ENVIRONMENTAL STEWARDSHIP, COMMITMENTS, AND COMPLIANCE

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Traditional Roadside Stewardship

- SHA Integrated Roadside Vegetation Management (IRVM) approach:
  - Mowing
  - Woody Vegetation Control
  - Herbicide Application
  - Landscape Planting/Seeding
  - Invasive Species Control
Vegetation Management Zones

- GIS delineation and mapping based on safety guidelines and green assets

**VEGETATION MANAGEMENT ZONES**
- Vehicle Recovery Area
- Traffic Barrier
- Woody Vegetation
- Sight Distance
- Structure Maintenance
- Utility Maintenance

**GREEN ASSETS**
- Turfgrass
- Native Meadow
- Landscape Bed/Tree
- Reforestation
- Stormwater Management Facility
- Wetland / Sensitive Sites
- Invasive Species
Technology in Environmental Stewardship

- **Green Asset Management System (GAMS)**
  - Enterprise GIS Database
    - Stream Restoration
    - Facilities
    - Drainage Conveyance
    - Reforestation Planting
    - Stormwater Management
    - Wetlands
    - Invasive Species

- Database contains site specific information
  - Also tracks site inspections/assessments and photos
Internal Facility Audits

- Audits of 101 facilities
- Categories
  - Air quality
  - Asbestos
  - Drinking water / water supply
  - Lead based paint
  - Waste (universal, non-hazardous, hazardous)
  - Stormwater
  - Pesticide management
  - Underground & aboveground storage tanks
  - Wastewater
Internal Facility Audits
EPA Third Party Audits
Voluntary Disclosure Agreement

- **September 2008** - SHA & EPA enter an audit agreement
- **Set audit schedule**
  - 101 facilities
  - Audit categories:
    - Air quality
    - Drinking water / water supply
    - Waste (universal, non-hazardous, hazardous)
    - Stormwater
    - Pesticide management
    - Wastewater
EPA Third Party Audits
Voluntary Disclosure Agreement

- **October 2011**
  - Audits completed
  - Final disclosure reports submitted to EPA

- **Results:**
  - 292 non-compliance findings identified and disclosed
  - 0 economic benefit penalties assessed by EPA

- **Findings**
  - Set completion dates
  - Failure would result in federal fines

- **Spot Audits**
EPA Third Party Audits
Voluntary Disclosure Agreement

- Positive Outcomes:
  - Identified systematic issues
  - Provided benchmark of the noncompliance areas
  - Avoided potentially steep fines
  - Increased awareness
  - Gained “buy-in” from maintenance staff
  - Hazardous material removal contract
Federal Clean Water Act

- NPDES Permit
  - Municipal Separate Storm Sewer System (MS4) Permit
- Chesapeake Bay Agreement
  - Bay Total Maximum Daily Load (TMDL)
TMDL Program

- Impervious Surface Restoration:
  - Require 20% restoration by 2020

- Pollutant Load Reductions:
  - Reduce pollutant discharges 60% by 2017, 100% by 2025
Pollutants of Concern to SHA

- Nutrients
  - Nitrogen
  - Phosphorous
- Sediment
- Chlorides (Salt)
- Illicit Discharges
- Trash and Litter
### Watershed Implementation Plan (WIP) by 2025

- Bioretention/Rain Gardens
- Dry Detention Ponds
- Extended Detention Ponds
- Stormwater Retrofits
- Catch Basin Cleaning
- Urban Filtering
- Urban Infiltration
- Litter
- Urban Stream Restorations
- Urban Tree Plantings
- Vegetated Open Channels
- Wet Ponds and Wetlands
- BioSwales
- Forest Conservation
- Outfall Stabilization
- Street Sweeping
- Salt Reduction
Watershed Implementation Plan (WIP) by 2025

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- 19,876 AC of drainage areas
- 7,073,080 lbs of debris
- 74,468 LF of streams
- 5,657 AC of trees planted
- 26,675 miles of sweeping annually
Maintenance Impacts

- Bioretention/Rain Gardens
- Dry Detention Ponds
- Extended Detention Ponds
- Stormwater Retrofits
- Catch Basin Cleaning
- Urban Filtering
- Urban Infiltration
- Litter
- Urban Stream Restorations
- **Urban Tree Plantings**
- Vegetated Open Channels
- Wet Ponds and Wetlands
- **BioSwales**
- Forest Conservation
- Outfall Stabilization
- **Street Sweeping**
- **Salt Reduction**
Street Sweeping

- Contract mechanism
- Industry limitations
- Impact on routine sweeping
- Measurement parameters
  - Pounds versus 25 cycles
- Reporting
- Watershed of route
BioSwales

- Mowing restrictions
  - Hand mowing
  - Fall mowing of herbaceous vegetation
- Reseed
- Stabilization
- Remove plant waste, sediment and litter
- Location identification
OED Maintained

- **Trees**
  - Hand mowing in between
  - Trimming

- **Meadows**
  - Location identification
  - Reduces mowable acres

- **Stream Restoration**
  - Permitting requirements
  - Spawning season limitations
BMPs on the Horizon

- Litter removal
  - Measurement parameters
- Inlet cleaning
  - Measurement parameters
- Salt reduction in winter operations
  - 2010 Legislation to create Salt Management Plan
Salt Management Plan

- Anti-icing
  - All interstates, freeways, and expressways
  - 14 brine makers across the state
- Environmental impact practices
  - Well maintained salt structures
  - Salt contamination
  - MDSS
Salt Management Plan

- Training & education
  - Snow college

- Equipment
  - Spreader calibration
  - Tailgate flaps
  - Tow plows
  - Dual wing plows
Stormwater & Drainage Asset Management Program

- As of 2014, SHA owns and maintains over:
  - 3,100 permanent stormwater management facilities
  - 180,000 hydraulic structures
  - 100,000 conveyances

- Program:
  - Locate
  - Inspect
  - Evaluate
  - Remediate
Stormwater & Drainage Asset Management Program

- Performance rating for each asset type
  - No Response Required
  - Minor Maintenance
  - Major Maintenance or Repair
  - Retrofit Design
Petroleum Tank Management Program
- Release prevention, detection, and reporting
- 296 tanks at approximately 128 facilities
- 1 million gallons
SHA Facilities - Compliance Programs

- **Stormwater / Wastewater Program**
  - Storm water discharge permit (12-SW) at 32 permitted facilities
    - Quarterly inspections
  - New wash bays
  - Salt brine with secondary containment
  - Material storage structure for erodible material
  - Storm Water Pollution Prevention Plans (SWPPP) at 97 facilities
  - Spill Prevention Control & Countermeasures (SPCC) plans at 45 facilities.
  - 10 individual wastewater discharge permits
SHA Facilities -
Environmental Mgmt. System (EMS)

- Asset management approach
- Data warehouse / task tracker
- Environmental Compliance Training
- Routine Inspection Program
- 3rd- Party Audit Program under development
- Ongoing SOP development and refinement
- Business Plan activities
SHA Business Plan

Environmental Stewardship & Compliance (ESC)

- Maintenance initiatives are well represented under ESC
  Key Performance Area of SHA’s Business Plan

- Performance Measures
  - Road salt BMP pilot projects
  - Non-compliance findings at SHA maintenance facilities

- Strategies
  - Salt Management Plan
  - Maintain 90% functionality for SWM facilities
  - Enhance EMS to bring all facilities into compliance
  - Develop plan to bring maintenance operations into compliance
  - Sustainable vegetation management approach
Looking Ahead

- Transportation Asset Management
  - Green Asset Management System
  - Asset Data Warehouse
- Mobile field tool in development
  - Site assessments incorporated while in the field
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