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**WATER QUALITY IMPROVEMENT PROJECT: RESIDENTIAL ONSITE WASTEWATER
TREATMENT IN THE KARST TERRAIN OF SOUTHWEST MISSOURI**

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ABSTRACT: The unique karst geology of the Ozarks creates highly connected bedrock passages for surface water to rapidly recharge groundwater. This landscape can allow pollutants released near the surface to damage groundwater and drinking water quality. Thirty-three percent of Missourians rely on groundwater as their primary drinking water source. Southwest Missouri hosts thousand of private drinking water wells and studies indicate that hundreds of these private wells have become contaminated. It is important to understand the potential sources of contamination to protect and improve groundwater quality. In the United States twenty-five percent of the population relies on decentralized or onsite wastewater treatment systems (OWTS). In Missouri about fifty percent of these systems are failing. Research has revealed that failing OWTS are a major source of groundwater pollution in Southwest Missouri. Conventionally designed and installed systems provide poor treatment in landscapes with steep slopes, shallow depth to bedrock and cherty soils. Often this poorly treated effluent can leach into the shallow groundwater system. The Water Quality Improvement Project (WQIP) provided cost-share funding to target failing OWTS in sensitive landscapes and remediate those systems by installing advanced treatment. A GIS database was created to identify sensitive landscape positions that provide direct connections to groundwater. An applicant's site location was evaluated in the GIS database and priority was based on the potential for monitoring groundwater, soil type, lot size, environmental need and the potential to threaten surrounding drinking water supplies. The project steering committee determined the selection criteria and system design was supervised by the technical site committee. Education about operation and maintenance of residential OWTS, especially advanced treatment systems, is an essential component to maximize the effectiveness and lifespan of a properly installed system. The WQIP project addressed this by expanding a public onsite wastewater training facility that features a variety of treatment technologies providing visual, hands-on demonstrations. The facility hosts educational workshops for homeowners, installers, health department professionals and students. This presentation will summarize the WQIP project, focusing on site selection methods, project challenges, successes and lessons learned.

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