

**Water and Environmental Programs
Engineering Success Stories**

State: Oklahoma

Borrower Name and Case No.: Amorita - Byron Sewer System Authority

Engineering Firm: SMC, Inc.; Oklahoma City

Rural Development Contact: Rick Schlegel, State Engineer
Jerry Browning, RDM, (580) 256-3375

Congressional Information: Senators Don Nickles and James Inhoff
Rep. Frank Lucas

County: Alfalfa

Keywords: Small Diameter Gravity Sewer

Small Diameter Gravity Sewer System

Problem:

The two small communities of Amorita (pop. 56) and Byron (pop. 57) in Northwest Oklahoma are located two miles apart. The individual septic tanks and lateral line systems for these communities failed due to the inability of the underlying clay soils to absorb wastewater. Raw sewage surfaced in the yards and road ditches in both towns creating a serious health problem. Neither community could afford a conventional type public sewage system.

Solution:

These two communities through their consulting engineer, Mike Spear of SMC, Inc., contacted Rural Development in Woodward, Oklahoma about possible funding of a sewer system for both communities. Rick Schlegel, RD Engineer, and Cindy Schlegel, Rural Development Specialist, met with the boards of both towns and Mike Spear to discuss possible solutions. Rick suggested that the towns consider working together to construct a central treatment system to serve both communities. Rick also suggested that the towns consider using a Small Diameter Gravity Sewer System (SDGS) for their collection systems. This type system would be brand new to Oklahoma, but probably would be the least cost and the most affordable type system to solve the sewage problem in these communities.

The Communities decided to work together and formed a joint Authority called the Amorita - Byron Sewer System Authority and submitted an application to Cindy for Rural Development funding. Rick and Mike Spear met several times with the

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Oklahoma Department of Environmental Quality to work with them in establishing design criteria for SDGS systems since this technology had not been used before in the state. Design guidelines were established. With joint cooperation of the communities, the engineer, the Department of Environmental Quality, and through funding by Rural Development, the Oklahoma Department of Commerce, and the Oklahoma Water Resources Board, a SDGS system was installed for about half the cost of a conventional type system. The system also resulted in lower operation and maintenance costs than conventional systems.

The system consists of new dual compartment septic tanks for each user with 4" diameter collection lines that flow under gravity to a small liquid lift station in each town. The liquids are then pumped to a central lagoon system located between the two towns for final storage and evaporation. This type solution is more environmentally friendly since deep excavations are eliminated which reduce damage to the landscape, reduce inflow and infiltration, and solids are digested in the tanks eliminating the need for sludge management from the lagoons.

This system has been in operation for over 3 years now with only very few problems. By working together, utilizing new innovative technology, and utilizing funding and technical assistance from Rural Development these communities have developed an affordable public sewage system that is setting an example for other communities to follow.

Rural Development has now funded several additional SDGS systems in the State resulting in more cost effective and affordable systems for many communities.
