

**R30B34**  
**University of Maryland Center for Environmental Science**  
 University System of Maryland

***Operating Budget Data***

	(\$ in Thousands)				
	<u>FY 11</u> <u>Actual</u>	<u>FY 12</u> <u>Working</u>	<u>FY 13</u> <u>Allowance</u>	<u>FY 12-13</u> <u>Change</u>	<u>% Change</u> <u>Prior Year</u>
General Funds	\$17,949	\$18,184	\$18,762	\$578	3.2%
Contingent & Back of the Bill Reductions	0	0	0	-10	
<b>Adjusted General Funds</b>	<b>\$17,949</b>	<b>\$18,184</b>	<b>\$18,762</b>	<b>\$568</b>	<b>3.1%</b>
Special Funds	695	965	821	-145	-15.0%
Contingent & Back of the Bill Reductions	0	0	0	10	
<b>Adjusted Special Funds</b>	<b>\$695</b>	<b>\$965</b>	<b>\$821</b>	<b>-\$134</b>	<b>-13.9%</b>
Other Unrestricted Funds	3,500	6,230	5,742	-488	-7.8%
<b>Adjusted Other Unrestricted Funds</b>	<b>\$3,500</b>	<b>\$6,230</b>	<b>\$5,742</b>	<b>-\$488</b>	<b>-7.8%</b>
Total Unrestricted Funds	22,144	25,379	25,325	-54	-0.2%
<b>Adjusted Total Unrestricted Funds</b>	<b>\$22,144</b>	<b>\$25,379</b>	<b>\$25,325</b>	<b>-\$54</b>	<b>-0.2%</b>
Restricted Funds	20,176	19,828	21,333	1,505	7.6%
<b>Adjusted Restricted Funds</b>	<b>\$20,176</b>	<b>\$19,828</b>	<b>\$21,333</b>	<b>\$1,505</b>	<b>7.6%</b>
<b>Adjusted Grand Total</b>	<b>\$42,320</b>	<b>\$45,207</b>	<b>\$46,658</b>	<b>\$1,451</b>	<b>3.2%</b>

- General funds increase \$0.6 million, or 3.1%, in the fiscal 2013 allowance after adjusting for the \$10,345 reduction that is contingent on enactment of the Budget Reconciliation and Financing Act of 2012, which would be replaced by the same amount from the Higher Education Investment Fund (HEIF). HEIF declines 13.9%, or \$0.1 million, due to the use of fund balance in fiscal 2012. Overall, State funds increase \$0.4 million.
- Other unrestricted funds decline \$488,000, or 7.8%, and restricted funds increase 7.6%, or \$1.5 million, over fiscal 2012.

Note: Numbers may not sum to total due to rounding.

For further information contact: Sara J. Baker

Phone: (410) 946-5530

***Personnel Data***

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	<b><u>FY 11</u></b> <b><u>Actual</u></b>	<b><u>FY 12</u></b> <b><u>Working</u></b>	<b><u>FY 13</u></b> <b><u>Allowance</u></b>	<b><u>FY 12-13</u></b> <b><u>Change</u></b>
Regular Positions	258.94	263.13	263.13	0.00
Contractual FTEs	<u>37.00</u>	<u>37.00</u>	<u>37.00</u>	<u>0.00</u>
<b>Total Personnel</b>	<b>295.94</b>	<b>300.13</b>	<b>300.13</b>	<b>0.00</b>

***Vacancy Data: Regular Positions***

Turnover and Necessary Vacancies, Excluding New Positions	8.92	3.39%
Positions and Percentage Vacant as of 12/31/11	18.76	7.10%

- The fiscal 2013 allowance does not provide any new regular positions.

## ***Analysis in Brief***

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### **Major Trends**

***Chesapeake Bay Restoration Projects Increase:*** The number of projects increased to 185 in fiscal 2011.

***Research Expenditures Grow:*** Research expenditures increased from \$41.7 million in fiscal 2009 to \$43.0 million in fiscal 2010.

***Participation Declines in Environmental Education Programs:*** After training a record number of 524 teachers in fiscal 2007, the number of K-12 teachers participating in University of Maryland Center for Environmental Science’s (UMCES) education program declined to 429 in fiscal 2011.

### **Issues**

***Intent to Grant Degrees:*** In January 2012, the Maryland Higher Education Commission approved UMCES’ mission which includes a provision for UMCES to assume an expanded role in graduate and professional education, including the possibility of attaining accreditation as a graduate degree-granting institution.

***Mobile Testing of Ballast Water:*** In September 2011, the Maritime Environmental Research Center dedicated a unique 155-foot research barge into UMCES’ fleet of vessels. The barge, also known as a Mobile Testing Platform, will test ballast water treatment technologies that can be used to reduce the risk of introducing invasive species throughout the maritime industry.

### **Recommended Actions**

1. See the University System of Maryland overview for systemwide recommendations.

*R30B34 – USM – University of Maryland Center for Environmental Science*

**R30B34**  
**University of Maryland Center for Environmental Science**  
**University System of Maryland**

## ***Operating Budget Analysis***

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### **Program Description**

The University of Maryland Center for Environmental Science (UMCES) is a research institution for environmental and natural sciences studies. Its mission is to develop a comprehensive program of environmental research, education, and service. Research focuses on the watersheds, estuaries, and coastal areas of the State of Maryland and the greater Chesapeake Bay region, applying knowledge to help predict conditions in Maryland's ecology. Additionally, UMCES administers the Maryland Sea Grant College program. Funded by the National Oceanic and Atmospheric Administration, the Sea Grant program is a network of 30 university-based programs located in the coastal and Great Lakes regions.

UMCES includes three geographically distinct laboratories under a single administration.

- Appalachian Laboratory in Frostburg, founded in 1962 at the headwaters of the Chesapeake Bay watershed with research focusing on landscape and watershed ecology;
- Chesapeake Biological Laboratory on Solomon's Island, founded in 1925, conducts marine research and is home to UMCES' research fleet; and
- Horn Point Laboratory in Cambridge, founded in 1973, conducts research on biology, chemistry, physics, and ecology of the organisms and ecosystems from wetlands and estuarine water of the Chesapeake Bay.

In addition, University of Maryland Baltimore County; University of Maryland, Baltimore; and UMCES partnered to establish the Institute of Marine and Environmental Technology which conducts marine and environmental research.

Each of the laboratories serves as a regional center, offering natural science education programs to K-12 teachers and students. Environmental education programs also serve environmental interest groups and institutions within and beyond the University System of Maryland (USM) that are concerned with environmental research, education, and service.

While UMCES does not grant degrees, its faculty members contribute to graduate education by advising, teaching, and supervising the research of undergraduate and graduate students within USM degree-granting institutions. These activities further the institution's goals of providing quality research and graduate education and helping to build an educated workforce.

UMCES provides advisory services to local Chesapeake Bay industries and is the principal source of independent scientific information on environmental matters for Maryland’s lawmakers, State agencies, and regional and national coastal management programs. UMCES seeks financial support for its services through contract and grant agreements and contributions from private sources.

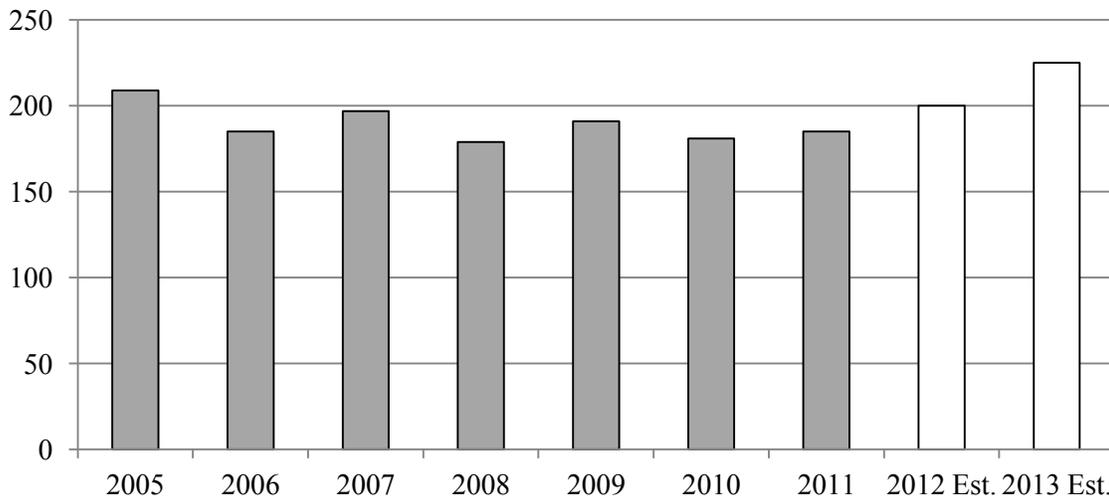
## **Performance Analysis: Managing for Results**

### **Chesapeake Bay Restoration Projects Increase**

UMCES tracks the number of Chesapeake Bay restoration projects it participates in as a measure of strengthening the predictive ecology for Maryland through relevant research programs. Projects are those that focus on (1) the Bay; and (2) aspects of restoration ranging from research concerning the overall health of the Bay to a specific organism. Since participating in 205 projects in fiscal 2005, the number of projects has fluctuated over the years reaching a low of 179 in fiscal 2008, as shown in **Exhibit 1**. In fiscal 2011, UMCES participated in 185 projects.

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**Exhibit 1**  
**Chesapeake Bay Restoration Projects**  
**Fiscal 2005-2013**



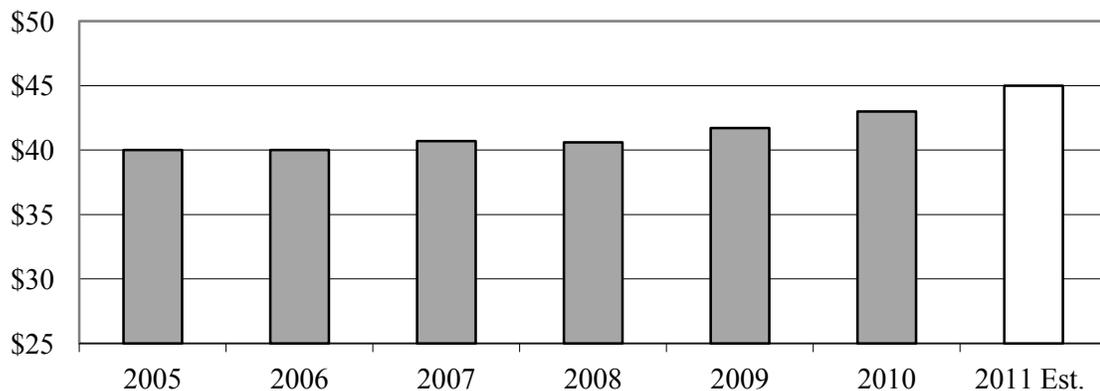
Source: Governor’s Budget Books, Fiscal 2013

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## Research Expenditures Grow

Increasing extramural support from government and private sources is a goal of UMCES. Additionally, USM established a goal of doubling research funding to \$2.4 billion by 2020 as part of its strategic plan to maintain Maryland as an innovation economy leader by attracting more federal funding to the State. As shown in **Exhibit 2**, since fiscal 2008, research expenditures grew 5.9%, or \$2.4 million, reaching a high of \$43.0 million in fiscal 2010.

**Exhibit 2**  
**UMCES Research Expenditures**  
**Fiscal 2005-2011**  
**(\$ in Millions)**



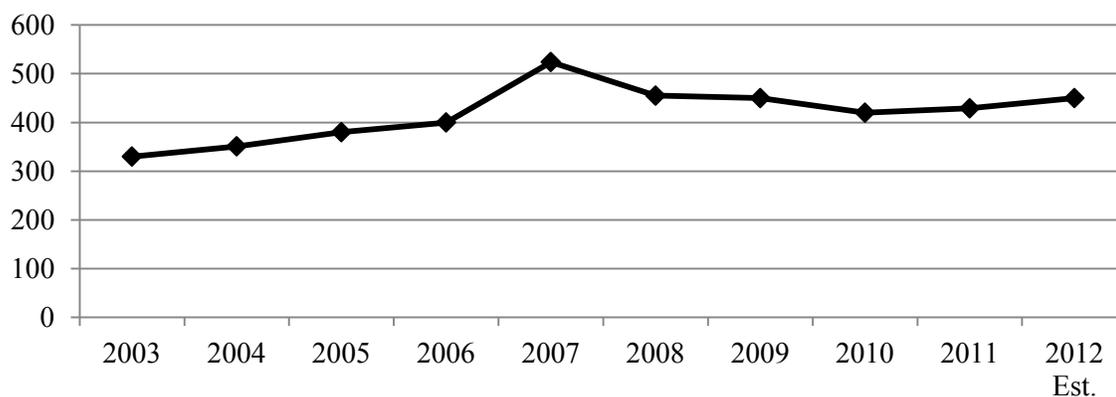
UMCES: University of Maryland Center for Environmental Science

Source: Governor's Budget Books, Fiscal 2013

## Participation Declines in Environmental Education Programs

In addition to research, UMCES strives to strengthen K-12 teacher training in environmental education programs. After training a record number of 524 K-12 teachers in fiscal 2007, the number of those participating in UMCES' education program declined to 429 in fiscal 2011 as shown in **Exhibit 3**.

**Exhibit 3**  
**K-12 Teachers Participating in Environmental Education Programs**  
**Fiscal 2003-2012**



Source: Governor's Budget Books, Fiscal 2013

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## **Fiscal 2012 Actions**

### **Proposed Deficiency**

A fiscal 2012 deficiency would provide UMCES \$150,000 in general funds to meet the costs associated with leasing a facility in Annapolis to house the Socio-Environmental Synthesis Center (SESYNC). This is a National Science Foundation-funded center which was established through an award to the University of Maryland, College Park (UMCP) of which UMCES is a partner.

### **Other Actions**

Section 47 of the fiscal 2012 budget bill required the Governor to abolish 450 positions as of January 1, 2012, of which UMCES' share was 1 position.

### **Proposed Budget**

The general fund allowance for fiscal 2013 is 2.3%, or \$0.4 million, higher than in fiscal 2012 after including the \$0.1 million deficiency and adjusting for the contingent reduction of \$10,345 of general funds to be replaced with a corresponding increase in the Higher Education Investment Fund (HEIF), as shown in **Exhibit 4**. When accounting for the 15.0%, or \$0.1 million, decline in the HEIF

**Exhibit 4**  
**Governor’s Proposed Budget**  
**University of Maryland Center for Environmental Science**  
**Fiscal 2011-2013**  
**(\$ in Thousands)**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2012-2013</b>	<b>% Change</b>
	<u>Actual</u>	<u>Working</u>	<u>Adjusted</u>	<u>Change</u>	<u>Prior Year</u>
General Funds	\$17,949	\$18,334	\$18,762	\$428	2.3%
Higher Education Investment Fund	695	965	821	-145	-15.0%
Total State Funds	18,644	19,299	19,583	284	1.5%
Other Unrestricted Funds	3,500	6,230	5,742	-488	-7.8%
Total Unrestricted Funds	22,144	25,529	25,325	-204	-0.8%
Restricted Funds	20,176	19,828	21,333	1,505	7.6%
<b>Total Funds</b>	<b>\$42,320</b>	<b>\$45,357</b>	<b>\$46,658</b>	<b>\$1,301</b>	<b>2.9%</b>

Note: Fiscal 2012 general funds include a \$150,000 deficiency. Fiscal 2013 general funds and the HEIF are adjusted by \$10,345 to reflect a decrease in general funds which is offset by a corresponding increase in the HEIF contingent upon legislation. Numbers may not sum to total due to rounding.

Source: Governor’s Budget Book, Fiscal 2013

due to the use of fund balance in fiscal 2012, the overall growth in State funds is 1.5%, or \$0.3 million, above fiscal 2012. Other unrestricted funds decline \$0.5 million due to a reduction in overhead revenues from contracts and grants.

UMCES’ State-supported budget by program is shown in **Exhibit 5**. In fiscal 2012, expenditures for plant increase 22.6%, or \$1.0 million, of which \$0.7 million were committed for facility renewal but only \$16,000 was expended, and \$0.2 million were related to increases in personnel costs. Expenditures on research, which account for approximately 61.0% of the budget, grew 8.0%, or \$1.0 million, primarily due to personnel costs and \$0.4 million related to SESYNC. Additionally, approximately half of the \$0.8 million, or 30.6%, increase in institutional support is also attributed to personnel costs with the remainder due to a one-time Injured Workers’ Insurance Fund assessment increase of \$0.3 million and an increase in administrative costs.

In fiscal 2013, research expenditures increase \$0.8 million, or 5.8%, of which \$0.7 million is related to the opening of the SESYNC facility (\$0.4 million for rent and \$0.3 million for operating costs) and increases in salary and fringe benefit costs. Expenditures for institutional support decline 4.4%, or \$0.1 million, due to the combined effect of reduced HEIF revenues in fiscal 2012 and 2013. Part-time salary and fringe benefit costs also decline.

**Exhibit 5**  
**State-supported Budget Changes by Program**  
**Fiscal 2011-2013**  
**(\$ in Thousands)**

	<u>2011</u>	<u>Working 2012</u>	<u>% Change 2011-12</u>	<u>Adjusted 2013</u>	<u>\$ Change 2012-13</u>	<u>% Change 2012-13</u>
<b><u>Expenditures</u></b>						
Research	\$12,307	\$13,288	8.0%	\$14,059	\$771	5.8%
Plant	4,341	5,320	22.6%	5,364	44	0.8%
Institutional support	2,597	3,393	30.6%	3,245	-149	-4.4%
Public service	33	35	5.7%	35	0	0.0%
Deficiency		150			-150	
<b>Total</b>	<b>\$19,278</b>	<b>\$22,186</b>	<b>15.1%</b>	<b>\$22,702</b>	<b>\$516</b>	<b>2.3%</b>
<b><u>Revenues</u></b>						
General Funds	\$17,949	\$18,334	2.1%	\$18,762	\$428	2.3%
HEIF	695	965	38.9%	821	-145	-15.0%
Other Unrestricted Funds <sup>1</sup>	2,014	2,813	39.7%	3,061	249	8.8%
Transfer(to)/from Fund Balance	-1,379	74		58	-17	
<b>Total</b>	<b>\$19,278</b>	<b>\$22,186</b>	<b>15.1%</b>	<b>\$22,702</b>	<b>\$516</b>	<b>2.3%</b>

HEIF: Higher Education Investment Fund

<sup>1</sup> Other State support is a component of unrestricted revenue. Other unrestricted revenue considered non-State support includes designated research initiative fund (DRIF) and self-supporting activities.

Note: Fiscal 2012 general funds include a \$150,000 deficiency. Fiscal 2013 general funds and the HEIF are adjusted by \$10,345 to reflect a decrease in general funds which is offset by a corresponding increase in the HEIF contingent upon legislation. Numbers may not sum to total due to rounding.

Source: University of Maryland Center for Environmental Science

## *Issues*

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### **1. Intent to Grant Degrees**

In December 2010, the Board of Regents' Educational Policy Committee reviewed and discussed the proposed revised mission statements of all USM institutions and regional centers. At the time, UMCES' mission statement proposed to "build on the Center's success in graduate education, including leadership of the MEES [Marine-Estuarine-Environment Sciences] program...." According to USM, the system requested UCMES to explore the path toward becoming a graduate degree-granting institution.

At the December 2010 meeting, the Regent's requested UMCES to revise its mission statement to further elaborate on its role in graduate education. The statement was modified to include a provision that "The USM and UMCES are developing a path for the Center to assume an expanded role in graduate and professional education, including possible accreditation as a graduate degree-granting institution." The mission statement was submitted to the Maryland Higher Education Commission (MHEC) in February 2011 for approval. MHEC approved UMCES' revised mission statement in January 2012; however, it still needs final approval from the Board of Regents.

The MEES program was established in 1978 as an interdisciplinary and inter-institutional graduate program. The program offers master's and doctoral degrees in six areas: oceanography, fisheries science, ecology, environmental molecular biology, environmental chemistry, and environmental science. Courses offered through the MEES program are available to any USM graduate student. The program is administratively housed at UMCP which provides administrative services including those related to admissions, registration, and billing. Additionally, students have access to services provided by the Graduate School including assistantships and academic mentoring. The director is considered an UMCP employee who has a half-time teaching appointment supported by UMCP and half-time research appointment funded by UMCES. Currently, discussions are underway between UMCP and UMCES on the best course of action that should be taken to strengthen the program.

This change in UMCES' mission statement raises several issues and concerns including the advantages to the State and students of transferring the MEES program from UMCP where the program benefits from efficiencies and student services afforded by UMCP. There are concerns that the resources needed to become accredited will impact the ability of UMCES to carry out its core research mission, particularly when these resources could be used to enhance and strengthen the existing MEES program. There are also questions of the benefits to the State to having another degree-granting institution, especially one specializing in one graduate degree, and if USM has the authority to create a degree-granting institution from a research center.

**The President should comment on the factors influencing the decision toward becoming a degree-granting institution, and the financial impact on becoming a degree-granting institution including accreditation and providing student services. The President should also**

**address if partner institutions are kept apprised of the purposed changes and discuss the benefits to the State of creating a new degree-granting institution.**

## **2. Mobile Testing of Ballast Water**

In September 2011, the Maritime Environmental Research Center (MERC) dedicated a unique 155-foot research barge into UMCES' fleet of vessels. MERC, located at the Chesapeake Biological Laboratory, was established in 2008 in partnership with the Maryland Port Administration (MPA) with support from the U.S. Maritime Administration (MARAD), the National Oceanic and Atmospheric Administration, and the American Bureau of Shipping to address environmental issues facing the maritime industry. An objective of MERC is to facilitate the development, evaluation and adoption of ballast water and other environmental treatment systems, and management strategies. Specially, MERC focuses on evaluating the mechanical and biological effectiveness and the costs and logistical aspects of ballast water treatment systems and on assessing the economic impact of ballast water regulations and management approaches.

This unique barge, also known as a Mobile Testing Platform, will test ballast water treatment technologies that can be used to reduce the risk of introducing invasive species throughout the maritime industry. While more than 80% of commercial products are transported by merchant vessels, these vessels are also responsible for introducing aquatic invasive species into coastal waters, which can cause ecological and economic damage, through the dumping of ballast waters at various ports. The impacts of these species include a decline and even local extinction of native species, alteration of habitat, and economic cost related to biofouling. For example, the U.S. Fish and Wildlife Service estimates that the zebra mussel has caused between \$5 million and \$6 million in damages. Currently, there are over 150 known invasive species in the Chesapeake Bay.

The goal of the testing platform is to provide developers and manufactures independent testing of their water treatment technologies facilitating the transition of treatments from concept to certification and routine operational use. What makes this testing platform particularly unique is its mobility, allowing it to be moved up and down the Chesapeake Bay. This allows MERC to test systems in different seasons to determine the effects that temperature and varying salinities have on the performance of systems.

The barge, which was once used to transport oil, has been retrofitted with two 300-cubic meters ballast water tanks and a laboratory. Maryland Environmental Service outfitted the barge with funding provided by MARAD (\$1.9 million) and MPA (\$1.5 million). UMCES has a 10-year lease for the barge in which the annual payments for the first two years are \$165,000 and then gradually escalate to \$194,000 in the last two years of the lease. In 2012, testing costs are split between MERC (using funds provided by MPA and MARAD) and the selected vendors who will cover the mechanical/engineering and barge movement costs. Currently, MARAD is developing a program in which vendors apply to and pay MARAD for testing services. This will ensure credibility and transparency, avoiding any perception of conflicts of interest that can arise when vendors directly pay for services.

**The President should comment on the status of the program including how many companies are using the testing services and how the program will be funded after fiscal 2012.**

## ***Recommended Actions***

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1. See the University System of Maryland overview for systemwide recommendations.

## *Current and Prior Year Budgets*

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### Current and Prior Year Budgets University of Maryland Center for Environmental Science (\$ in Thousands)

	<u>General Fund</u>	<u>Special Fund</u>	<u>Federal Fund</u>	<u>Other Unrestricted Fund</u>	<u>Total Unrestricted Fund</u>	<u>Restricted Fund</u>	<u>Total</u>
<b>Fiscal 2011</b>							
Legislative Appropriation	\$17,230	\$0	\$0	\$6,249	\$23,479	\$18,788	\$42,267
Deficiency Appropriation	0	0	0	0	0	0	0
Budget Amendments	719	695	0	-15	1,398	1,766	3,164
Reversions and Cancellations	0	0	0	-2,733	-2,733	-377	-3,111
<b>Actual Expenditures</b>	<b>\$17,949</b>	<b>\$695</b>	<b>\$0</b>	<b>\$3,500</b>	<b>\$22,144</b>	<b>\$20,176</b>	<b>\$42,320</b>
<b>Fiscal 2012</b>							
Legislative Appropriation	\$18,063	\$965	\$0	\$6,230	\$25,258	\$18,664	\$43,922
Budget Amendments	121	0	0	0	121	1,164	1,285
<b>Working Appropriation</b>	<b>\$18,184</b>	<b>\$965</b>	<b>\$0</b>	<b>\$6,230</b>	<b>\$25,379</b>	<b>\$19,828</b>	<b>\$45,207</b>

Note: Numbers may not sum to total due to rounding.

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## **Fiscal 2011**

For fiscal 2011, general funds for UMCES increased \$0.7 million through a budget amendment related to the reorganization of the University of Maryland Biotechnology Institute (UMBI). Special funds, comprised of the HEIF, increased \$0.7 million through a budget amendment as authorized in the fiscal 2011 budget bill. Other unrestricted funds decreased \$15,470 through a budget amendment due to a decline in federal contract and grant activity.

Cancellations of unrestricted funds totaled \$2.7 million of which \$2.1 million was related to maintaining the vacancy level resulting in salary, fringe benefits, and other operating expenditures being less than anticipated and \$0.6 million less was spent on facilities renewal.

Restricted funds increased by a total of \$1.8 million through budget amendments related to federal contract and grant activity of which \$1.0 million was associated with the transfer of the Institute of Marine and Environmental Technology, formerly part of UMBI, to UMCES.

Cancellations of restricted funds totaled \$0.4 million due to lower than anticipated expenditures of grants and contracts.

## **Fiscal 2012**

For fiscal 2012, general funds increased \$0.1 million through a budget amendment related to the \$750 employee bonus.

Current restricted revenues increase \$1.2 million by budget amendment which was due to \$1.0 million in federal and \$0.2 million in private contract and grant activity.

**Object/Fund Difference Report**  
**University of Maryland Center for Environmental Science**

<u>Object/Fund</u>	<u>FY 11 Actual</u>	<u>FY 12 Working Appropriation</u>	<u>FY 13 Allowance</u>	<u>FY 12 - FY 13 Amount Change</u>	<u>Percent Change</u>
<b>Positions</b>					
01 Regular	258.94	263.13	263.13	0.00	0%
02 Contractual	37.00	37.00	37.00	0.00	0%
<b>Total Positions</b>	<b>295.94</b>	<b>300.13</b>	<b>300.13</b>	<b>0.00</b>	<b>0%</b>
<b>Objects</b>					
01 Salaries and Wages	\$ 25,334,068	\$ 27,315,969	\$ 27,334,013	\$ 18,044	0.1%
02 Technical and Spec. Fees	364,089	775,700	563,700	-212,000	-27.3%
03 Communication	271,376	262,692	251,011	-11,681	-4.4%
04 Travel	819,566	770,836	902,660	131,824	17.1%
06 Fuel and Utilities	2,123,259	2,202,366	2,207,158	4,792	0.2%
07 Motor Vehicles	1,177,716	1,349,757	1,357,943	8,186	0.6%
08 Contractual Services	8,076,397	8,040,924	8,881,477	840,553	10.5%
09 Supplies and Materials	1,863,699	1,815,978	1,926,101	110,123	6.1%
11 Equipment – Additional	1,571,972	1,120,968	1,640,725	519,757	46.4%
12 Grants, Subsidies, and Contributions	30,122	44,450	28,550	-15,900	-35.8%
13 Fixed Charges	669,951	674,093	861,646	187,553	27.8%
14 Land and Structures	18,260	832,925	702,925	-130,000	-15.6%
<b>Total Objects</b>	<b>\$ 42,320,475</b>	<b>\$ 45,206,658</b>	<b>\$ 46,657,909</b>	<b>\$ 1,451,251</b>	<b>3.2%</b>
<b>Funds</b>					
40 Unrestricted Fund	\$ 22,144,082	\$ 25,379,057	\$ 25,325,097	-\$ 53,960	-0.2%
43 Restricted Fund	20,176,393	19,827,601	21,332,812	1,505,211	7.6%
<b>Total Funds</b>	<b>\$ 42,320,475</b>	<b>\$ 45,206,658</b>	<b>\$ 46,657,909</b>	<b>\$ 1,451,251</b>	<b>3.2%</b>

Note: The fiscal 2012 appropriation does not include deficiencies.