



2011 Annual Report

A Message from the Executive Director



This past year we had the honor of celebrating the 5th anniversary of our formation, which resulted from the signing of an Intergovernmental Agreement in September 2006. I have the privilege of overseeing the day-to-

day operations of an organization that has a \$12-million budget and has grown to 34 employees in six stormwater management program areas, including stormwater facility construction, infrastructure maintenance, development coordination, floodplain management, water quality protection, and GIS.

Our rate payers entrust SEMSWA to plan, fund, construct, acquire, operate, and maintain drainage and flood control facilities, as determined by our board of directors, through a coordinated and cooperative governmental effort. Storm runoff by nature does not recognize political boundaries; therefore, responsibilities for its management tend to overlap. SEMSWA is well positioned to collaborate to achieve successful stormwater management. Master planning a drainage basin in coordination with the collective governmental agencies responsible for managing stormwater as a resource is an important first step to this cooperative approach. When stormwater capital improvement projects are planned according to this approach, opportunities are created for other stakeholders, often leading to additional funding sources.

Collaboration leads not only to award-winning projects, as you'll read in this report, but also to opportunities for educating the public and our stakeholders on ways to manage and sustain our water and natural resources. In the last 5 years, we have experienced a high level of cooperation in our endeavor to protect, preserve, and enhance our natural resources. This cooperation reflects the multi-jurisdictional nature of stormwater management and the regionalism necessary to deliver constructed projects with an eye on the future.

We encourage you to read how SEMSWA staff combines the goals of the different program areas into one focus: successful stormwater management.

The SEMSWA Mission: Provide stormwater management services essential to the protection, preservation, and enhancement of our neighborhoods, community, and natural resources through flood control, water quality, construction, maintenance, and education.

2011 Highlights

- The Piney Creek Stream Stabilization and Caley Bridge Crossing CIP project won the CASFM 2011 Grand Award for Engineering Excellence.
- The GIS, CIP, Maintenance, and Land Development groups integrated a pipe video system with GIS and an Asset Management inventory to better categorize the stormwater system and won an award for this effort.
- The Water Quality group won two awards for its Dry Utility Annual Permit and design assistance for water quality facilities at IKEA Centennial.
- The GIS Group won an award for customization of the land development case tracking and State Stormwater Quality Permit database.
- Focused outreach efforts were extended to property owners backing to a drainageway regarding flood safety.
- The Water Quality group negotiated a new household hazardous waste collection contract to include an "e-waste" recycling program.
- The CIP and Maintenance groups jointly developed a pilot program to compare pipe remove and replace operations with an in situ pipe slip liner approach, and completed several projects.



Capital Improvement Program



Award-winning Piney Creek Stabilization and Caley Bridge Crossing Capital Improvement Program Project

The Colorado Association of Stormwater and Floodplain Managers voted SEMSWA's Piney Creek Stream Stabilization and Caley Bridge Crossing Project the winner of its **2011 Grand Award for Engineering Excellence**. Prior to the improvements, Piney Creek exhibited dangerously high runoff during significant rainfall events, sweeping vehicles down the stream on more than one occasion and causing safety and access concerns for years. The construction of the bridge with the stream project provides a safe passage during flood events for residents and emergency vehicles. Additionally, the project corrected the steeply eroded banks, stabilized the channel to halt loss of property, and provided safe equestrian access to the creek's open space.

Completed CIP Projects



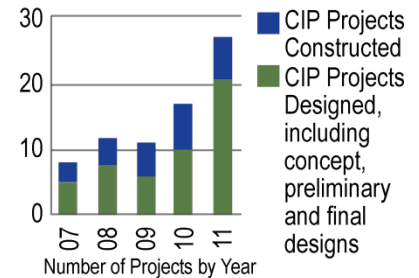
- Basins with constructed projects
- Basins with projects not yet prioritized for construction

Projects constructed in 21 of 30 master planned basins

Construction of capital improvement program (CIP) projects begins with master planning, where drainage concerns are looked at in the entirety of the watershed. Since SEMSWA's formation in 2006, one or more capital improvement projects have been constructed in 21 master planned basins.

CIP Projects Completed in 2011

- Lone Tree Creek Regional Detention Pond L-1 West
- Goldsmith Gulch at East Caley Avenue Culvert Replacement
- Cottonwood Creek at Easter Channel Stabilization
- Piney Creek Stream Stabilization and Caley Bridge Crossing
- West Toll Gate at Fox Hill Park Channel Stabilization



Steady progress in completing master planned projects



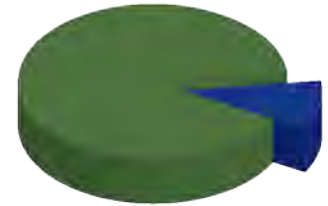
Sculpted drop grade control structure in Fox Hill Park on West Toll Gate Creek

Floodplain and Master Planning Program

During 2011, SEMSWA worked closely with the South Suburban Parks and Recreation District to help homeowners understand how a floodplain area is designated as a drainageway and how it safely conveys flows while at the same time functions as a recreational amenity. Fact Sheets were prepared for homeowners whose property abuts Big Dry Creek to help them gain an understanding of the management that is necessary to ensure a properly functioning floodplain easement during that rare but significant rainfall event.

Additionally, future outreach of the SEMSWA "Stay Safe" Flood Awareness Plan will build on this Big Dry Creek effort and will include information explaining the different floodplain insurance options to help affected property owners make informed decisions. One of SEMSWA's goals with the *Stay Safe Plan* is to encourage homeowners to get insurance policies, ideally more policies than the number of structures in the floodplain.

Properties in the Floodplain



■ Insured ■ Not Insured

Only a small portion of property owners utilize flood insurance policies

Floodplain Management Statistics

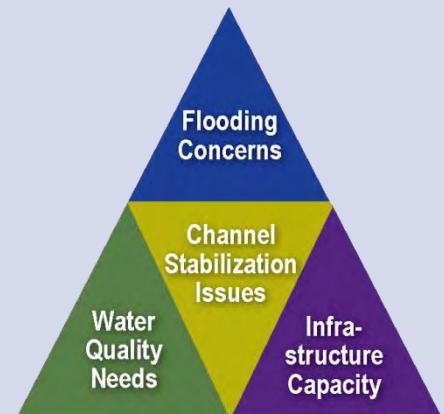
During 2011, **44 floodplain development permits** were reviewed, approved, and issued in anticipation of work in a floodplain; **26 floodplain studies** were reviewed to assess the impacts to a floodplain from anticipated improvements; **30 inquiries** of SEMSWA staff from residents needing to determine property boundaries in relation to a floodplain; and **one floodplain violation** was investigated and resolved. Numerous floodplain informational brochures were made available to interested residents and contractors either living or working in or adjacent to a floodplain.

Master Plans Completed in 2011

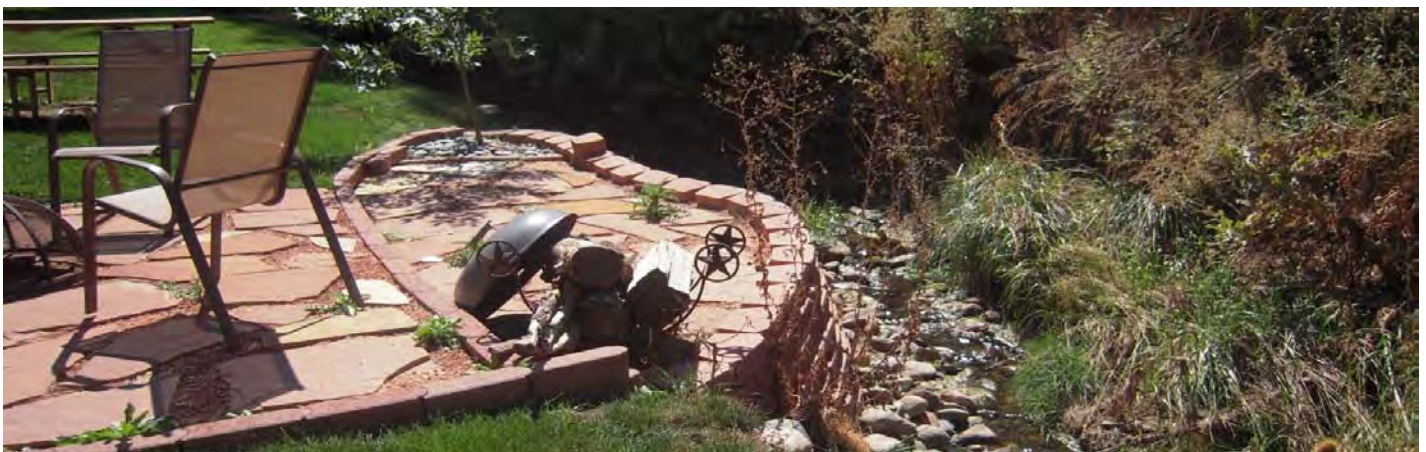
During 2011, the following master plans and studies were completed in Centennial and Arapahoe County:

- Cottonwood Creek Flood Hazard Area Delineation (FHAD)
- First Creek FHAD
- Piney Creek FHAD
- Upper East Toll Gate Creek Master Development Plan
- Upper East Toll Gate Creek FHAD

Efforts in progress during 2011 for basin master planning include Little Creek, Piney Creek and Antelope Creek, West Toll Gate and No Name Creek, Sand Creek, and Happy Canyon Creek.



Master Planning for Stormwater Management



Example of a backyard amenity encroachment into the Big Dry Creek floodplain easement that may cause flooding of neighboring properties

Maintenance Program

In spring 2011, SEMSWA acquired a pipeline camera system to video inspect stormwater pipes and culverts. Shortly afterwards, SEMSWA successfully integrated three software systems (Asset/Work Management, GIS, and Pipe Video) to form a complete system for identifying and prioritizing inspections, assigning work orders, completing inspections, and ultimately updating the master GIS database. Although Asset Management, GIS, and Pipe Video systems are not new themselves, the integration of all three for the purpose of evaluating stormwater systems and establishing proactive maintenance is critical to SEMSWA being able to establish a prioritized procedure for inspecting pipeline segments.

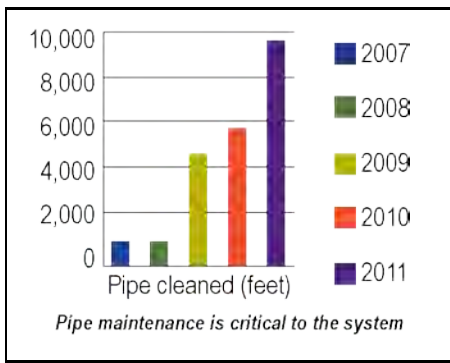
By integrating the Pipe Video software with GIS, the software has become a data "scrubber" where pipe sizes, materials, and conditions are updated regularly and accurately. Perhaps most importantly, SEMSWA can achieve a level of proactive maintenance that would not be possible otherwise. Future rehabilitation and routine maintenance projects can be identified and prioritized from the integrated system. This facilitates the timely construction of rehabilitation projects before failure occurs, leading to a sustainable approach to maintenance.



Crew videoing storm sewer pipe for inventory



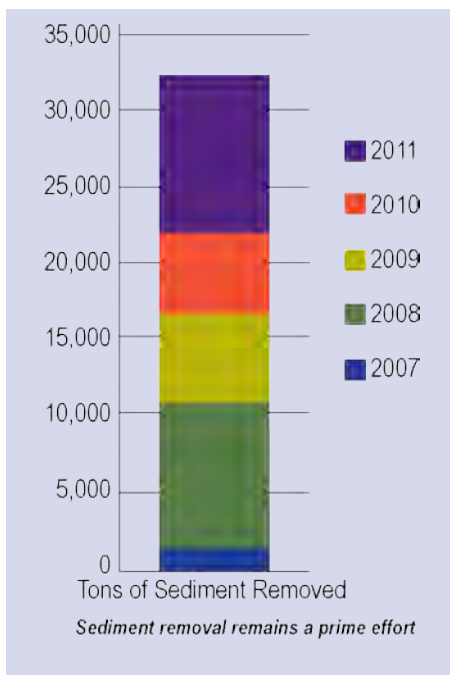
Inside the Pipe Video System Van



Corrugated metal culvert as shown in pipe video



Maintenance Crew slip lining the culvert segment



The Maintenance Program is responsible for inspecting and cleaning grates, inlets, vaults, culverts, and pipes as well as removing sediment from channels, ponds, and other stormwater infrastructure so that stormwater is effectively conveyed to the drainageway. The 2011 Work Order statistics illustrate the infrastructure cleaned and the tons of sediment and debris removed:

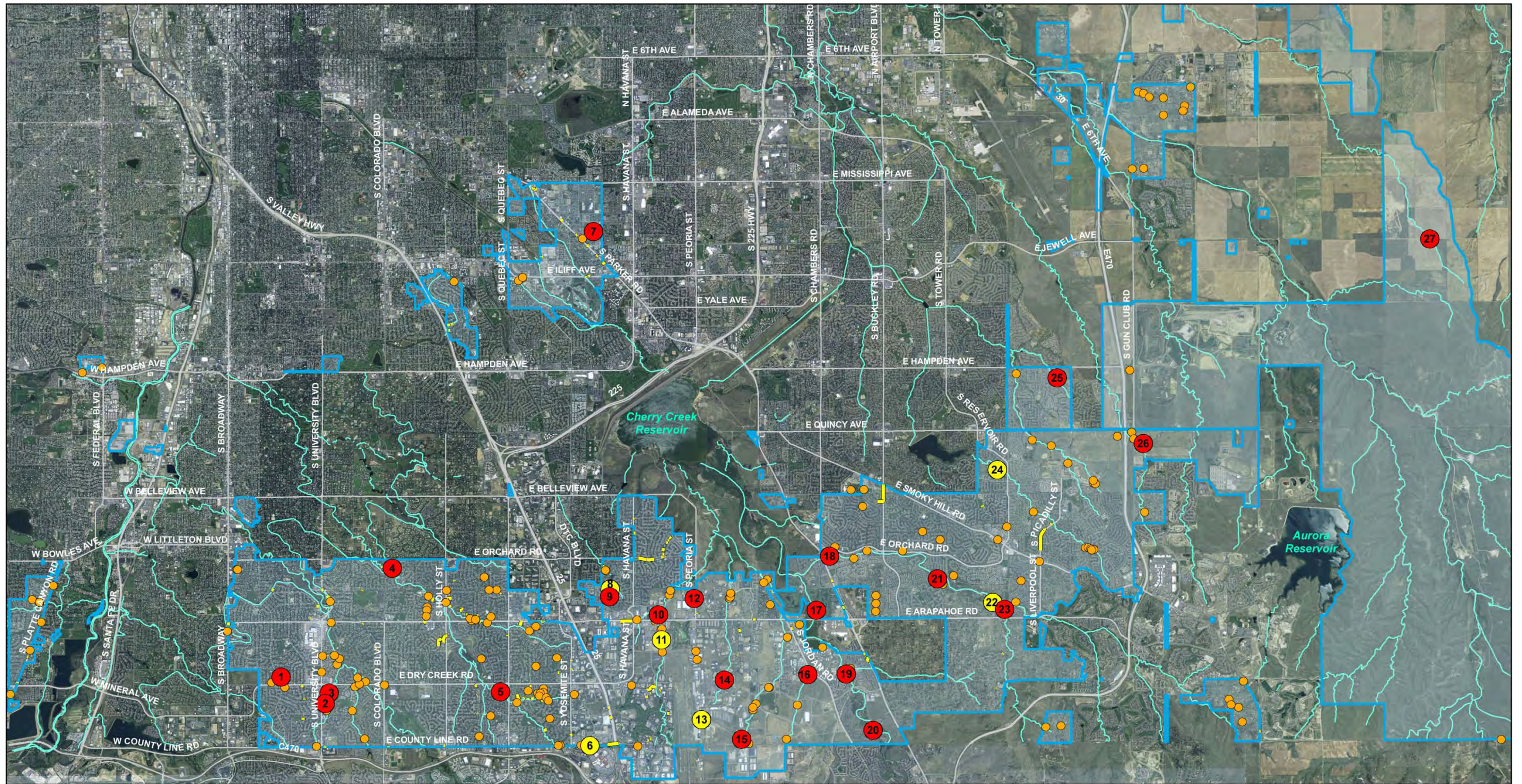
- 6,390 grates and vaults cleaned
- 9,330 feet of storm pipe cleaned
- 10,045 tons of sediment removed
- 275 tons of overgrowth removed
- 40 acres of mowed/weed control
- 48 regional ponds maintained
- 35,630 feet of storm pipe inspected



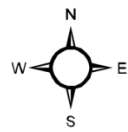
Removing vegetation & debris from infrastructure



Jet-truck disposal of removed sediment & wastes



SEMSWA CIP and Maintenance Project Map 2011



Legend

- CIP Completed During 2011
- CIP In Progress During 2011
- Maintenance Projects
- CMP Pipes Inspected by Video
- SEMSWA Service Area

- | | | |
|---|--|--|
| <ol style="list-style-type: none"> 1. Littles Creek at Dry Creek Rd Detention Ponds 2. Country Park Pond Conversion 3. Big Dry Creek Stabilization at Forest Park 4. Little Dry Creek Reach 6 Stabilization 5. Willow Creek Stabilization (Quebec to Dry Creek) 6. Storm Sewer Rehabilitation (Cured In Place Pipe) 7. Mexico Regional Pond Water Quality Retrofit 8. Goldsmith Gulch at E Caley Ave Culvert Replacement 9. Goldsmith Gulch Channel Improvements (Phase 2) | <ol style="list-style-type: none"> 10. Lincoln Executive Center Regional Pond Modification 11. Cottonwood Creek Channel Stabilization 12. Lincoln Executive Center Caley East Regional Pond 13. Lone Tree Creek Regional Pond (L-1 West) Improvements 14. Lone Tree Creek Regional Pond (L-2) Improvements 15. Windmill Creek Regional Pond W-1 Improvements 16. Dove Creek Regional Pond D-2 Improvements 17. Cherry Creek Stabilization North of Arapahoe Rd 18. Piney Creek Stream and Pond Improvements (Parker Rd) | <ol style="list-style-type: none"> 19. Cherry Creek Stabilization at the Eco Park 20. Cherry Creek Drop Structure at 17 Mile Pedestrian Bridge 21. Piney Creek at Tower Rd Channel Stabilization (Phase I) 22. Piney Creek Stream Stabilization Phase II 23. Piney Creek Channel Stabilization at Caley - Phase 2 24. West Tollgate Creek Stabilization at Fox Hill Park 25. Tallgrass Sediment Pond Removal 26. East Toll Gate Creek Regional Pond Improvements 27. First Creek Culvert Replacement (Jewell Ave) |
|---|--|--|

Water Quality

The Federal Clean Water Act requires that SEMSWA, as the operator of a storm sewer system, obtain a Stormwater Discharge Permit from the State. The State developed a special Permit for the impaired Cherry Creek Basin, so SEMSWA's General Permit meets requirements of Cherry Creek Control Regulation 72 as well. The Permit goal is to reduce pollutant discharges, actively protect water quality, and meet Regulation 72 through education, standards, oversight, and enforcement. SEMSWA's Permit program describes best management practices (BMPs) for outreach efforts, construction activities, and municipal operations. Outreach efforts focus on changing impactful behaviors (see *Public Outreach*). Oversight of standards includes inspections of temporary BMPs to keep sediment from leaving construction sites and permanent BMPs for water quality treatment after construction is complete. The ability to enforce these requirements is necessary to ensure the State that SEMSWA's Permit program will be effective.



The sand filter basin on the IKEA site provides treatment for stormwater runoff

Customers at the new Centennial IKEA can witness stormwater treatment in action. Drainage design was incorporated at each step in the design process to compliment IKEA's green practices. This effort was challenging due to the tight site constraints, which included 10 acres of roof on 13.5 total acres. The drainage design represents a high standard for treatment facilities that SEMSWA would like to establish in older neighborhood systems built prior to current standards. SEMSWA's Grant Program uses budgeted funds each year to assist in upgrading facilities to provide better water quality treatment, helping the entire stormwater system to function more effectively. Read more on Grant Program opportunities at www.semswa.org.

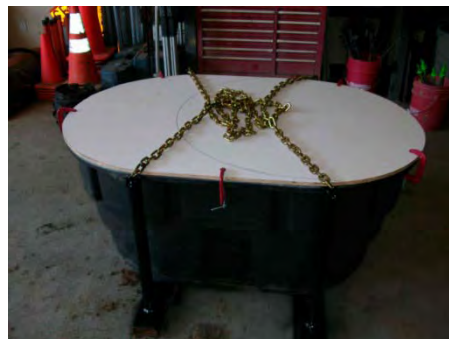
As required under SEMSWA's permit, a Household Hazardous Waste (HHW) Collections program has been established to provide residents with options for disposal or recycling of typical HHW, including automobile fluids, used landscape chemicals, fluorescent tubes, leftover paint, and the like. SEMSWA uses WMCurbside, Inc. to provide door-to-door "curbside" pickup service. In the contract negotiated for 2012, residents who take advantage of SEMSWA's HHW collections service will be able to recycle a limited amount of electronic wastes, with a choice of either one TV, any size, or one computer system consisting of a CPU, monitor, desktop printer, keyboard, and mouse. WMCurbside will also accept residential needles/syringes and lancets, or "sharps," packaged and sealed in puncture-proof plastic containers. The additional services are included in the \$20 co-pay paid by each resident in the SEMSWA area to cover the annual pickup of accumulated HHW; SEMSWA pays the remaining \$97 for each pickup. Information on the program is at www.semswa.org.

2011 Permit Program Statistics

- 2,378 inspections at over 190 active construction sites
- 16 outreach events promoting behavior change
- 57 potentially improper discharges investigated
- 496 residential curbside household hazardous waste collections; 40,000 pounds of waste recycled or disposed



Maintenance staff fabricating a sturdy frame

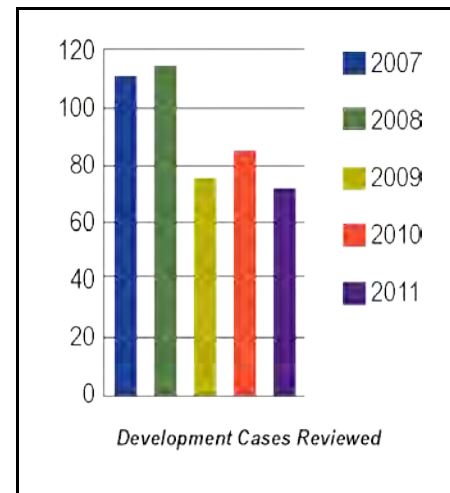


Finished concrete washout container

To meet permit requirements for SEMSWA's municipal operations, Maintenance staff fabricated a concrete washout container to prevent pollution from their concrete operations. This Good Housekeeping BMP is compact and portable, with a cleanout drain and a lid that bolts down during transport, meeting permit requirements with ingenuity.

Land Development Coordination and Awards

Land Development staff continued coordinating land development opportunities within Arapahoe County and the City of Centennial to meet the objective of comprehensive, efficient and effective stormwater management. Adherence to land development standards and codes is critical to building sustainable projects as it ensures the community has well-planned, adequate and long-term stormwater infrastructure. During 2011, SEMSWA received a combined total of 75 referrals from the County and City, compared to 88 in 2010. Referrals to SEMSWA since 2007 have reflected the economic situation in Colorado, with a decrease since 2008 (115 referrals), but keeping somewhat steady since 2009. SEMSWA conducted a customer service survey in 2011 to solicit input on areas of service that could be improved. SEMSWA is committed to a regular assessment of our review, approval, and permitting processes to streamline where possible, making it easier to do business in SEMSWA's service area.



Typical directional boring for dry utility work



Using integrated pipeline video to update inventory

At its 26th Annual Awards ceremony, the Colorado Chapter of the American Public Works Association (APWA) honored SEMSWA with awards in four public works categories. APWA is an international education and professional association that provides high-quality public works goods and services. In 2011, 65 organizations submitted public works projects that demonstrated innovation and creativity. SEMSWA won awards in the following categories:

- *Public Works Administration*, for a streamlined **Annual Utility Permit Program** for dry utility installation
- *Building Code Administration/Permitting/Enforcement*, for **customizing Cartegraph™ database software** to meet Land Development case and State Discharge Permit tracking needs
- *Sustainable Design/Construction Management*, for design assistance with IKEA's **stormwater quality treatment system**
- *Water/Wastewater Design/Maintenance/Operations*, for **integrating pipeline video inspections into GIS** for tracking and managing stormwater pipeline infrastructure



The extended detention basin water quality treatment facility at the IKEA Centennial store

Public Outreach



CH2M HILL volunteer inlet stenciling group



SEMSWA info booth at Western Welcome Week event



Learning about water at World Monitoring Day

Staff members from SEMSWA's Water Quality group are involved with numerous and varied outreach activities that strengthen the connection between people and water quality. The activities focus on changing impactful behaviors and range from booths at community celebrations to day-long service workshops. The goal is to foster partnerships between SEMSWA, residents and businesses with the purpose of reducing pollutants in stormwater runoff entering our streams and lakes. Changing behavior can be challenging, but knowledge is power and outreach is the first step.



Teacher's Workshop: learning about the storm sewer system

Outreach Categories



- Public Meetings
- Signage
- Volunteer Days
- Workshops & Training
- Information Booths
- Mailings
- HOA Events

Outreach activities in 2011 to support SEMSWA's stormwater management programs included neighborhood and community meetings to inform the public about upcoming CIP construction projects, the reasons for the project, and the potential impacts to local residents from the construction activities. These meetings provided the public a chance to provide input and meet the SEMSWA engineering design staff making the decisions about a stream stabilization project, a trail connection, or a park amenity package. Often the discussions led to specific characteristics of a construction activity, which generated an awareness among residents of the potential impacts. These meetings have proven to be instrumental in constructing a successful project.



Explaining a future CIP stream stabilization and restoration project



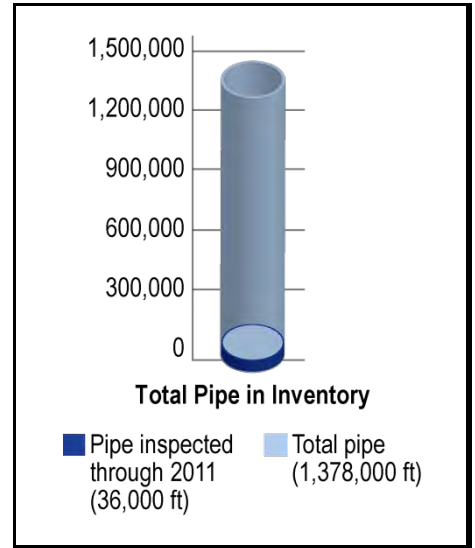
Booth display familiarizing public with community resources and SEMSWA projects



Learning about water quality and stormwater runoff in the classroom from SEMSWA staff (and father)

GIS Program

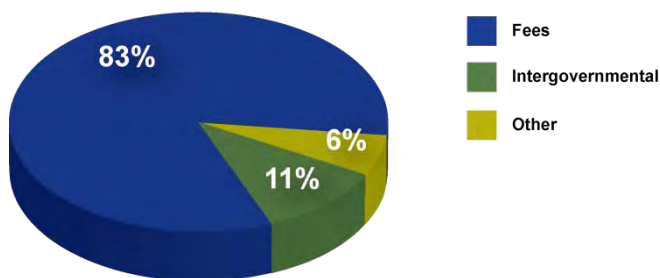
During 2011, the GIS group continued to enhance the Asset Management program to evaluate SEMSWA's stormwater system through improved inspection and tracking of inlet, pipe, channel, and other stormwater conveyance facilities. New information obtained from a pipe video system and a more comprehensive data entry effort were integrated with Asset Management efforts to provide a better understanding of the system's condition and a more accurate representation in the GIS database. Additionally, the GIS group updated building footprint mapping efforts and coordinated with the billing consultant to produce a more accurate assessment of service fee rates based on square feet of impervious area which contributes to stormwater runoff. GIS staff also improved the custom Cartegraph™ database application to track case/project review as well as permitting and inspection activities. Having information stored in a central, digital environment is critical to a higher level of customer service with contractors, developers, and partner agencies.



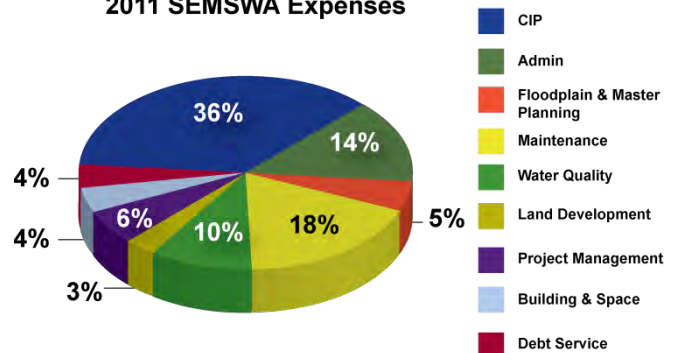
SEMSWA Financials

SEMSWA is a political subdivision and a public corporation of the State, falling under the guidelines of the Colorado Revised Statutes (C.R.S.) for a "drainage authority" (29-1-204.2 C.R.S.). Fees are based on the amount each property contributes to stormwater runoff, which was determined by the SEMSWA Board to be an equitable assignment of cost, as property owners pay fees in proportion to the demand their property's runoff places on the drainage system. Fees paid by owners of existing properties are not used to pay for new development infrastructure, again ensuring an equitable assessment of fees for stormwater management services. Property owners can dispute their fee, specifically their calculated amount of impervious area and density through an appeals process. The SEMSWA Board has set fees to provide sufficient funds to properly manage stormwater and meet State and Federal regulatory requirements. More detailed information is available at www.semswa.org.

2011 SEMSWA Revenue



2011 SEMSWA Expenses



2011 SEMSWA STAFF





The Southeast Metro Stormwater Authority is a legal entity formed through an intergovernmental agreement between Arapahoe County, the City of Centennial, Arapahoe County Water and Wastewater Authority, East Cherry Creek Valley Water and Sanitation District, and the Inverness Water and Sanitation District. The boundaries of SEMSWA cover the City of Centennial and the developed areas of the unincorporated portions of the County. The Stormwater Authority, which is also an Enterprise, provides the resources and funding to protect people and property from flooding while also complying with water quality regulations.

