



## TRANSITIONING FROM ACTIVE TO PASSIVE REMEDIATION BY REFINING THE CONCEPTUAL SITE MODEL USING EXISTING DATA

SURF Case Study #0014

This case study examines how existing data were applied to transition a comingled petroleum site from active to passive remediation, resulting in significant improvements to sustainability indicators.

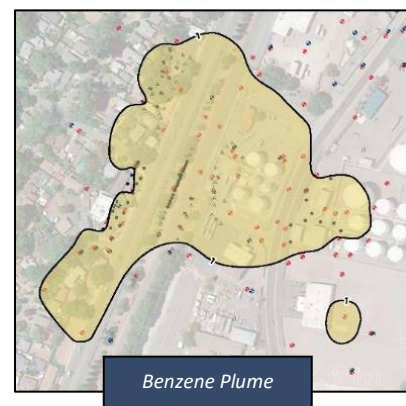
### BACKGROUND

- Petroleum hydrocarbon impacts historically treated with on-site and off-site oxygen injection (O2) and dual-phase extraction systems.
- Initial sustainability evaluation in 2016 revealed that dual-phase extraction accounted for 97% of greenhouse gas emissions and water and energy use at the site.
- O2 system operated effectively but had a limited radius of influence and continued effectiveness relied on contaminant mass transport through treatment areas.



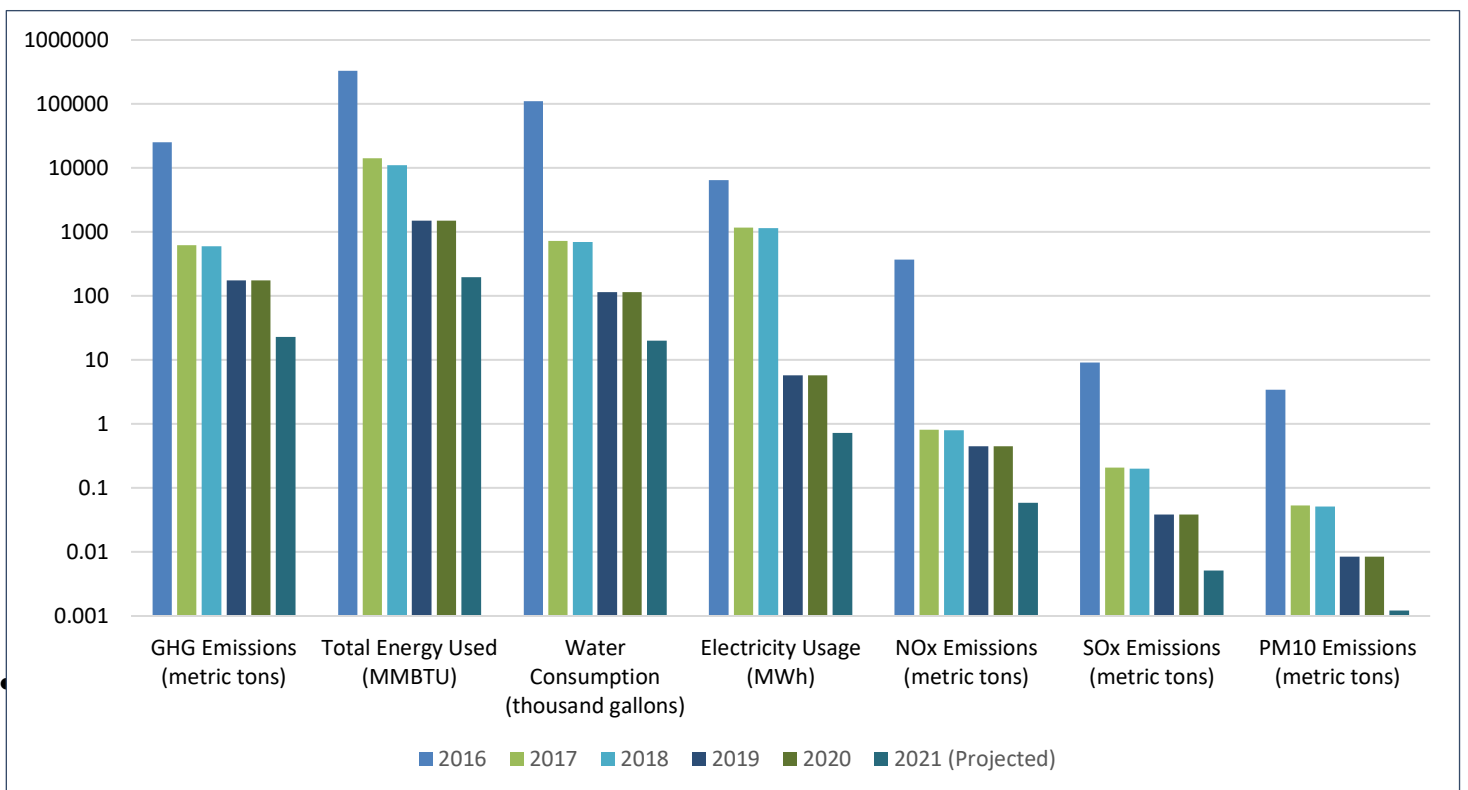
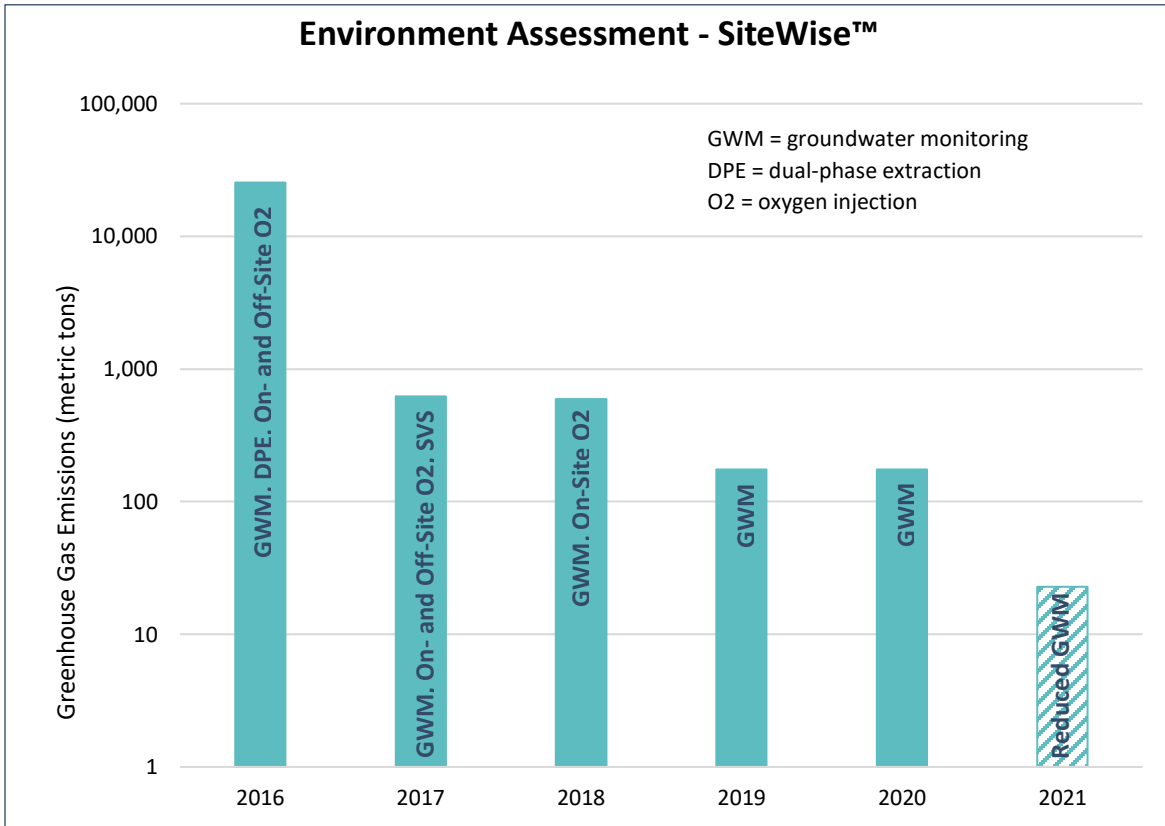
### ASSESSMENT OF EXISTING DATA

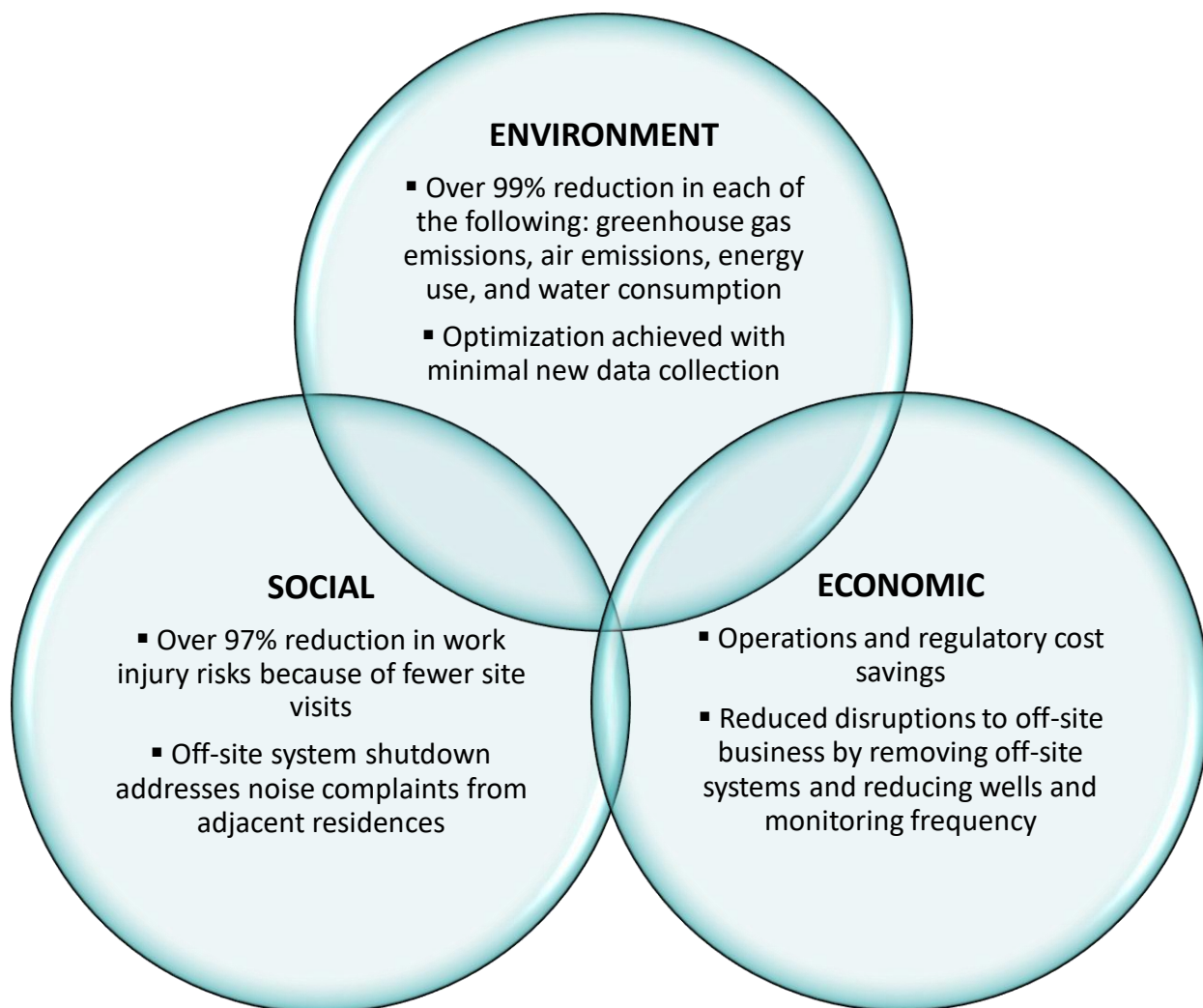
- After in-person meetings and discussions, the regulatory agency approved a temporary dual-phase extraction system shutdown. When contaminant concentrations continued to decrease, the agency approved permanent shutdown.
- Contaminant trends at wells outside of the O2 system radius of influence indicated natural attenuation was occurring, though at slower rates. Because of potential site redevelopment, soil vapor was assessed; results indicated that residual impacts do not pose near- or long-term risk.
- Historical groundwater and lithologic data were used to evaluate contaminant mass transport at transects across the plume over time. Results indicated the remaining mass is stored in fine-grained lithology with low rates of transport. These data justified shutdown of O2 systems that relied on mass transport through treatment areas.
- Evaluations of plume stability and the groundwater monitoring well network indicated that reductions in the network (40% ) and sampling frequency (annual) are sufficient for future plume monitoring.



# ENVIRONMENTAL FOOTPRINT ASSESSMENT

- The SiteWise™ assessment tool was used to quantify sustainability indicators for each phase of the transition from active to passive remediation.
- Remediation system shutdowns and a reduced groundwater monitoring well network improved sustainability parameter footprints by three to four orders of magnitude.





FOR MORE INFORMATION...

**This case study is the topic of a SURF webinar.**

**To access the webinar, click [here](#).**

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