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# WHAT IS NASA LANGLEY DOING TO ENSURE A HEALTHY CHESAPEAKE BAY?

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LaRC has been building a quality stormwater pollution prevention (P2) program over several years in order to ensure long-term sustainability, improve water quality, and reduce impacts to surrounding surface waters and the environmentally-sensitive Chesapeake Bay. A variety of processes and BMPs are used to ensure that Center operations are accomplished in a way as to minimize or prevent pollutants from entering nearby waterways.

Best Management Practice (BMP) means a practice, or combination of practices, that could be implemented to protect water quality.

LaRC has procedures designed to minimize or prevent pollutant discharge from:

- **Daily operations** such as road, street, and parking lot maintenance
- **Equipment maintenance**
- The application, storage, transport, and disposal of **pesticides, herbicides, and fertilizers.**

These procedures are designed keep the water around LaRC cleaner.

The Stormwater Program educates personnel on how to prevent [illicit discharges](#), ensures proper disposal of waste materials, prevents pollutants from leaks from entering the storm sewer systems, and ensures that any products used (including fertilizers, herbicides, and pesticides) are in accordance with the manufacturer's recommendations. The Stormwater Program also oversees construction and demolition activities on Center to ensure that sediment and harmful pollutants stay out of the storm drains.

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## SO HOW EXACTLY DOES LARC DO ALL OF THIS?

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### *Daily Operations Pollution Prevention*

#### **Street Sweeping**

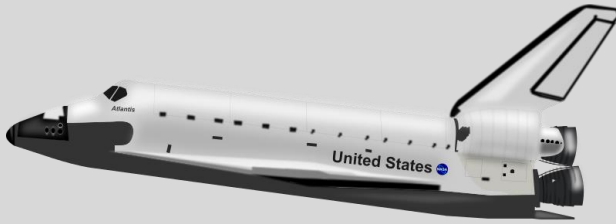
Street sweeping is LaRC's preferred method to prevent stormwater pollution coming from our streets. Street sweeping is aimed at collecting debris and floatables from the roadway before they can be washed into a nearby ditch or drain and find their way into local waterways. Street sweeping is scheduled every quarter through a contracted service company. During the course of the last four years, 495-cubic yards of sediment was collected from street sweeping! Additionally, construction site personnel on Center also sweep regularly to pick up any dirt they may have tracked onto the roadway during the workday.



## Catch Basin and Ditch Maintenance



LaRC has 71 catch basins on Center, and an extensive system of grass-lined ditches (~62,000 linear feet) and paved ditches (~2,800 linear feet). Many of these are located along streets and parking areas. These catch sediment, trash, and debris that accumulates quite a bit over time. These basins and ditches are routinely cleaned of all debris that has accumulated, and all ditch and drain lines to and from the basin are kept free of blockage and open to drain freely. The grounds maintenance contractor disposes or composts the debris off Center on the same day of collection. Over the last four years, 83 tons of debris was cleaned from catch basins and ditches, nearly equivalent to the weight of the Space Shuttle when empty!



**83 tons!**

## Leaf Collection Activities

Leafy debris can block the flow of water down storm drains and cause flooding. Leaf collection and removal of pine straw, pinecones, limbs, and other debris across the Center is removed three times per year (October, November, and January). All leaf debris collected is composted on Center or at a nearby composting operation off Center.



## Landscape Maintenance/Debris



Have you ever seen the grounds maintenance contractor blowing leaves and grass clippings back onto the grass? That's because the material is being returned to the lawn to restore important nutrients and keep the debris out of storm drains. The grounds crew also periodically trims shrubs, bushes, and trees and this woody debris is collected and composted.

## “Municipal” Yard Inspections

The Environmental Office inspects all yard-type areas, the hazardous waste facility, and the composting area throughout the year. Issues such as evidence of illegal dumping, illicit connections to the storm sewer system, and flows during dry weather are looked for and eliminated if found. Environmental Staff also look for good housekeeping and if any pollution prevention practices can be implemented. At least four inspections are completed each year.

## Multi-Media Environmental Audits

The Environmental Office conducts at least 40 multi-media environmental audits per fiscal year in facilities with the largest potential environmental threats. These audits include identifying potential threats to the stormwater system (such as leaky equipment, checking sump pumps, secondary containment for drums, etc.) and providing ways to reduce any identified threats.



## *Equipment Maintenance*

### **Dewatering of Utility Construction and Maintenance Activities**

Periodically LaRC needs to remove water from utility pipes, especially water from the steam tunnels. Many of these areas collect rainwater and steam condensate over time. These areas are pumped out in an environmentally-friendly way. For rainwater pump outs, the contractor pumps the water to a grassy area for filtration through the grass and away from any storm drain conveyances (if possible). If the water shows any signs of sediment, the dewatering operation uses a special bag that helps to filter the sediment out. If the water has any concerns of pollutants (heavy metals, oil/grease, etc.), the contractor notifies the Environmental Office so the proper steps for testing and disposal can be followed. For construction-related dewatering operations, the contractor must dewater in accordance with a plan approved by the Environmental Office. Typically, the contractor will use a dewatering bag or similar BMP for this type of action.



### **Spill Containment Areas for Equipment Storage**



The primary storage area for many pieces of equipment, such as emergency generators, is stored under a permanent canopy to limit exposure to rainwater. Any leaking oil or greasy parts on this equipment would wash down a storm drain or into the grass if it wasn't protected. In addition, all of this equipment is stored in a large poured concrete/asphalt spill containment berm. The area also has easy access to spill kits in the event of a spill. Employees in this area are trained to look for illicit discharges and on proper spill response.

### **Salt Storage**

LaRC uses salt and brine solutions on roadways and sidewalks during wintery conditions. All winter salt products are stored inside buildings or in tanks and have no exposure to stormwater.

### **Underground Storage Tanks (USTs)**

LaRC has four active USTs on Center. All USTs at LaRC are equipped with electronic leak-detection systems. In addition, product inventory records are maintained by operating personnel at each facility where USTs are located. Facilities maintenance support contractors visually inspect tanks each time they are filled with product. Additionally, documented tank inspections are performed in accordance with all applicable regulations.

## *Pesticides, Herbicides, and Fertilizers*

LaRC's policy regarding the use of pesticides, herbicides, and fertilizers is to follow Integrated Pest Management (IPM) practices whenever possible and to use the absolute minimum amount of product on Center as necessary. Additionally, all products are stored in a building and have no exposure to stormwater. The building has no floor drains and the necessary equipment to clean up any spills.

## Fertilizers

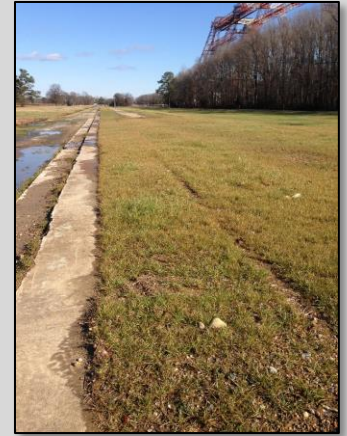
Much of the Center's land and foliage is allowed to grow naturally, without any fertilizer. Grass clippings are returned to the lawn to restore important nutrients and avoid the need for fertilizers. In general, LaRC does not routinely apply fertilizers. Fertilizers are used when planting new trees, shrubs, and grass areas (post disturbance, etc.) to help establish the new vegetation. Once established, vegetation is not fertilized unless the health of the vegetation (spot treatments) requires it.

## Pesticides

Of the Center's 764 acres of land, less than one-twentieth of one percent is treated with pesticide. These treatments are on an as-needed basis and applications are limited to minimal quantities. The grounds maintenance contractor manages the pesticide program at LaRC, uses only EPA approved/registered pesticides, and is in close communication with the LaRC Environmental and Safety offices.

## Herbicides

Herbicide application provides non-crop control of emerged annual and perennial weeds with glyphosate used exclusively. Herbicides are not applied to large grassy areas, these areas are allowed to grow naturally and only receive routine mowing. Herbicides are typically only used to treat fence lines, right of ways, outdoor electrical substations, and large gravel fenced enclosures. Application rates are based on product label recommendations, and only between 800 to 1,000 gallons of diluted herbicides are applied annually at LaRC.



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## WHY DOES LARC DO ALL OF THIS?

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The Chesapeake Bay is on a "diet", and this diet is called the Total Maximum Daily Load (TMDL). The TMDL describes the maximum amount of pollutants that the Chesapeake Bay can receive while still meeting water quality standards. The TMDL also allocates how much of those pollutants can come from various sources, including LaRC.

Nitrogen, phosphorus, and sediment are the pollutants of concern in the Chesapeake Bay. High levels of these pollutants enter the water from various sources, including agricultural operations, urban runoff, construction, wastewater facilities, septic systems, air pollution, and other sources. LaRC wants to make sure that it is doing its part to minimize the pollutants entering the Chesapeake Bay from our property. We also hope that you apply your stormwater education practices at home too.

Our daily operations, equipment maintenance, and demolition of old facilities and construction of new ones helps to keep the Center moving forward. However, all of this positive development does carry with it environmental risks. Fortunately, LaRC has plans in place to manage all of these environmental challenges, and is constantly growing and adapting for new risks.

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## HOW CAN I HELP?

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The Environmental Office strives to keep an eye on all the activities occurring around Center, but sometimes things get missed. If you are ever on Center and see something flowing to a drain, ditch, or storm inlet that shouldn't be, please contact the Environmental Office immediately at 4-7517 or 4-2451.