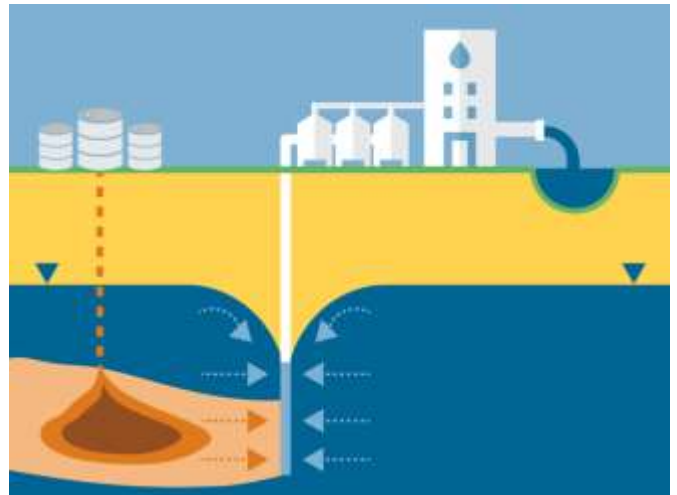


## P&T Optimization

Bob's Industrial Recycling  
Midwest Location  
Mixed groundwater plume  
Capture optimization  
State-regulated site

RAOs: prevent plume  
spread

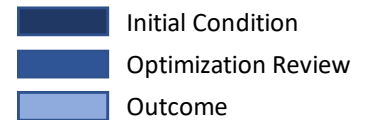
Risk Scenario—Plume migrating from site into  
residential neighborhood, capture unlikely



Performance evaluation summary—Potentiometric maps and downgradient chemical trends do not support hydraulic and chemical capture.

Hypothesis: Capture can be improved.

Evaluate installing additional monitoring wells and the ability to increase the current pumping rates at existing extraction wells or to add another one.



Lines of evidence used to optimize the P&T system:

1. Evaluate potentiometric maps of the area for hydraulic influences.
2. Perform chemical trend analysis on monitoring wells downgradient of the extraction wells.
3. Evaluate the potential for increasing the pumping rates at the extraction wells without installing an additional extraction well.
4. If unable to increase the pumping rates, then evaluate where to install an additional extraction well and determine likely pumping rates to achieve full hydraulic and chemical capture of the plume.

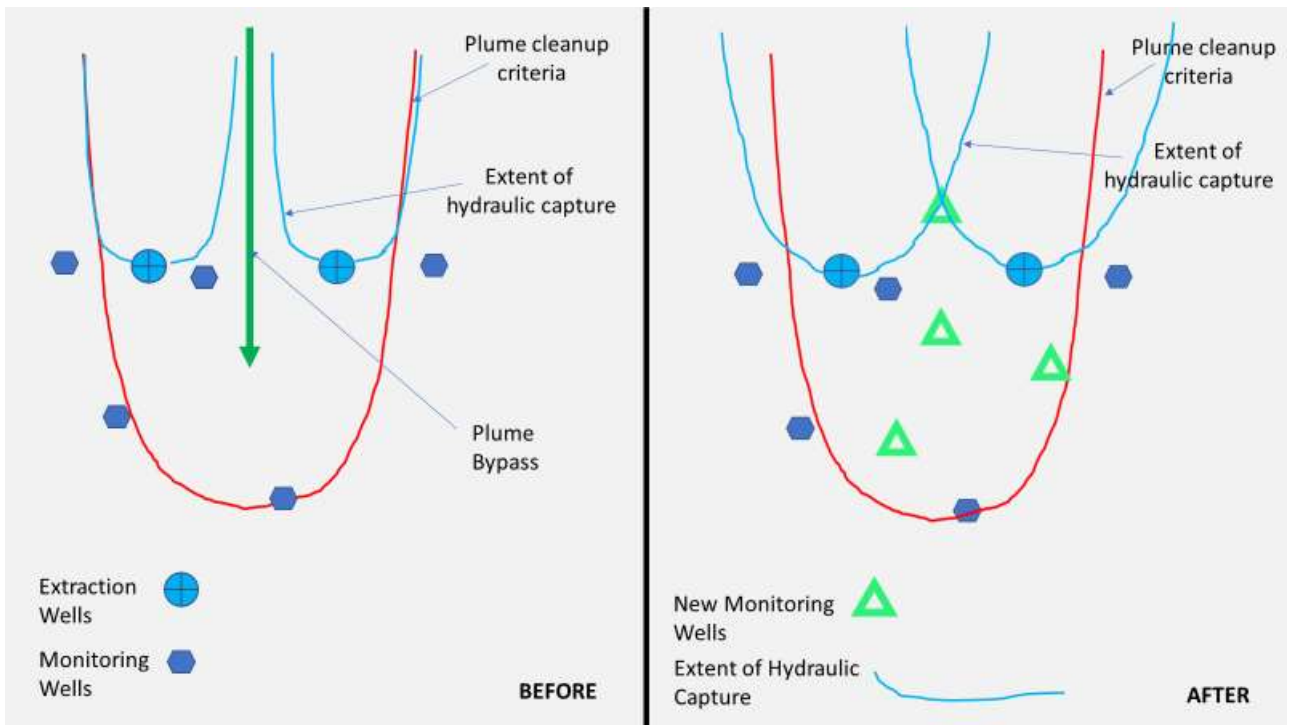
P&T optimization evaluation effective through increasing pumping rates at existing extraction wells.

# P&T Optimization

Bob's Industrial Recycling  
 Midwest Location  
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Once data were collected and evaluated, the remedy was found to be ineffective. Subsequent monitoring well installations with increased pumping rates demonstrated that the P&T system was now effective and protective of the downgradient residential area.

Inadequate plume capture was suspected based on increasing chemical concentrations in downgradient monitoring wells. Potentiometric maps lacked sufficient data, which made it difficult to conclusively determine whether capture was complete or not. PRPs disputed that capture was not complete. The downgradient chemical trends were closely evaluated, and increasing trends were documented. Sufficient data were available to persuade PRPs to provide a better monitoring-well network for more adequate potentiometric coverage. Locations were chosen, wells were installed, and capture was proven inadequate. The groundwater modeling was proven to be inaccurate. Increasing pumping rates were measured empirically. Rates were doubled; capture was demonstrated hydraulically and chemically without the need for another extraction well.



BEFORE

AFTER

- Initial Condition
- Optimization Review
- Outcome

P&T Optimization Conclusion:  
 Monitoring and capture systems optimized  
 Time Span: 2 years  
 Remedy effectiveness and/or risk reduction improvement: Full plume capture was achieved, downgradient residential area was protected from any further plume encroachment, and new methods were developed for demonstrating capture