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## **Field Site Testing of Low Impact Oil Field Access Roads: Reducing the Environmental Footprint in Desert Ecosystems**

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### **Abstract**

Lease roads and well pads are a highly visible and often less than welcome aspect of O&G drilling and producing operations. In South Texas this is occurring as the Cretaceous Eagle Ford shale is being developed from near the Mexican border outward to the east/northeast across several counties stretching more than 150 miles. The “Brush Country” as it is often referred to, is a semi-arid landscape where measures to lessen the impact of developing the shale are fostering a host of new technologies.

To address environmental concerns about the development of the resource, Texas A&M University is adapting “Disappearing Roads” technology to the particular needs of the Eagle Ford. A collaborative project within the Environmentally Friendly Drilling Program has been testing new types of “disappearing roads” in a desert like environment to measure their effectiveness and ability to lower the surface footprint of surface operations. One road was constructed with materials made with recycled drilling waste, another incorporated reusable composite mats, and a third represented a new type of “roll out road” developed in by a student engineering team from the University of Wyoming as a class project. The field demonstration is expected to:

- 1) Provide a realistic field trial in representative desert ecosystems so that results could be evaluated efficiently so as to benefit both the industry, the organizations with the technology, and the public sector.
- 2) Document and provide the results of technology field trials so that promising processes, systems and products could be utilized in a wider range of gas shale plays.
- 3) Speed the commercial development of technology developed to reduce the environmental footprint of drilling activities,

The removable mat concepts may also be used to lessen the impact of constructing water ponds and to provide temporary enlargement of well pads that can accommodate service equipment used in fracturing operations. This paper will describe the technology behind the roads and document their performance in semi-arid rangeland landscapes.

### **Introduction Background**

While the energy industry is developing better practices to manage its environmental impact<sup>1,2,3</sup> its drilling activity faces restrictions, and in some cases complete prohibitions of operations in sensitive areas. Environmental constraints, including laws, regulations, and implementation procedures, can limit natural gas development and production on both federal and private lands. More than 30 environmental policy and regulatory impediments to domestic natural gas production have been identified and documented.<sup>4</sup> Surface footprint is one of the more vexing problems that energy developers must face.

Public concerns about the footprint of human activity (ORV tracks and oil and gas operation lease roads) in ecologically sensitive desert locations have resulted in regulatory impediments to E&P activities. At the same time, significant amounts of oil and gas resources remain to be discovered and developed in arid regions of the U.S. This is particularly true of natural gas resources in the Rocky Mountains.

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