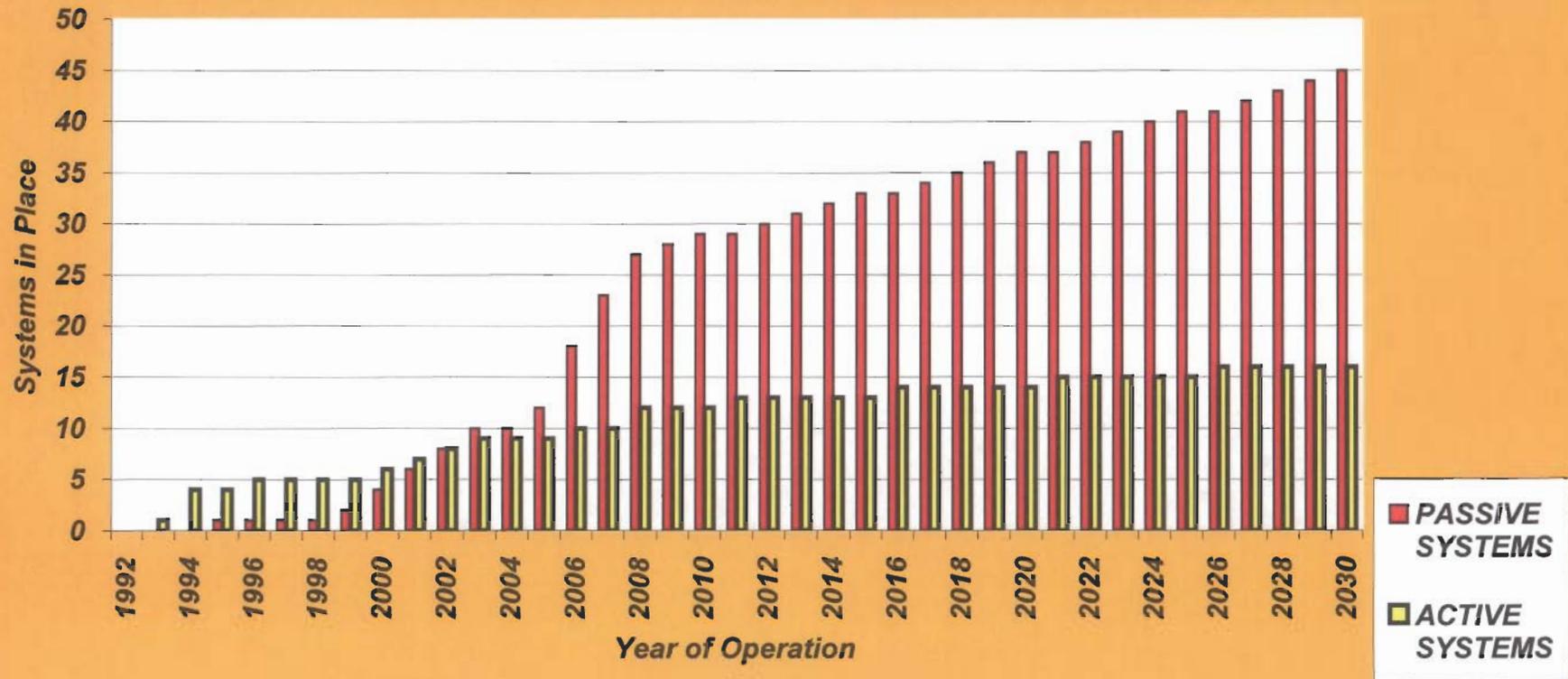
MARYLAND BUREAU OF MINES
ACID MINE DRAINAGE PROGRAM
CONSTRUCTION FUNDING SOURCES
(thru 2006)



- EPA 104(b) Fund
- Appalachian Clean Streams
- Watershed Cooperative Grants
- Water Restoration Bond
- AML Title 4
- MD Deep Mine Fund
- Small Creeks & Estuaries
- Sprenger - Lang
- EPA 319 Fund

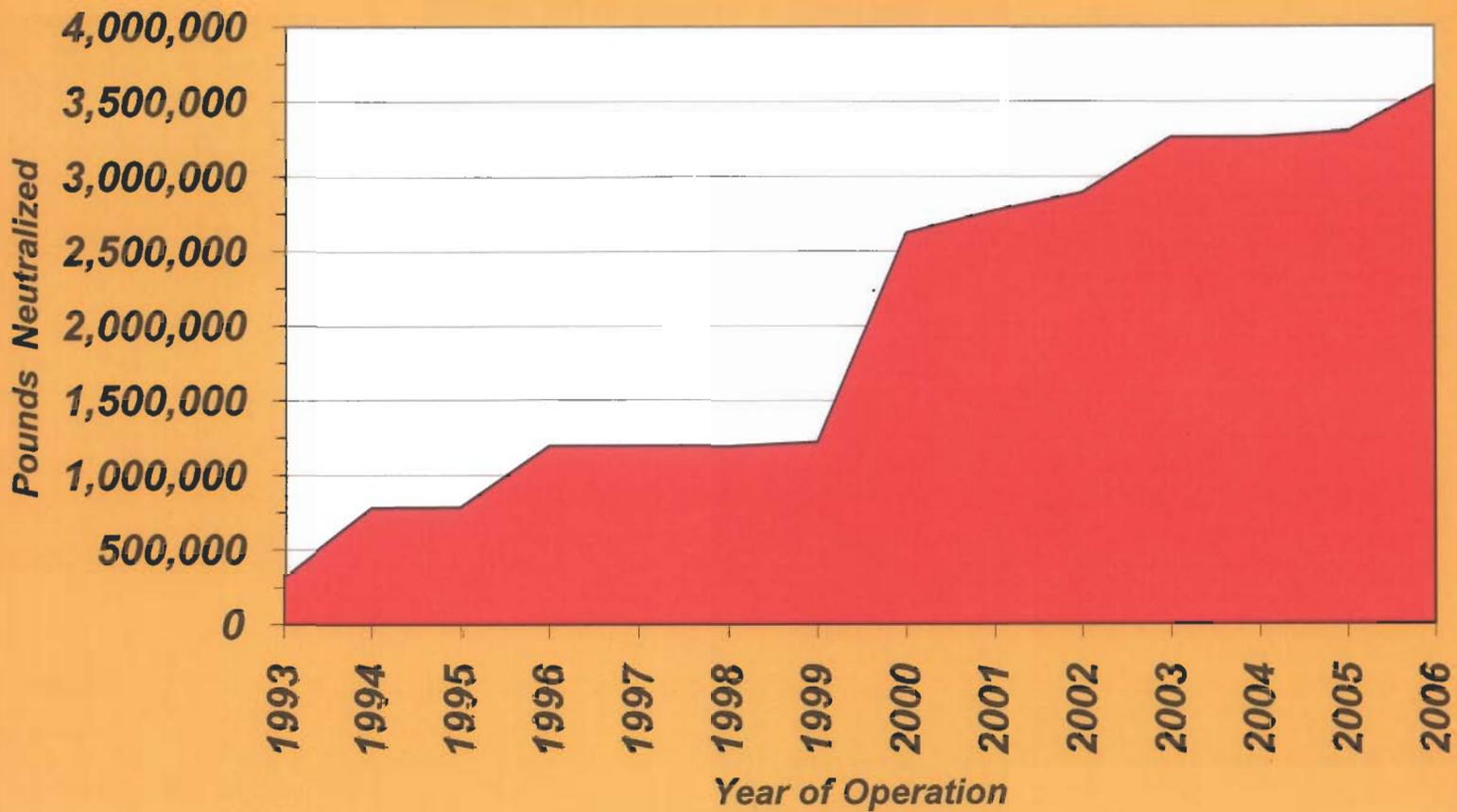


MARYLAND BUREAU OF MINES
ACID MINE DRAINAGE PROGRAM
TREATMENT SYSTEMS IN PLACE



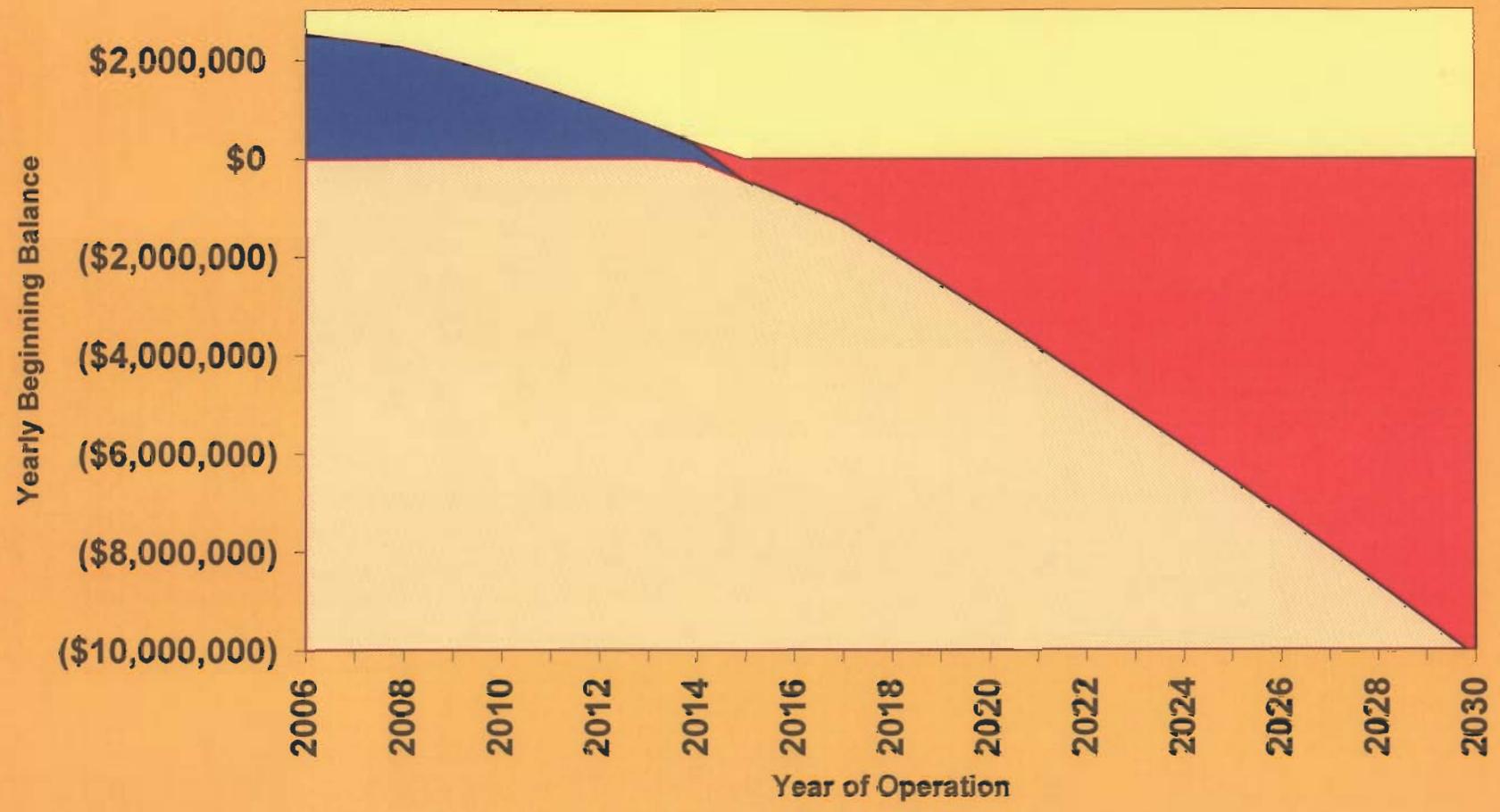


**MARYLAND BUREAU OF MINES
ACID MINE DRAINAGE PROGRAM
TOTAL ACIDITY NEUTRALIZED
PER YEAR (1993 - 2006)**





MARYLAND BUREAU OF MINES ACID MINE DRAINAGE PROGRAM AMD FUND BALANCE





SECTION 1

PROGRAM SUMMARY



SECTION 1.1
SYSTEM SUMMARY



SECTION 1.1.1 ALL SYSTEMS LISTING

	TYPE	SYSTEM DESIGNATION	DESIGN	FIRST FULL OPERATIONAL YEAR	STATUS
1	ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	IN-PLACE
2	ACTIVE	GORMAN	PUMPKONSULT SLURRY DOSER	1994	IN-PLACE
3	ACTIVE	LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	IN-PLACE
4	ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	IN-PLACE
5	PASSIVE	ELK LICK I	ALD / WETLAND	1995	IN-PLACE
6	ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	IN-PLACE
7	PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	IN-PLACE
8	ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	IN-PLACE
9	PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	IN-PLACE
10	PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	IN-PLACE
11	ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	IN-PLACE
12	PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	IN-PLACE
13	PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	IN-PLACE
14	ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	IN-PLACE
15	PASSIVE	CONEY CLEANERS	SAPS	2002	IN-PLACE
16	PASSIVE	TEETS	PYROLUSITE	2002	IN-PLACE
17	ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	IN-PLACE
18	PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	IN-PLACE
19	PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	IN-PLACE
20	PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	IN-PLACE
21	PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	IN-PLACE
22	ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	IN-PLACE
23	PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	IN-PLACE
24	PASSIVE	CRELLIN SCHOOL	WETLANDS	2006	IN-PLACE
25	PASSIVE	MIDLOTHIAN SCHOOL	PYROLUSITE	2006	IN-PLACE
26	PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	IN-PLACE
27	PASSIVE	NEFF RUN II	STEEL SLAG LEACH BED	2006	IN-PLACE
28	PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	IN-PLACE
29	PASSIVE	JAY RICE	PYROLUSITE	2007	PENDING
30	PASSIVE	RAILROAD STREET	SAPS	2007	PENDING
31	PASSIVE	AARONS RUN OWENS NORTH	PYROLUSITE	10/2007	PENDING
32	PASSIVE	AARONS RUN OWENS SOUTH	PYROLUSITE	10/2007	PENDING
33	PASSIVE	GETSON	LEACH BEDS	10/2007	PENDING
34	ACTIVE	AARONS RUN	BOXHOLM BUCKET DOSER	04/2008	PENDING
35	ACTIVE	CRELLIN BOREHOLE	SLURRY TYPE DOSER	04/2008	PENDING
36	PASSIVE	HAMPSHIRE HILL	STEEL SLAG LEACH BED	07/2008	PENDING
37	PASSIVE	AARONS RUN HEADWATER REST.	LEACH BEDS	10/2008	PENDING
38	PASSIVE	AARONS RUN STREAM REST.	SAPS / LEACH BED	10/2008	PENDING
39	PASSIVE	CHUBB RUN	PYROLUSITE	10/2008	PENDING
40	PASSIVE			2009	PROJECTED
41	PASSIVE			2010	PROJECTED
42	ACTIVE			2011	PROJECTED
43	PASSIVE			2012	PROJECTED
44	PASSIVE			2013	PROJECTED
45	PASSIVE			2014	PROJECTED
46	PASSIVE			2015	PROJECTED
47	ACTIVE			2016	PROJECTED
48	PASSIVE			2017	PROJECTED
49	PASSIVE			2018	PROJECTED
50	PASSIVE			2019	PROJECTED
51	PASSIVE			2020	PROJECTED
52	ACTIVE			2021	PROJECTED
53	PASSIVE			2022	PROJECTED
54	PASSIVE			2023	PROJECTED
55	PASSIVE			2024	PROJECTED
56	PASSIVE			2025	PROJECTED
57	ACTIVE			2026	PROJECTED
58	PASSIVE			2027	PROJECTED
59	PASSIVE			2028	PROJECTED
60	PASSIVE			2029	PROJECTED
61	PASSIVE			2030	PROJECTED



Section 1.1.2 ALL SYSTEMS BENEFITS AND COST SCHEDULE

ACTIVE / PASSIVE	System Designation	Design	First Full Operational Year	Avg. Lbs. Acidity Neutralized per year	Adjusted 2006 Capital Costs	Annualized 2006 Capital Costs	2006 O&M Costs	Capital Cost Per Annual Pound Neutralized	O&M Cost Per Annual Pound Neutralized	Total Cost Per Annual Pound Neutralized
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	50,998	\$106,653	\$4,266	\$14,031	\$0.08	\$0.28	\$0.36
ACTIVE	GORMAN	PUMPKONSULT SLURRY DOSER	1994	Data Incomplete	\$199,573	\$7,983	\$10,678			
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168	\$931,997	\$37,280	\$119,252	\$0.03	\$0.10	\$0.13
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275	\$95,671	\$3,827	\$26,505	\$0.01	\$0.08	\$0.10
ACTIVE	LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,050	\$224,135	\$8,965	\$26,079	\$0.02	\$0.07	\$0.09
ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$101,849	\$4,074	\$13,433	\$0.06	\$0.18	\$0.24
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611	\$197,751	\$7,910	\$28,062	\$0.03	\$0.09	\$0.12
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092	\$189,324	\$7,573	\$23,027	\$0.16	\$0.49	\$0.65
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2008	250,965	\$221,609	\$8,864	\$19,903	\$0.04	\$0.08	\$0.11
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520	\$129,483	\$5,179	\$28,364	\$0.01	\$0.07	\$0.08
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	4,985	\$193,986	\$7,759	\$8,473	\$5.52	\$6.03	\$11.55
PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	49,183	\$188,572	\$7,543	\$10,540	\$2.38	\$3.33	\$5.72
PASSIVE	CONEY CLEANERS	SAPS	2002	44,642	\$267,146	\$10,686	\$8,293	\$7.27	\$5.64	\$12.91
PASSIVE	CRELLIN SCHOOL	WETLANDS	2006	Data Incomplete	\$222,686	\$8,907	\$6,587	\$0.00	\$0.00	\$0.00
PASSIVE	ELK LICK I	ALD / WETLAND	1995	3,207	\$45,582	\$1,823	\$4,684	\$1.10	\$2.82	\$3.91
PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	27,817	\$120,448	\$4,818	\$5,242	\$0.92	\$1.00	\$1.93
PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	69,783	\$85,189	\$3,408	\$5,239	\$0.49	\$0.75	\$1.24
PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	31,585	\$123,131	\$4,925	\$5,121	\$0.63	\$0.65	\$1.28
PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	5,712	\$196,409	\$7,856	\$6,760	\$8.88	\$7.64	\$16.52
PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	31,482	\$115,437	\$4,617	\$5,760	\$0.37	\$0.47	\$0.84
PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	167,140	\$138,092	\$5,524	\$6,681	\$0.11	\$0.13	\$0.24
PASSIVE	JAY RICE	PYROLUSITE	2007	Data Incomplete	\$153,518	\$6,141	\$7,083	\$0.00	\$0.00	\$0.00
PASSIVE	MIDLOTHIAN SCHOOL	PYROLUSITE	2008	Data Incomplete	\$175,981	\$7,039	\$5,799	\$0.00	\$0.00	\$0.00
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2008	3,545	\$76,005	\$3,040	\$5,103	\$73.99	\$124.18	\$198.17
PASSIVE	NEFF RUN II	STEEL SLAG LEACH BED	2008	Data Incomplete	\$76,005	\$3,040	\$5,648	\$0.00	\$0.00	\$0.00
PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2008	1,840	\$76,005	\$3,040	\$5,648	\$193.77	\$359.83	\$553.60
PASSIVE	OAK HILL II	SAPS / WETLANDS	2005	30,205	\$305,009	\$12,200	\$8,105	\$11.98	\$7.96	\$19.93
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	67,829	\$245,736	\$9,829	\$6,870	\$0.89	\$0.62	\$1.51
PASSIVE	RAILROAD STREET	SAPS	2007	Data Incomplete	\$264,500	\$10,580	\$7,744	\$0.00	\$0.00	\$0.00
PASSIVE	TEETS	PYROLUSITE	2002	26,895	\$239,970	\$9,599	\$7,139	\$3.55	\$2.64	\$6.20



SECTION 1.2

ALL SYSTEMS BENEFITS

Case 1 assumes currently available funds will be insufficient after 2014 to cover a full year of operation and maintenance cost for systems constructed through 2008. All systems cease operations based on projections when the balance is insufficient to meet annual O & M requirements.

Case 2 assumes currently available funds along with additional funds will be sufficient after 2014 to cover only operation and maintenance costs for systems constructed through 2008.

Case 3 assumes currently available and additional funds will be available to continue construction of new systems and cover operation and maintenance costs for all systems through 2030.



SECTION 1.2.1 TOTAL ACIDITY NEUTRALIZED BY SYSTEM

				ANNUAL
Type	System Designation	Design	First Full Operational Year	Avg. Lbs. Acidity Neutralized per year
PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	1,840
PASSIVE	ELK LICK I	ALD / WETLAND	1995	3,207
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	3,545
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	4,986
PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	5,712
PASSIVE	TEETS	PYROLUSITE	2002	26,895
PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	27,817
PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	30,205
PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	31,482
PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	31,685
PASSIVE	CONEY CLEANERS	SAPS	2002	44,642
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092
PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	49,183
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	50,996
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	67,829
PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	69,783
ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909
PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	167,140
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275
ACTIVE	LAUREL RUN	PUMPCONSULT SLURRY DOSER	1994	388,050
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168

				CUMULATIVE
Type	System Designation	Design	First Full Operational Year	Lbs. Acidity Neutralized
PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	1,840
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	3,545
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	9,972
PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	22,850
PASSIVE	ELK LICK I	ALD / WETLAND	1995	38,484
PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	49,183
PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	60,410
PASSIVE	TEETS	PYROLUSITE	2002	134,475
PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	189,512
PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	220,371
PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	222,532
PASSIVE	CONEY CLEANERS	SAPS	2002	223,212
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	254,980
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	271,318
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	282,549
PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	418,699
ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	947,821
PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	1,189,981
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	1,190,443
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	4,469,846
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	4,526,720
ACTIVE	LAUREL RUN	PUMPCONSULT SLURRY DOSER	1994	5,044,650
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	8,394,176
TOTAL Pounds				28,398,531
TOTAL Tons				14,199



SECTION 1.2.2 TOTAL ACIDITY NEUTRALIZED TOTAL PROGRAM

ANNUAL		
Year	Lbs. Acidity Neutralized	Tons Acidity Neutralized
1993	319,275	160
1994	780,234	390
1995	783,441	392
1996	1,194,961	597
1997	1,194,961	597
1998	1,194,961	597
1999	1,222,777	611
2000	2,620,567	1,310
2001	2,769,027	1,385
2002	2,891,560	1,446
2003	3,262,713	1,631
2004	3,262,713	1,631
2005	3,297,903	1,649
2006	3,603,436	1,802

CUMULATIVE		
Year	Lbs. Acidity Neutralized	Tons Acidity Neutralized
1993	319,275	160
1994	1,099,508	550
1995	1,882,949	941
1996	3,077,910	1,539
1997	4,272,871	2,136
1998	5,467,831	2,734
1999	6,690,608	3,345
2000	9,311,175	4,656
2001	12,080,202	6,040
2002	14,971,762	7,486
2003	18,234,475	9,117
2004	21,497,187	10,749
2005	24,795,091	12,398
2006	28,398,527	14,199



SECTION 1.3

COST & REVENUE SCHEDULES

Case 1 assumes currently available funds will be insufficient after 2014 to cover a full year of operation and maintenance cost for systems constructed through 2008. All systems cease operations when the balance is insufficient to meet annual O & M requirements.

Case 2 assumes currently available funds along with additional funds will be sufficient after 2014 to cover only operation and maintenance costs for systems constructed through 2008.

Case 3 assumes currently available and additional funds will be available to continue construction of new systems and cover operation and maintenance costs for all systems through 2030.



1.3.1 CASE 1* COST & REVENUE SCHEDULE

***Case 1 assumes currently available funds will be insufficient after 2014 to cover a full year of operation and maintenance cost for systems constructed through 2008. All systems cease operations when the balance is insufficient to meet annual O & M requirements.**

YEAR	SYSTEMS IN PLACE	O&M COSTS			REVENUE				YEAR'S ENDING BALANCE	ADDITIONAL O&M FUNDS REQUIRED FOR YEAR
		ACTIVE	PASSIVE	TOTAL	BEGINNING YEAR BALANCE	INTEREST INCOME @ 2%	GRANT FUNDS FOR YEAR	AVAILABLE FUNDS FOR YEAR		
2006	28	\$309,335	\$123,797	\$433,132	\$2,528,327	\$50,666.55	\$258,000	\$2,836,894	\$2,403,762	0
2007	33	\$305,989	\$135,940	\$441,928	\$2,403,762	\$48,075.23	\$258,000	\$2,709,837	\$2,267,909	0
2008	39	\$337,336	\$150,119	\$487,456	\$2,267,909	\$45,358.17	\$180,000	\$2,493,267	\$2,005,811	0
2009	39	\$347,689	\$162,978	\$510,667	\$2,005,811	\$40,116.22	\$180,000	\$2,225,927	\$1,715,260	0
2010	39	\$347,689	\$162,978	\$510,667	\$1,715,260	\$34,305.21	\$180,000	\$1,929,566	\$1,418,898	0
2011	39	\$347,689	\$162,978	\$510,667	\$1,418,898	\$28,377.97	\$180,000	\$1,627,276	\$1,116,609	0
2012	39	\$347,689	\$162,978	\$510,667	\$1,116,609	\$22,332.19	\$180,000	\$1,318,942	\$808,275	0
2013	39	\$347,689	\$162,978	\$510,667	\$808,275	\$16,165.49	\$180,000	\$1,004,440	\$493,773	0
2014	39	\$347,689	\$162,978	\$510,667	\$493,773	\$9,875.46	\$180,000	\$683,648	\$172,981	\$0



1.3.2 CASE 2* COST & REVENUE SCHEDULE

*Case 2 assumes currently available funds along with additional funds will be sufficient after 2014 to cover only operation and maintenance costs for systems constructed through 2008.

YEAR	SYSTEMS IN PLACE	O&M COSTS			REVENUE				YEAR'S ENDING BALANCE	ADDITIONAL O&M FUNDS REQUIRED FOR YEAR
		ACTIVE	PASSIVE	TOTAL	BEGINNING YEAR BALANCE	INTEREST INCOME @ 2%	GRANT FUNDS FOR YEAR	AVAILABLE FUNDS FOR YEAR		
2006	28	\$309,335	\$123,797	\$433,132	\$2,528,327	\$50,567	\$258,000	\$2,836,894	\$2,403,762	
2007	33	\$305,989	\$135,840	\$441,828	\$2,403,762	\$48,075	\$258,000	\$2,709,837	\$2,267,909	
2008	39	\$337,336	\$150,119	\$487,455	\$2,267,909	\$45,358	\$180,000	\$2,493,267	\$2,005,811	
2009	39	\$347,689	\$162,978	\$510,667	\$2,005,811	\$40,116	\$180,000	\$2,225,927	\$1,716,260	
2010	39	\$347,689	\$162,978	\$510,667	\$1,716,260	\$34,305	\$180,000	\$1,929,565	\$1,418,898	
2011	39	\$347,689	\$162,978	\$510,667	\$1,418,898	\$28,378	\$180,000	\$1,627,276	\$1,116,609	
2012	39	\$347,689	\$162,978	\$510,667	\$1,116,609	\$22,332	\$180,000	\$1,316,942	\$808,275	
2013	39	\$347,689	\$162,978	\$510,667	\$808,275	\$16,165	\$180,000	\$1,004,440	\$493,773	
2014	39	\$347,689	\$162,978	\$510,667	\$493,773	\$9,875	\$180,000	\$683,648	\$172,981	
2015	39	\$347,689	\$162,978	\$510,667	\$172,981	\$3,460	\$180,000	\$356,441	\$0	\$154,226
2016	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$180,000	\$180,000	\$0	\$330,667
2017	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$180,000	\$180,000	\$0	\$330,667
2018	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2019	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2020	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2021	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2022	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2023	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2024	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2025	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2026	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2027	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2028	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2029	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667
2030	39	\$347,689	\$162,978	\$510,667	\$0	\$0	\$0	\$0	\$0	\$510,667



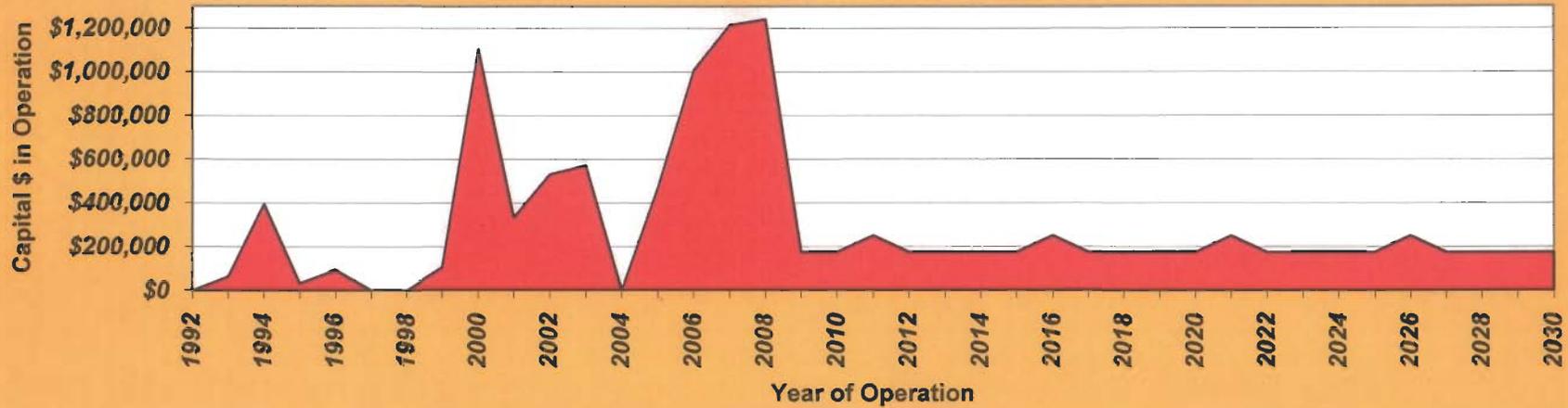
1.3.3 CASE 3: COST & REVENUE SCHEDULE & CAPITAL REQUIREMENTS

*Case 3 assumes currently available and additional funds will be available to continue construction of new systems and cover operation and maintenance costs for all systems through 2030.

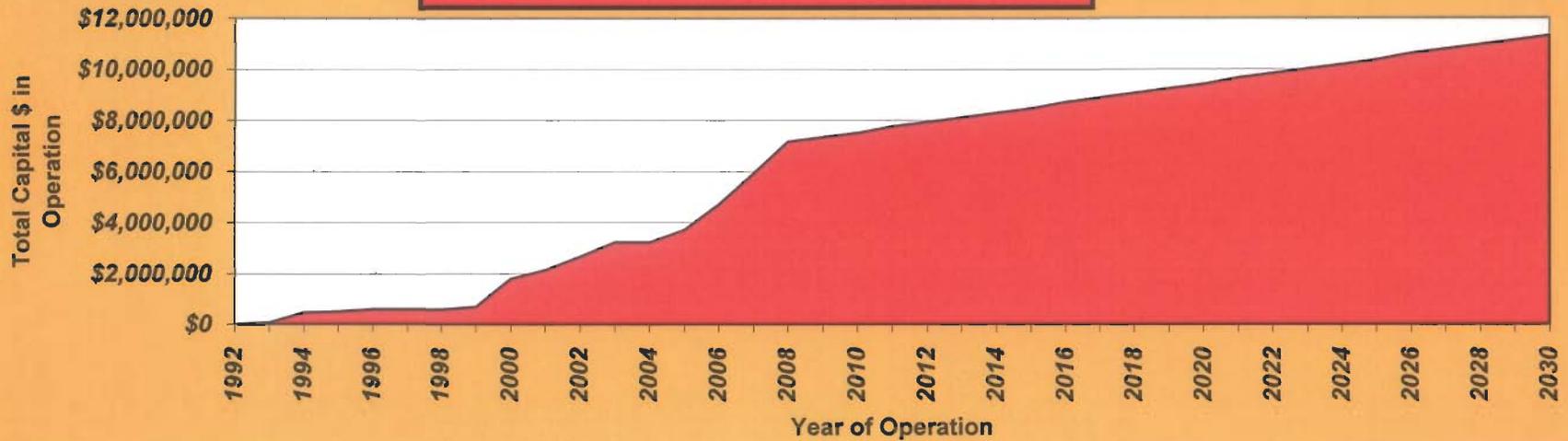
YEAR	SYSTEMS IN PLACE			O&M COSTS					REVENUE				YEAR'S ENDING BALANCE	ADDITIONAL O&M FUNDS REQUIRED FOR YEAR	CAPITAL ADDITIONS REQUIREMENTS				
				CURRENT & PENDING		NEW POST 2008		TOTAL O&M Costs	BEGINNING YEAR BALANCE	INTEREST INCOME @ 2%	GRANT FUNDS FOR YEAR	AVAILABLE FUNDS FOR YEAR			CURRENT & PENDING		NEW POST 2008		TOTAL
	ACTIVE	PASSIVE	TOTAL	ACTIVE	PASSIVE	ACTIVE	PASSIVE								ACTIVE	PASSIVE	ACTIVE	PASSIVE	
2006	10	18	28	\$309,335	\$123,797			\$433,132	\$2,528,327	\$50,596.65	\$258,000	\$2,836,894	\$2,403,762						
2007	10	23	33	\$305,989	\$138,940			\$444,929	\$2,403,762	\$49,075.23	\$258,000	\$2,708,837	\$2,287,509						
2008	12	27	39	\$337,336	\$180,119			\$487,456	\$2,287,509	\$45,358.17	\$180,000	\$2,483,287	\$2,008,811						
2009	12	28	40	\$347,689	\$162,978		\$6,036	\$516,703	\$2,008,811	\$40,116.22	\$180,000	\$2,228,827	\$1,709,224						
2010	12	29	41	\$347,689	\$162,978		\$12,072	\$522,739	\$1,709,224	\$34,184.48	\$180,000	\$1,823,409	\$1,400,865						
2011	13	29	42	\$347,689	\$162,978	\$28,974	\$12,072	\$551,714	\$1,400,869	\$28,013.38	\$180,000	\$1,608,683	\$1,058,988						
2012	13	30	43	\$347,689	\$162,978	\$28,974	\$18,109	\$587,790	\$1,058,989	\$21,120.38	\$180,000	\$1,258,158	\$700,359						
2013	13	31	44	\$347,689	\$162,978	\$28,974	\$24,145	\$663,786	\$700,359	\$14,007.17	\$180,000	\$894,368	\$330,560						
2014	13	32	45	\$347,689	\$162,978	\$28,974	\$30,181	\$689,822	\$330,560	\$6,811.59	\$180,000	\$517,181	\$0						
2015	13	33	46	\$347,689	\$162,978	\$28,974	\$36,217	\$75,858	\$0	\$0.00	\$180,000	\$180,000	\$0						
2016	14	33	47	\$347,689	\$162,978	\$27,948	\$36,217	\$684,833	\$0	\$0.00	\$180,000	\$180,000	\$0						
2017	14	34	48	\$347,689	\$162,978	\$27,948	\$42,253	\$510,569	\$0	\$0.00	\$180,000	\$180,000	\$0						
2018	14	35	49	\$347,689	\$162,978	\$27,948	\$48,290	\$616,505	\$0	\$0.00	\$0	\$0	\$0						
2019	14	36	50	\$347,689	\$162,978	\$27,948	\$54,326	\$622,941	\$0	\$0.00	\$0	\$0	\$0						
2020	14	37	51	\$347,689	\$162,978	\$27,948	\$60,362	\$628,977	\$0	\$0.00	\$0	\$0	\$0						
2021	15	37	52	\$347,689	\$162,978	\$86,922	\$60,362	\$667,951	\$0	\$0.00	\$0	\$0	\$0						
2022	15	38	53	\$347,689	\$162,978	\$86,922	\$66,398	\$663,988	\$0	\$0.00	\$0	\$0	\$0						
2023	15	39	54	\$347,689	\$162,978	\$86,922	\$72,434	\$670,024	\$0	\$0.00	\$0	\$0	\$0						
2024	15	40	55	\$347,689	\$162,978	\$86,922	\$78,471	\$679,060	\$0	\$0.00	\$0	\$0	\$0						
2025	15	41	56	\$347,689	\$162,978	\$86,922	\$84,507	\$682,096	\$0	\$0.00	\$0	\$0	\$0						
2026	16	41	57	\$347,689	\$162,978	\$115,896	\$84,507	\$711,070	\$0	\$0.00	\$0	\$0	\$0						
2027	16	42	58	\$347,689	\$162,978	\$115,896	\$90,543	\$717,107	\$0	\$0.00	\$0	\$0	\$0						
2028	16	43	59	\$347,689	\$162,978	\$115,896	\$96,579	\$723,143	\$0	\$0.00	\$0	\$0	\$0						
2029	16	44	60	\$347,689	\$162,978	\$115,896	\$102,616	\$729,179	\$0	\$0.00	\$0	\$0	\$0						
2030	16	45	61	\$347,689	\$162,978	\$115,896	\$108,652	\$735,215	\$0	\$0.00	\$0	\$0	\$0						



MARYLAND BUREAU OF MINES ACID MINE DRAINAGE PROGRAM CAPITAL \$ PER YEAR



MARYLAND BUREAU OF MINES ACID MINE DRAINAGE PROGRAM TOTAL CAPITAL \$ IN OPERATION





SECTION 1.4

DETAILED OPERATION & MAINTENANCE COSTS



1.4.1 DETAILED O&M COSTS* ALL "ACTIVE" SYSTEMS

*Assumes Case 2 Funding for O&M Costs

Year	MAINTENANCE					Reagent Costs	SAMPLING				Miscellaneous Costs	Project Specific Transportation Costs	Project Specific Personnel Costs	TOTAL O&M COSTS	Year
	Major Maintenance	Annual Parts	In House Labor	Contracted Labor	TOTAL Maintenance		Sampling Materials	Sampling Labor	Laboratory Analysis	TOTAL Sampling					
2006 Base	\$20,938	\$3,150	\$27,358	\$44,440	\$95,885	\$144,840	\$367	\$4,136	\$19,200	\$23,703	\$19,440	\$3,380	\$22,086	\$309,335	2006 Base
2007	\$20,938	\$3,150	\$27,358	\$44,440	\$95,885	\$144,840	\$367	\$4,136	\$19,200	\$23,703	\$19,440	\$3,380	\$18,740	\$305,989	2007
2008	\$24,918	\$3,623	\$31,364	\$44,440	\$104,345	\$159,735	\$472	\$5,829	\$24,600	\$30,901	\$19,440	\$3,887	\$19,028	\$337,336	2008
2009	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2009
2010	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2010
2011	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2011
2012	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2012
2013	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2013
2014	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2014
2015	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2015
2016	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2016
2017	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2017
2018	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2018
2019	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2019
2020	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2020
2021	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2021
2022	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2022
2023	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2023
2024	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2024
2025	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2025
2026	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2026
2027	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2027
2028	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2028
2029	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2029
2030	\$26,245	\$3,780	\$32,700	\$44,440	\$107,165	\$164,700	\$508	\$6,393	\$26,400	\$33,300	\$19,440	\$4,056	\$19,028	\$347,689	2030



1.4.2 DETAILED O&M COSTS* ALL "PASSIVE" SYSTEMS

*Assumes Case 2 Funding for O&M Costs

Year	MAINTENANCE					Reagent Costs	SAMPLING				Miscellaneous Costs	Project Specific Transportation Costs	Project Specific Personnel Costs	TOTAL O&M COSTS	Year
	Major Maintenance	Annual Parts	In House Labor	Contracted Labor	TOTAL Maintenance		Sampling Materials	Sampling Labor	Laboratory Analysis	TOTAL Sampling					
2006 Base	\$26,092	\$2,430	\$4,701	\$0	\$33,223	\$0	\$771	\$3,928	\$39,360	\$44,059	\$0	\$6,760	\$39,756	\$123,797	2006 Base
2007	\$32,262	\$2,801	\$5,869	\$0	\$40,932	\$0	\$790	\$4,036	\$40,320	\$45,145	\$0	\$6,760	\$43,102	\$135,940	2007
2008	\$40,007	\$3,274	\$6,863	\$0	\$50,144	\$0	\$883	\$4,398	\$45,120	\$50,402	\$0	\$6,760	\$42,814	\$150,119	2008
2009	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2009
2010	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2010
2011	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2011
2012	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2012
2013	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2013
2014	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2014
2015	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2015
2016	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2016
2017	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2017
2018	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2018
2019	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2019
2020	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2020
2021	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2021
2022	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2022
2023	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2023
2024	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2024
2025	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2025
2026	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2026
2027	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2027
2028	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2028
2029	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2029
2030	\$45,332	\$3,645	\$7,709	\$0	\$56,686	\$0	\$996	\$4,841	\$50,880	\$56,718	\$0	\$6,760	\$42,814	\$162,978	2030



1.4.3 DETAILED O&M COSTS* ALL SYSTEMS

*Assumes Case 2 Funding for O&M Costs

Year	MAINTENANCE					Reagent Costs	SAMPLING				Miscellaneous Costs	Project Specific Transportation Costs	Project Specific Personnel Costs	TOTAL O&M COSTS	Year
	Major Maintenance	Annual Parts	In House Labor	Contracted Labor	TOTAL Maintenance		Sampling Materials	Sampling Labor	Laboratory Analysis	TOTAL Sampling					
2006 Base	\$47,030	\$5,580	\$32,058	\$44,440	\$129,108	\$144,840	\$1,137	\$8,065	\$58,560	\$67,762	\$19,440	\$10,140	\$61,842	\$433,132	2006 Base
2007	\$53,200	\$5,951	\$33,227	\$44,440	\$136,818	\$144,840	\$1,156	\$8,172	\$59,520	\$68,848	\$19,440	\$10,140	\$61,842	\$441,928	2007
2008	\$64,925	\$6,896	\$38,227	\$44,440	\$154,489	\$159,735	\$1,356	\$10,227	\$69,720	\$81,303	\$19,440	\$10,647	\$61,842	\$487,456	2008
2009	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2009
2010	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2010
2011	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2011
2012	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2012
2013	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2013
2014	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2014
2015	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2015
2016	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2016
2017	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2017
2018	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2018
2019	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2019
2020	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2020
2021	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2021
2022	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2022
2023	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2023
2024	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2024
2025	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2025
2026	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2026
2027	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2027
2028	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2028
2029	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2029
2030	\$71,577	\$7,425	\$40,409	\$44,440	\$163,851	\$164,700	\$1,504	\$11,234	\$77,280	\$90,018	\$19,440	\$10,816	\$61,842	\$510,667	2030



SECTION 2

COST ASSUMPTIONS & RANKING



SECTION 2.1

COST ASSUMPTIONS

Case 1 assumes currently available funds will be insufficient after 2014 to cover a full year of operation and maintenance cost for systems constructed through 2008. All systems cease operations when the balance is insufficient to meet annual O & M requirements.

Case 2 assumes currently available funds along with additional funds will be sufficient after 2014 to cover only operation and maintenance costs for systems constructed through 2008.

Case 3 assumes currently available and additional funds will be available to continue construction of new systems and cover operation and maintenance costs for all systems through 2030.



2.1.1 LISTING OF SYSTEMS BY CASE

	TYPE	SYSTEM DESIGNATION	DESIGN	FIRST YEAR OF OPERATION	POTENTIAL YR. DEACTIVATED	POTENTIAL YR. DEACTIVATED
CASE 1: Systems deactivated after 2014 due to lack of O&M funding.					Case 1	Case 2
CASE 2: Funds available for O&M through 2030 only for systems built through 2008.						
1	ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	2015	2030
2	ACTIVE	GORMAN	PUMPKONSULT SLURRY DOSER	1994	2015	2030
3	ACTIVE	LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	2015	2030
4	ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	2015	2030
5	PASSIVE	ELK LICK I	ALD / WETLAND	1995	2015	2030
6	ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	2015	2030
7	PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	2015	2030
8	ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	2015	2030
9	PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	2015	2030
10	PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	2015	2030
11	ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	2015	2030
12	PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	2015	2030
13	PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	2015	2030
14	ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	2015	2030
15	PASSIVE	CONEY CLEANERS	SAPS	2002	2015	2030
16	PASSIVE	TEETS	PYROLUSITE	2002	2015	2030
17	ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	2015	2030
18	PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	2015	2030
19	PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	2015	2030
20	PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	2015	2030
21	PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	2015	2030
22	ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	2015	2030
23	PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	2015	2030
24	PASSIVE	CRELLIN SCHOOL	WETLANDS	2006	2015	2030
25	PASSIVE	MIDLOTHIAN SCHOOL	PYROLUSITE	2006	2015	2030
26	PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	2015	2030
27	PASSIVE	NEFF RUN II	STEEL SLAG LEACH BED	2006	2015	2030
28	PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	2015	2030
29	PASSIVE	JAY RICE	PYROLUSITE	2007	2015	2030
30	PASSIVE	RAILROAD STREET	SAPS	2007	2015	2030
31	PASSIVE	AARONS RUN OWENS NORTH	PYROLUSITE	10/2007	2015	2030
32	PASSIVE	AARONS RUN OWENS SOUTH	PYROLUSITE	10/2007	2015	2030
33	PASSIVE	GETSON	LEACH BEDS	10/2007	2015	2030
34	ACTIVE	AARONS RUN	BOXHOLM BUCKET DOSER	04/2008	2015	2030
35	ACTIVE	CRELLIN BOREHOLE	SLURRY TYPE DOSER	04/2008	2015	2030
36	PASSIVE	HAMPSHIRE HILL	STEEL SLAG LEACH BED	07/2008	2015	2030
37	PASSIVE	AARONS RUN HEADWATER REST.	LEACH BEDS	10/2008	2015	2030
38	PASSIVE	AARONS RUN STREAM REST.	SAPS / LEACH BED	10/2008	2015	2030
39	PASSIVE	CHUBB RUN	PYROLUSITE	10/2008	2015	2030
CASE 3: Only occurs if additional funds available for construction and additional O&M costs.						
40	PASSIVE		TBD	2009		
41	PASSIVE		TBD	2010		
42	ACTIVE		Doser	2011		
43	PASSIVE		TBD	2012		
44	PASSIVE		TBD	2013		
45	PASSIVE		TBD	2014		
46	PASSIVE		TBD	2015		
47	ACTIVE		Doser	2016		
48	PASSIVE		TBD	2017		
49	PASSIVE		TBD	2018		
50	PASSIVE		TBD	2019		
51	PASSIVE		TBD	2020		
52	ACTIVE		Doser	2021		
53	PASSIVE		TBD	2022		
54	PASSIVE		TBD	2023		
55	PASSIVE		TBD	2024		
56	PASSIVE		TBD	2025		
57	ACTIVE		Doser	2026		
58	PASSIVE		TBD	2027		
59	PASSIVE		TBD	2028		
60	PASSIVE		TBD	2029		
61	PASSIVE		TBD	2030		

TBD = To Be Determined



2.1.2 DETAILED SYSTEM EXPENDITURES



TREATMENT SYSTEM INFO				CAPITAL EXPENDITURES					OPERATION & MAINTENANCE EXPENDITURES										SAMPLING EXPENDITURES						Total O & M Cost		
Active Treatment System Designation	System Design	System	Status	Years in Service	Initial Construction Costs	Misc. Costs including Administration, Design & Procurement (15% of ICC)	System Modified or Re-built Y or N	Cost of Modification or Re-build	Total Capital Costs	Major Maintenance (@ 1% of Total Capital Costs)	Mechanical Maintenance Parts	In House Labor Hours	Maintenance In House Labor	Maintenance Contractual Labor	Total Maintenance Costs	Reagent Type	Cost of Reagent per Ton 2006	Avg. Chemical Reagent used in Tons	Avg. Total Cost for Chemical Reagent	Avg. No. of Samples taken	Sampling Materials	Average Man Hours	Sampling Labor	Laboratory Analysis		Total Sampling Costs	Misc. Costs rent, utilities, etc.
Cherry Creek	Boxholm Bucket Doser	Operating		5	\$80,000.00	\$12,000.00	N		\$92,000.00	\$920.00	\$315.00	66	\$2,671.02	\$1,670.00	\$5,576.02	Calcium Carbonate	\$90.00	50	\$4,500.00	8	\$18.80	16	\$429.76	\$960.00	\$1,408.56		\$11,484.58
Gorman	Pumpkomsult Slurry Doser	Backup		13	\$111,500.00	\$16,725.00	Y	\$33,775.00	\$162,000.00	\$1,620.00	\$315.00	66	\$2,671.02	\$1,670.00	\$3,847.82	Calcium Carbonate	\$90.00	23	\$2,070.00	4	\$9.40	8	\$214.88	\$480.00	\$704.28	\$1,500.00	\$8,123.10
Kempton Air Shaft	Aquafox waterwheel Doser	Operating		7	\$109,064.00	\$16,359.60	Y	\$772,742.00	\$898,165.60	\$8,981.66	\$315.00	208	\$8,417.76	\$17,600.00	\$35,314.42	Calcium Oxide	\$128.00	502	\$64,256.00	36	\$84.60	30	\$805.80	\$4,320.00	\$5,210.40	\$12,000.00	\$116,780.82
Kitzmilller	Aquafox waterwheel Doser	Operating		14	\$55,000.00	\$8,250.00	N		\$63,250.00	\$632.50	\$315.00	66	\$2,671.02	\$2,500.00	\$6,118.52	Calcium Oxide	\$130.00	116	\$15,080.00	8	\$18.80	8	\$214.88	\$960.00	\$1,193.68	\$1,500.00	\$23,891.20
Laurel Run	Pumpkomsult Slurry Doser	Operating		13	\$111,500.00	\$16,725.00	Y	\$33,775.00	\$162,000.00	\$1,620.00	\$315.00	66	\$2,671.02	\$1,670.00	\$6,276.02	Calcium Carbonate	\$90.00	178	\$16,062.30	8	\$18.80	8	\$214.88	\$960.00	\$1,193.68		\$23,532.00
Lost Land Run	Boxholm Bucket Doser	Operating		13	\$55,000.00	\$8,250.00	Y	\$8,450.00	\$71,700.00	\$717.00	\$315.00	66	\$2,671.02	\$1,670.00	\$5,373.02	Calcium Carbonate	\$90.00	48	\$4,320.00	8	\$18.80	8	\$214.88	\$960.00	\$1,193.68		\$10,886.70
McDonald Mine	Boxholm Bucket Doser	Operating		4	\$134,582.00	\$20,187.30	Y	\$22,619.00	\$177,388.30	\$1,773.88	\$315.00	66	\$2,671.02	\$1,670.00	\$6,429.90	Calcium Oxide	\$130.00	106	\$13,780.00	36	\$84.60	36	\$966.96	\$4,320.00	\$5,371.56		\$25,581.46
Mill Run PLB	Pulse Limestone Bed	Operating		6	\$137,875.00	\$20,681.25	Y		\$158,556.25	\$1,585.56	\$315.00	0	\$0.00	\$10,990.00	\$12,890.56	Calcium Oxide Sand	\$37.20	25	\$930.00	16	\$37.60	8	\$214.88	\$1,920.00	\$2,172.48	\$4,440.00	\$20,433.04
Shallmar	Aquafox waterwheel Doser	Operating		1	\$187,091.00	\$28,063.65	N		\$215,154.65	\$2,151.55	\$315.00	66	\$2,671.02	\$2,500.00	\$7,637.57	Calcium Oxide	\$131.00	47	\$6,157.00	24	\$56.40	24	\$644.64	\$2,880.00	\$3,581.04		\$17,375.61
Vindex	Aquafox waterwheel Doser	Operating		11	\$81,340.00	\$12,201.00	N		\$93,541.00	\$935.41	\$315.00	66	\$2,671.02	\$2,500.00	\$6,421.43	Calcium Oxide	\$131.00	135	\$17,685.00	12	\$28.20	8	\$214.88	\$1,440.00	\$1,683.08		\$25,789.51
Sub Total Active					\$1,062,952.00	\$159,442.80		\$871,361.00	\$2,093,755.80	\$20,937.56	\$3,150.00	676	\$27,147.72	\$44,440.00	\$95,885.28			1230	\$144,840.30	160	\$376.00	154	\$4,136.44	\$19,200.00	\$23,712.44	\$19,440.00	\$283,878.02
Pending Active Systems																											
Aarons Run	Boxholm Bucket Doser	Design Stage		4/1/2008	\$211,500.00	\$31,725.00			\$243,225.00	\$2,432.25	\$315.00	66	\$2,671.02	\$0.00	\$5,418.27	Calcium Carbonate	\$90.00	50	\$4,500.00	24	\$56.40	48	\$1,289.28	\$2,880.00	\$4,225.68		\$14,143.95
Crellin Borehole	Slurry Type Doser	Design Stage		4/1/2008	\$250,000.00	\$37,500.00			\$287,500.00	\$2,875.00	\$315.00	66	\$2,671.02	\$0.00	\$5,861.02	Hydrated Lime	\$128.00	120	\$15,360.00	36	\$84.60	36	\$966.96	\$4,320.00	\$5,371.56		\$26,592.58
Sub Total Pending Active					\$461,500.00	\$69,225.00		\$0.00	\$530,725.00	\$5,307.25	\$630.00	132	\$5,342.04	\$0.00	\$11,279.29			170	\$19,860.00	60	\$141.00	84	\$2,256.24	\$7,200.00	\$9,597.24	\$0.00	\$40,736.53
Sub Total All Active					\$1,524,452.00	\$228,667.80		\$871,361.00	\$2,624,480.80	\$26,244.81	\$3,780.00	808	\$32,659.76	\$44,440.00	\$107,164.57			1400	\$164,700.30	220	\$517.00	238	\$6,392.68	\$26,400.00	\$33,309.68	\$19,440.00	\$324,614.55
Passive Treatment System Designation																											
Amish Road I	Aluminator / Pond	Operating		2	\$159,000.00	\$23,850.00	N		\$182,850.00	\$1,828.50	\$135.00	12	\$322.32		\$2,285.82					28	\$65.80	8	\$214.88	\$3,360.00	\$3,640.68	\$0.00	\$5,926.50
Amish Road II	ALDs / Ponds / Wetlands	Operating		1	\$159,200.00	\$23,880.00	N		\$183,080.00	\$1,830.80	\$135.00	12	\$322.32		\$2,288.12					44	\$103.40	12	\$322.32	\$5,280.00	\$5,705.72	\$0.00	\$7,993.84
Coney Cleaners	SAPS	Modifications Necessary		5	\$200,385.00	\$30,057.75	Y		\$230,442.75	\$2,304.43	\$135.00	12	\$322.32		\$2,761.75					20	\$47.00	20	\$537.20	\$2,400.00	\$2,984.20	\$0.00	\$5,745.95
Crellin School	Wetlands	Operating		1	\$188,000.00	\$28,200.00	N		\$216,200.00	\$2,162.00	\$135.00	4	\$107.44		\$2,404.44					12	\$28.20	14	\$168.00	\$1,440.00	\$1,636.20	\$0.00	\$4,040.64
Elk Lick I	ALD / Wetland	Operating		12	\$27,800.00	\$4,170.00	N		\$31,970.00	\$319.70	\$135.00	4	\$107.44		\$562.14					12	\$28.20	4	\$107.44	\$1,440.00	\$1,575.64	\$0.00	\$2,137.78
Elk Lick II	SAPS / Steel Slag / Wetlands	Operating		8	\$69,333.00	\$10,399.95	Y	\$24,750.00	\$104,482.95	\$1,044.83	\$135.00	12	\$322.32		\$1,502.15					8	\$18.80	8	\$214.88	\$960.00	\$1,193.68	\$0.00	\$2,695.83
Elk Lick III	SAPS / Wetlands	Modifications Necessary		6	\$62,039.00	\$9,305.85	N		\$71,344.85	\$713.45	\$135.00	6	\$161.16		\$1,009.61					12	\$28.20	8	\$214.88	\$1,440.00	\$1,683.08	\$0.00	\$2,692.69
Everhart	Aluminator / SAPS / Wetlands	Operating		6	\$89,670.00	\$13,450.50	N		\$103,120.50	\$1,031.21	\$135.00	12	\$322.32		\$1,488.53					8	\$18.80	4	\$107.44	\$960.00	\$1,086.24	\$0.00	\$2,574.77
Fazenbaker	SAPS / wetlands	Operating		4	\$151,745.00	\$22,761.75	N		\$174,506.75	\$1,745.07	\$135.00	6	\$161.16		\$2,041.23					16	\$37.60	8	\$214.88	\$1,920.00	\$2,172.48	\$0.00	\$4,213.71
Glotfely	ALD / SAPS / Wetland	Operating		7	\$81,618.00	\$12,242.70	N		\$93,860.70	\$938.61	\$135.00	21	\$564.06		\$1,637.67					12	\$28.20	4	\$107.44	\$1,440.00	\$1,575.64	\$0.00	\$3,213.31
Interstate 335	ALDs / Ponds / Wetlands	Operating		7	\$97,636.00	\$14,645.40	N		\$112,281.40	\$1,122.81	\$135.00	4	\$107.44		\$1,365.25					20	\$47.00	12	\$322.32	\$2,400.00	\$2,769.32	\$0.00	\$4,134.57
Jay Rice	Pyrolusite	Under Construction		1/1/2007	\$133,494.00	\$20,024.10	N		\$153,518.10	\$1,535.18	\$135.00	24	\$644.64		\$2,314.82					20	\$47.00	12	\$322.32	\$2,400.00	\$2,769.32	\$0.00	\$5,084.14
Midlothian School	Pyrolusite	Modifications Necessary		1	\$148,570.00	\$22,285.50	N		\$170,855.50	\$1,708.56	\$135.00	12	\$322.32		\$2,165.88					8	\$18.80	4	\$107.44	\$960.00	\$1,086.24	\$0.00	\$3,252.12
Neff Run I	Limestone Leach Bed	Operating		1	\$64,166.00	\$9,624.90	N		\$73,790.90	\$737.91	\$135.00	4	\$107.44		\$980.35					12	\$28.20	4	\$107.44	\$1,440.00	\$1,575.64	\$0.00	\$2,555.99
Neff Run II	Steel Slag Leach Bed	Operating		1	\$64,166.00	\$9,624.90	N		\$73,790.90	\$737.91	\$135.00	6	\$161.16		\$1,034.07					16	\$37.60	4	\$107.44	\$1,920.00	\$2,065.04	\$0.00	\$3,099.11
Neff Run III	Limestone Leach Bed	Operating		1	\$64,166.00	\$9,624.90	N		\$73,790.90	\$737.91	\$135.00	6	\$161.16		\$1,034.07					16	\$37.60	4	\$107.44	\$1,920.00	\$2,065.04	\$0.00	\$3,099.11
Oak Hill I	SAPS / Wetlands	Operating		2	\$250,000.00	\$37,500.00	N		\$287,500.00	\$2,875.00	\$135.00	18	\$483.48		\$3,493.48					16	\$37.60	4	\$107.44	\$1,920.00	\$2,065.04	\$0.00	\$5,558.52
Potomac Hill	Steel Slag Ditch / SAPS	Modifications Necessary		4	\$189,855.00	\$28,478.25	N		\$218,333.25	\$2,183.33	\$135.00	12	\$322.32		\$2,640.65					12	\$28.20	8	\$214.88	\$1,440.00	\$1,683.08	\$0.00	\$4,323.73
Railroad Street	SAPS	Under Construction		1/1/2007	\$230,000.00	\$34,500.00	N		\$264,500.00	\$2,645.00	\$135.00	12	\$322.32		\$3,102.32					20	\$47.00	8	\$214.88	\$2,400.00	\$2,661.88	\$0.00	\$5,764.20
Teets	Pyrolusite	Operating		5	\$180,000.00	\$27,000.00	N		\$207,000.00	\$2,070.00	\$135.00	12	\$322.32		\$2,527.32					16	\$37.60	4	\$107.44	\$1,920.00	\$2,065.04	\$0.00	\$4,592.36
Sub Total Passive					\$2,610,843.00	\$391,626.45		\$34,750.00	\$3,027,219.45	\$30,272.19	\$2,700.00	211	\$5,467.46	\$0.00	\$38,639.65					328	\$770.80	154	\$3,925.40	\$39,360.00	\$44,059.20	\$0.00	\$82,698.85
Pending Passive Treatment Systems																											
Aaron Run Headwater Rest	Leach Bed	Design Stage		10/1/2008	\$42,400.00	\$6,360.00	N		\$48,760.00	\$487.60	\$135.00	4	\$107.44		\$730.04					12	\$28.20	4	\$107.44	\$1,440.00	\$1,575.64	\$0.00	\$2,305.68
Aaron Run Stream Rest	SAPS / Leach Beds	Design Stage		10/1/2008	\$339,984.00	\$50,997.60	N		\$390,981.60	\$3,909.82	\$135.00	12	\$322.32		\$4,367.14					16	\$37.60	4	\$107.44	\$1,920.00	\$2,065.04	\$0.00	\$6,432.18
Aaron Run Owens North	Pyrolusite	Design Stage		10/1/2007	\$276,100.00	\$41,415.00	N		\$317,515.00	\$3,175.15	\$135.00	9	\$241.74		\$3,551.89												



SECTION 2.2

RANKING OF ALL SYSTEMS BY CATEGORIES

2.2.1 ALL SYSTEMS COSTS PER ANNUAL POUNDS OF TOTAL ACIDITY NEUTRALIZED RANKED BY YEAR OF OPERATION

ACTIVE / PASSIVE	System Designation	System Design	Year of Installation	Avg. Lbs. Acidity Neutralized per year	2006 Capital Costs	Annualized Capital Costs	2006 O&M Costs	Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb. Neutralized
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275	\$92,889	\$3,715	\$27,704	\$0.29	\$0.09	\$0.36
ACTIVE	GORMAN	PUMPKONSULT SLURRY DOSER	1994	Data Incomplete	\$230,973	\$9,239	\$13,968	\$0.00	\$0.00	\$0.00
ACTIVE	LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,060	\$230,973	\$9,239	\$29,319	\$0.60	\$0.08	\$0.67
ACTIVE	LDST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$102,227	\$4,089	\$14,868	\$1.40	\$0.20	\$1.61
PASSIVE	ELK LICK I	ALD / WETLAND	1995	3,207	\$45,562	\$1,823	\$5,323	\$1.14	\$2.20	\$4.30
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,620	\$128,711	\$5,028	\$30,267	\$0.31	\$0.07	\$0.38
PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	27,817	\$132,356	\$5,294	\$7,332	\$1.01	\$1.40	\$2.42
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168	\$1,104,630	\$44,185	\$137,291	\$0.92	\$0.11	\$1.04
PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	31,482	\$115,437	\$4,617	\$7,638	\$0.37	\$0.62	\$0.99
PASSIVE	INTERSTATE 334	ALD / PONDS / WETLANDS	2000	167,188	\$138,092	\$5,524	\$8,926	\$0.11	\$0.17	\$0.28
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092	\$169,324	\$7,673	\$30,160	\$4.02	\$0.64	\$4.66
PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	69,743	\$85,189	\$3,408	\$6,666	\$0.49	\$0.96	\$1.45
PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	31,585	\$123,131	\$4,926	\$7,194	\$0.63	\$0.91	\$1.54
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	80,896	\$106,683	\$4,266	\$15,871	\$2.09	\$0.31	\$2.40
PASSIVE	CONY CLEANERS	SAPS	2002	44,642	\$267,146	\$10,686	\$12,901	\$7.27	\$8.77	\$16.04
PASSIVE	TEETS	PYROLUCITE	2002	26,895	\$229,870	\$9,599	\$11,289	\$3.55	\$4.18	\$7.73
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611	\$193,687	\$7,747	\$31,617	\$0.85	\$0.11	\$0.76
PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	5,712	\$196,409	\$7,896	\$10,261	\$8.88	\$11.69	\$20.47
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	67,829	\$344,726	\$13,829	\$11,237	\$0.89	\$1.02	\$1.91
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	4,986	\$193,886	\$7,750	\$12,139	\$5.62	\$8.63	\$14.15
PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	36,205	\$208,009	\$12,200	\$13,854	\$11.88	\$13.60	\$26.57
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,363	\$221,609	\$8,864	\$24,224	\$0.88	\$0.10	\$0.98
PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	48,183	\$188,572	\$7,543	\$14,201	\$2.38	\$4.49	\$6.87
PASSIVE	CRELLIN SCHOOL	WETLANDS	2006	Data Incomplete	\$222,486	\$8,907	\$10,911	\$0.00	\$0.00	\$0.00
PASSIVE	MIDLOTHIAN SCHOOL	PYROLUCITE	2006	Data Incomplete	\$175,981	\$7,039	\$9,216	\$0.00	\$0.00	\$0.00
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	2,845	\$76,004	\$3,040	\$6,579	\$73.89	\$190.11	\$254.10
PASSIVE	NEFF RUN II	STEEL SLAG LEACH BED	2006	Data Incomplete	\$76,005	\$3,040	\$7,122	\$0.00	\$0.00	\$0.00
PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	1,840	\$76,005	\$3,040	\$7,123	\$193.77	\$453.95	\$647.72
PASSIVE	JAY RICE	PYROLUCITE	2007	Data Incomplete	\$153,518	\$6,141	\$10,386	\$0.00	\$0.00	\$0.00
PASSIVE	RAILROAD STREET	SAPS	2007	Data Incomplete	\$264,500	\$16,580	\$13,286	\$0.00	\$0.00	\$0.00

2.2.2 ALL SYSTEMS COSTS PER ANNUAL POUNDS OF TOTAL ACIDITY NEUTRALIZED RANKED BY AVERAGE ANNUAL POUNDS NEUTRALIZED

ACTIVE / PASSIVE	System Designation	System Design	First Full Operational Year	2006 Annual Pounds Neutralized	2006 Capital Costs	Annualized Capital Costs	2006 O&M Costs	Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb Neutralized
PASSIVE	NEFF RUN B	LIMESTONE LEACH BED	2006	1,840	\$76,005	\$3,040	\$7,123	\$193.77	\$403.95	\$647.72
PASSIVE	ELK LICK I	ALD / WETLAND	1999	3,207	\$46,562	\$1,823	\$5,323	\$1.18	\$3.29	\$4.30
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	3,545	\$76,005	\$3,040	\$6,579	\$73.99	\$160.11	\$234.10
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	4,986	\$193,386	\$7,789	\$12,130	\$5.82	\$8.83	\$14.15
PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	5,712	\$196,409	\$7,896	\$18,251	\$8.88	\$11.59	\$20.47
PASSIVE	TEETS	PYROLUSITE	2002	26,895	\$239,879	\$9,889	\$11,284	\$3.55	\$4.18	\$7.73
PASSIVE	ELK LICK S	SAPS / STEEL SLAG / WETLANDS	1999	27,817	\$172,396	\$6,294	\$7,332	\$1.01	\$1.60	\$2.42
PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	30,209	\$368,009	\$12,209	\$13,854	\$11.98	\$13.60	\$25.57
PASSIVE	GLOTTELTY	ALD / SAPS / WETLAND	2000	31,442	\$115,437	\$4,617	\$7,638	\$0.37	\$0.62	\$0.99
PASSIVE	EVERMART	ALUMINATOR / SAPS / WETLAND	2001	31,885	\$123,131	\$4,825	\$7,194	\$0.63	\$0.91	\$1.54
PASSIVE	DOVEY CLEANERS	SAPS	2002	44,542	\$267,146	\$10,686	\$12,901	\$7.27	\$8.77	\$16.04
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	47,892	\$189,324	\$7,673	\$30,160	\$4.02	\$6.64	\$4.66
PASSIVE	AMISH ROAD B	ALDs / PONDS / WETLANDS	2006	48,183	\$158,572	\$7,543	\$14,201	\$2.38	\$4.49	\$6.87
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	56,996	\$106,653	\$4,266	\$15,871	\$2.08	\$0.31	\$2.40
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	67,828	\$246,736	\$9,829	\$11,237	\$6.88	\$1.02	\$1.91
PASSIVE	ELK LICK B	SAPS / WETLANDS	2001	69,783	\$85,189	\$3,408	\$6,666	\$0.49	\$0.96	\$1.45
ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$102,227	\$4,089	\$14,868	\$1.40	\$0.29	\$1.61
PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	167,140	\$138,092	\$5,524	\$8,926	\$0.11	\$0.17	\$0.28
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,365	\$221,609	\$8,864	\$24,224	\$0.40	\$0.10	\$0.88
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,811	\$193,887	\$7,747	\$31,517	\$0.65	\$0.11	\$0.78
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275	\$82,886	\$3,715	\$27,704	\$0.29	\$0.09	\$0.38
ACTIVE	LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,050	\$230,973	\$9,239	\$25,319	\$0.60	\$0.08	\$0.67
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520	\$126,711	\$5,628	\$30,207	\$0.31	\$0.07	\$0.38
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,368	\$1,104,634	\$44,165	\$137,291	\$0.92	\$0.11	\$1.04
ACTIVE	GORMAN	PUMPKONSULT SLURRY DOSER	1994	Data Incomplete	\$230,973	\$9,239	\$13,908	\$0.00	\$0.00	\$0.00
PASSIVE	CRELLIN SCHOOL	WETLANDS	2004	Data Incomplete	\$222,688	\$8,907	\$10,911	\$0.00	\$0.00	\$0.00
PASSIVE	MIOLOTHAN SCHOOL	PYROLUSITE	2006	Data Incomplete	\$176,981	\$7,039	\$9,216	\$0.00	\$0.00	\$0.00
PASSIVE	NEFF RUN B	STEEL SLAG LEACH BED	2006	Data Incomplete	\$76,005	\$3,040	\$7,123	\$0.00	\$0.00	\$0.00
PASSIVE	JAY RICE	PYROLUSITE	2007	Data Incomplete	\$163,918	\$6,141	\$10,366	\$0.00	\$0.00	\$0.00
PASSIVE	RAILROAD STREET	SAPS	2007	Data Incomplete	\$264,500	\$10,580	\$13,266	\$0.00	\$0.00	\$0.00



2.2.3 ALL SYSTEMS COSTS PER ANNUAL POUNDS OF TOTAL ACIDITY NEUTRALIZED RANKED BY TOTAL ADJUSTED CAPITAL COSTS

ACTIVE / PASSIVE	System Designation	System Design	First Full Operational Year	Avg. Lbs. Acidity Neutralized per year	2006 Capital Costs	Adjusted Capital Costs	2006 O&M Costs	Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb. Neutralized
PASSIVE	ELK LICK I	ALD / WETLAND	1995	3,207	\$45,562	\$1,823	\$5,323	\$1.59	\$3.20	\$4.80
PASSIVE	NEFF RUN II	STEEL SLAG LEACH BED	2006	Data Incomplete	\$76,005	\$3,040	\$7,122	\$0.00	\$0.00	\$0.00
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	3,541	\$76,005	\$3,040	\$6,579	\$23.99	\$160.11	\$234.10
PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	1,848	\$76,005	\$3,040	\$7,123	\$193.77	\$453.95	\$647.72
PASSIVE	ELK LICK II	SAPS / WETLANDS	2001	89,783	\$81,189	\$3,408	\$4,664	\$0.49	\$0.36	\$1.45
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275	\$92,855	\$3,715	\$27,764	\$0.29	\$0.89	\$0.38
ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$102,227	\$4,089	\$14,866	\$1.40	\$0.20	\$1.61
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	50,996	\$106,653	\$4,266	\$15,871	\$2.09	\$0.31	\$2.40
PASSIVE	BLOTFELTY	ALD / SAPS / WETLAND	2000	31,482	\$115,437	\$4,617	\$7,638	\$0.37	\$0.62	\$0.99
PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	31,589	\$123,131	\$4,926	\$7,184	\$0.63	\$0.91	\$1.54
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,820	\$135,711	\$5,038	\$30,207	\$0.31	\$0.07	\$0.28
PASSIVE	ELK LICK III	SAPS / STEEL SLAG / WETLANDS	1999	27,817	\$132,266	\$5,294	\$7,332	\$1.01	\$1.60	\$2.42
PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	167,140	\$138,082	\$5,524	\$8,926	\$0.11	\$0.17	\$0.28
PASSIVE	JAY RICE	PYROLUSITE	2007	Data Incomplete	\$153,516	\$6,141	\$10,366	\$0.00	\$0.00	\$0.00
PASSIVE	MIDLOTHIAN SCHOOL	PYROLUSITE	2006	Data Incomplete	\$176,981	\$7,039	\$9,216	\$0.00	\$0.00	\$0.00
PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	49,183	\$188,572	\$7,543	\$14,201	\$2.36	\$4.49	\$6.87
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	47,892	\$199,324	\$7,873	\$30,166	\$4.02	\$0.84	\$4.86
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611	\$193,647	\$7,747	\$31,517	\$0.65	\$0.11	\$0.76
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	4,986	\$192,988	\$7,759	\$12,130	\$8.82	\$8.63	\$14.15
PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	5,712	\$196,409	\$7,856	\$10,251	\$8.88	\$11.59	\$20.47
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965	\$221,509	\$8,864	\$24,224	\$0.88	\$0.10	\$0.98
PASSIVE	CRELLIN SCHOOL	WETLANDS	2006	Data Incomplete	\$222,686	\$8,907	\$10,911	\$0.00	\$0.00	\$0.00
ACTIVE	GORMAN	PUMPKONSULT SLURRY DOSER	1994	Data Incomplete	\$230,973	\$9,239	\$13,908	\$0.00	\$3.00	\$0.00
ACTIVE	LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,050	\$230,973	\$9,239	\$29,318	\$0.60	\$0.68	\$0.67
PASSIVE	TEETS	PYROLUSITE	2002	26,895	\$239,970	\$9,599	\$11,280	\$3.85	\$4.18	\$7.73
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	67,829	\$245,736	\$9,829	\$11,237	\$0.89	\$1.82	\$1.91
PASSIVE	RAILROAD STREET	SAPS	2007	Data Incomplete	\$264,500	\$10,540	\$13,266	\$0.00	\$0.00	\$0.00
PASSIVE	CONEY CLEANERS	SAPS	2002	44,642	\$267,146	\$10,686	\$12,901	\$7.27	\$8.77	\$16.04
PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	30,201	\$305,009	\$12,200	\$13,854	\$11.98	\$12.60	\$25.57
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168	\$1,164,830	\$4,185	\$137,291	\$0.92	\$0.11	\$1.04



2.2.4 ALL SYSTEMS COSTS PER ANNUAL POUNDS OF TOTAL ACIDITY NEUTRALIZED RANKED BY ANNUAL O&M COSTS

ACTIVE / PASSIVE	System Designation	System Design	First Full Operational Year	Avg. Lbs. Acidity Neutralized per year	2006 Capital Costs	Annualized Capital Costs	2006 O&M Costs	Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb. Neutralized
PASSIVE	ELK LICK I	ALD / WETLAND	1995	3,207	\$45,582	\$1,823	\$5,323	\$1.10	\$3.20	\$4.30
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	3,545	\$76,005	\$3,040	\$6,579	\$73.99	\$160.11	\$234.10
PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	69,783	\$85,189	\$3,408	\$6,666	\$0.49	\$0.96	\$1.45
PASSIVE	NEFF RUN II	STEEL SLAG LEACH BED	2006	Data Incomplete	\$76,005	\$3,040	\$7,122	\$0.00	\$0.00	\$0.00
PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	1,840	\$76,005	\$3,040	\$7,123	\$193.77	\$453.95	\$647.72
PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	31,585	\$123,131	\$4,925	\$7,184	\$0.63	\$0.91	\$1.54
PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	27,817	\$132,356	\$5,294	\$7,332	\$1.01	\$1.40	\$2.42
PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	31,482	\$115,437	\$4,617	\$7,638	\$0.37	\$0.62	\$0.98
PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	167,140	\$138,092	\$5,524	\$8,826	\$0.11	\$0.17	\$0.28
PASSIVE	MIDLOTHIAN SCHOOL	PYROLUSITE	2006	Data Incomplete	\$175,981	\$7,039	\$9,216	\$0.00	\$0.00	\$0.00
PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	5,712	\$196,409	\$7,856	\$10,251	\$8.88	\$11.59	\$20.47
PASSIVE	JAY RICE	PYROLUSITE	2007	Data Incomplete	\$153,518	\$6,141	\$10,366	\$0.00	\$0.00	\$0.00
PASSIVE	CRELLIN SCHOOL	WETLANDS	2006	Data Incomplete	\$222,686	\$8,907	\$10,911	\$0.00	\$0.00	\$0.00
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	67,829	\$245,736	\$9,829	\$11,237	\$0.89	\$1.02	\$1.91
PASSIVE	TEETS	PYROLUSITE	2002	26,895	\$239,970	\$9,599	\$11,280	\$3.55	\$4.18	\$7.73
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	4,966	\$193,986	\$7,769	\$12,130	\$5.52	\$8.63	\$14.15
PASSIVE	CONY CLEANERS	SAPS	2002	44,642	\$267,146	\$10,686	\$12,901	\$7.27	\$8.77	\$16.04
PASSIVE	RAILROAD STREET	SAPS	2007	Data Incomplete	\$264,500	\$10,580	\$13,266	\$0.00	\$0.00	\$0.00
PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	30,205	\$305,009	\$12,200	\$13,854	\$11.98	\$13.60	\$25.57
ACTIVE	GORMAN	PUMPKONSULT SLURRY DOSER	1994	Data Incomplete	\$230,973	\$9,239	\$13,908	\$0.00	\$0.00	\$0.00
PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	49,183	\$188,572	\$7,543	\$14,201	\$2.38	\$4.49	\$6.87
ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$102,227	\$4,089	\$14,868	\$1.40	\$0.20	\$1.61
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	50,996	\$106,653	\$4,266	\$15,871	\$2.09	\$0.31	\$2.40
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965	\$221,609	\$8,864	\$24,224	\$0.88	\$0.10	\$0.98
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,276	\$92,885	\$3,715	\$27,704	\$0.29	\$0.09	\$0.38
ACTIVE	LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,050	\$230,973	\$9,239	\$29,319	\$0.60	\$0.08	\$0.67
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092	\$189,324	\$7,573	\$30,160	\$4.02	\$0.64	\$4.66
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520	\$125,711	\$5,028	\$30,207	\$0.31	\$0.07	\$0.38
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611	\$193,687	\$7,747	\$31,517	\$0.65	\$0.11	\$0.76
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168	\$1,104,630	\$44,185	\$137,291	\$0.92	\$0.11	\$1.04



2.2.5 ALL SYSTEMS COSTS PER ANNUAL POUNDS OF TOTAL ACIDITY NEUTRALIZED RANKED BY ANNUALIZED CAPITAL COSTS PER POUND NEUTRALIZED

ACTIVE / PASSIVE	System Designation	System Design	First Full Operational Year	Avg. Lbs. Acidity Neutralized per year	2006 Capital Costs	Annualized Capital Costs	2006 O&M Costs	Capital Cost per Annual Lb. Neutralized	O&M Cost per Annual Lb. Neutralized	Total Cost per Annual Lb. Neutralized
PASSIVE	NEFF RUN II	STEEL SLAG LEACH BED	2006	Data Incomplete	\$76,005	\$3,040	\$7,122	\$0.00	\$0.00	\$0.00
PASSIVE	MIDLOTHIAN SCHOOL	PYROLUSITE	2006	Data Incomplete	\$175,981	\$7,039	\$9,216	\$0.00	\$0.00	\$0.00
PASSIVE	JAY RICE	PYROLUSITE	2007	Data Incomplete	\$153,518	\$6,141	\$10,366	\$0.00	\$0.00	\$0.00
PASSIVE	CRELLIN SCHOOL	WETLANDS	2006	Data Incomplete	\$222,696	\$8,907	\$10,911	\$0.00	\$0.00	\$0.00
PASSIVE	RAILROAD STREET	SAPS	2007	Data Incomplete	\$264,500	\$10,590	\$13,266	\$0.00	\$0.00	\$0.00
ACTIVE	GORMAN	PUMPCONSULT SLURRY DOSER	1994	Data Incomplete	\$230,973	\$9,239	\$13,908	\$0.00	\$0.00	\$0.00
PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	167,140	\$138,082	\$5,524	\$8,926	\$0.11	\$0.17	\$0.28
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275	\$92,885	\$3,715	\$27,704	\$0.28	\$0.09	\$0.38
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520	\$125,711	\$5,028	\$30,207	\$0.31	\$0.07	\$0.38
PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	31,482	\$115,437	\$4,617	\$7,638	\$0.37	\$0.62	\$0.99
PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	69,783	\$85,189	\$3,408	\$6,666	\$0.49	\$0.96	\$1.45
ACTIVE	LAUREL RUN	PUMPCONSULT SLURRY DOSER	1994	388,050	\$230,973	\$9,239	\$29,319	\$0.60	\$0.08	\$0.67
PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	31,585	\$123,131	\$4,925	\$7,184	\$0.63	\$0.91	\$1.54
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611	\$193,687	\$7,747	\$31,517	\$0.65	\$0.11	\$0.76
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2008	260,965	\$221,609	\$8,864	\$24,224	\$0.88	\$0.10	\$0.98
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	67,829	\$245,736	\$9,829	\$11,237	\$0.89	\$1.02	\$1.91
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168	\$1,104,630	\$44,185	\$137,291	\$0.92	\$0.11	\$1.04
PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	27,817	\$132,356	\$5,294	\$7,332	\$1.01	\$1.40	\$2.42
PASSIVE	ELK LICK I	ALD / WETLAND	1995	3,207	\$45,582	\$1,823	\$5,323	\$1.10	\$3.20	\$4.30
ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$102,227	\$4,089	\$14,868	\$1.40	\$0.20	\$1.61
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	60,996	\$106,663	\$4,266	\$15,871	\$2.09	\$0.31	\$2.40
PASSIVE	AMISH ROAD II	ALD / PONDS / WETLANDS	2006	49,183	\$188,572	\$7,543	\$14,201	\$2.38	\$4.49	\$6.87
PASSIVE	TEETS	PYROLUSITE	2002	26,895	\$239,970	\$9,699	\$11,280	\$3.55	\$4.18	\$7.73
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092	\$189,324	\$7,573	\$30,160	\$4.02	\$0.84	\$4.86
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	4,986	\$193,986	\$7,759	\$12,130	\$5.52	\$8.63	\$14.15
PASSIVE	CONY CLEANERS	SAPS	2002	44,642	\$267,146	\$10,686	\$12,901	\$7.27	\$6.77	\$14.04
PASSIVE	FAZENBAKER	S/PS / WETLAND	2003	5,712	\$196,409	\$7,856	\$10,281	\$8.88	\$11.59	\$20.47
PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	30,205	\$305,009	\$12,200	\$13,854	\$11.98	\$13.60	\$25.57
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	3,545	\$76,005	\$3,040	\$6,579	\$73.99	\$160.11	\$234.10
PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	1,840	\$76,005	\$3,040	\$7,123	\$193.77	\$453.95	\$647.72



2.2.6 ALL SYSTEMS COSTS PER ANNUAL POUNDS OF TOTAL ACIDITY NEUTRALIZED RANKED BY O&M COSTS PER POUND NEUTRALIZED

ACTIVE / PASSIVE	System Designation	System Design	First Full Operational Year	Avg. Lbs. Acidity Neutralized per year	2006 Capital Costs	Annualized Capital Costs	2006 O&M Costs	Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb Neutralized
ACTIVE	GORMAN	PUMPKONSULT SLURRY DOSER	1994	Data Incomplete	\$230,973	\$9,239	\$13,905	\$0.00	\$0.00	\$0.00
PASSIVE	RAILROAD STREET	SAPS	2007	Data Incomplete	\$264,500	\$10,580	\$13,266	\$0.00	\$0.00	\$0.00
PASSIVE	CRELLIN SCHOOL	WETLANDS	2006	Data Incomplete	\$222,686	\$8,907	\$10,911	\$0.00	\$0.00	\$0.00
PASSIVE	JAY RICE	PYROLUSITE	2007	Data Incomplete	\$153,518	\$6,141	\$10,366	\$0.00	\$0.00	\$0.00
PASSIVE	MIDLOTHIAN SCHOOL	PYROLUSITE	2006	Data Incomplete	\$175,981	\$7,039	\$9,216	\$0.00	\$0.00	\$0.00
PASSIVE	NEFF RUN II	STEEL SLAG LEACH BED	2006	Data Incomplete	\$76,005	\$3,040	\$7,122	\$0.00	\$0.00	\$0.00
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520	\$125,711	\$6,028	\$30,207	\$0.31	\$0.07	\$0.38
ACTIVE	LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,050	\$230,973	\$9,239	\$29,319	\$0.60	\$0.08	\$0.67
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275	\$92,885	\$3,715	\$27,704	\$0.29	\$0.09	\$0.38
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965	\$221,609	\$8,864	\$24,224	\$0.88	\$0.10	\$0.98
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611	\$193,687	\$7,747	\$31,517	\$0.65	\$0.11	\$0.76
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168	\$1,104,630	\$44,185	\$137,291	\$0.92	\$0.11	\$1.04
PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	167,140	\$138,092	\$5,524	\$8,926	\$0.11	\$0.17	\$0.28
ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$102,227	\$4,089	\$14,868	\$1.40	\$0.20	\$1.61
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	50,996	\$106,653	\$4,266	\$15,871	\$2.09	\$0.31	\$2.40
PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	31,482	\$115,437	\$4,617	\$7,638	\$0.37	\$0.62	\$0.99
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092	\$189,324	\$7,573	\$30,160	\$4.02	\$0.64	\$4.66
PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	31,585	\$123,131	\$4,925	\$7,184	\$0.63	\$0.91	\$1.54
PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	69,783	\$85,189	\$3,408	\$6,666	\$0.49	\$0.96	\$1.45
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	67,829	\$245,736	\$9,829	\$11,237	\$0.89	\$1.02	\$1.91
PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	27,817	\$132,366	\$5,294	\$7,332	\$1.01	\$1.40	\$2.42
PASSIVE	ELK LICK I	ALD / WETLAND	1995	3,207	\$45,582	\$1,823	\$5,323	\$1.10	\$3.20	\$4.30
PASSIVE	TEETS	PYROLUSITE	2002	26,895	\$239,970	\$9,599	\$11,280	\$3.55	\$4.18	\$7.73
PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	49,183	\$188,572	\$7,543	\$14,201	\$2.38	\$4.49	\$6.87
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	4,986	\$193,986	\$7,759	\$12,130	\$5.52	\$8.63	\$14.15
PASSIVE	CONY CLEANERS	SAPS	2002	44,642	\$267,146	\$10,686	\$12,901	\$7.27	\$8.77	\$16.04
PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	5,712	\$196,409	\$7,856	\$10,251	\$8.88	\$11.59	\$20.47
PASSIVE	OAK HILL I	SAPS / WETLANDS	2005	30,205	\$305,009	\$12,200	\$13,854	\$11.58	\$13.60	\$25.57
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	3,545	\$76,005	\$3,040	\$6,579	\$73.99	\$160.11	\$234.10
PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	1,840	\$76,005	\$3,040	\$7,123	\$193.77	\$453.95	\$647.72



2.2.7 ALL SYSTEMS COSTS PER ANNUAL POUNDS OF TOTAL ACIDITY NEUTRALIZED RANKED BY TOTAL COSTS PER POUND NEUTRALIZED

ACTIVE / PASSIVE	System Designation	System Design	First Full Operational Year	Avg. Lbs. Acidity Neutralized per year	2006 Capital Costs	Annualized Capital Costs	2006 O&M Costs	Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb Neutralized
ACTIVE	GORMAN	PUMPKONSULT SLURRY DOSER	1994	Data Incomplete	\$230,973	\$9,239	\$13,908	\$0.00	\$0.00	\$0.00
PASSIVE	RAILROAD STREET	SAPS	2007	Data Incomplete	\$264,500	\$10,580	\$13,266	\$0.00	\$0.00	\$0.00
PASSIVE	CRELLIN SCHOOL	WETLANDS	2006	Data Incomplete	\$222,686	\$8,907	\$10,911	\$0.00	\$0.00	\$0.00
PASSIVE	JAY RICE	PYROLUSITE	2007	Data Incomplete	\$153,518	\$6,141	\$10,366	\$0.00	\$0.00	\$0.00
PASSIVE	MIDLOTHIAN SCHOOL	PYROLUSITE	2006	Data Incomplete	\$175,981	\$7,039	\$9,216	\$0.00	\$0.00	\$0.00
PASSIVE	NEFF RUN II	STEEL SLAG LEACH BED	2006	Data Incomplete	\$76,005	\$3,040	\$7,122	\$0.00	\$0.00	\$0.00
PASSIVE	INTERSTATE 335	ALD / PONDS / WETLANDS	2000	167,140	\$138,092	\$5,524	\$8,926	\$0.11	\$0.17	\$0.28
ACTIVE	KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275	\$92,885	\$3,715	\$27,704	\$0.29	\$0.09	\$0.38
ACTIVE	VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520	\$125,711	\$5,028	\$30,207	\$0.31	\$0.07	\$0.38
ACTIVE	LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,050	\$230,973	\$9,239	\$29,319	\$0.60	\$0.08	\$0.67
ACTIVE	McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,511	\$193,687	\$7,747	\$31,517	\$0.65	\$0.11	\$0.76
ACTIVE	SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965	\$221,609	\$8,864	\$24,224	\$0.88	\$0.10	\$0.98
PASSIVE	GLOTFELTY	ALD / SAPS / WETLAND	2000	31,482	\$115,437	\$4,617	\$7,638	\$0.37	\$0.62	\$0.99
ACTIVE	KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168	\$1,104,630	\$44,185	\$137,291	\$0.92	\$0.11	\$1.04
PASSIVE	ELK LICK III	SAPS / WETLANDS	2001	65,783	\$85,189	\$3,406	\$6,666	\$0.49	\$0.96	\$1.45
PASSIVE	EVERHART	ALUMINATOR / SAPS / WETLAND	2001	31,585	\$123,131	\$4,925	\$7,184	\$0.63	\$0.91	\$1.54
ACTIVE	LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$102,227	\$4,089	\$14,868	\$1.40	\$0.20	\$1.61
PASSIVE	POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	67,829	\$245,736	\$9,829	\$11,237	\$0.85	\$1.02	\$1.91
ACTIVE	CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	60,996	\$106,653	\$4,266	\$15,871	\$2.09	\$0.31	\$2.40
PASSIVE	ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	27,817	\$132,356	\$5,294	\$7,332	\$1.01	\$1.40	\$2.42
PASSIVE	ELK LICK I	ALD / WETLAND	1995	3,207	\$45,582	\$1,823	\$5,323	\$1.10	\$3.20	\$4.30
ACTIVE	MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092	\$189,324	\$7,573	\$30,160	\$4.02	\$0.64	\$4.66
PASSIVE	AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	49,183	\$188,572	\$7,543	\$14,201	\$2.38	\$4.49	\$6.87
PASSIVE	TEETS	PYROLUSITE	2002	26,895	\$239,970	\$9,599	\$11,280	\$3.55	\$4.18	\$7.73
PASSIVE	AMISH ROAD I	ALUMINATOR / POND	2005	4,986	\$193,986	\$7,759	\$12,130	\$5.52	\$8.63	\$14.15
PASSIVE	CONY CLEANERS	SAPS	2002	44,642	\$267,146	\$10,686	\$12,901	\$7.27	\$8.77	\$16.04
PASSIVE	FAZENBAKER	SAPS / WETLAND	2003	5,712	\$196,409	\$7,856	\$10,251	\$8.88	\$11.59	\$20.47
PASSIVE	OAK HILL I	SAPS / WETLANDS	2006	30,205	\$305,009	\$12,200	\$13,854	\$11.98	\$13.60	\$25.57
PASSIVE	NEFF RUN I	LIMESTONE LEACH BED	2006	3,545	\$76,005	\$3,040	\$6,579	\$73.99	\$160.11	\$234.10
PASSIVE	NEFF RUN III	LIMESTONE LEACH BED	2006	1,840	\$76,005	\$3,040	\$7,123	\$193.77	\$453.95	\$647.72



SECTION 3

OPERATIONS AND MAINTENANCE

This Section details all O & M costs under various escalation scenarios and is not included in this Abridged Version of the Report.**

**Section 1.4 projects O & M details at a constant dollar model (2006) through 2030 with no escalation of costs.



SECTION 4
ACTIVE SYSTEMS



4.1 ACTIVE SYSTEM BENEFITS

BENEFITS AVG. TOTAL ACIDITY NEUTRALIZED PER YEAR BY SYSTEM			
System Designation	System Design	Year Operational	Avg. Lbs. Acidity Neutralized Per Year
KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275
GORMAN	PUMPKONSULT SLURRY DOSER	1994	
LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,050
LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909
VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520
KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168
MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092
CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	50,996
McDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611
SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965

TOTAL BENEFITS TO DATE BY SYSTEM			
System Designation	System Design	Year Operational	Total Lbs. Acidity Neutralized
KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	4,469,846
GORMAN	PUMPKONSULT SLURRY DOSER	1994	
LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	5,044,646
LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	947,821
VINDEX	AQUAFIX WATERWHEEL DOSER	1996	4,526,720
KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	8,394,176
MILL RUN PLB	PULSE LIMESTONE BED	2001	282,549
CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	254,980
McDONALD MINE	BOXHOLM BUCKET DOSER	2003	1,190,443
SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965

BENEFITS TOTAL ACIDITY NEUTRALIZED BY ACTIVE SYSTEMS			
Year	Total Acidity Neutralized		
	Average Pounds Per Year	Cumulative	
		Pounds	Tons
1993	319,275	319,275	160
1994	780,234	1,099,508	550
1995	780,234	1,879,742	940
1996	1,191,754	3,071,496	1,536
1997	1,191,754	4,263,250	2,132
1998	1,191,754	5,455,003	2,728
1999	1,191,754	6,646,757	3,323
2000	2,390,922	9,037,679	4,519
2001	2,438,013	11,475,692	5,738
2002	2,489,009	13,964,701	6,982
2003	2,786,620	16,751,321	8,376
2004	2,786,620	19,537,941	9,769
2005	2,786,620	22,324,561	11,162
2006	3,037,585	25,362,146	12,681



SECTION 4.2

SUMMARY SYSTEM BENEFITS AND QUALITY BASED COST

ACTIVE SYSTEMS



4.2 ACTIVE SYSTEMS SUMMARY OF BENEFITS AND QUALITY BASED COSTS

System Designation	System Design	Year Operational	Avg. Lbs. Acidity Neutralized per year	Installed Capital Cost	Adjusted 2006 Capital Costs	Annualized 2006 Capital Costs	2006 O&M Costs	Capital Cost Per Annual Pound Neutralized	O&M Cost Per Annual Pound Neutralized	Total Cost Per Annual Pound Neutralized
CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	50,996	\$92,000	\$106,653	\$4,266	\$14,031	\$0.08	\$0.28	\$0.36
GORMAN	PUMPKONSULT SLURRY DOSER	1994	Data Incomplete	\$162,000	\$199,573	\$7,983	\$10,678	\$0.00	\$0.00	\$0.00
KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168	\$898,166	\$931,997	\$37,280	\$119,252	\$0.03	\$0.10	\$0.13
KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275	\$63,250	\$95,671	\$3,827	\$26,505	\$0.01	\$0.08	\$0.10
LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,050	\$162,000	\$224,135	\$8,965	\$26,079	\$0.02	\$0.07	\$0.09
LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$71,700	\$101,849	\$4,074	\$13,433	\$0.06	\$0.18	\$0.24
MCDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611	\$177,388	\$197,751	\$7,910	\$28,062	\$0.03	\$0.09	\$0.12
MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092	\$158,556	\$189,324	\$7,573	\$23,027	\$0.16	\$0.49	\$0.65
SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965	\$215,155	\$221,609	\$8,864	\$19,903	\$0.04	\$0.08	\$0.11
VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520	\$93,541	\$129,483	\$5,179	\$28,364	\$0.01	\$0.07	\$0.08
BY SYSTEM TYPE										
LOST LAND RUN	BOXHOLM BUCKET DOSER	1994	72,909	\$71,700	\$101,849	\$4,074	\$13,433	\$0.06	\$0.18	\$0.24
CHERRY CREEK	BOXHOLM BUCKET DOSER	2002	50,996	\$92,000	\$106,653	\$4,266	\$14,031	\$0.08	\$0.28	\$0.36
MCDONALD MINE	BOXHOLM BUCKET DOSER	2003	297,611	\$177,388	\$197,751	\$7,910	\$28,062	\$0.03	\$0.09	\$0.12
GORMAN	PUMPKONSULT SLURRY DOSER	1994	Data Incomplete	\$162,000	\$199,573	\$7,983	\$10,678	\$0.00	\$0.00	\$0.00
LAUREL RUN	PUMPKONSULT SLURRY DOSER	1994	388,050	\$162,000	\$224,135	\$8,965	\$26,079	\$0.02	\$0.07	\$0.09
KITZMILLER	AQUAFIX WATERWHEEL DOSER	1993	319,275	\$63,250	\$95,671	\$3,827	\$26,505	\$0.01	\$0.08	\$0.10
VINDEX	AQUAFIX WATERWHEEL DOSER	1996	411,520	\$93,541	\$129,483	\$5,179	\$28,364	\$0.01	\$0.07	\$0.08
KEMPTON AIR SHAFT	AQUAFIX WATERWHEEL DOSER	2000	1,199,168	\$898,166	\$931,997	\$37,280	\$119,252	\$0.03	\$0.10	\$0.13
SHALLMAR	AQUAFIX WATERWHEEL DOSER	2006	250,965	\$215,155	\$221,609	\$8,864	\$19,903	\$0.04	\$0.08	\$0.11
MILL RUN PLB	PULSE LIMESTONE BED	2001	47,092	\$158,556	\$189,324	\$7,573	\$23,027	\$0.16	\$0.49	\$0.65



SECTION 5
PASSIVE SYSTEMS



5.1 PASSIVE SYSTEM BENEFITS BY SYSTEM PER YEAR

System Designation	System Design	Year Operational	Lbs. Iron Neutralized	Lbs. Site Acidity Neutralized	Lbs. Excess Alkalinity	Lbs. TOTAL Acidity Neutralized	Lbs. Aluminum Neutralized
ELK LICK I	ALD / WETLAND	1995	1,662.64	1,606.00	1,601.00	3,207.00	0.61
ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	5,224.81	27,171.70	644.80	27,816.50	695.25
GLOTFELTY	ALD / SAPS / WETLAND	2000	12,385.37	29,956.50	1,525.00	31,481.50	13.08
INTERSTATE 335	ALD / PONDS / WETLANDS	2000	51,880.67	164,914.20	2,225.90	167,140.10	3,656.78
ELK LICK III	SAPS / WETLANDS	2001	6,964.11	68,232.40	1,550.70	69,783.10	871.82
EVERHART	ALUMINATOR / SAPS / WETLAND	2001	7,876.00	29,373.50	2,211.90	31,585.40	503.16
CONEY CLEANERS	SAPS	2002	1,470.29	44,517.99	124.40	44,642.30	2,862.10
TEETS	PYROLUSITE	2002	2,701.52	20,989.99	5,905.10	26,895.00	1,560.05
FAZENBAKER	SAPS / WETLAND	2003	884.69	5,373.40	339.00	5,712.40	252.90
POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	11,025.92	52,137.40	15,692.00	67,829.40	740.98
AMISH ROAD I	ALUMINATOR / POND	2005	1,405.63	2,172.90	2,813.10	4,986.00	172.80
OAK HILL I	SAPS / WETLANDS	2005	1,018.81	16,928.10	13,276.70	30,204.80	1,523.64
AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	3,163.65	3,649.60	45,533.30	49,182.90	12.55
CRELLIN SCHOOL	WETLANDS	2006					
MIDLOTHIAN SCHOOL	PYROLUSITE	2006					
NEFF RUN I	LIMESTONE LEACH BED	2006	41.09	129.70	3,415.30	3,545.00	6.47
NEFF RUN II	STEEL SLAG LEACH BED	2006					
NEFF RUN III	LIMESTONE LEACH BED	2006	15.69	0.01	1,839.70	1,839.71	0.14
JAY RICE	PYROLUSITE	2007					
RAILROAD STREET	SAPS	2007					
TOTALS Pounds			107,720.89	467,153.21	98,697.90	565,851.11	12,871.73
TOTALS TONS			83.66	233.68	49.35	282.93	6.44

BENEFITS TO DATE PER SYSTEM

System Designation	System Design	Year Operational	Lbs. Iron Neutralized	Lbs. Site Acidity Neutralized	Lbs. Excess Alkalinity	Lbs. TOTAL Acidity Neutralized	Lbs. Aluminum Neutralized
ELK LICK I	ALD / WETLAND	1995	19,952	19,272	19,212	38,484	0
ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	41,798	217,374	5,158	222,532	5,562
GLOTFELTY	ALD / SAPS / WETLAND	2000	86,698	209,696	10,675	220,371	92
INTERSTATE 335	ALD / PONDS / WETLANDS	2000	363,165	1,154,399	15,581	1,169,981	25,597
ELK LICK III	SAPS / WETLANDS	2001	41,785	409,394	9,304	418,699	5,231
EVERHART	ALUMINATOR / SAPS / WETLAND	2001	47,256	178,241	13,271	189,512	3,019
CONEY CLEANERS	SAPS	2002	7,351	222,590	622	223,212	14,311
TEETS	PYROLUSITE	2002	13,508	104,950	29,526	134,475	7,800
FAZENBAKER	SAPS / WETLAND	2003	3,539	21,494	1,356	22,850	1,012
POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	44,104	208,550	62,768	271,318	2,964
AMISH ROAD I	ALUMINATOR / POND	2005	2,811	4,346	5,626	9,972	348
OAK HILL I	SAPS / WETLANDS	2005	2,038	33,856	26,953	60,410	3,047
AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	3,164	3,650	45,533	49,183	13
CRELLIN SCHOOL	WETLANDS	2006	0	0	0	0	0
MIDLOTHIAN SCHOOL	PYROLUSITE	2006	0	0	0	0	0
NEFF RUN I	LIMESTONE LEACH BED	2006	41	130	3,415	3,545	6
NEFF RUN II	STEEL SLAG LEACH BED	2006	0	0	0	0	0
NEFF RUN III	LIMESTONE LEACH BED	2006	16	0	1,840	1,840	0
JAY RICE	PYROLUSITE	2007					
RAILROAD STREET	SAPS	2007					

BENEFITS TO DATE

AVERAGE PER YEAR BY YEAR	YEAR	Lbs. Iron Neutralized	Lbs. Site Acidity Neutralized	Lbs. Excess Alkalinity	Lbs. TOTAL Acidity Neutralized	Lbs. Aluminum Neutralized
	1995	1,663	1,606	1,601	3,207	0
	1996	1,663	1,606	1,601	3,207	0
	1997	1,663	1,606	1,601	3,207	0
	1998	1,663	1,606	1,601	3,207	0
	1999	6,887	26,778	2,246	31,024	695
	2000	71,153	223,648	9,997	229,645	4,365
	2001	85,994	321,254	9,759	331,014	5,740
	2002	90,155	386,762	15,789	402,551	10,162
	2003	102,076	444,273	31,820	476,093	11,156
	2004	102,076	444,273	31,820	476,093	11,156
	2005	104,500	463,374	47,910	511,284	12,853
	2006	107,721	467,153	98,698	565,851	12,872

CUMMULATIVE TO DATE	YEAR	Lbs. Iron Neutralized	Lbs. Site Acidity Neutralized	Lbs. Excess Alkalinity	Lbs. TOTAL Acidity Neutralized	Lbs. Aluminum Neutralized
	1995	1,663	1,606	1,601	3,207	0
	1996	3,325	3,212	3,202	6,414	0
	1997	4,988	4,818	4,803	9,621	0
	1998	6,651	6,424	6,404	12,828	0
	1999	13,538	35,202	8,650	43,852	695
	2000	84,692	258,850	14,847	273,497	5,060
	2001	170,685	580,104	24,406	604,510	10,801
	2002	260,851	966,867	40,195	1,007,061	20,963
	2003	362,927	1,411,139	72,014	1,483,154	32,119
	2004	465,003	1,855,412	103,834	1,959,247	43,275
	2005	569,503	2,318,786	151,744	2,470,530	56,128
	2006	677,224	2,785,939	250,442	3,036,381	68,999



SECTION 5.2

SUMMARY SYSTEM BENEFITS AND QUALITY BASED COST

PASSIVE SYSTEMS



5.2.1 PASSIVE SYSTEMS QUALITY SUMMARY

System Designation	System Design	Year Operational	Avg. Lbs. Iron Neutralized per year	Avg. Lbs. Site Acidity Neutralized per year	Avg. Lbs. Excess Alkalinity per year	Avg. Lbs. TOTAL Acidity Neutralized per year	Avg. Lbs. Aluminum Neutralized per year	Installed Capital Cost	2006 Capital Costs	Annualized 2006 Capital Costs	2006 O&M Costs
AMISH ROAD I	ALUMINATOR / POND	2005	1,405.63	2,172.90	2,813.10	4,986.00	172.80	\$182,850	\$193,986	\$7,759	\$8,473
AMISH ROAD II	ALDs / PONDS / WETLANDS	2006	3,163.85	3,649.80	45,533.30	49,182.90	12.55	\$183,980	\$188,572	\$7,543	\$10,540
CONEY CLEANERS	SAPS	2002	1,470.29	44,517.90	124.40	44,842.30	2,862.10	\$230,443	\$267,148	\$10,686	\$8,293
CRELLIN SCHOOL	WETLANDS	2008	Data Incomplete					\$218,200	\$222,688	\$8,907	\$8,587
ELK LICK I	ALD / WETLAND	1999	1,662.64	1,806.00	1,601.00	3,207.00	0.01	\$31,970	\$45,582	\$1,823	\$4,684
ELK LICK II	SAPS / STEEL SLAG / WETLANDS	1999	5,224.81	27,171.70	844.80	27,816.50	895.25	\$104,483	\$120,448	\$4,818	\$5,242
ELK LICK III	SAPS / WETLANDS	2001	8,964.11	68,232.40	1,550.70	69,783.10	871.82	\$71,345	\$85,189	\$3,408	\$5,239
EVERHART	ALUMINATOR / SAPS / WETLAND	2001	7,876.00	29,373.50	2,211.90	31,585.40	503.16	\$103,121	\$123,131	\$4,925	\$5,121
FAZENBAKER	SAPS / WETLAND	2003	884.69	5,373.40	339.00	5,712.40	252.90	\$174,507	\$196,409	\$7,856	\$8,780
GLOTFELTY	ALD / SAPS / WETLAND	2000	12,385.37	29,956.50	1,525.00	31,461.50	13.08	\$93,861	\$115,437	\$4,917	\$5,780
INTERSTATE 335	ALD / PONDS / WETLANDS	2000	\$1,880.67	164,914.20	2,225.90	167,140.10	3,696.78	\$112,281	\$138,092	\$5,524	\$8,681
JAY RICE	PYROLUSITE	2007	Data Incomplete					\$153,518	\$153,518	\$6,141	\$7,083
MIDLOTHIAN SCHOOL	PYROLUSITE	2006	Data Incomplete					\$170,856	\$175,981	\$7,039	\$5,799
NEFF RUN I	LIMESTONE LEACH BED	2006	41.09	129.70	3,415.30	3,545.00	6.47	\$73,791	\$76,905	\$3,040	\$5,103
NEFF RUN II	STEEL SLAG LEACH BED	2006	Data Incomplete					\$73,791	\$76,905	\$3,040	\$5,846
NEFF RUN III	LIMESTONE LEACH BED	2008	15.89	0.01	1,839.71	1,839.71	0.14	\$73,791	\$76,905	\$3,040	\$5,846
OAK HILL I	SAPS / WETLANDS	2005	1,018.81	16,928.10	13,276.70	30,204.80	1,523.64	\$287,500	\$305,009	\$12,200	\$8,105
POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	11,025.92	52,137.40	15,892.00	67,829.40	740.98	\$218,333	\$245,736	\$9,829	\$9,870
RAILROAD STREET	SAPS	2007	Data Incomplete					\$264,500	\$264,500	\$10,580	\$7,744
TEETS	PYROLUSITE	2002	2,791.52	20,989.90	5,905.10	26,895.00	1,560.05	\$207,600	\$239,970	\$9,599	\$7,139
BY SYSTEM DESIGN											
ELK LICK I	ALD / WETLAND	1999	1,662.64	1,806.00	1,601.00	3,207.00	0.01	\$31,970	\$45,582	\$1,823	\$4,684
AMISH ROAD II	ALD / WETLAND / POND	2006	3,163.85	3,649.80	45,533.30	49,182.90	12.55	\$183,980	\$188,572	\$7,543	\$10,540
INTERSTATE 335	ALD / WETLAND / POND	2000	\$1,880.67	164,914.20	2,225.90	167,140.10	3,696.78	\$112,281	\$138,092	\$5,524	\$8,681
GLOTFELTY	ALD / WETLAND / SAPS	2000	12,385.37	29,956.50	1,525.00	31,461.50	13.08	\$93,861	\$115,437	\$4,917	\$5,780
AMISH ROAD I	ALUMINATOR / POND	2005	1,405.63	2,172.90	2,813.10	4,986.00	172.80	\$182,850	\$193,986	\$7,759	\$8,473
EVERHART	ALUMINATOR / SAPS / WETLAND	2001	7,876.00	29,373.50	2,211.90	31,585.40	503.16	\$103,121	\$123,131	\$4,925	\$5,121
NEFF RUN I	LIMESTONE LEACH BED	2006	41.09	129.70	3,415.30	3,545.00	6.47	\$73,791	\$76,905	\$3,040	\$5,103
NEFF RUN III	LIMESTONE LEACH BED	2008	15.89	0.01	1,839.71	1,839.71	0.14	\$73,791	\$76,905	\$3,040	\$5,846
AMISH ROAD I	POND / ALUMINATOR	2005	1,405.63	2,172.90	2,813.10	4,986.00	172.80	\$182,850	\$193,986	\$7,759	\$8,473
AMISH ROAD II	POND / WETLAND / ALD	2006	3,163.85	3,649.80	45,533.30	49,182.90	12.55	\$183,980	\$188,572	\$7,543	\$10,540
INTERSTATE 335	POND / WETLAND / ALD	2000	\$1,880.67	164,914.20	2,225.90	167,140.10	3,696.78	\$112,281	\$138,092	\$5,524	\$8,681
JAY RICE	PYROLUSITE	2007	Data Incomplete					\$153,518	\$153,518	\$6,141	\$7,083
MIDLOTHIAN SCHOOL	PYROLUSITE	2006	Data Incomplete					\$170,856	\$175,981	\$7,039	\$5,799
TEETS	PYROLUSITE	2002	2,791.52	20,989.90	5,905.10	26,895.00	1,560.05	\$207,600	\$239,970	\$9,599	\$7,139
CONEY CLEANERS	SAPS	2002	1,470.29	44,517.90	124.40	44,842.30	2,862.10	\$230,443	\$267,148	\$10,686	\$8,293
RAILROAD STREET	SAPS	2007	Data Incomplete					\$264,500	\$264,500	\$10,580	\$7,744
POTOMAC HILL	SAPS / STEEL SLAG DITCH	2003	11,025.92	52,137.40	15,892.00	67,829.40	740.98	\$218,333	\$245,736	\$9,829	\$9,870
ELK LICK III	SAPS / WETLANDS	2001	8,964.11	68,232.40	1,550.70	69,783.10	871.82	\$71,345	\$85,189	\$3,408	\$5,239
FAZENBAKER	SAPS / WETLANDS	2003	884.69	5,373.40	339.00	5,712.40	252.90	\$174,507	\$196,409	\$7,856	\$8,780
OAK HILL I	SAPS / WETLANDS	2005	1,018.81	16,928.10	13,276.70	30,204.80	1,523.64	\$287,500	\$305,009	\$12,200	\$8,105
GLOTFELTY	SAPS / WETLAND / ALD	2000	12,385.37	29,956.50	1,525.00	31,461.50	13.08	\$93,861	\$115,437	\$4,917	\$5,780
EVERHART	SAPS / WETLAND / ALUMINATOR	2001	7,876.00	29,373.50	2,211.90	31,585.40	503.16	\$103,121	\$123,131	\$4,925	\$5,121
ELK LICK II	SAPS / WETLANDS / STEEL SLAG	1999	5,224.81	27,171.70	844.80	27,816.50	895.25	\$104,483	\$120,448	\$4,818	\$5,242
ELK LICK II	STEEL SLAG / SAPS / WETLANDS	1999	5,224.81	27,171.70	844.80	27,816.50	895.25	\$104,483	\$120,448	\$4,818	\$5,242
POTOMAC HILL	STEEL SLAG DITCH / SAPS	2003	11,025.92	52,137.40	15,892.00	67,829.40	740.98	\$218,333	\$245,736	\$9,829	\$9,870
NEFF RUN II	STEEL SLAG LEACH BED	2006	Data Incomplete					\$73,791	\$76,905	\$3,040	\$5,846
CRELLIN SCHOOL	WETLANDS	2008	Data Incomplete					\$218,200	\$222,688	\$8,907	\$8,587
ELK LICK I	WETLANDS / ALD	1999	1,662.64	1,806.00	1,601.00	3,207.00	0.01	\$31,970	\$45,582	\$1,823	\$4,684
AMISH ROAD II	WETLANDS / ALD / PONDS	2006	3,163.85	3,649.80	45,533.30	49,182.90	12.55	\$183,980	\$188,572	\$7,543	\$10,540
INTERSTATE 335	WETLANDS / ALD / PONDS	2000	\$1,880.67	164,914.20	2,225.90	167,140.10	3,696.78	\$112,281	\$138,092	\$5,524	\$8,681
ELK LICK III	WETLANDS / SAPS	2001	8,964.11	68,232.40	1,550.70	69,783.10	871.82	\$71,345	\$85,189	\$3,408	\$5,239
OAK HILL I	WETLANDS / SAPS	2005	1,018.81	16,928.10	13,276.70	30,204.80	1,523.64	\$287,500	\$305,009	\$12,200	\$8,105
FAZENBAKER	WETLANDS / SAPS	2003	884.69	5,373.40	339.00	5,712.40	252.90	\$174,507	\$196,409	\$7,856	\$8,780
GLOTFELTY	WETLANDS / SAPS / ALD	2000	12,385.37	29,956.50	1,525.00	31,461.50	13.08	\$93,861	\$115,437	\$4,917	\$5,780
EVERHART	WETLANDS / SAPS / ALUMINATOR	2001	7,876.00	29,373.50	2,211.90	31,585.40	503.16	\$103,121	\$123,131	\$4,925	\$5,121
ELK LICK II	WETLANDS / SAPS / STEEL SLAG	1999	5,224.81	27,171.70	844.80	27,816.50	895.25	\$104,483	\$120,448	\$4,818	\$5,242



5.2.2 PASSIVE SYSTEMS QUALITY BASED COST SUMMARY

System Designation	System Design	Iron			Site Acidity			Alkalinity			Aluminum			TOTAL Acidity		
		Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb Neutralized	Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb Neutralized	Capital Cost per Annual Excess Lb.	O&M Cost per Annual Excess Lb.	Total Cost per Annual Excess Lb.	Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb Neutralized	Capital Cost per Annual Lb Neutralized	O&M Cost per Annual Lb Neutralized	Total Cost per Annual Lb Neutralized
AMISH ROAD I	ALUMINATOR / POND	\$5.52	\$6.03	\$11.55	\$3.57	\$3.90	\$7.47	\$2.76	\$3.01	\$5.77	\$44.90	\$48.03	\$93.94	\$1.56	\$1.70	\$3.26
AMISH ROAD II	ALDs / PONDS / WETLANDS	\$2.38	\$2.33	\$5.72	\$2.07	\$2.89	\$4.95	\$0.17	\$0.23	\$0.40	\$601.03	\$839.88	\$1,440.91	\$0.15	\$0.21	\$0.37
CONEY CLEANERS	SAPS	\$7.27	\$6.64	\$12.91	\$0.24	\$0.19	\$0.43	\$85.90	\$68.68	\$152.58	\$3.73	\$2.90	\$6.63	\$0.24	\$0.19	\$0.43
CRELLIN SCHOOL	WETLANDS										\$182,326.30	\$468,440.68	\$650,766.98	\$0.57	\$1.48	\$2.03
ELK LICK I	ALD / WETLAND	\$1.10	\$2.82	\$3.91	\$1.14	\$2.92	\$4.05	\$1.14	\$2.93	\$4.06						
ELK LICK II	SAPS / STEEL SLAG / WETLANDS	\$0.92	\$1.00	\$1.93	\$0.18	\$0.19	\$0.37	\$7.47	\$8.13	\$15.60	\$6.93	\$7.54	\$14.47	\$0.17	\$0.19	\$0.36
ELK LICK III	SAPS / WETLANDS	\$0.49	\$0.75	\$1.24	\$0.05	\$0.08	\$0.13	\$2.20	\$3.38	\$5.58	\$3.91	\$6.01	\$9.92	\$0.05	\$0.08	\$0.12
EVERHART	ALUMINATOR / SAPS / WETLAND	\$0.63	\$0.85	\$1.28	\$0.17	\$0.17	\$0.34	\$2.23	\$2.32	\$4.54	\$0.79	\$10.18	\$19.97	\$0.16	\$0.16	\$0.32
FAZENBAKER	SAPS / WETLAND	\$8.88	\$7.64	\$16.52	\$1.46	\$1.26	\$2.72	\$23.18	\$19.94	\$43.12	\$31.07	\$26.73	\$57.80	\$1.38	\$1.18	\$2.56
GLOTFELTY	ALD / SAPS / WETLAND	\$0.37	\$0.47	\$0.84	\$0.15	\$0.19	\$0.35	\$3.03	\$3.78	\$6.80	\$353.02	\$440.38	\$793.38	\$0.15	\$0.18	\$0.33
INTERSTATE 335	ALD / PONDS / WETLANDS	\$0.11	\$0.13	\$0.24	\$0.03	\$0.04	\$0.07	\$2.48	\$3.00	\$5.48	\$1.51	\$1.83	\$3.34	\$0.03	\$0.04	\$0.07
JAY RICE	PYROLUSITE															
MIDLOTHIAN SCHOOL	PYROLUSITE															
NEFF RUN I	LIMESTONE LEACH BED	\$73.99	\$124.18	\$198.17	\$23.44	\$39.34	\$62.78	\$0.88	\$1.49	\$2.38	\$469.89	\$788.68	\$1,258.55	\$0.86	\$1.44	\$2.30
NEFF RUN II	STEEL SLAG LEACH BED															
NEFF RUN III	LIMESTONE LEACH BED	\$193.77	\$359.83	\$553.60	\$304,018.51	\$564,573.68	\$868,592.19	\$1.65	\$3.07	\$4.72	\$21,715.81	\$40,328.89	\$62,042.30	\$1.65	\$3.07	\$4.72
OAK HILL I	SAPS / WETLANDS	\$11.98	\$7.95	\$19.93	\$0.72	\$0.48	\$1.20	\$0.92	\$0.61	\$1.53	\$8.01	\$5.32	\$13.33	\$0.40	\$0.27	\$0.67
POTOMAC HILL	STEEL SLAG DITCH / SAPS	\$0.89	\$0.62	\$1.51	\$0.19	\$0.13	\$0.32	\$0.63	\$0.44	\$1.06	\$13.27	\$9.27	\$22.54	\$0.14	\$0.10	\$0.25
RAILROAD STREET	SAPS															
TEETS	PYROLUSITE	\$3.55	\$2.64	\$6.20	\$0.48	\$0.34	\$0.80	\$1.63	\$1.21	\$2.83	\$6.15	\$4.58	\$10.73	\$0.36	\$0.27	\$0.62
BY SYSTEM TYPE																
ELK LICK I	ALD / WETLAND	\$1.10	\$2.82	\$3.91	\$1.14	\$2.92	\$4.05	\$1.14	\$2.93	\$4.06	\$182,326.30	\$468,440.68	\$650,766.98	\$0.57	\$1.48	\$2.03
AMISH ROAD I	ALD / WETLAND / POND	\$2.38	\$2.33	\$5.72	\$2.07	\$2.89	\$4.95	\$0.17	\$0.23	\$0.40	\$601.03	\$839.88	\$1,440.91	\$0.15	\$0.21	\$0.37
INTERSTATE 335	ALD / WETLAND / POND	\$0.11	\$0.13	\$0.24	\$0.03	\$0.04	\$0.07	\$2.48	\$3.00	\$5.48	\$1.51	\$1.83	\$3.34	\$0.03	\$0.04	\$0.07
GLOTFELTY	ALD / WETLAND / SAPS	\$0.37	\$0.47	\$0.84	\$0.15	\$0.19	\$0.35	\$3.03	\$3.78	\$6.80	\$353.02	\$440.38	\$793.38	\$0.15	\$0.18	\$0.33
AMISH ROAD I	ALUMINATOR / POND	\$5.52	\$6.03	\$11.55	\$3.57	\$3.90	\$7.47	\$2.76	\$3.01	\$5.77	\$44.90	\$48.03	\$93.94	\$1.56	\$1.70	\$3.26
EVERHART	ALUMINATOR / SAPS / WETLAND	\$0.63	\$0.85	\$1.28	\$0.17	\$0.17	\$0.34	\$2.23	\$2.32	\$4.54	\$0.79	\$10.18	\$19.97	\$0.16	\$0.16	\$0.32
NEFF RUN I	LIMESTONE LEACH BED	\$73.99	\$124.18	\$198.17	\$23.44	\$39.34	\$62.78	\$0.88	\$1.49	\$2.38	\$469.89	\$788.68	\$1,258.55	\$0.86	\$1.44	\$2.30
NEFF RUN III	LIMESTONE LEACH BED	\$193.77	\$359.83	\$553.60	\$304,018.51	\$564,573.68	\$868,592.19	\$1.65	\$3.07	\$4.72	\$21,715.81	\$40,328.89	\$62,042.30	\$1.65	\$3.07	\$4.72
AMISH ROAD I	POND / ALUMINATOR	\$5.52	\$6.03	\$11.55	\$3.57	\$3.90	\$7.47	\$2.76	\$3.01	\$5.77	\$44.90	\$48.03	\$93.94	\$1.56	\$1.70	\$3.26
AMISH ROAD II	POND / WETLAND / ALD	\$2.38	\$2.33	\$5.72	\$2.07	\$2.89	\$4.95	\$0.17	\$0.23	\$0.40	\$601.03	\$839.88	\$1,440.91	\$0.15	\$0.21	\$0.37
INTERSTATE 335	POND / WETLAND / ALD	\$0.11	\$0.13	\$0.24	\$0.03	\$0.04	\$0.07	\$2.48	\$3.00	\$5.48	\$1.51	\$1.83	\$3.34	\$0.03	\$0.04	\$0.07
JAY RICE	PYROLUSITE															
MIDLOTHIAN SCHOOL	PYROLUSITE															
TEETS	PYROLUSITE	\$3.55	\$2.64	\$6.20	\$0.48	\$0.34	\$0.80	\$1.63	\$1.21	\$2.83	\$6.15	\$4.58	\$10.73	\$0.36	\$0.27	\$0.62
CONEY CLEANERS	SAPS	\$7.27	\$6.64	\$12.91	\$0.24	\$0.19	\$0.43	\$85.90	\$68.68	\$152.58	\$3.73	\$2.90	\$6.63	\$0.24	\$0.19	\$0.43
RAILROAD STREET	SAPS															
POTOMAC HILL	SAPS / STEEL SLAG DITCH	\$0.89	\$0.62	\$1.51	\$0.19	\$0.13	\$0.32	\$0.63	\$0.44	\$1.06	\$13.27	\$9.27	\$22.54	\$0.14	\$0.10	\$0.25
ELK LICK III	SAPS / WETLANDS	\$0.49	\$0.75	\$1.24	\$0.05	\$0.08	\$0.13	\$2.20	\$3.38	\$5.58	\$3.91	\$6.01	\$9.92	\$0.05	\$0.08	\$0.12
FAZENBAKER	SAPS / WETLANDS	\$8.88	\$7.64	\$16.52	\$1.46	\$1.26	\$2.72	\$23.18	\$19.94	\$43.12	\$31.07	\$26.73	\$57.80	\$1.38	\$1.18	\$2.56
OAK HILL I	SAPS / WETLANDS	\$11.98	\$7.95	\$19.93	\$0.72	\$0.48	\$1.20	\$0.92	\$0.61	\$1.53	\$8.01	\$5.32	\$13.33	\$0.40	\$0.27	\$0.67
GLOTFELTY	SAPS / WETLAND / ALD	\$0.37	\$0.47	\$0.84	\$0.15	\$0.19	\$0.35	\$3.03	\$3.78	\$6.80	\$353.02	\$440.38	\$793.38	\$0.15	\$0.18	\$0.33
EVERHART	SAPS / WETLAND / ALUMINATOR	\$0.63	\$0.85	\$1.28	\$0.17	\$0.17	\$0.34	\$2.23	\$2.32	\$4.54	\$0.79	\$10.18	\$19.97	\$0.16	\$0.16	\$0.32
ELK LICK II	SAPS / WETLANDS / STEEL SLAG	\$0.92	\$1.00	\$1.93	\$0.18	\$0.19	\$0.37	\$7.47	\$8.13	\$15.60	\$6.93	\$7.54	\$14.47	\$0.17	\$0.19	\$0.36
ELK LICK II	STEEL SLAG / SAPS / WETLANDS	\$0.92	\$1.00	\$1.93	\$0.18	\$0.19	\$0.37	\$7.47	\$8.13	\$15.60	\$6.93	\$7.54	\$14.47	\$0.17	\$0.19	\$0.36
POTOMAC HILL	STEEL SLAG DITCH / SAPS	\$0.89	\$0.62	\$1.51	\$0.19	\$0.13	\$0.32	\$0.63	\$0.44	\$1.06	\$13.27	\$9.27	\$22.54	\$0.14	\$0.10	\$0.25
NEFF RUN II	STEEL SLAG LEACH BED															
CRELLIN SCHOOL	WETLANDS															
ELK LICK I	WETLANDS / ALD	\$1.10	\$2.82	\$3.91	\$1.14	\$2.92	\$4.05	\$1.14	\$2.93	\$4.06	\$182,326.30	\$468,440.68	\$650,766.98	\$0.57	\$1.48	\$2.03
AMISH ROAD II	WETLANDS / ALD / PONDS	\$2.38	\$2.33	\$5.72	\$2.07	\$2.89	\$4.95	\$0.17	\$0.23	\$0.40	\$601.03	\$839.88	\$1,440.91	\$0.15	\$0.21	\$0.37
INTERSTATE 335	WETLANDS / ALD / PONDS	\$0.11	\$0.13	\$0.24	\$0.03	\$0.04	\$0.07	\$2.48	\$3.00	\$5.48	\$1.51	\$1.83	\$3.34	\$0.03	\$0.04	\$0.07
ELK LICK III	WETLANDS / SAPS	\$0.49	\$0.75	\$1.24	\$0.05	\$0.08	\$0.13	\$2.20	\$3.38	\$5.58	\$3.91	\$6.01	\$9.92	\$0.05	\$0.08	\$0.12
OAK HILL I	WETLANDS / SAPS	\$11.98	\$7.95	\$19.93	\$0.72	\$0.48	\$1.20	\$0.92	\$0.61	\$1.53	\$8.01	\$5.32	\$13.33	\$0.40	\$0.27	\$0.67
FAZENBAKER	WETLANDS / SAPS	\$8.88	\$7.64	\$16.52	\$1.46	\$1.26	\$2.72	\$23.18	\$19.94	\$43.12	\$31.07	\$26.73	\$57.80	\$1.38	\$1.18	\$2.56
GLOTFELTY	WETLANDS / SAPS / ALD	\$0.37	\$0.47	\$0.84	\$0.15	\$0.19	\$0.35	\$3.03	\$3.78	\$6.80	\$353.02	\$440.38	\$793.38	\$0.15	\$0.18	\$0.33
EVERHART	WETLANDS / SAPS / ALUMINATOR	\$0.63	\$0.85	\$1.28	\$0.17	\$0.17	\$0.34	\$2.23	\$2.32	\$4.54	\$0.79	\$10.18	\$19.97	\$0.16	\$0.16	\$0.32
ELK LICK II	WETLANDS / SAPS / STEEL SLAG	\$0.92	\$1.00	\$1.93	\$0.18	\$0.19	\$0.37	\$7.47	\$8.13	\$15.60	\$6.93	\$7.54	\$14.47	\$0.17	\$0.19	\$0.36