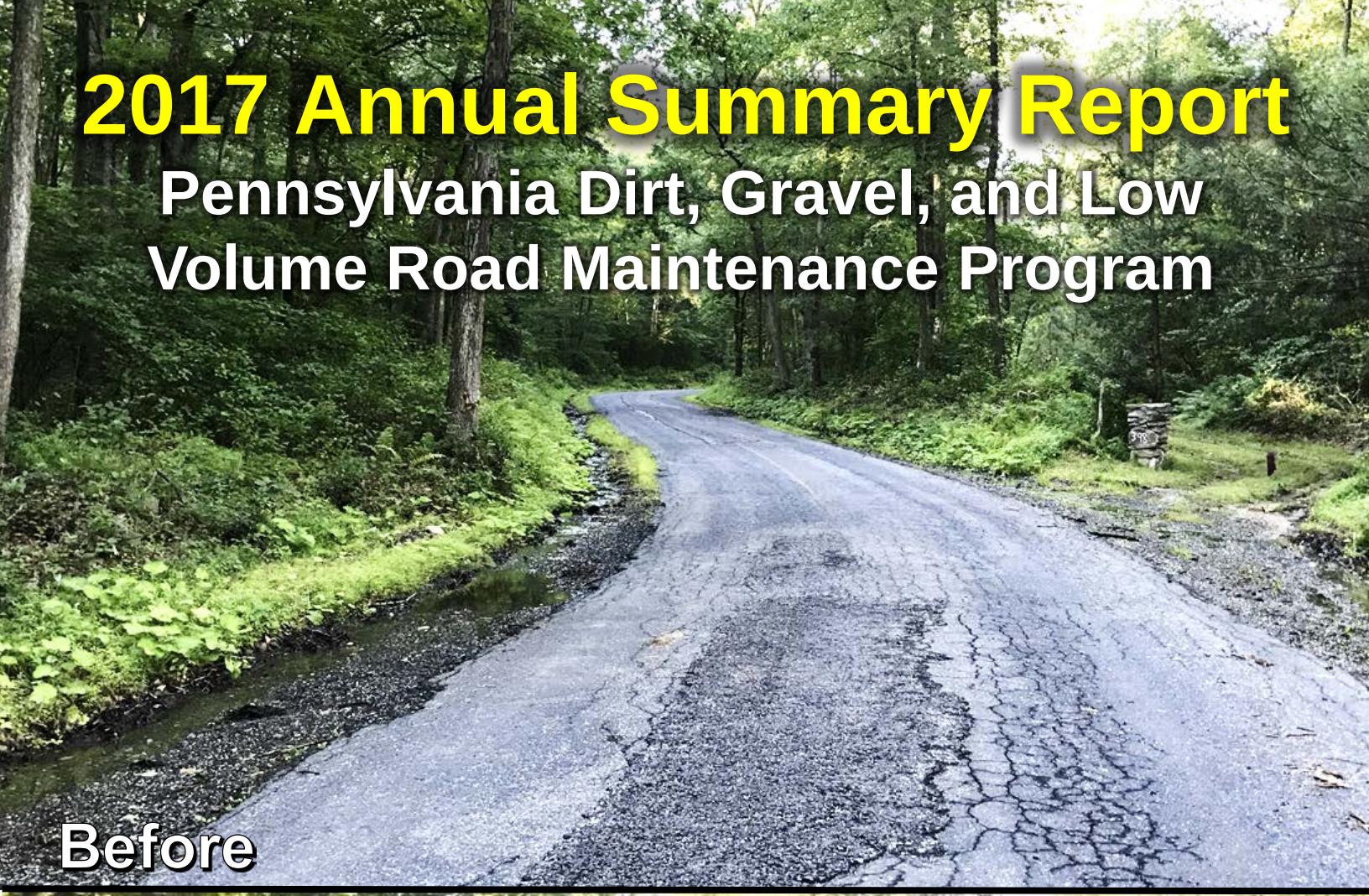
2017 Annual Summary Report

Pennsylvania Dirt, Gravel, and Low Volume Road Maintenance Program



July 2018

Photo: Beetem Hollow Road, a paved Low Volume Road in Cumberland County, was a constant maintenance, environmental, and safety issue due to the sunken road and saturated conditions. Over 800' of underdrain, and a 500' French mattress were used to elevate the road and provide a stable base for the new asphalt surface shown here.

Pennsylvania SCC State Conservation Commission

Center for Dirt and Gravel Road Studies

What is the DGLVR Program?

Pennsylvania's Dirt, Gravel, and Low-Volume Road Maintenance Program provides education, technical assistance, and grant funding to local public-road-owning entities throughout the state. The program was expanded in 2014 to dedicate $20 million to unpaved roads and $8 million to paved low volume roads (LVRs) traveled by fewer than 500 vehicles per day. The program's goal is to implement Environmentally Sensitive Maintenance Practices aimed at reducing the environmental impacts of public roads, while reducing long-term maintenance costs. The PA State Conservation Commission (SCC) administers the program at the state level, and allocates funding to conservation districts in 65 counties throughout Pennsylvania. Owners of public roads apply for grants to their conservation district, and work with them to complete projects. The Penn State Center for Dirt and Gravel Road Studies provides education, outreach, and technical assistance for the program. More information is available at: www.dirtandgravelroads.org.

On the Ground: In 2017, the DGLVR Program:

- **Completed 492 contracts in 333 separate municipalities**
- **Replaced 98 stream crossings (culverts and bridges)**
- **Replaced more than 600 road drainage culverts (crosspipes)**
- **Installed more than 800 new road drainage culverts (crosspipes)**
- **Placed more than 400,000 tons of road fill**
- **Placed approximately 80 miles of Driving Surface Aggregate**
- **Installed more than 18 miles of underdrain**

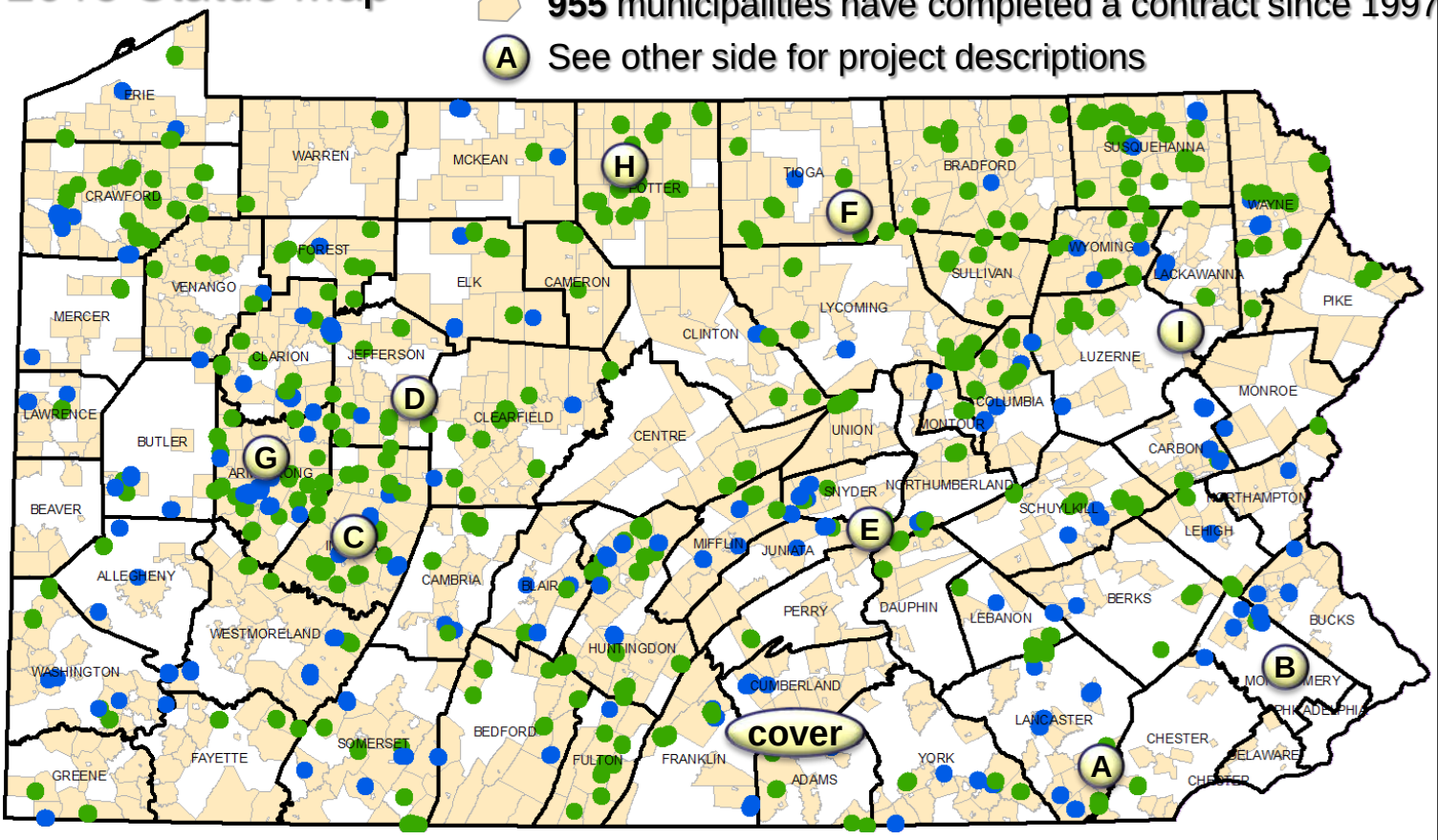
DGLVR Program 2018 Status Map

336 Dirt and Gravel Contracts completed in 2017

156 LVR Contracts completed in 2017

955 municipalities have completed a contract since 1997

A See other side for project descriptions



The DGLVR Program completed nearly 500 projects and implemented thousands of practices in 2017. On the pages below, a few key practices are outlined and project examples from around the state are highlighted. For more information on projects and spending, please visit www.dirtandgravelroads.org

Urban Paved Low Volume Roads

Act 89 of 2013 earmarked $8 million of program funding annually to improvements to paved low volume roads. This funding has opened up the program to many more urban townships and boroughs that had not previously been involved. Practices used in urban areas are different from traditional program practices, but still try to accomplish the same goals of encouraging infiltration while reducing runoff and sediment pollution. Many counties have incorporated program funding and goals into broader management plans concerning Municipal Separate Storm Sewer Systems (MS4) and Combined Sewer Overflows (CSO).

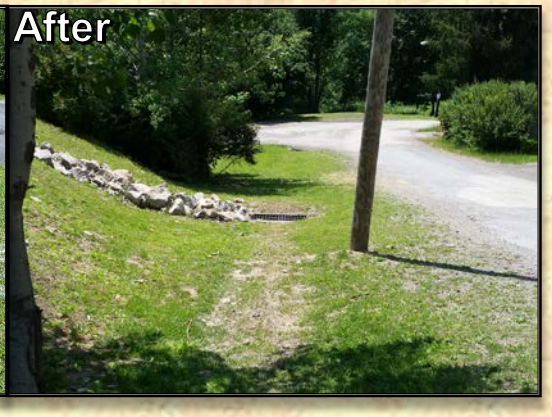
Example A: Lancaster County: Paved LVR, Blackberry Lane, $15K grant, $19K in-kind

Project Details:
This relatively small project in the borough of Lititz focused on the creation of a rain garden to promote infiltration and reduce runoff from an urbanized area of houses, roads, and driveways. The district worked with a local church that owned the land to complete this project. (after photo shows before planting)

Example B: Montgomery County: Paved LVR, Webber Road, $33K grant, $4K in-kind

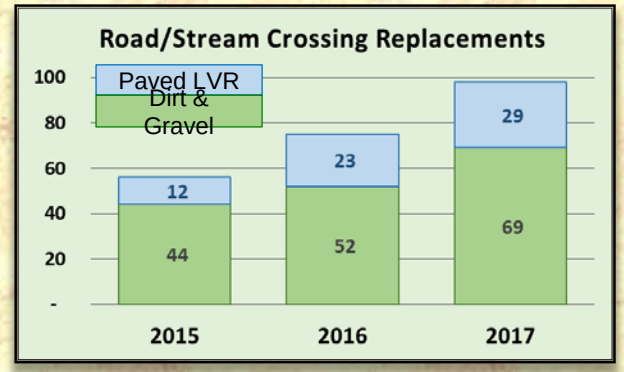
Project Details:
The open ditch created constant erosion and safety concerns. The ditch was replaced with a short storm sewer system, with a grass swale above it to promote infiltration. The project also replaced several crosspipes and collected spring seepage along the road, while addressing concerns of local landowners.

Example C: Indiana County: Paved LVR, Mine Hill Road, $20K grant, $2K in-kind



Project Details:
This steep road collects a large volume of water from adjacent land uses, causing regular washouts in the road ditches. A small storm sewer system was installed and directed to a stabilized outlet at the bottom of the hill. Several off right-of-way practices were implemented to control water coming to the road.

Stream Crossing Replacements



Stream crossing replacements per year (2015-2017).

Replacement of stream culverts and bridges has increased significantly since program funding increased in 2014. The program focuses replacements on undersized structures that are causing stream instability. Undersized structures are prone to washouts and flooding, require frequent maintenance, and often impede aquatic life from passing through the structure. New structure widths must span the bankfull stream channel to accommodate the movement of streambed material and provide adequate aquatic organism passage.

Example D: Jefferson County: Paved LVR, Laurel Ridge Road, $58K grant, $24K in-kind

Project Details:
Twin 5’ round pipes in an 18’ bankfull channel frequently clogged, causing major flooding. A 19’ x 8’ aluminum plate arch culvert was constructed beside the stream, then lifted into place with a crane. The new structure was filled with more than a foot of material to ensure protection of the bottom plate and proper aquatic organism passage.

Example E: Snyder County: Unpaved, Arnold Road, $69K grant, $19K in-kind

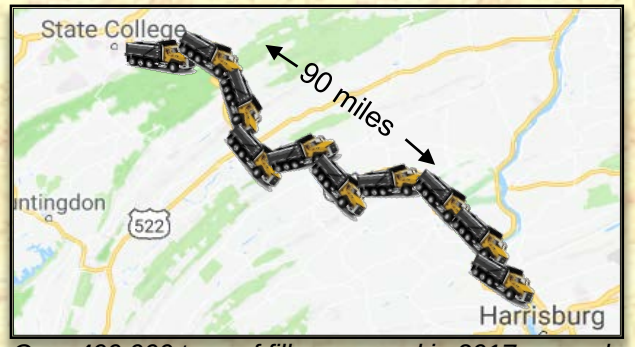
Project Details:
The existing 8’ pipe restricted stream flow, causing erosion and flooding. A 20’ bottomless concrete box culvert was installed to address erosion and scour issues, and improve passage for aquatic organisms. This structure is not a true “box”, but an upside down U-shape with no bottom, sitting on concrete footers.

Example F: Tioga County: Unpaved, Salt Spring Run Road, $146K grant, $91K in-kind

Project Details:
This project (funded in conjunction with the US Fish and Wildlife Service and the National Fish and Wildlife Foundation) was one of two 32’ span Geosynthetically Reinforced Soil (GRS) bridges installed on Salt Spring Road. Together, replacing these two structures reconnected more than 11 miles of Exceptional Value naturally reproducing trout habitat.

All photos credited to the Conservation District in which projects are located

Filling the Road Profile



Over 400,000 tons of fill were used in 2017, enough to fill 90 miles of tri-axles parked bumper to bumper

Over time, many rural roads across Pennsylvania have become entrenched, or sunken below their surroundings. This occurs through decades of road surface loss due to grading, traffic, snowplowing, and erosion. Once roads are entrenched, it is often difficult or impossible to get drainage out of the road area. Filling the road profile is the practice of importing fill material to reestablish positive drainage from the road. Fill encourages sheet flow, and provides the necessary cover to install new crosspipes and turnouts to distribute road drainage.

Example G: Armstrong County: Unpaved, Gibson School Road, $56K grant, $56K in-kind

Project Details:
This severely entrenched road trapped drainage in the roadway, funneling it into a nearby stream. More than 9,000 tons of fill were placed on this 2,300 foot project, at a depth of up to 8 feet in some spots. Fill provided sheet flow off the lower side of the road, and enough cover to install new pipes to drain the uphill ditch.

Example H: Potter County: Unpaved, Cobb Hill Road, $75K grant, $57K in-kind

Project Details:
Cobb Hill road frequently washed out as it collected drainage from surrounding agricultural fields. This project imported more than 6,000 tons of fill to prevent the road from acting like a ditch. The new fill provided cover for 750 feet of underdrain and 12 new crosspipes, such as the one shown in the picture on the right.

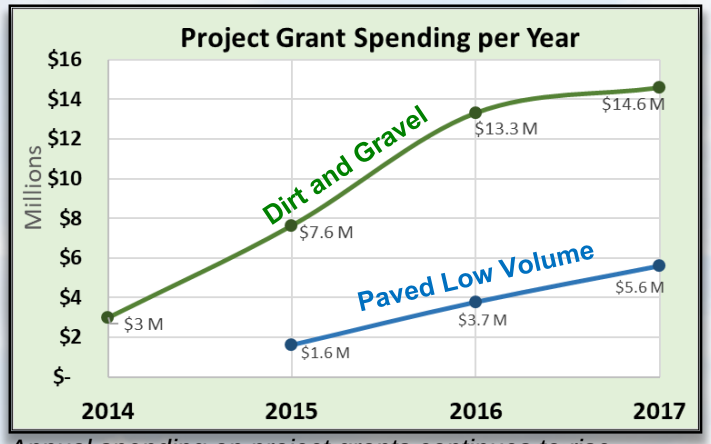
Example F: Luzerne County: Unpaved, Park Road, $25K grant, $7K in-kind

Project Details:
Sometimes importing new base material is the only way to raise the road out of the mud. Park Road used geotextile and new stone base to elevate the road and provide a stable base for the Driving Surface Aggregate that was placed on top. The project also included several drainage improvements, including a French mattress, turnouts, and sheet flow.

Spending

Key Spending Notes from 2017:

- Spending on projects continues to increase, with $20 million spent on projects completed in 2017.
- As of April 2018, more than **$36 million was under contract** for upcoming projects.
- The average grant value awarded continued to climb, reaching a record $43,000 for dirt and gravel, and $36,000 for low-volume road projects.
- In-kind contributions from grant recipients reached an all-time high of $9.1 million in 2017, averaging $.45 of in-kind for every program $1 spent.



Annual spending on project grants continues to rise since program funding increased in 2014.

Education and Outreach

Environmentally Sensitive Maintenance (ESM) Trainings: These two-day trainings are required before municipalities can apply for program funding. Training material underwent significant updates for 2017 that were well received by attendees. A total of 13 sessions were held around Pennsylvania in 2017 with over 680 in attendance, a 10% increase over the past two years.

Quality Assurance / Quality Control (QAQC) Visits: The QAQC process involves a team visit to each county to evaluate the administration and implementation of the DGLVR Program. The 14 county visits conducted in 2017 represented the completion of a visit to all 65 participating counties from 2015-2017. All conservation districts visited were implementing a local DGLVR Program that met or exceeded the expectations of SCC staff and the QAQC team.

Stream Crossing Replacement Education: With the rapid increase in stream crossing replacements (see reverse), commission and center staff have increased training and technical assistance in this area. Five one-day stream crossing trainings were held in 2017 and four additional sessions are scheduled for 2018. The center has also partnered with Trout Unlimited to provide additional on-site technical assistance and project oversight on stream-crossing replacements in conservation districts across the state.

Looking to 2018 and Beyond

Updated Tracking and Reporting: Work is underway on significant updates to the customized online Geographic Information System (GIS) that conservation districts use to track project spending and deliverables. The financial tracking capabilities of the system are being significantly upgraded, allowing for reporting more detailed financial information, quarterly reporting, and automated replenishments to conservation districts.

Expanded Educational Opportunities: In addition to the stream crossing trainings and the ongoing relationship with Trout Unlimited described above, plans are underway for the first DGLVR "boot camps" in 2018. These field-oriented trainings are designed to jump start new conservation district technicians with knowledge and skills to help them successfully implement the program.

This document was prepared jointly by the PA State Conservation Commission and the PSU Center for Dirt and Gravel Road Studies. Figures are based on GIS data supplied by Conservation Districts in January 2018. For more information, visit www.dirtandgravelroads.org.

Center for Dirt and Gravel Road Studies