# Environmental and Sustainability Management System for Schools

## 1. The Problem/Need for a Program

We all have a responsibility to make good choices for our family, our community and future generations. HCPS understands that our natural resources are limited and we only have one earth. There are also strict environmental regulations in place that assess harsh penalties for polluting the environment. For these reasons, HCPS implemented an ESMS to help reduce its environmental impact and conduct its daily operations more efficiently and effectively.

## 2. Fulfilling Program Criteria

The Henrico County Public Schools System is one of the few school systems in the country that has developed and implemented an Environmental and Sustainability Management System to protect the environment by reducing air, water and soil pollution, watershed stewardship. HCPS is also educating and training its employees to recognize activities that impact the environment and is implementing sustainable practices in its daily operations. Increased employee awareness of environmental issues is shared by the employees within schools, their communities, with neighbors, and other organizations and businesses through model activities, discussions, and specific purchases that promote sustainable practices. HCPS has 72 schools and 48,000 students who are our present and future ambassadors of environmental protection and sustainability. This ESMS program has taught us how to conserve natural resources, protect the environment, and meet environmental regulations. Also, ESMS has reduced energy consumption and the cost of operations for the schools. We have already received public recognition for this program from the Virginia Department

of Environmental Quality (DEQ) through their Virginia Environmental Excellence Program (VEEP) at the Exemplary Environmental Enterprise (E3) level.

## 3. How the program was carried out

An Environmental and Sustainability Management System is a set of management processes and procedures that allow an organization to analyze, control, and reduce the impact of its activities, products and services on the environment and operate with greater efficiency.

A core committee of employees was selected to attend four ESMS workshops at the Center for Organizational and Technological Advancement (COTA) at Virginia Tech in Roanoke, Virginia. The core committee has developed an ESMS program manual covering the 17 elements of ISO 14001. The ISO 14001 standard is the most important standard within the ISO 14000 series. ISO 14001 specifies the requirements of an environmental management system (EMS) for small to large organizations. An EMS is a systemic approach to handling environmental issues within an organization. The ISO 14001 standard is based on the methodology known as Plan-Do-Check-Act (PDCA).

After assessing a detailed inventory of 108 operational activities managed by the department, each activity was evaluated for associated aspects that have an impact on the environment. An Environmental Aspect is defined as “an organization’s activities, products or services that can have a significant environmental impact.” Impacts are actions that relate to the pollution of air, water, and soil. C & M employees provided input in regard to all the activities (aspects) in the C & M Compound that impact the

environment. These aspects and impacts were studied and evaluated using an environmental matrix (business impact and environmental impact), then numerically rated and ranked. The total score of each aspect was used to rank and order their importance and achievability. Fifteen significant aspects were selected to improve upon by setting targets and goals for continual improvement. Seven aspects were addressed in detail to be worked on in 2011-2012. C &M established targets and goals for continual improvements (three phases). The seven (7) significant aspects were as follows:

**Aspect 1: Hazardous Material Storage and Disposal**

Objective: Facilitate proper storage and disposal of EPA regulated materials

Investment: $21,000

Benefits: Regulatory compliance and reduced environmental liability

**Aspect 2: Used Fats, Oils, and Greases from Kitchen**

Objective: Facilitate proper storage and disposal of kitchen fats, oils, and greases

Investment: $3,600 (15 Containers)

Benefits: Regulatory compliance and reduced environmental liability

**Aspect 3: Used Electrical Ballasts**

Objective: Facilitate proper storage and disposal of used ballasts

Cost: < $500 annually

Benefits: Regulatory compliance and reduced environmental liability

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**Aspect 4 & 5: Chlorinated Solvents and Propellants**

Objective: Reduce the number of products containing chlorinated solvents and propellants

Cost: $ 0

Benefits: Reduction of aerosol by 46 percent and reduction of propellants by 50 percent

**Aspect 6: Aerosol Can Disposal**

Objective: Proper disposal of propellants and chlorinated solvents

Investment: $1,000

Benefits: Removed 22 gallons of hazardous waste from entering the landfill annually, regulatory compliance and reduced environmental liability

**Aspect 7: Small Container Fuel Storage**

Objective: Provide proper storage to minimize leakage and spills of fuels (gas, diesel, and kerosene). Replaced existing containers with DOT approved storage containers

Investment: $8,000 (40 cans)

Benefits: Regulatory compliance and reduced environmental liability

The sustainability program was presented and feedback sought from the highest levels within the organization during a meeting with the school superintendent, county manager, deputy county managers, and directors.

The cost of the ESMS program included the cost of personnel time and the capital cost of purchased equipment to accomplish the significant aspects. The personnel included senior management, a core team of five members and other personnel from the Construction and Maintenance Department.

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The resources needed to implement this ESMS Program included:

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| Senior Management | 104 Hours |
| Consulting | 0 Hours |
| Core Team | 1,154 Hours |
| Other Personnel | 127 Hours |
| Total Personnel Hours | 1,385 Hours |
| | |
| Total Personnel Cost | $38,505 |
| Equipment and Material Cost | $35,100 |
| | |
| Total Costs | $73,605 |

Some of the tangible benefits of ESMS program are as follows:

1. Received Gold LEED certification for the new 255,000 square feet Glen Allen High School.
2. Received Silver LEED certification for the new 120,000 square feet Holman Middle School.
3. Implemented the Environmental and Sustainability Management System.

4. Implemented green/good housekeeping procedures, which eliminated the use of caustic chemicals used in facilities each summer to remove and replace the floor finish.
5. Eliminated the use of 26 aerosol products containing chlorinated solvents including methylene chloride.
6. Removed one third of warehouse products considered environmentally hazardous from the inventory.
7. Implemented an aerosol management program to collect and recycle the residual content of cans and prevent the release of residual aerosol and VOC's to the atmosphere - 22 gallons of waste converted to energy in 2012.
8. Installed a hazardous material storage unit to assure proper management of hazardous material.
9. Centralized used kitchen fats, oils and greases recycling program to assure proper storage and disposal.
10. Replaced lighting with high efficiency fixtures in 12 facilities resulted in a 30 percent reduction in lighting energy.
11. Removed 14 existing underground storage tanks from various facilities to avoid the risk of release.
12. Strategically distributed and placed Spill Kits to support the Pollution Prevention Plan.
13. Implemented "No Vehicle Idling" and "No Vehicle Washing" guidelines for pollutant reduction and savings.

14. Promoted school-based recycling efforts that reduced the size or quantity of dumpster to landfill solid waste.
15. Conducted unannounced energy audits in facilities to improve compliance with the energy conservation best practices.
16. Removed 5,250 gallons of processed Ethylene Glycol from facilities and replaced with non-toxic products.
17. Through implementation of the sustainability program, the organization and its employees gain a better understanding of environmental regulatory requirements, minimize risk for environmental liabilities, and minimize expenditures by conserving resources.

Some of the less tangible benefits of promoting sustainability within the organization include:

1. Community Outreach: Increased employee awareness of environmental issues, which is shared by employees within their communities, with neighbors, and other organizations and businesses through model activities, discussions, and specific purchases that promote sustainable practices.
2. Watershed Stewardship: Sustainability training and education provided to the staff, which affect or alter their daily practices and procedures in the workplace with respect to watershed protection, also affects their own personal practices in their daily lives. Leading by example has an influence on watershed protection by others in employee's communities and neighborhoods. C&M worked with Eagle

Scouts and posted signs on storm drains that state: “NO DUMPING, ONLY RAIN DOWN THE STORM DRAIN, DRAIN TO WATER WAYS”.

3. Organizational Management Tool: The process of developing, implementing, and documenting sustainable practices and implementing a proactive sustainable management system results in an organizational management tool which promotes and supports efficient operations.
4. Recycling: Reduced the burden on landfills, and promoted a reduction in facility dumpster size or number.
5. Environmental Quality: Improved indoor air quality and the learning environment.
6. Improved Public Image: Public recognition of efforts toward fully sustainable operations, such as Virginia Environmental Excellence Program (VEEP) Exemplary Environmental Enterprise (E3).
7. Higher achievement toward assuring that all students will learn in a healthier learning environment that efficiently and effectively supports the instructional program.