



## PetroFix Well Flushing Technical Bulletin



PetroFix<sup>®</sup> is injected using low pressure and high volume to minimize hydraulic fracturing and preferential channeling of the product into wells, infrastructure corridors, etc. However, as PetroFix flows in the same channels that contain groundwater contamination it is common to observe PetroFix in monitoring wells as it flows through and past that well. This is true of all liquid remedial amendments

and in the case of PetroFix easily is resolved, if needed, by performing a *Clean Water Monitoring Well Flushing Event*. If monitoring well impact is a concern, then the remediation practitioner should be prepared to conduct clean water flushing events on monitoring wells at the end of a PetroFix application. The following sections outline this process.

## Triggers for Clean Water Monitoring Well Flushing Events

The conditions that trigger the possible need to perform a clean water flush in a monitoring well include:

1. PetroFix was applied in application points within 5 feet of said monitoring well (potential zone of direct influence); and/or,
2. **Visual evidence of PetroFix is observed** in a monitoring well prior to the end of the workday or end of the injection event.

Because PetroFix turns the aquifer black as it distributes it acts as its own tracer. We recommend taking a baseline sample and observing groundwater color before PetroFix injections. If no visible PetroFix is observed in a well compared to baseline samples taken at the end of injection in which no more than a light gray color was observed, then a monitoring well flush is not needed. If you do observe PetroFix in wells, we do recommend flushing impacted wells. If you do not flush PetroFix from wells eventually the product will fully drop out of groundwater and the groundwater itself will clarify after a few weeks to a

few months (e.g. turning to background colors versus gray or black). More information on this is provided in the REGENESIS technical bulletin entitled "PetroFix Groundwater Sampling Technical Bulletin".

When the need for a PetroFix flushing event is triggered for a specific well first complete all injection locations before proceeding with flushing operations. It is advisable to perform flushing operations at the end of all field activities if any event triggers are experienced.

## Performing a Clean Water Flushing Event

Determine the volume of flush water and pumping rate to be use for each monitoring well. As a support tool REGENESIS has provided a PetroFix Monitoring Well Flush Calculator spreadsheet that can be downloaded from the PetroFix website ([www.petrofix.com/resources](http://www.petrofix.com/resources)). The

information needed for input into the spreadsheet is shown below in the yellow highlighted cells. Please note that the calculated amount of flush water is a good, calculated starting point although you may find that actual volumes needed may vary.

Well Screen I.D.	2	inches		
MW Riser Pipe I.D.	2	inches		
Bore Hole I.D.	6	inches		
Sand Pack Length	12	feet		
Screen Length	10	feet		
Riser Length	10	feet		
Total Depth of MW	20	feet bgs		
Screen Slot Size	0.01	inches of opening		
Transmitting Capacity*	0.78	gal/minute/foot of screen		
Estimated porosity of sand pack	35%	percent (standard)		
Volumes of water needed to flush MW + Sand Pack	7			

*A reference table for transmitting capacity is in the spreadsheet for Schedule 40 and Schedule 80 PVC well screens.*

Connect the clean water supply to the monitoring well with a closed system using a PVC compression coupling or a threaded connection (if available). Alternately, applying water through the open top of the monitoring well via gravity feed is acceptable.

For the closed water system, monitor the water pressure and flow rate. Detail about flow rates is

provided in the calculation spreadsheet and considers well construction criteria. Do not exceed 20 psi for clean water flushing into monitoring wells. Document water flushing procedure used on each well including rate at which each MW accepts the clean water and closed system pressures over the course of the flushing event.

*It would be helpful to collect and photo document color of water from monitoring well at the following intervals:*

Monitoring Well:	Undiluted sample	10x dilution	100x dilution
Prior to PetroFix Injection (baseline)		NA	NA
Post-PetroFix Injection			
Right after flush			
15-30 minutes after flush			
Following workday or end of injection			

10x dilution = 1 ml undiluted sample into 9 ml clear water

100x dilution = 1 ml of 10x diluted water into 9 ml clear water

After completing the clean water flushing event and corresponding sampling events in each well, close well with a torque well plug, J-plug or similar water tight well cap.



# REGENESIS

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