FRAC FLOWBACK WATER TREATMENT **Mobile Water Treatment**

As the number of shale gas fracturing operations increase, the demands on fresh water supplies are being strained. Disposal options for the higher TDS wastewater generated from both fracturing wells and producing wells are also becoming limited and less economical. These constraints have a negative effect on production activities as drilling projects are delayed or reduced.

Mobile Water Treatment for the Oil & Gas Industry

PPC has a unique process that allows waste fluids, specifically pit water, produced water and frac flowbackfluids, generated in the normal course of drilling, completion and production of wells to be reused for numerous applications.

These applications include reuse for subsequent frac jobs.

Each of the various water sources require a unique treatment scheme in order to accomplish objectives, which when tested by an outside laboratory then verify on-site tests and proven in field applications. The treatment system works and where designed by our engineers to assure adherence to specific "Recommended Reuse Criteria".

Impact of Water and Wastewater from Shale Gas Fracturing Operations Water Management Solutions & Technologies

Increasing disposal costs due to greater logistical requirements and a shortfall of available treatment capacity are issues that will require a comprehensive water treatment strategy.

These challenges for future growth in the industry include:
Limited alternatives to treat high TDS flowback and produced water
Removal of free oil and grease
Reducing overall waste volume
Limited water re-use
Management of the entire water cycle

Process Plants Corporation P.O. Box 1966 Cranberry Township, PA 16066 • 724-776-5933 • http://ppc-site.com

FRAC FLOWBACK WATER TREATMENT **Mobile Water Treatment**

Clean the entire pit/pond to: Produce Water for High Water Recovery & Reuse

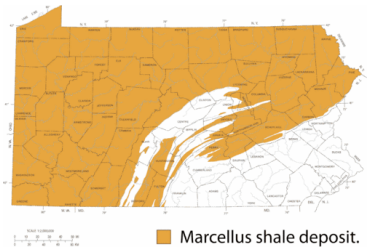
Process Plants Corporation has been a provider of water and wastewater treatment systems design and operation.

Initially each system designed and installed for Industrial and Acid Mine Discharge at DEP or mining operation sites focuses on the issues facing the industry such as environmental compliance, waste reduction targets, and maximum recovery and reuse of water in the process.

Our process for was engineered to convert coal fines from gob piles and the fines recovered from treating the AMD and by restoration with Switch Grass make a product to create energy to sell back to the grid.

PPC has supplied industrial wastewater treatment solutions for over 30 years at major installations with process technology, design-build water and wastewater plants for industry.

Pennsylvania, West Virginia and New York Require Innovative Water & Wastewater Technologies



WHAT IS MISSING FROM THE BOTTOM-LINE

As the number of shale gas fracturing operations increase, the demands on fresh water supplies are being strained. Disposal options for the higher TDS wastewater generated from both fracturing wells and producing wells are also becoming limited and less economical. These constraints have a negative effect on production activities as drilling projects are delayed or reduced.

The Marcellus Payback

Pennsylvania is a major piece of the Appalachian Basin's Marcellus shale that holds the promise to become a top producing shale reservoir. It covers a vast area--many times larger than any other shale play--and exhibits excellent reservoir qualities. Recent strong well results show that the Marcellus is living up to its promise, and its location in the core of North America's premium natural-gas markets gives it leverage over more distant supplies.

FRAC FLOWBACK WATER TREATMENT **Mobile Water Treatment**

Final use or disposal of the fluids produced by the drilling process depends on which layer of the process it is produced. The freshwater which is encountered in the first several hundred feet of drilling can be reused in the drilling process, be land applied, or trucked to an on-site facility for treatment.

Effective, cost-efficient methods to treat and supply the millions of gallons of water used for shale gas production are required to address the issues that impact development. The long-term sustainability of shale gas operations in a given region depends on several factors:

- *Working closely with the local, state, and federal regulatory environment*
- *Coping with the stress placed on the local fresh water supplies*
- *Effective and economical wastewater management plans*

Our process offers a solution to this combined wastewater disposal and water supply problem is to simply treat and recycle the flowback water, over and over again, as frac water- reduces by 95%

MARCELLUS SHALE DRILLING

As water demands rise, flows to wastewater treatment increase proportionally unless water reuse and recycle is boosted. Therefore, it makes sense to focus on the major contributors of wastewater flow and contaminants for potential opportunities to reduce, reuse, recycle or recover these streams.

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