2004 Annual Progress Report
for Ground Water Remedy Optimization

Appendix

Optimization Recommendations
and Progress Toward Implementation

August, 2005

OSWER 9283.1-27

RSE Recommendations and Progress Toward Implementation
Site Name: Baird & McGuire (Holbrook, MA)
RSE Report: EPA-542-R-02-008j (January 2002)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
No Recommendations		
Cost Reduction		
6.2.1 Eliminate excess process monitoring	Implemented (09/2001)	Implementation resulted in process monitoring reduced from daily to weekly, reduced lab staffing level, and more cost-effective lab analyses. Certain analytes are now being tested on a monthly basis.
6.2.2 Reduce security labor	Implemented	Improvements include new lighting and a fence. An alarm was installed as part of the effort to automate plant operations. Full-time security staff was utilized for the duration of EPA-led operations due to community concerns. Responsibility for operation and maintenance of this remedy has transferred from EPA to the State, therefore additional changes to the security plan are being considered by the State.
6.2.3 Automate systems and reduce operator labor	Implemented (2004)	The site team performed system upgrades, including replacing the SCADA system, in order to fully automate plant operations prior to transferring the site to the State for operation and maintenance; additional labor changes are being considered by the State.
6.2.4 Change LNAPL disposal procedure	Deferred to State	The site team did not find this recommendation to be cost effective. Responsibility for operation and maintenance of this remedy has transferred from EPA to the State; this recommendation has been deferred to the State for consideration.
6.2.5 Change sludge disposal procedure	Deferred to State	The site team did not find this recommendation to be cost effective. Responsibility for operation and maintenance of this remedy has transferred from EPA to the State; this recommendation has been deferred to the State for consideration.
6.2.6 Replace the current air stripper with a more efficient unit	Considered, then declined	Through a pilot test conducted in 2003-2004, it was determined that an air stripping unit was not necessary. A cost effective analysis was also performed and determined that the exiting GAC filters alone provided the most cost effective and adequate treatment.
6.2.7 Change filter media	Alternative implemented	Site team determined that the filter media did not need to be changed. The problem of clogging was due to a buildup of polymer floc in the filter tank. Floc dosage was changed which alleviated the problem.

Technical Improvement		
6.3.1 Convert decommissioned sludge unit into an equalization tank	Considered, then declined	It was determined that an equalization tank was not necessary for this system.
Progress Toward Final Cleanup Goals		
6.4.1 Investigate in-situ chemical oxidation	Considered, then declined	The site team focused implementation efforts on cost reduction recommendations and greater system efficiencies prior to transferring the site to the State, with completion occurring just in time for state takeover in June 2004. Focus on this investigation may be worthwhile for the State to consider.

RSE Recommendations and Progress Toward Implementation
Site Name: Groveland Wells (Groveland, MA)
RSE Report: EPA-542-R-02-017 (September 2002)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
No Recommendations		
Cost Reduction		
6.2.1 Discontinue pumping at EW-M3	Alternative implemented (2004)	Well shutdown for a period of time, during which TCE concentration rebounded to 20 ug/L. The site team is planning to continue a pulse operation of EW-M3 only when the contamination level is relatively high.
6.2.2 Evaluate costs for ground water sampling and analysis	Implemented	The site team is now conducting sampling only for a limited number of key wells during the spring sampling event. Passive Diffusion Bag (PDB) samplers will be used for both spring and fall sampling events to reduce labor costs. Split sampling will be eliminated. Correlation of low-flow sampling and PDB sampling will be required for FY05 for quality assurance. Additional cost savings are associated with reductions in split sampling, metals sampling, and data validation. Estimated cost savings are $30,000 per year.
6.2.3 Switch from UV/OX to air stripping	Considered, then declined	Site team has not further considered this recommendation, due to concern for costs. Site manager consulted others in Region and State about renegotiating arsenic discharge standard; consensus is that changing the level for this site is not feasible at this time. Recently submitted costs indicate annual costs are approximately $740,000.
Technical Improvement		
6.3.1 Replace well EW-S5	Alternative implemented (2004)	The well is still operating but newly installed pump has fewer maintenance problems.
6.3.2 Discontinue pumping at G1 and G2	Implemented (2004)	Both wells are offline. There is no change in metals influent concentrations as a result.
6.3.3 Monitor extraction wells for fouling	In progress	Redevelopment of extraction wells is planned. However, the schedule is dependent on the available funding and ongoing source area investigation. The lines are still cleaned annually.

Progress Toward Cleanup Goals		
6.4.1 Improved source area characterization	Implemented (2004)	Characterization of the source area was conducted in spring/summer, 2004. The investigation report is expected in January 2005. The RPM will evaluate various approaches to source area remediation upon review of the report. Total cost of investigation was approximately $150,000.
6.4.2 Limited feasibility study regarding more aggressive source area remediation	Under consideration	Implementation of this recommendation is contingent upon the results of 6.4.1.

RSE Recommendations and Progress Toward Implementation
Site Name: Savage Municipal Water Supply (Milford, NH)
RSE Report: EPA-542-R-02-008h (September 2001)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Dispose of recovered solvent offsite to avoid complications with solvent circulating through treatment system	Implemented (11/2003)	The bulk solvent storage tank was decommissioned and associated piping removed. All collected solvent is now stored in the separation unit. The total cost to clean, dismantle and dispose of the equipment was $4,400.00.
6.1.2 Determine actual capture zone of extraction wells	In progress	Ground water modeling to understand the effect of pumping inside and outside of the containment wall began in 2004 and is currently ongoing. Additional characterization was also done to identify the source of contamination at mid-depth outside the wall; results are still under evaluation.
6.1.3 Move recharge points beyond influence of extraction wells to improve system efficiency	Under consideration	This recommendation is contingent upon 6.1.2. Relocation of the recharge chamber and/or extraction well will be considered once the additional work described in 6.1.2 is complete.
6.1.4 Verify effectiveness of subsurface containment wall	Implemented (02/2002)	Site team performed pumping tests, as recommended, and found that pumping is required to maintain an inward gradient. The current level of pumping is reported to be sufficient.
6.1.5 Improve reporting by providing regular analysis of treatment system data	Implemented (07/2003)	Thorough interpretations of treatment system data are now included in annual reports.
Cost Reduction		
6.2.1 Discontinue steam regeneration of carbon system	Alternative implemented (2003)	Carbon is regenerated every 60 to 90 days. The site team is now evaluating the feasibility of discharging directly to the atmosphere in lieu of carbon polishing for the vapor phase treatment process. A direct cost savings calculation is difficult due to highly variable natural gas rates.
6.2.2 Reduce operator labor	Considered, then declined	Site team has been unable to reduce operator labor due to additional work done at the site since the RSE, including vertical profiling field work and in-situ chemical oxidation source removal.
6.2.3 Replace the blower with a smaller, more efficient model	Alternative implemented (2003)	Site team installed blowers with variable frequency drive rather than the smaller blower recommended here.The capital cost was approximately $8,700. Estimated savings are approximately $7,800 per year if the blower operates for the entire year.

6.2.4 Request survey of electricity usage	Implemented (2003)	The utility company offered no further recommendations for reductions.
Technical Improvement		
6.3.1 Improve invoicing at State level to ensure timely delivery of monthly updates	Implemented (2003)	Invoices and regular reports are now shared in a more timely manner.
6.3.2 Repair or replace air compressor for air sparging system	Implemented (2002)	This recommendation was implemented, however the air sparging system and SVE system are no longer operating due to the high water table.
Progress Toward Final Cleanup Goals		
6.4.1 Clarify exit strategy and closure criteria	In progress	Site team is currently addressing remaining source area through in-situ chemical oxidation effort. A final exit strategy will be developed after the effort is complete and results are fully evaluated.
6.4.2 Aggressive mass removal - Pumping from "hot-spot" wells - Chemical oxidation of "hot-spot"	In progress	Site team selected in-situ chemical oxidation to address source area. Potassium permanganate injections began in Fall 2003 and continued in 2004. Additional injections are planned for 2005, as well as monitoring areas where injection already occurred. Actual cost of investigation and injection to date is nearly $350,000.

RSE Recommendations and Progress Toward Implementation
Site Name: Silresim Chemical Corp. (Lowell, MA)
RSE Report: EPA-542-R-02-008p (December 2001)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Augment evaluation of plume capture	Implemented (2002)	The site invested in continuous logging pressure transducers for monitoring wells to determine the radius of influence of nearby extraction wells. In addition, efforts with the site ground water flow and contaminant transport models will continue. Evaluating a capture zone is now an ongoing process. This effort began before the RSE.
6.1.2 Monitor sediment periodically in nearby surface water bodies	Alternative implemented (2002)	The site team is determining effects on sediments by monitoring nearby ground water. This is an ongoing effort included in regular capture zone analyses.
6.1.3 Monitor air quality in nearby basements	Implemented (2002)	Monitoring at the Lowell Iron and Steel building began in 2002. A survey of other buildings in the area showed no basements; other buildings are built on concrete slabs. A long-term monitoring plan is under development.
Cost Reduction		
6.2.1 Reduce site security costs by installing a monitored security system	Implemented (08/2001)	The site team pursued this change prior to the RSE. The reduction required approximately $5,000 in upgrades but yielded savings of approximately $90,000 per year.
6.2.2 Conduct cost/benefit analysis of sludge drying	Considered, then declined	Site team determined that sludge drying is not cost effective due to the decreased extraction rate and associated decrease in sludge production.
6.2.3 Consider alternative contract structure	Implemented (2003)	As recommended, more recent contracts contain both fixed-price and cost-reimbursable terms.
Technical Improvement		
No Recommendations		
Progress Toward Final Cleanup Goals		
6.4.1 Continue efforts to address source area	Implemented (2003)	Prior to the RSE, the site team began an evaluation of several remedial approaches. A six-phase heating pilot was completed in 2003. As a result, the site determined that this approach will not be cost effective.

RSE Recommendations and Progress Toward Implementation
Site Name: Bog Creek Farm (Howell Township, NJ)
RSE Report: EPA 542-R-02-015 (September 2002)

An RSE was performed at the Bog Creek Farm site in 2002. The findings from the RSE and other site team efforts prior to the RSE demonstrated that it was necessary to undertake a significant review of the remedial approach at this site (broader than the RSE). As a result, this site did not follow the formal follow-up process utilized at other RSE sites. A summary of recent remedial activities is provided below.

EPA's Environmental Response Team (ERT) has done extensive sampling of site soil and ground water to further characterize the levels of contaminants at the site. The results of the sampling confirm that the P&T system will not be able to reach ground water cleanup levels in a reasonable time frame unless additional soil, which currently serves as a source of VOCs, is removed.

In 2004 the Army Corps of Engineers completed an Alternative and Estimate Evaluation for the site. This analysis provides alternatives for soil remediation, as well as optimization alternatives for the P&T system and *in-situ* dissolved plume remediation. The Region has issued an Explanation of Significant Differences (ESD) for the soils and has selected a remedy that includes excavation and removal of 21,000 cubic yards. The ESD also recognizes that the State has new requirements for the protection of ground water, which must be met by the P&T system in addition to those levels selected in the OU-2 ROD. At present, the P&T system is in operation with 33 new extraction wells and upstream reinjection.

RSE Recommendations	**Status (June 2005)**	**Comments**
Remedy Effectiveness		
6.1.1 Evaluate ground water impacts between slurry wall and brook with a GeoProbe	Planned	Recommendations 6.1.1 and 6.1.2 will be addressed during the current excavation effort.
6.1.2 Monitor VOCs and water levels in piezometers between slurry wall and brook	Planned	Recommendations 6.1.1 and 6.1.2 will be addressed during the current excavation effort.
6.1.3 Analyze for 1,1 DCE in ground water samples	In progress	The ground water recommendations will be addressed in the Focused Feasibility Study scheduled for completion during summer 2005.
Cost Reduction		
6.2.1 Review USACE oversight costs	In progress	The Region is trying to reduce oversight costs by virtue of having USACE personnel split time and charges between two sites.
6.2.2 Reduce operator labor	Planned	

6.2.3 Revise the ground water sampling program	Planned	A ROD Amendment to address ground water is planned for completion by September 2005.
Technical Improvement		
6.3.1 Eliminate continuous emissions monitoring	In progress	The Region is working with the State to update the current permit.
6.3.2 Test individual extraction wells to determine yield	In progress	
6.3.3 Repair and clean various items	In progress	
Progress Toward Final Cleanup Goals		
6.4 Considerations for site closeout and reduction of life-cycle costs	In progress	This recommendation will be addressed in the Focused Feasibility Study scheduled for completion during summer 2005.

RSE Recommendations and Progress Toward Implementation
Site Name: Brewster Well Field (Brewster, NY)
RSE Report: EPA 542-R-02-008t (April 2002)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Preliminary conceptual site model (CSM)	Implemented	The CSM was completed and revised in 2004. However, some analysis, including delineation of plume boundaries, requires additional data. Additional ground water investigations began in the 1st quarter of FY 2005. A finalized CSM is planned as an outcome of the additional investigations.
6.1.2 Additional delineation south of EW-1(GeoProbe, new wells)	In Progress	New monitoring wells are being put in place in FY 2005. The potential use of GeoProbe will be assessed based on area-specific characteristics.
6.1.3 Define target containment zone	Planned	A preliminary capture zone analysis was included in the CSM (6.1.1). The finalization of the CSM after current investigations will include a final capture zone analysis.
6.1.4 Interpret capture zone	Planned	This will be done once the capture zone is fully delineated after the current ground water investigations.
6.1.5 Revise conceptual site model	Planned	The results of the current ground water investigations will include a finalized CSM. The Region plans to update the CSM annually.
6.1.6 New extraction wells: replace EW-2 to EW-4 with new wells	Under Consideration	The replacement of extraction wells will be evaluated for cost-effectiveness and, if required, locations will be selected based on the results of the current ground water investigations.
Cost Reduction		
6.2.1 Cut oversight expense	Implemented	Total cost including Army Corps administration, oversight, review, quality assurance, and data analysis was $84,639 in 2003, a 30% reduction, from the $121,427 costs for 2001. The management cost is estimated to remain the same until the system is operating more efficiently and without technical problems.
6.2.2 Reduce sampling and analysis, equipment rental, and travel/per diem costs	Considered, then declined	Monitoring costs are expected to remain the same until the time in which any system modifications are made. Travel/per diem costs are in accordance with JTR regulations and lab costs appear to be comparable to other labs. The Region continues to strive for fair and reasonable costs.

6.2.3 Replace alarm monitoring service with autodialer	Considered, then declined	The current system includes an autodialer that connects to an answering service. Additional changes suggested by this recommendation would require an entire new control system. Cost-savings would not be realized for 6-7 years. The Region plans to continue with the current system The RSE team agrees with this decision.
Technical Improvement		
6.3.1 Install new underground discharge line	Implemented (09/2003)	A new underground discharge line was constructed in September 2003.
6.3.2 Improve annual O&M reports	In Progress	Suggested items are being incorporated into O&M Reports
6.3.3 Ensure vapors from acetic acid wash complies with OSHA standards	Considered, then declined	The site health and safety plan was approved by a certified industrial hygienist to be in accordance with OSHA standards. In its initial evaluation, the Army Corps determined that inhalation of acetic acid is not a significant hazard (below PELs).
6.3.4 Measure the air flow through the air stripper	Considered, then declined	The pressure in the stripper is monitored and the air stripper is cleaned on a quarterly basis to ensure optimum air flow. These practices are sufficient to evaluate the stripper performance and indicate any need for maintenance. The RSE team agrees with this assessment.
Progress Toward Final Cleanup Goals		
6.4.1 Continue evaluating alternative remedial options	Under consideration	This recommendation will be considered further after completion of the current ground water investigation and subsequent finalization of the CSM.

RSE Recommendations and Progress Toward Implementation
Site Name: Circuitron Corp. (East Farmingdate, NY)
RSE Report: EPA-542-R-05-004 (January 2005)

An RSE-Lite was performed at the Circuitron Corp. site in August, 2004. The first formal follow-up discussion to document progress at this site will occur in Fall 2005. Preliminary information on the progress at this site, below, was provided during the development of this report.

Recommendation	Status (June 2005)	Comments
Remedy Effectiveness		
6.1.1 Periodically evaluate if existing institutional controls remain sufficient	New	Institutional controls are currently being evaluated as part of the Five-Year Review, which will be completed during the fourth quarter of FY2005.
Cost Reduction		
6.2.1 Eliminate liquid phase GAC (conditional)	New	After eliminating pumping at RW-3, the influent levels of iron increased and it was decided to hold off on eliminating the liquid phase GAC until the final pumping rates of RW-1 and RW-2 are achieved, and the influent iron concentration is stabilized. It was also decided to hold off on this until first introducing citric acid to the influent ground water (see 6.2.3 below).
6.2.2 Sample extraction wells, then potentially eliminate pumping at RW-2 and RW-3	New	Sampling was performed at extraction wells RW-1, RW-2 and RW-3. Based on the sampling results, RW-3 was shut down in January, 2005.
6.2.3 Revise filter bag configuration (conditional)	New	Based on the lower cost of using citric acid over adding filter bags, the site team decided to pilot injecting citric acid into the influent ground water. If successful, the citric acid could reduce iron fouling problems at the reinjection trench, whereas adding filter bags in series will not have an effect on this problem. If this is successful, then the system will be automated. If not, then the ability of reducing operator time by adding additional filter bags will be reviewed (given space limitations at the plant).
6.2.4 Reduce operator labor	New	See items 6.2.1, 6.2.2, and 6.2.3 above.
6.2.5 Reduce project management labor	New	See items 6.2.1, 6.2.2, and 6.2.3 above.
6.2.6 Consider replacing pumps (Only if extraction is to continue three years or more)	New	The site team does not expect to operate the plant for more than 3 additional years.

Technical Improvement		
6.3.1 Clarify reporting of flow rates	New	Completed in February, 2005.
6.3.2 Continue with current jetting for infiltration trench	New	The site team continues to use water jetting to clean the reinjection trench.
Progress Toward Final Cleanup Goals		
6.4 Considerations for gaining site close-out	New	ERT will be conducting soil and ground water sampling near MW-4S to delineate any possible remaining source area. In order to do this, the site team is currently obtaining access agreements for adjacent properties.

RSE Recommendations and Progress Toward Implementation
Site Name: Claremont Polychemical (Old Bethpage, NY)
RSE Report: EPA 542-R-02-008n (March 2002)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Convert depths-to-water to water levels, survey if necessary	Implemented	All water level data expressed as feet above mean sea level is now in a ground water elevation monitoring database.
6.1.2 Interpret process data and quarterly aquifer data, report results	Implemented	Monthly and quarterly reports are being prepared.
6.1.3 Develop a groundwater flow model	In progress	The Region has initiated the development of a regional ground water data base and the installation of four additional on-site ground water monitoring wells. This information will be used to support development of a ground water flow model. Completion of the data base and ground water modeling is currently planned to be completed by the end of 2005.
Cost Reduction		
6.2.1 Eliminate unused metals removal system	Under consideration	The Region is working to fully characterize and delineate a plume at the site. New extraction wells are an option and the possibility of implementing this recommendation will depend on the final decisions regarding potential changes to the extraction system. The sand filters have been taken off-line and re-engineered to act as solids precipitation and settling vessels.
6.2.2 Simplify system	Under consideration	See recommendation 6.2.1
6.2.3 Eliminate unnecessary process monitoring (also included in 6.2.1)	Under consideration	The monitoring frequency for four elements has been reduced from weekly to monthly and nine others have been reduced from monthly to quarterly monitoring. Changes have been made to the Sampling and Analysis Plan the sampling contractor uses. Further reductions will continue to be considered.
6.2.4 Attempt to relax pH discharge standard	Implemented (11/2004)	The pH discharge standard has been relaxed with cooperation from the State beginning on November 16, 2004.
6.2.5 Investigate eliminating the vapor phase carbon treatment (redundant if 6.2.2 is implemented)	Considered, then declined	The Region will retain the vapor phase carbon system to ensure no unauthorized air releases.

6.2.6 Optimize above-ground treatment facility of the Old Bethpage Landfill Site	Under consideration	An optimization assessment of this facility has not been performed. EPA is evaluating the benefit of conducting the evaluation given that the LTRA period will expire in December 2006.
Technical Improvement		
6.3.1 Replace faulty influent flow meters	Implemented	A magnetic flow meter was installed on the main ground water discharge line and integrated into the site control panel to allow for capture of instantaneous and totalizing flow readings. Additional Signet flow meters have also been installed on individual influent lines. The Sparling meters on the discharge lines are being rebuilt. Flow rate and totalizing readings are transmitted to the master control panel.
6.3.2 Sample with a PID influent as well as effluent for vapor phase carbon unit	Implemented	This protocol is now part of normal site monitoring procedures.
6.3.3 Determine the cause of the pressure buildup of the liquid phase carbon units	Implemented	The cause of the pressure buildup was discovered and solved by normal backwashing and maintenance procedures.
Progress Toward Cleanup Goals		
6.4.1 Address “hot spot” contamination after analysis of aquifer data	Under consideration	The Region is currently performing further evaluation of the ground water contaminant conditions based on installation of additional on-site monitoring wells, the development of a regional ground water monitoring database, and a ground water fate and transport model. The results of these evaluations will set the direction for the site and will support any further consideration of using any “hot spot” wells. Current results indicate an upgradient source of TCE and PCE. Additional wells are planned on- and off-site to fully delineate this plume.

RSE Recommendations and Progress Toward Implementation
Site Name: Higgins Farm (Franklin Township, NJ)
RSE Report: EPA 542-R-04-034 (May 2004)

Recommendation	Status (June 2005)	Comments
Remedy Effectiveness		
6.1.1 Plume definition	Planned by PRPs	The PRP has submitted a work plan to address this item. Contingencies for later actions such as sampling nearby domestic wells are included. PRPs are expected to take over operations by October 2005.
6.1.2 Surface water sampling	Deferred to PRPs	Sampling of surface water is intended to verify that seeps are not contaminating the water within the stream. This action is being conducted by USACE.
6.1.3 On-site plume capture	Planned by PRPs	The revised PRP work plan submitted in May, 2005 outlines their plan to assess the effectiveness of the plume capture.
Cost Reduction		
6.2.1 Bypass treatment plant to POTW	Considered, then declined	PRPs have not indicated an interest in making this change. EPA and the PRPs acknowledge the difficulties this change would entail.
6.2.2. Extraction system revisions	In progress	Three extraction wells were temporarily shutdown in February, 2005. De-activation of certain wells is anticipated following installation of level transducers to monitor water level recovery and flow and contaminant levels.
6.2.3 Downsize air stripper blower	Under consideration by PRPs	Review of these revisions will be done when the extraction system optimization is complete and flows and concentrations have stabilized.
6.2.4 Alternate manganese removal technologies	Under consideration by PRPs	Review of these revisions will be done when the extraction system optimization is complete and flows and concentrations have stabilized.
6.2.5 Changes in monitoring program	Under consideration by PRPs	The PRPs have initiated studies to evaluate monitoring requirements.
6.2.6. Review level of USACE oversight	Deferred to PRPs	No changes in staffing will occur during the transition from the EPA-lead to PRP-lead, or during the first year of PRP operations.

6.2.7 Reduce monthly reporting frequency to quarterly	Implemented	The frequency of some items was changed from weekly to monthly. EPA does not want less frequent reports than quarterly. Since there is only a short time until the O&M contract expires, it is unlikely there will be any effort to change this. The participants did agree the monthly reports provided by the operators should be more focused.
Technical Improvement		
6.3.1. Change well maintenance methods	Deferred to PRPs	This recommendation has been deferred to the PRPs.
6.3.2. Extraction pipe testing	Deferred to PRPs	This recommendation has been deferred to the PRPs.
6.3.3. Control system modification	Implemented	The new radio-controlled system has been installed and is operational.
Progress Toward Cleanup Goals		
6.4.1. Verify source removal	Under consideration by PRPs	The PRPs have indicated an interest in investigating the source areas. These may include contaminated soil remaining under the previously removed drums or residual contaminants in ground water.
6.4.2. Develop site exit strategy	Deferred to PRPs	Implementation of this recommendation has been deferred to the PRPs. The PRPs know that MCLs are the cleanup goal identified in the ROD.

RSE Recommendations and Progress Toward Implementation
Site Name: Mattiace Petrochemical Co., Inc. (Glen Cove, NY)
RSE Report: EPA 542-R-02-008i (July 2001)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Analyze capture zones	Considered, then declined	Region 2 is satisfied with capture as long as the extraction rate is approximately 8 to 10 gpm. The current total extraction rate is approximately 8 gpm. Nine extraction wells are in operation.
6.1.2 Delineate plume to the north	Considered, then declined	There is no plan for further delineation.
6.1.3 Reconsider reinjection strategy	Alternative implemented	The City of Glen Cove and the responsible party (PRP) executed an agreement on April 15, 2004 for the city sewage treatment plant to begin receiving treated water discharge from the site. The agreement went into effect immediately
Cost Reduction		
6.2.1 Replace thermal oxidizer	Implemented	The thermal oxidizer was replaced by a new vapor carbon system in July 2004.
6.2.2 Use alternate process to remove ketones	Implemented	Discharging the treated water to the POTW will provide appropriate treatment for the ketones.
6.2.3 Reduce process monitoring	Deferred to PRP	EPA's negotiations with the State did not result in decreasing the required process monitoring for pesticides. EPA has deferred any further internal process monitoring changes to the PRP.
6.2.4 Scale back project management	Deferred to PRP	The PRP will manage its own project management costs. EPA oversight costs consist of 5 or 6 hours per week for the RPM. EPA does not foresee the need for an oversight contractor in the near future.
Technical Improvement		
6.3.1 Rehabilitate fouled wells	Implemented	The PRP improved the existing extraction wells shortly after taking over the site in July 2003. As a result of this work, the extraction rate was greatly improved.
6.3.2 Repipe SVE wells and optimize SVE system	Implemented	The PRPs have regraded the SVE piping. Improvements to the SVE system have greatly improved flow rates, which minimizes the potential for off-site migration of vapors.

6.3.3 Replace damaged or ineffective equipment	Deferred to PRP	The specific recommendations for repairs were transmitted to the PRP for their consideration.
Progress Toward Final Cleanup Goals		
6.4.1 Establish data needs to evaluate progress and performance	Implemented by PRP	The PRP has entered site data into a web-based GIS database that will be used to evaluate ground water conditions at the site. The system may eventually replace data reports.
6.4.2 Consider aggressive mass removal	In progress	The PRP has proposed a pilot study for the use of phytoremediation at the site. EPA is evaluating the proposal.
6.5 Donate unused equipment to other EPA sites	Considered, then declined	All government-owned equipment at the site has been transferred to the PRP for one-time use.

RSE Recommendations and Progress Toward Implementation
Site Name: SMS Instruments, Inc. (Deer Park, NY)
RSE Report: EPA 542-R-03-015 (December 2003)

Recommendation	Status (June 2005)	Comments
Remedy Effectiveness		
6.1.1 Improve reporting and data analysis (including evaluating plume capture)	In progress	The quarterly report includes water level data and system operating information. The subcontractor is developing a ground water plume map. The reports are now submitted in a timely manner.
6.1.2 Review data and maintenance records to determine the likelihood of future discharge criteria exceedances	Implemented (2003)	The repairs to the blower motor were completed between the time of the RSE site visit and RSE report
Cost Reduction		
6.2.1 Reduce operator and project management/ technical support/reporting labor	Implemented (2004)	The current O&M cost has been reduced to approximately $250,000 as a result of reductions in labor costs associated with project management, sampling, and reporting and a minor reduction in operator labor. The cost savings are estimated to be approximately $100,000.
6.2.2 Optimize monitoring program	Implemented (2004)	Sampling has been reduced from four to three rounds per year. No lab analysis for SVOCs and metals will be conducted for the future sampling. The site team is still considering eliminating some monitoring wells from the sampling program.
6.2.3 Consider decreasing the frequency of vapor phase GAC replacement	In progress	Going forward, GAC change-outs for vapor treatment will be determined based on the evaluation of influent and effluent vapor concentrations.
Technical Improvement		
No Recommendations		
Progress Toward Final Cleanup Goals		
6.4.1 Develop and exit strategy	Implemented (2004)	The site team delineated an area of residual contamination at the site, which will be addressed through combined air/bio sparging. The site team intends for this effort to significantly reduce the period of time the P&T will need to operate. The air/bio sparging system began operating in May, 2005 and will continue for 4-6 months to reduce ground water VOC concentrations near EW-3 much more rapidly than P&T.

RSE Recommendations and Progress Toward Implementation
Site Name: Greenwood Chemical (Newtown, VA)
RSE Report: EPA 542-R-04-032 (April 2004)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Sample residential wells and surface water	Implemented	Recent sampling data was not readily available during the RSE site visit. It was determined that sampling was occurring every few years. The site team sampled 9 residential wells in Spring 2004. All sampled wells were clean except a low level detection of TCE in a well east (side gradient) of the site. Also, a down-gradient surface water seep had bis-2-chloroethyl ether impacts above ground water cleanup standards.
6.1.2 Delineate the contaminant plume	Implemented	Delineation of the contaminant plume was recommended to define a target containment area. A total of eight new monitoring wells were installed and sampled. Of these eight monitoring wells, six had been recommended in the OSE report. The sampling of these wells indicates that the plume has bifurcated, with separate components migrating to the south and to the east.
6.1.3 Determine a target capture zone and conduct a capture zone analysis	Implemented	The modeling/capture zone analysis results indicated that additional extraction wells are needed. The site team is planning to install 4 or 5 extraction wells with a total flow rate of 10 gpm for those wells (total flow rate of 26 gpm for the entire system).
6.1.4 Consider sampling influent and effluent to vapor phase GAC	Implemented	The vapor phase GAC (VGAC) had not been changed or monitored since the plant began operation. The change-out for the VGAC was conducted subsequent to the RSE. The influent and effluent emissions are scheduled to be monitored semiannually.
Cost Reduction		
6.2.1 Reduce operator labor	Implemented	The operator labor has been reduced from two full time equivalent (FTE) to 1.5 FTE. Further reduction to 1.2 FTE as recommended is under consideration and may be implemented when the new extraction wells are on-line.
6.2.2 Address remaining lagoon sediments and discontinue lagoon extraction on an expedited schedule	Implemented	The sediments from two lagoons have been removed and the lagoon area has been re-graded. This effort has improved treatment plant operation by removing much of the solids in the treatment plant influent.

6.2.3 Continually aim to eliminate metals removal and UV/Oxidation system	Under consideration	These two components of the system are the most costly to operate. If they can be eliminated while maintaining system effectiveness, operating costs could be substantially reduced. After the new extraction wells are on line, the site team will likely begin to determine if filtration without chemical precipitation will allow the system to meet aluminum discharge requirements and in addition should potentially reconsider the aluminum discharge requirement based on background data.
6.2.4 Optimize ground water monitoring program	Under consideration	The monitoring frequency is relatively high, especially at select monitoring wells. The site team will consider monitoring optimization after several rounds of quarterly sampling in the new monitoring wells and the new extraction wells are brought on line.
6.2.5 Evaluate project management/ technical support/reporting costs	In progress	The RPM is working with the contractor to evaluate these costs.
Technical Improvement		
6.3.1 Improve reporting	Implemented	
6.3.2 Tabulate ground water monitoring data and manage data electronically	Implemented	
Progress Toward Final Cleanup Goals		
6.4.1 A suggested approach for using P&T as a final remedy	In progress	EPA is working toward a final remedy and is considering this recommendation.
6.4.2 An alternative to the proposed RCRA cap	Under consideration	The proposed RCRA cap was planned for 6 to 7 acres of the site to address surface exposures and reduce groundwater infiltration and treatment volumes. The Region has been looking for a more cost-effective but equally protective approach. About 10,000 cubic yard of surface soil impacted by arsenic (arsenic concentration >27 ppm) was removed and disposed off site to address exposure issues. The reduction of infiltration associated with a RCRA cap is likely counter-productive to site cleanup since a long-term P&T system will provide hydraulic capture of contaminants leached into ground water. The site team is considering a permeable soil cover.

RSE Recommendations and Progress Toward Implementation
Site Name: Havertown PCP (Havertown, PA)
RSE Report: EPA 542-R-04-033 (March 2004)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Properly seal abandoned 12-inch sewer line and remediate surface soils near the seep	In progress	The site team has plugged the abandoned sewer line and has conducted an investigation of the Residential Open Space (ROS) area near the seep, including 15 borings with shallow and deep soil samples plus groundwater samples. Most were contaminated above removal levels. As of the follow-up meeting, the site team was awaiting the results of additional samples.
6.1.2 Improve plume delineation to the south and vertically	In progress	The site team has installed new wells in five locations that are consistent with the optimization evaluation recommendations. However, the results do not provide complete horizontal or vertical delineation of the plume. Installation of additional wells is planned for the Summer of 2005.
6.1.3 Evaluate plume capture once plume is delineated	Planned	The contaminant plume has not yet been delineated, so the capture zone cannot be effectively analyzed yet. The site team has constructed a three-dimensional groundwater flow model and has conducted a preliminary capture zone analysis using particle tracking. The simulations suggest that the existing recovery system captures the known extent of dissolved contamination upgradient of the trench, but both the model and the analysis require further evaluation, especially given that the plume has not been fully delineated vertically or horizontally. The Remedial Investigation is scheduled for completion during the Summer of 2005. The capture zone will be further evaluated at that time.
6.1.4 Take measures to further reduce system downtime	Implemented	The operation of the treatment plant has significantly improved due to internal optimization efforts. The system influent is routinely 28 to 30 gpm. The main system components, however, are treating ~40 gpm due to recycling/backwash within the plant.
Cost Reduction		
6.2.1 Use fewer UV/oxidation units	Implemented	The site team has shut off all but one of the UV/Oxidation units, and the treatment plant still effectively meets standards. The site team is considering a pilot test using just GAC for organics, but there have been problems with the recovery wells that have detracted from moving forward with this pilot test. The site team will likely wait until additional extraction wells are brought on line before further considering the GAC-only treatment for organics.

6.2.2 Evaluate areas to reduce labor costs	Planned	Labor costs will be reevaluated once the final extraction and treatment systems are operating.
Technical Improvement		
6.3.1 Continue improving treatment plant to facilitate operation and potentially increase capacity	In progress	The site team continues to make improvements to the treatment plant. The specific recommendation to increase the capacity of the first metals removal tank has not been implemented, but may be considered, particularly if a higher flow rate is required due to increased extraction.
6.3.2 Make piping changes to better use the second equalization tank	Alternative implemented	This recommendation has not been implemented, but an alternative, which includes converting the free product storage tank into a wastewater storage tank has been implemented. This has facilitated system operation.
Progress Toward Final Cleanup Goals		
6.4.1 Adapt P&T system to focus primarily on cost-effective containment with decreased emphasis on restoration	Under consideration	This recommendation will be taken into consideration as the site moves forward with the final remedy.
6.4.2 Potential options for improving capture	Under consideration	This recommendation stems from the potential need to improve capture downgradient of the trench. The optimization evaluation suggested potential alternatives to addressing downgradient contamination. The site team is beginning to look at potential alternatives.

RSE Recommendations and Progress Toward Implementation
Site Name: Hellertown Manufacturing (Hellertown, PA)
RSE Report: EPA 542-R-02-008l (November 2001)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Delineate plume and evaluate capture zone	In progress	A capture zone analysis using water level measurements has been conducted. The results suggest that capture is adequate; however, the analysis was based on limited data. A better indicator of capture would be from a water budget analysis and from reviewing concentration trends of downgradient performance wells installed somewhere between the extraction well and existing downgradient wells. The site team is waiting for access to the Norfolk railroad property to install the wells.
6.1.2 Evaluate extraction well and pump	Implemented	The well has been inspected with a downhole camera and has been rehabilitated. The flow rate has been at approximately 130 gpm for over a year and a half. This is an increase of approximately 50% compared to the flow rate at the time of the RSE. The site team has had to replace the pump frequently resulting in costs of approximately $10,000 per year. The RPM has requested advice on alternatives for the current pump.
6.1.3 Implement institutional controls	In progress	The current property owner has been contacted regarding continued access and institutional controls (ICs) and seems willing to cooperate. The idea is to have the owner implement the ICs on their own so that EPA does not have to have an interest in the property to implement the contols.
6.1.4 Initial investigation near CSP-7and old treatment area	Implemented	A soil gas survey indicated soil contamination as high as 240 mg/kg. The site team is planning to excavate approximately 40,000 cubic feet of soil. The work will likely be conducted in Summer 2005.
Cost Reduction		
6.2.1 Consider modifying treatment processes to liquid phase carbon only	Considered, then declined	The recommendation will be considered only if replacing the air stripper or other significant changes are required.
6.2.2 Reduce heating in building (lower temperature)	Implemented	The temperature has been lowered and the site team has identified savings of approximately $2,000 per year in lower utility costs.

Technical Improvement		
6.3.1 Stop performing data validation	Implemented	Data validation has been reduced to the M-1 level, which is the lowest level. The costs of data validation are not assigned to the site because the samples are analyzed by the CLP.
Progress Toward Final Cleanup Goals		
6.4.1 Establish cleanup levels	In progress	The RPM is working with the EPA toxicologist. They are working towards a standard of 5 ug/L for TCE but first need to demonstrate that TCE is the only contaminant of concern with a carcinogenic risk.
New or Updated Recommendations from December 2004 Follow-Up		
1. Move directly to soil excavation near CSP-7	New	New recommendation, not considered in report statistics.
2. Install downgradient wells beyond capture zone stagnation point	New	New recommendation, not considered in report statistics.

RSE Recommendations and Progress Toward Implementation
Site Name: Raymark (Hatboro, PA)
RSE Report: EPA 542-R-02-008m (December 2001)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Survey site-related wells	Implemented	Site surveying was added to the 5-year review work assignment in 2003. In addition, downhole camera work was done in 2003 to determine problems with a pump in one of the onsite extraction wells. The work was completed and is documented in the July 2003 Annual Groundwater Monitoring Report.
6.1.2 Measure water levels and develop potentiometric surfaces	Implemented	The water levels have been collected annually and potentiometric surface maps have been generated both in plan-view and as cross-sections and are included in the July 2003 Annual Groundwater Monitoring Report. The report suggests that capture is adequate, but EPA will install a new extraction well to target additional mass removal and source control near PF-1S.
6.1.3 Delineate onsite plume	Alternative implemented	Annual sampling has continued but additional monitoring points have not been installed. The site team will use soil vapor samples to help locate the source area and place the new extraction well.
6.1.4 Analyze capture zone	Implemented	A capture zone analysis was completed by the site contractor and included in the July 2003 Annual Groundwater Monitoring Report. The site team is considering installing an additional recovery well near PF-1S to augment mass removal and capture.
6.1.5 Properly seal abandoned wells	Planned	The wells have not been abandoned due to lack of necessary funding. The site team does plan to abandon the wells in the future.
6.1.6 Evaluate TCE impact on Pennypack Creek	Considered, then declined	This recommendation will not be pursued. EPA's hydrogeologist determined the sampling will not yield useful information for site operations. This is primarily due to the presence of other contaminant sources in the area unrelated to the site. There is little concern that the creek is adversely impacted by volatile organic compounds associated with the site or its immediate neighbors.

6.1.7 Sample air in buildings for TCE	Under consideration	Indoor air sampling in buildings and homes surrounding Superfund sites has become a national issue, and Regional management is pursuing this topic at the policy level. Implementation will hinge on Regional policy, and the time frame for devising that policy is unknown to the site manager and project liaison at this time. Work on this recommendation will be delayed until Regional policy is in place.
Cost Reduction		
No Recommendations		
Technical Improvement		
6.3.1 Complete O&M manual	Implemented	The O&M manual has been prepared by the existing site contractors. The O&M manual reflects current operating procedures at the plant. Development of this O&M manual was funded through the existing site O&M budget.
6.3.2 Compile and organize site data and documents	Implemented	The RPM has pursued this recommendation but has not been successful in locating and compiling historical site information. The existing data and documents have been organized.
6.3.3 Rename and label site wells	Implemented	The former MW-3D, which served as a recovery well, has been renamed to RW-3 to distinguish it from another MW-3D, which serves as a monitoring well. This name change is apparent in the July 2003 Annual Groundwater Monitoring Report.
Progress Toward Final Cleanup Goals		
No recommendations		

RSE Recommendations and Progress Toward Implementation
Site Name: Cape Fear Wood Preserving (Fayetteville, NC)
RSE Report: EPA-542-R-05-005 (February 2005)

An RSE-Lite was performed at the Cape Fear Wood Preserving site in August, 2004. The first follow-up discussion to document progress at this site will occur in Fall 2005.

Recommendation	Status	Comments
Remedy Effectiveness		
6.1.1 Install and sample a monitoring well downgradient of MW-16	New	
6.1.2 Sample outer monitoring wells annually	New	
6.1.3 Do not use water levels from operating recovery wells or infiltration galleries when generating potentio-metric surface maps	New	
Cost Reduction		
6.2.1 Contract O&M services and ground water sampling to a local contractor	New	
6.2.1 Eliminate select wells from monitoring program, and reduce sampling and reporting frequency to annually	New	
Technical Improvement		
6.3.1 Consider alternatives before adding a sequestering agent	New	
6.3.2 Reduce frequency of water level measurements, discontinue dissolved oxygen monitoring, and simplify O&M reporting	New	

6.3.3 Add a suffix to well labels to indicate shallow and deep wells	New	
Progress Toward Final Cleanup Goals		
6.4 .1 Evaluate effectiveness of various remedy components	New	
6.4.2 Considerations for evaluating thermal pilot study	New	

RSE Recommendations and Progress Toward Implementation
Site Name: Elmore Waste Disposal (Greer, SC)
RSE Report: EPA 542-R-02-008d (April 2001)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Plume definition	Implemented (2003)	A total of 24 monitoring wells and/or piezometers were installed. Additional work was done to identify a previously unidentified source area. A new PCE source area, approximately 200'x100', was found as a result of optimization efforts.
6.1.2 Capture zone analysis	Implemented (08/2003)	Characterization and modeling work used data from monitoring wells and piezometers that were installed in 2003 (see 6.1.1). An Aquifer Testing Report was submitted in March, 2004, which presented the results of pump tests, slug tests, and a water level study conducted May through August 2003. Data confirmed hydraulic conductivity varies considerably across the site, particularly in the intermediate depth aquifer. It further concludes that ground water flow in the intermediate aquifer is controlled by fractures; plume capture (and high well yield) is relatively effective in extraction wells that intersect fractures and relatively ineffective in wells outside of the influence of the fracture. Recommendations from the study included increasing the extraction rates from existing extraction wells, and conversion of two monitoring wells to extraction wells. During the first quarter of 2005, MW-18d and PZ-6 are planned to be converted to extraction wells, and this is expected to improve plume capture.
6.1.3 Indoor air sampling	Implemented (2003)	Soil gas work was conducted in 2002 and subsequent air sampling in the crawl spaces of 17 homes was conducted in 2003.
6.1.4 Surface water sampling	Implemented	The initial sampling event and two other events have been conducted. Future events are also planned. A total of 20 locations will be sampled.
Cost Reduction		
6.2.1 Re-evaluation of treatment criteria	Under consideration	The recommendation was considered, but fluctuations in influent concentrations and modification of the extraction system delayed the possibility of implementing any changes. Evaluating changing discharge of treated water from POTW to NPDES permit. After anticipated capital costs of $45,000 are recouped, will save approximately $4000/month (versus new POTW rate.)
6.2.2 Reduction in monitoring and reporting requirements	Implemented	Site contractor had identified the potential for reduction in the monitoring of the plant effluent. Reductions in sampling have been made. Analysis is provided by the Contract Laboratory Program. Annual savings are approximately $3,200 per year.

6.2.3 Modify GAC operations	Implemented	GAC operations occur as suggested by the RSE team. It is believed that GAC operations have always occurred in this manner and that incorrect information was provided during the RSE visit.
6.2.4 Natural attenuation	Under consideration	Consideration is delayed until results from the proposed characterization work are obtained.
Technical Improvement		
6.3.1 Changes to data evaluation protocols	Under consideration	Consideration is delayed until results from the proposed characterization work are obtained.
6.3.2 Goals for extraction from individual wells	Implemented (2004)	Throughout 2004, adjustments to pump setting depths and on/off pump controls have been made, monitored, and optimized in an effort to increase extraction rates. Maximizing extraction rates has become a routine O&M activity. See additional information below.
Progress Toward Final Cleanup Goals		
6.4.1 Reconsider closure criteria	Considered, then declined	Consideration was initially delayed until results from the characterization work were obtained. The site team has considered this recommendation but will not implement it at this time.
Changes is Site Approach Requiring Re-Design		
6.5.1 Permeable reaction barrier	Considered, then declined	Consideration of this recommendation was initially delayed until results from the characterization work were obtained. A limited study suggests this approach would not be appropriate at this site.
6.5.2 In-situ bioremediation barrier	Considered, then declined	Consideration of this recommendation was initially delayed until results from the characterization work were obtained. A limited study suggests this approach would not be appropriate at this site.

Additional Information

Effectiveness of efforts to maximize extraction rates (See 6.3.2) is shown by the following flow data:

Period	Avg. Monthly Extraction Rate (gal.)
July-December 2003	
January-June 2004	740,000
July-December 2004	

Three new shallow monitoring wells were installed during the 4th quarter 2004, and two additional shallow wells were installed in January 2005. These wells will be monitored to increase the effectiveness of the monitoring well network.

714,000

927,000

RSE Recommendations and Progress Toward Implementation
Site Name: FCX, Inc. (Statesville, NC)
RSE Report: EPA 542-R-02-008e (March 2002)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Update target capture zone	Alternative Implemented	A responsible party (RP) is addressing the on-site and off-site portions of the VOC plume with enhanced in-situ bioremediation, which will allow EPA to focus on the pesticide plume. The Region will issue a ROD Amendment selecting MNA for pesticides by the end of FY2005.
6.1.2 Site cleanup	Implemented	Site cleanup was accomplished when the OU2 remedy was completed.
6.1.3 Improved treatment system enclosure	Alternative Implemented	A secondary containment system for the OU1 P&T system was installed as part of the OU2 remedy. Flood detectors and alarms have not yet been installed. Additional room will be made in the enclosure with removal of the sand filters (See 6.2.2). Some changes have been made, but more significant changes will only be made if an alternative remedy for pesticides is not appropriate and the P&T system has to continue to operate for a number of years.
Cost Reduction		
6.2.1 Discharge to surface water (NPDES)	Considered, then declined	The EPA contractor reviewed this item and found that it would not be cost-effective. Furthermore, the State authorities favor discharge to the POTW rather than to surface water.
6.2.2 Remove the sand filter	Under consideration	Action contingent on 6.2.5. Options for removing the sand filter have been discussed. Implementing this change would cost approximately $20,000; it will only be implemented if an alternative remedy for pesticides is not appropriate and the P&T system has to continue to operate for a number of years.
6.2.3 Eliminate SVOC and metals in quarterly well sampling analysis	Planned	Sampling has been reduced from quarterly to semi-annually. Consideration of further reductions needs to address the remedial objectives including remediation of metals contamination. The RPM anticipates making this change through a ROD Amendment that will remove SVOCs and metals as contaminants of concern scheduled for FY05.
6.2.4 Concentrate system on pesticides	Alternative Implemented	An RP is addressing the on-site and off-site portions of the VOC plume with enhanced in-situ bioremediation, which will allow EPA to focus on the pesticide plume. The Region will issue a ROD Amendment selecting MNA for pesticides by the end of FY2005.

6.2.5 Suspension of pump and treat	Alternative Implemented	An RP is addressing the on-site and off-site portions of the VOC plume with enhanced in-situ bioremediation, which will allow EPA to focus on the pesticide plume. EPA is considering the possibility of in-situ bioremediation or MNA for pesticides.
Technical Improvement		
No recommendations		
Progress Toward Final Cleanup Goals		
No recommendations		

RSE Recommendations and Progress Toward Implementation
Site Name: Douglas Road/Uniroyal, Inc., Landfill (St. Joseph County, IN)
RSE Report: EPA 542-R-04-031 (February 2004)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Sample extraction wells annually	Implemented	All of the five extraction wells were sampled during the April 2004 event and will be included in the future sampling program, even though pumping from some extraction wells has been discontinued. Cost $1,500 annually.
6.1.2 Investigate off-site sources and remaining down-gradient impacts	Considered, then declined	The indicated off-site impacts are PCE concentrations at MW-11S that are above standards. There is no link for this contamination to the site, and based on ground water flow patterns, the contamination would not migrate onto the site. The residences in the area are on public water, and recent sampling shows decreasing concentrations. Because the contamination is not site-related and is not migrating on to the site, further characterization or remediation of these impacts will not be addressed as part of the site remedy.
Cost Reduction		
6.2.1 Reduce analytical QA/QC	Alternative implemented	The high QA/QC level was set for the sediment sampling of Juday Creek. Since the RSE, the sampling of Juday Creek was discontinued because of the consistent results from last several rounds of sampling and because the site team discontinued discharge of treated water to Juday Creek. The associated cost savings is about $100,000 for total of 3 years, which is approximately $30,000 per year.
6.2.2 Consider converting cell 3 to an additional infiltration basin	Alternative implemented	Because extraction rates have been decreased, the existing infiltration basin has sufficient capacity for treated water and added capacity from converting the wetland polishing cell is not required. Because no additional discharge capacity will be needed, the recommendation will not need to be implemented as stated in the RSE report.
Technical Improvement		
No recommendations		
Progress Toward Final Cleanup Goals		
6.4.1 Develop an exit strategy	In progress	The site team is developing an exit strategy based on the April 2004 sampling results. A completed exit strategy is anticipated by the end of FY05.

RSE Recommendations and Progress Toward Implementation
Site Name: MacGillis and Gibbs Co./Bell Lumber & Pole Co. (New Brighton, MN)
RSE Report: EPA 542-R-02-008c (February 2001)

Recommendation	Status (September 2003)	Comments
Remedy Effectiveness		
6.1.1 Develop/update target containment zone	Implemented	Target capture zone from 1999 sampling illustrated in a site map. New target capture zone based on November 2001 sampling showed that MNA would not be sufficient and that additional extraction wells were needed. Two new extraction wells were constructed and connected to the system at a cost of $150,000.
6.1.2 Capture zone analysis	Implemented	Two rounds of annual sampling data were evaluated, and modeling conducted. The capture zone analysis suggests that capture is now adequate.
6.1.3 Long-term monitoring	Implemented	Three rounds of annual monitoring were conducted by September 2003. The monitoring program has been temporarily extended to annual monitoring at 55 wells. The resulting data set will then be analyzed to determine where wells can be added or eliminated from the program.
6.1.4 Fencing/security and exposed pipeline	Implemented	Fencing was completed and pipeline buried by the Minnesota Pollution Control Agency. These actions are State-lead.
6.1.5 Donatelle Expansion	Implemented	Excavation in area around OU2 well is completed and successful. The OU2 well was removed, and the Donatelle building expansion completed. This expansion is a success story for the reuse of Superfund sites.
6.1.6 Atmospheric discharge from the water treatment plant	Considered, then declined	A study indicated no adverse effects are expected. Recommended air permit and air sampling not required.
Cost reduction		
6.2.1 Shutdown OU2 system	Implemented	The site team is looking to share or sell the associated equipment
6.2.2 Consider modifying OU3 treatment (eliminate bioreactor)	Alternative Implemented	Region is opting for removal of the carbon units rather than the bioreactor. Region prepared proposal and memo notifying the POTW of the system modification. The modifications were completed and the GAC and bag filters have been removed

6.2.3 Reduce sampled discharge points by piping multiple discharge points into a single point	Alternative Implemented	The permit was modified and the sampling frequency reduced. Levels found were well below permit limits and the project team also reduced sampling within the treatment plant. Changes in performance monitoring and confirmation sampling resulted in a reduction in costs from $137,500 in FY03 to $39,800 in FY04 (a cost savings of $97,700 or 70% in one year). If continued, this would be an annual savings.
Technical Improvement		
6.3a Replace the pH sensor on the OU3 bioreactor to avoid requirement for operator to climb ladder	Alternative implemented	Location of pH sampling and sampling protocol was changed to accomplish the same goal.
6.3b Revise the well rehabilitation program to consider specific treatments to fight biological growth	In progress	An effective well rehabilitation approach is being used at the site. Efforts are focused on implementing a well maintenance program. Pilot test begun.
Progress Toward Final Cleanup Goals		
No recommendations		

RSE Recommendations and Progress Toward Implementation
Site Name: Oconomowoc Electroplating (Ashippun, WI)
RSE Report: EPA 542-R-02-008b (August 2000)

The treatment plant at Oconomowoc Electroplating was shut down on July 31, 2004 since it was no longer effective in reducing the contaminant levels in the groundwater. The current remedy at the site is monitored natural attenuation. Because the P&T system is no longer operating, there will be no additional follow-up under this initiative. The information presented for the recommendations below reflects the status as of the previous follow-up call in August 2003.

Recommendation	Status (August 2003)	Comments
Remedy Effectiveness		
6.1.1 Capture zone analysis	Implemented	As of August 2003, this was part of well field investigation. Field work was complete and a draft report was expected in November 2003.
6.1.2 Plume delineation west of Eva Street (New Well)	Implemented	Addressed as part of the well field investigation. See 6.1.1.
6.1.3 Surface water sampling for copper near MW-12D	Status unreported	As of August 2003, this was to be addressed as part of independent ecological impact study. The RPM does not know the status or results of the study.
Cost Reduction		
6.2.1 Re-evaluation of cleanup/discharge criteria	Alternative Implemented	As of August 2003, PALs are considered cleanup/discharge criteria. If pilot study is unsuccessful due to elevated nickel concentrations in the influent/effluent, then a waiver may be replace PALs with enforcement standards. Alternative implemented – see 6.2.2 and 6.2.3.
6.2.2 Eliminate cyanide treatment	Implemented	As of August 2003, this recommendation had been implemented. However, the costs did not decrease as expected, largely due to an overly constraining contract that was to be renegotiated in February 2004.
6.2.3 Eliminate metals precipitation	Implemented	As of August 2003, this recommendation had been implemented. However, the costs did not decrease as expected, largely due to an overly constraining contract that was to be renegotiated in February 2004.
6.2.4 Delisting metals precipitation sludge	Alternative Implemented	Sludge disposal is unnecessary given that sludge is no longer generated in significant quantities with metals and cyanide removal discontinued. No longer applicable due to implementation of 6.2.2 and 6.2.3

Technical Improvement		
6.3.1 Changes to monitoring program and data evaluation	In Progress	Addressed as part of the well field investigation. See 6.1.1.
6.3.2 Verification of well elevations and depths	In Progress	Addressed as part of the well field investigation. See 6.1.1.
6.3.3 Additional monitoring points	In Progress	Addressed as part of the well field investigation. See 6.1.1.
6.3.4 Low-flow sampling	In Progress	Addressed as part of the well field investigation. See 6.1.1.
6.3.5 Electronic data management	In Progress	Addressed as part of the well field investigation. See 6.1.1.
6.3.6 Expansion of well sampling program	In Progress	Addressed as part of the well field investigation. See 6.1.1.
6.3.7 Media replacement for tertiary filter media	Implemented	Bag filters have been installed and are performing adequately.
6.3.8 Control modifications (remote monitoring and emergency shut off)	Status unreported	As of August 2003, the RPM was unaware if this modification was implemented. There is no updated O&M manual or design document.
6.3.9 Conduit relocation	Status unreported	As of August 2003, the RPM was unaware if this modification was implemented. There is no updated O&M manual or design document.
6.3.10 Piping maintenance	Status unreported	As of August 2003, the RPM was unaware if this modification was implemented. There is no updated O&M manual or design document.
6.3.11 Well maintenance	Implemented	The wells and the air stripper are acid washed on an as-needed basis.
6.3.12 Independent review of analytical data	Implemented	An independent lab samples a portion of the analytical samples.
6.3.13 Treatment process optimization	Alternative Implemented	This recommendation pertained to metals removal, which has already been discontinued. No longer applicable due to implementation of 6.2.2 and 6.2.3
6.3.14 Waste sludge storage options	Alternative Implemented	Sludge storage and disposal are unnecessary. Sludge is no longer generated in significant quantities with metals and cyanide removal discontinued. No longer applicable due to implementation of 6.2.2 and 6.2.3

Progress Toward Final Cleanup Goals		
6.4.1 Establish closure criteria	Considered, then declined	Programmatic guidance is available that documents proper criteria for closure. The RSE team still notes the need for a detailed plan to clearly determine when the P&T system or components of the system can be shutdown.
6.4.2 Additional source area identification/removal	In Progress	Addressed as part of the well field investigation. See 6.1.1.
Outstanding Value Engineering Proposal		
6.5 Postpone evaluation of VE proposal for a second air stripper	Implemented	
Changes in Current Approach to Site Remediation Requiring Re-Design		
6.6.1 Consider permeable reaction barrier	Alternative Implemented	Pump and treat system shut down July 31, 2004, and a study is underway to evaluate natural attenuation.
6.6.2 Additional VOC source removal	Under consideration	Pending results of characterization in well. An isolated area of contamination has been identified that will be addressed in the near future. No specific schedule has been set or scope of work defined
6.6.3 Installation of a subsurface barrier	Alternative Implemented	Pump and treat system shut down July 31, 2004. A study is underway to evaluate natural attenuation.

RSE Recommendations and Progress Toward Implementation
Site Name: Ott/Story/Cordova Chemical Co. (Dalton Township, MI)
RSE Report: EPA 542-R-02-008s (March 2002)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
No recommendations		
Cost Reduction		
6.2.1 Replace DAS units with tray aerators or packed towers	Under consideration	Implementation is contingent on funding and discussions of a land transfer between the PRP and the Muskegon County POTW. The POTW might take over operations of the plant if it can help alleviate demand for treatment of industrial wastewater. The RPM hopes to address this and other changes to the treatment facility in the next year. Capital cost was mentioned as a potential obstacle.
6.2.2 Reexamine NPDES permit and potentially bypass PACT system	Under consideration	The RPM will pursue this matter with the State. The NPDES permit has been renewed. The next steps are for the site team to review process data and discuss the optimization plans with the State authorities.
6.2.3 Reduce process monitoring and analysis	In Progress	Discussions are occurring with the State. Some relatively small reductions in the process monitoring have been made, but these reductions have not been sufficient to reduce the laboratory personnel. Additional reductions should be considered.
6.2.4 Reduce aquifer monitoring and analysis	Implemented	Discussions are occurring with the State. Aquifer monitoring was reduced. A savings of approximately $150,000 per year in labor and approx. $100,000 per year laboratory analysis resulted.
6.2.5 Remove excess equipment and do not construct the planned storage building	Considered, then declined	By the time of the RSE site visit and report, the site manager was unable to stop the construction process.
6.2.6 Evaluate potential reduction in onsite presence of USACE	Planned	Discussions are occurring with the State. Reductions in the scope of the other oversight contractor are also expected. The USACE allowance of $24,500 per month has remain unchanged since the RSE, but actual expenditures may have decreased. Approximately $1 million in unused funds from these years may be available for deobligation at the end of FY04. In addition, a reduced allowance should be negotiated for the next IAG with USACE that begins in FY05.
6.2.7 Remove trailers from site	Planned	The removal of the second trailer will likely accompany the reduction in USACE oversight.

6.2.8 Have onsite staff conduct sampling for OU3	Alternative Implemented	Discussions occurred with the State. As of September 2003, OU3 was fully funded by the State because the State indemnified the responsible party
Technical Improvement		
6.3.1 Establish consistent sampling method	Status unreported	The RPM does not know the status of this recommendation.
6.3.2 Modify program for water-level measurement	Implemented	This recommendation was implemented when the reductions were made in aquifer monitoring (see 6.2.4).
Progress Toward Final Cleanup Goals		
6.4.1 Establish agreement between the OU2 remedy and ROD	Planned	A remedy evaluation was in planning before the RSE site visit. The remedy evaluation and a new decision document for the site are anticipated. This effort, along with others, have been postponed to 2004 to coincide with negotiations for the next IAG with USACE..

RSE Recommendations and Progress Toward Implementation
Site Name: Reilly Tar & Chemical Corp. (Indianapolis, IN)
RSE Report: EPA 542-R-04-035 (February 2004)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Install piezometers and monitoring wells to allow for improved evaluation of plume capture	Planned	Installation of a piezometer cluster and a monitoring well cluster are planned at locations recommended in the RSE report. The installation will be done as part of a partial extraction system shutdown recently proposed by the responsible party (RP).
6.1.2 Perform improved plume capture evaluation (Including use of a numerical model)	Under Consideration	Capture will be evaluated by developing a target capture zone, analyzing potentiometric surface maps, analyzing concentration trends in down-gradient wells, and potentially rerunning an existing model for the site. A decision has not been made on the use of a numerical model.
6.1.3 Consider the need for a modified extraction system	Considered, then declined	The RPM believe it is more likely that extraction will be decreased in the future rather than increased, especially as potential sources are addressed.
Cost Reduction		
6.2.1 Consider using extracted water for process and cooling uses	Considered, then declined	The RP has evaluated this option in the past and has chosen not to implement it. Although it may be more cost-effective for the remedy, it has the potential to cause upsets in the manufacturing process and greatly affect the business.
Technical Improvement		
6.3.1 Minor suggestion for improved O&M reporting	Planned	This recommendation will be implemented in the next O&M reporting.
Progress Toward Final Cleanup Goals		
6.4.1 Develop an exit strategy (consider alternate approach)	In progress	Extraction will generally be reduced over time as appropriate. The RP will first need to address onsite sources, including potential leaks that could be releasing ammonia to the subsurface. The RP has conducted repairs of the sewer and will further investigate potential release points. The potential down-gradient receptors are connected to the city public water. The concepts outlined in the RSE report will be further considered once the RP has thoroughly demonstrated that sources have been addressed.

RSE Recommendations and Progress Toward Implementation
Site Name: Bayou Bonfouca (Slidell, LA)
RSE Report: EPA-542-R-02-008f (June 2001)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Delineate plume and evaluate capture zone	Implemented (08/2002)	Additional monitoring wells were installed in locations recommended by the RSE team, which allowed the site team to successfully delineate the NAPL plume in this location.
6.1.2 Review results from current State and future EPA sampling of surface water and sediments	Alternative implemented (11/2002)	EPA's Environmental Response Team (ERT) performed surface water sampling to evaluate conditions. The ERT study demonstrates that the biology of the bayou (e.g., benthics, etc.) is in the process of recovering.
Cost Reduction		
6.2.1 Eliminate monthly sampling of extraction wells	Deferred to State	Responsibility for operation and maintenance of this remedy has transferred from EPA to the State; this recommendation has been deferred to the State for consideration.
6.2.2 Recycle Creosote	Implemented (2003)	The State attempted on multiple occasions to find a user for the recovered creosote but has been unsuccessful.
Technical Improvement		
6.3.1 Quantify NAPL recovery in extraction wells	Deferred to State	Responsibility for operation and maintenance of this remedy has transferred from EPA to the State; this recommendation has been deferred to the State for consideration.
6.3.2 Monthly Evaluation of Data	Considered, then declined	The reports provide sufficient information for LDEQ to monitor and evaluate the performance of the remedy.
6.3.3 Clarify role of TOC measurements in determining carbon replacement	Deferred to State	Responsibility for operation and maintenance of this remedy has transferred from EPA to the State; this recommendation has been deferred to the State for consideration.
6.3.4 Investigate effect of higher extraction rates on subsidence	Considered, then declined	The State is concerned about subsidence. The advantages of increasing the pumping rate likely do not outweigh the disadvantages, therefore the State will continue with their current protocol.
Progress Toward Final Cleanup Goals		
6.4.1 Develop exit strategy	Alternative implemented	The five-year review process will be used to evaluate the remedy and potential alternatives in the future.

RSE Recommendations and Progress Toward Implementation
Site Name: Midland Products (Yell County, AR)
RSE Report: EPA 542-R-02-008g (June 2001)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Install and sample new wells for plume delineation	Planned	In FY05, a ROD Amendment will change the remedy goal from ground water restoration to containment and selects the use of a Technical Impracticability (TI) waiver to waive the requirement to restore the area to drinking water levels. Monitored Natural Attenuation (MNA) will be applied to areas outside the TI zone. Six new ground water wells will be installed for plume delineation purposes as part of the amended remedy.
6.1.2 Sample for carrier oils	Considered, then declined	Sampling for carrier oils will not, in fact, yield beneficial information and is not cost effective.
Cost Reduction		
6.2.1 Reduce risk in O&M contract	Implemented (03/2002)	This was accomplished in the existing O&M contract which began in 3/2002.
6.2.2 Reduce sampling of effluent	Implemented (2004)	Reductions began in the summer of 2004 and were made part of the operating contract. Effluent sampling will no longer be needed once the P&T system is shut down as part of the amended remedy
Technical Improvement		
6.3.1 Provide additional training for plant operator and update O&M manual	Implemented	The plant operator has received new training.
6.3.2 Install a phone and FAX (with wiring)	Implemented	The phone line has been installed.
6.3.3 Install an autodialer	Alternative implemented	Other measures are in place to sufficiently avoid uncontrolled releases and/or shut down of the P&T system for an unacceptable duration.
6.3.4 Replace check valves between bag filters and carbon units	Alternative implemented	A manual valve was located that prevents backflow of water from the carbon vessels when the bag filters are replaced. Shutting this valve has been added to the standard operating procedures.

6.3.5 Clean oil/water separator	Alternative implemented	The oil/water separator was gauged and determined to contain the minimal product.
6.3.6 Monitor effluent from first carbon unit	Implemented	This item has been added to the existing contract. Monitoring will no longer be needed when the P&T system is shut down as part of the amended remedy.
6.3.7 Repair influent flow meter	Implemented	The flow meter has been repaired
6.3.8 Replace at-risk airlines	Implemented	The plastic air lines were replaced with metal lines.
6.3.9 Analyze and summarize monthly data	Alternative implemented	Extensive analysis is conducted internally by ADEQ; further analysis is not required by the site contractors.
Progress Toward Final Cleanup Goals		
6.4.1 Change cleanup standards in ROD	In progress	The ROD Amendment will change the RAO for the site from ground water restoration to containment and selects the use of a Technical Impracticability (TI) waiver to waive the requirement to restore the area to drinking water levels. The TI waiver will apply to a TI zone that consists of the DNAPL source area and the area contained within the down-gradient sentinel monitoring wells. Monitored Natural Attenuation (MNA) will be applied to areas outside the TI zone. Institutional controls (ICs) will be used at the site to prevent use of the contaminated ground water.
6.4.2 Initial feasibility study for aggressive source removal	Implemented	EPA has determined that the DNAPL source can not be removed by the P&T system. The systems effectiveness is hampered by the fractured nature of the aquifer.

RSE Recommendations and Progress Toward Implementation
Site Name: Cleburn Street Well (Grand Island, NE)
RSE Report: EPA 542-R-02-008k (July 2001)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Rehabilitate fouled extraction wells	Implemented	Extraction rate improved from 80 gpm to 100 gpm
6.1.2 Determine capture- zone effectiveness with sampling	Implemented	Capture is adequate.
6.1.3 Modify well-sampling program	Implemented	
6.1.4 Survey local private wells	Implemented	Done during previous site activities. Does not need to be repeated, all residents are on city water.
6.1.5 Conduct indoor air sampling	Alternative Implemented	An evaluation of the plume and surrounding buildings suggested that vapor intrusion is not a concern and that no further work is necessary.
6.1.6 Sample Pine Street well for TCE	Deferred to PRP/State	During the 5-year review in the 2nd quarter of FY03, the site team will contact the city of Grand Island to review their sampling data.
Cost Reduction		
6.2.1Combine operator labor for OU1 and OU2	Considered, then declined	This will not be done; however, the State will pay their portion of the electric bill.
6.2.2 Replace blower for OU1	Considered, then declined	The State planned to replace the 50 horsepower blower with a 25 horsepower blower in January 2003. As of October 2003, the system was not operating and may be permanently shutdown if sampling can confirm that standards are met.
6.2.3 Consider reducing project management costs	In progress	The site team expects to reduce project management costs as a result of changing contractors in FY2005.
Technical Improvement		
6.3.1 Measure SVE well parameters	Implemented	The State is providing this information in their quarterly reports and is now adjusting the SVE system based on the productivity of the various vapor extraction wells. The system is not operating and may be permanently shutdown if sampling can confirm that standards are met.
6.3.2 Treat SVE condensate with air stripper	Implemented	
6.3.3 Reformat Quarterly Performance	Implemented	The reports have improved.

Reports		
6.3.4 Drain water from extraction well vaults	Implemented	
6.3.5 Sample wells for additional parameters	Considered, then declined	This additional information will not likely help in site decision-making.
Progress Toward Final Cleanup Goals		
6.4.1 Investigate and implement air sparging	Under consideration	The site managers first evaluated if changing the elevation of the wells will improve mass recovery from the "hot spots". Changing the elevation of the pump had no discernible effect. Air sparging will be considered. To expedite consideration, the RSE team provided technical assistance in the form of an example outline for an air sparging work plan.
6.4.2 Develop an exit strategy	Deferred to State	EPA and the State have discussed developing a site-wide exit strategy for all operable units. The State has proposed to initiate the effort.

RSE Recommendations and Progress Toward Implementation
Site Name: Summitville Mine (Summitville, CO)
RSE Report: EPA 542-R-02-018 (September 2002)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Considerations for management of the mine pool	Implemented	
6.1.2 Considerations for the 2002 SDI Sediment Removal	Alternative implemented	The primary recommendation was to coordinate these efforts with the final design. The efforts have been postponed and will be considered along with the final design. A small amount of sediment was removed with funds left over from the contract for the seep management work.
6.1.3 Considerations for groundwater and seep management	Considered, then declined	The site team is proceeding with the trenches at a cost of $2.85 million without the additional hydrogeological evaluation. The construction of the trenches was largely completed. Some additional improvements will be done for seep collection ($300,000). The seep management system is working by diverting some clean water and collecting impacted water, but the system is not performing as well as expected. Original capital cost estimate for seep management (excluding trenches) was $100,000.
Cost Reduction		
6.2.1 Reduce weekly environmental surface water sampling	Implemented	Substantial reductions have been made. Many of these were planned prior to the RSE site visit. Estimated cost reduction of $50,000/year.
6.2.2 Reduce groundwater and seep sampling	Implemented	Substantial reductions have been made. Many of these were planned prior to the RSE site visit. Estimated cost reduction of $32,500/year
6.2.3 Eliminate unnecessary snow removal and/or obtain reimbursement for conducting National Park Service snow removal	Implemented	The snow removal was abandoned for two months the first winter (2003) with cost savings of approximately $135,000. Snow removal is presently only conducted as needed (i.e., for site access at the beginning of the season). Estimated cost savings were $275,000/year, but actual cost reductions now average $94,000/year.
6.2.4 Scale back or eliminate Del Norte office	Considered, then declined	The office is still used as delivery place. The site is remote, and access is limited, and the site team maintains that no viable alternative is available.
6.2.5 Improve contracting to allow purchasing of vehicles rather than leasing	Alternative implemented	The site team submitted a cost analysis to the contracting officer, but the policy is designed to prevent government ownership of equipment. Under the new contract, site vehicles will be provided by the site contractor (with the exception of three state-owned vehicles that will remain on site). Est. cost reduction $53,000/yr., actual cost reduction not quantified under new contract.

6.2.6 Automate new plant to reduce labor requirements	Under consideration	Automation is a goal for the new plant. The discussion is deferred and this issue is left for upcoming Remedy Review Board evaluation of design and treatment alternatives, Summer 2005.
Technical Improvement		
6.3.1 Provide a new source for potable water	In progress	The cost associated with installing a water supply well is much higher than expected (RSE estimate $30,000). Other water supply options are being pursued.
6.3.2 Remediate dirty power	Alternative implemented	An upgraded corridor was planned for the new system at a cost est. of $200,000. The RSE capital estimate was $45,000. In addition, new internal wiring was installed as part of the construction for the seep collection system (See 6.1.3). Actual cost for all work is $200,000.
6.3.3 Provide necessary backup to filter press and dump truck	Alternative implemented	Infrastructure assessment manager software was applied at the site and identified other items as higher priorities With respect to a dump truck, the site team will be using roll-off bins in the future. These bins will be part of a new sludge disposal procedure, providing temporary storage in the event that a dump truck or other transportation options are temporarily unavailable.
6.3.4 Apply lessons learned from existing water treatment plant (WTP) to design of the new WTP	Under consideration	The discussion is deferred and this issue is left for upcoming Remedy Review Board evaluation of design and treatment alternatives, Summer 2005
Progress Toward Final Cleanup Goals		
6.4.1 Consider remedial actions that could replace long-term containment and water treatment	Under Consideration	The discussion is deferred and this issue is left for upcoming Remedy Review Board evaluation of design and treatment alternatives, Summer, 2005.

Note: Overall annual O&M costs have reportedly decreased by approximately $1 million as a result of these recommendations and other site optimization efforts.

RSE Recommendations and Progress Toward Implementation
Site Name: Modesto Ground Water Contamination (Modesto, CA)
RSE Report: EPA-542-R-02-008o (December 2001)

Recommendation	Status (January 2005)	Comments
Remedy Effectiveness		
6.1.1 Monitor subsurface performance of SVE system	Implemented (12/2002)	Monitoring points were installed and confirmed that the system is working effectively. The site team is now considering whether to expand the SVE system because it is more cost-effective in removing mass relative to the P&T system.
6.1.2 Assign responsibility for evaluating monitoring and performance data	Implemented (07/2003)	The site contractor's quarterly reports now include appropriate analyses to monitor system effectiveness.
6.1.3 Analyze capture zone	Implemented (2003)	Increases in concentrations in downgradient wells and new potentiometric surface maps suggest that system may not provide capture. This will be considered in selecting the final remedy (current remedy is interim). Extraction well recently malfunctioned and has been turned off. Following implementation of 6.1.4, the site team will determine the best location for the replacement well.
6.1.4 Delineate plume (if necessary)	Planned (2005)	A work plan is currently in development to delineate the southern plume edge and characterizing the lower aquifer. This task is dependent on available funding.
Cost Reduction		
6.2.1 Consider alternate discharge locations - Discharge to storm sewer - Reinject to subsurface	Planned	Negotiation over discharges is a time consuming process. The Region does not currently have the resources to conduct such an exercise. The site team is committed to finding a cost-effective approach to discharging treated water and will consider reinfiltration in FY05.
6.2.2 Simplify system (remove equalization tank, simplify filtration system, and remove transfer pump)	Implemented (2002)	
6.2.3 Regularly evaluate need for ion exchange units	Implemented (2002)	This is an ongoing effort. Ion exchange units are still needed but requirements for data analysis have been reduced.

Technical Improvement		
6.3.1 Relocate vacuum breaker	Implemented (2002)	This recommendation was implemented shortly after the RSE site visit.
6.3.2 Install valving for backwashing carbon and ion exchange units	Implemented (2003)	
6.3.3 Monitor extraction well performance	Planned	Extraction well recently malfunctioned and has been turned off. Following implementation of 6.1.4, the site team will determine the best location for the replacement well.
6.3.4 Modify SVE system to address high operating temperatures	Considered, then declined	Contractor conducts monthly inspections and recommended keeping the existing piping as long as it remains serviceable.
6.3.5 Regularly evaluate need for vapor phase carbon	Considered, then declined	Given the close proximity of potential receptors, the site team will continue to treat the off-gas from both ground water and soil vapor treatment systems.
6.3.6 Properly convert PID readings to PCE concentrations	Implemented (2002)	This recommendation was implemented shortly after the RSE site visit.
6.3.7 Improve accuracy of SVE flow	Implemented (2002)	Measurements are now taken using thermal handheld anemometer, which is more accurate than previous method.
6.3.8 Adjust membrane around Baker tank	Alternative Implemented	The baker tank was a temporary measure; this recommendation is no longer appropriate.
6.3.9 Improve drainage to secondary sump	Implemented (2002)	This recommendation was implemented shortly after the RSE site visit.
6.3.10Add fans to the control panel	Implemented (2002)	Fans and an air conditioner were added to the trailers to control temperature.
6.3.11Relocate vapor phase carbon for the groundwater treatment system	Implemented (2002)	This recommendation was implemented shortly after the RSE site visit.
6.3.12 Add phone line for data acquisition	Implemented (2002)	This recommendation was implemented shortly after the RSE site visit.

Progress Toward Final Cleanup Goals		
6.4.1 Initiate screening of final remedy	Planned (2005-2006)	Selection of a final remedy is planned for FY2006.
6.4.2 Measure DO and ORP in monitoring wells	Implemented (2003)	

RSE Recommendations and Progress Toward Implementation
Site Name: Selma Treating Co. (Selma, CA)
RSE Report: EPA-542-R-02-008u (January 2002)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Analyze Capture Zones for Current Extraction System • 6.1.1.1 Update contaminant plume maps and analyze trends in concentrations • 6.1.1.2 Analyze level measurements and develop potentiometric surface maps • 6.1.1.3 Recalibrate the groundwater flow model and use simulations for capture zone analyses	Implemented (2003)	Additional monitoring wells were installed to recalibrate existing ground water model and evaluate capture zone. Effort identified the need for in situ treatment of chromium plume. Total cost for capture zone analysis, including well installation, was nearly $100,000.
6.1.2 Use model simulations to optimize locations for new extraction wells	Implemented (2004)	Addressed as part of 6.1.1.
6.1.3 Develop a contingency plan for exceedences in nearby wells	Implemented (2004)	The site team is currently monitoring chromium contamination in local irrigation wells.
Cost Reduction		
6.2.1 Dispose of sludge as non-hazardous	Considered, then declined	EPA attorneys working with the site team have determined that the sludge material is hazardous and cannot be reclassified.
Technical Improvement		
6.3.1 Repair leaks in the plant	Implemented (2002)	This recommendation was addressed soon after the RSE site visit.

Progress Toward Final Cleanup Goals		
6.4.1 Develop an exit strategy for the site	In progress	The site team is pursuing an in situ remedy in order to accelerate remediation. Molasses injection testing began in February 2005 and will continue through the remainder of 2005. A final exit strategy will be developed upon evaluation of the results of the in situ effort.
6.4.2 Address remaining soil contamination	Implemented (05/2004)	The upper 5 feet of contaminated soil has been excavated and placed in an on-site impoundment. The excavated area has been backfilled with clean material and covered with asphalt.

RSE Recommendations and Progress Toward Implementation
Site Name: Boomsnub/Airco (Hazel Dell, WA)
RSE Report: EPA-542-R-02-016 (September 2002)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Conduct a hydro-geological analysis	Implemented (2003)	EPA worked closely with the PRP to develop the recommended models. The PRP submitted a modeling report and two technical memos containing a hydro-geological analysis. Site discussions and further analyses are ongoing.
6.1.2 Evaluate potential management options for extraction and discharge	In progress	The site team has evaluated a number of options including discharge to wetlands and use for industrial processes. Neither of these options was determined to be practical. A work plan was developed to investigate the feasibility of infiltrating treated water and generate flow model scenarios using the infiltration galleries. A final decision has not yet been made.
6.1.3 Considerations for potential extraction and discharge options	In progress	See notes to 6.1.2
6.1.4 Consider other discharge options	In progress	See notes to 6.1.2
Cost Reduction		
6.2.1 Eliminate ion exchange effluent tank and pump	Implemented (2003)	The effluent tank was taken out of service and the influent pump was replaced with a variable speed pump. This will reduce utility costs and reduce noise.
6.2.2 Improve electric work for air stripper	Implemented (2003)	Electrical system was brought up to code. Some underground piping was also upgraded.
Technical Improvement		
6.3.1 Consider limitations of passive technologies	Implemented (2003)	EPA and the PRP are no longer considering passive technologies, such as permeable reactive barriers. The PRP is still considering options for mass removal.
6.3.2 Develop an exit strategy	Planned (2005)	The site is negotiating a consent decree with the PRP in 2005. The development of an exit strategy will be one element of the agreement between parties.
Progress Toward Final Cleanup Goals		
No recommendations		

RSE Recommendations and Progress Toward Implementation
Site Name: Commencement Bay (South Tacoma Channel)/Well 12A (Tacoma, WA)
RSE Report: EPA-542-R-02-008q (December 2001)

Recommendation	Status	Comments
Remedy Effectiveness		
6.1.1 Obtain accurate water level measurements and develop associated potentiometric surface maps	Implemented	Accurate information was located in site files shortly after the RSE visit. Additional survey work is included in the capture zone work described in 6.1.3.
6.1.2a Develop a groundwater flow model 6.1.2b Develop a contaminant transport model	Planned	Addressed as part of recommendation 6.1.3. The ground water flow model will be completed first; a contaminant transport model may then be developed if the results show that it is necessary. Site team expects to complete effort by June 2005.
6.1.3 Analyze capture zone	In progress	Ground water sampling is complete; a final report is currently being developed. Capture zone analysis will be part of the final study. Site team expects to complete effort by June 2005.
6.1.4 Improve well-sampling program	Planned	Addressed as part of recommendation 6.1.3.
6.1.5 Monitor Well 9 for VOCs	Implemented	Well 9 is routinely sampled by the city when the well is used to supplement the city's water supply. Costs are incurred by the city.
Cost Reduction		
6.2.1 Replace pumps in extraction wells	Implemented	Pump replacement was completed as part of an overall improvement plan The site team estimates that the costs of installing new, more efficient pumps were recovered in just one year.
6.2.2 Examine city stormwater discharge policies and investigate alternative discharge locations	Considered, then declined	Discharge rates have decreased from $60,000 to $40,000 per year due to reduced system flow rates. The State may choose to consider reinfiltration when the remedy transfers from EPA to the State for operation and maintenance.
6.2.3 Consider replacing carbon treatment system with an air stripper	Considered, then declined	Site team evaluated this recommendation and found that air stripping will not address all site contaminants; carbon treatment will still be needed. The RSE team no longer supports this recommendation because further analysis has demonstrated it is not cost effective.
Technical Improvement		

No Recommendations		
Progress Toward Final Cleanup Goals		
6.4.1 Excavate remaining filter cake	Considered, then declined	The filter cake does not appear to be a current source to ground because it is capped by asphalt. With regard to continuing sources, the site managers will first focus their attention on the DNAPL.
6.4.2 Evaluate remedial process options based on analysis of ground water monitoring	In progress	Options presented by the RSE team include monitored natural attenuation, pump & treat for containment, and aggressive source removal. The site team continues to consider various remedial approaches.

RSE Recommendations and Progress Toward Implementation
Site Name: McCormick & Baxter (Portland, OR)
RSE Report: EPA-542-R-02-008r (February 2002)

The RSE was intended to evaluate the P&T and NAPL collection systems, however the P&T system was discontinued prior to the RSE site visit. Emphasis was then placed on alternate strategies for containment of ground water and NAPL contamination. As a result, the RSE team offered feedback on various approaches the site team was considering at the time of the RSE. The suggestions represented the collective thoughts of the site team and the RSE team over the course of the RSE. The RSE team made three general recommendations to assist the site team in evaluating and selecting a final remedial approach. These recommendations are provided below, followed by additional detail on the status of remedial activities at the site.

Recommendation	Status (January 2005)	Comments
6.3.1 Implement strategies in phases with defined schedules and budgets	Implemented	Recommendation applied throughout the process of evaluating, designing and constructing the final remedy.
6.3.2 Take an experimental approach and apply lessons learned	Implemented	Recommendation applied throughout the process of evaluating, designing and constructing the final remedy.
6.3.3. Expand permeability modeling and conduct a cost-benefit analysis of various sediment caps	Implemented	Recommended analyses were completed and results incorporated into cap design.

In 2002, an Explanation of Significant Differences (ESD) invoked the contingency remedy from the original Record of Decision, which included a subsurface barrier wall to contain contaminated ground water and NAPL product. The ESD also resolved a delay in installing a sediment cap. Construction of these two remedies is now complete, and the State is expected to take over operation and maintenance of the ground water containment remedy in October 2006.

At the time of the RSE visit, the site managers were favoring a partially encompassing barrier wall that would be located inland from the riverfront. In response to stakeholder comments, EPA decided on a fully encircling wall. Installation of the barrier wall was completed in July 2003, and a 3-year performance monitoring program is ongoing. The monitoring includes measuring water elevations inside and outside of the wall. An impermeable cap was also installed over most of the barrier wall to limit infiltration and mounding within in the wall. The final cost for the wall was approximately $4 million. Ground water monitoring costs are $100,000 per year, while monitoring and maintenance of the cap costs an additional $30,000 to $50,000 per year. Substantial increases in NAPL thickness and recovery have occurred since wall installation. For example, nearly 50 gallons of combined DNAPL and LNAPL were collected in February 2004 compared to 100 combined gallons in all of 2002. On average, 30-60 gallons of NAPL were recovered each month in 2004. Annual NAPL recovery costs are approximately $150,000.

Installation of a 23-acre sediment cap was completed in November 2004. Cost-benefit analyses performed by the site team showed no cost benefit associated with dredging seep areas. Columbia River dredge material was used as the source for most of the cap. The entire cap was armored with interlocking concrete blocks, six inch gravel, and ten inch rock, depending on the specific location. The total cost for the sediment cap is estimated at $10 million. The site team expects that monitoring and maintenance will require approximately $30,000 to $50,000 per year and will consist of visual monitoring for erosion, periodic bathymetry measurements, chemical sampling, and report preparation.

RSE Recommendations and Progress Toward Implementation
Site Name: Wyckoff/Eagle Harbor (Bainbridge Island, WA)
RSE Report: EPA-542-R-05-013 (March 2005)

Recommendation	Status (December 2004)	Comments
Remedy Effectiveness		
6.1.1 Select a final remedy	In progress	The site team will propose a final remedy in 2005, with public comment. Attention is currently focused on hydraulic isolation, though enhanced thermal remediation may play a role in the future.
Cost Reduction		
6.2.1 Simplify existing treatment plant	Implemented	A pilot test for bypassing the biological treatment was completed. Results suggest that carbon provides sufficient removal in the absence of the biological treatment. Design for the new treatment system excludes biological treatment but includes dissolved air flotation, filtration, and carbon. Actual cost savings as a result of implementation are approximately $30,000 per month.
6.2.2 Install upgradient sheet pile	In progress	The State and EPA agree on this item and give it a high priority. An alternatives evaluation was drafted for the upgradient cutoff wall, which would isolate contamination and increase the efficiency of the remedy.
6.2.3 Remove steam injection/ extraction system and apply cap	Planned	The State and EPA agree on this item and give it a high priority. Cap design is contingent upon the details of the final remedy.
6.2.4 Conduct water budget analysis	In progress	A preliminary analysis suggests that an extraction rate of only 10 or 11 gpm will be required once the upgradient wall and cap are installed. A more thorough analysis will be conducted once installation is complete.
6.2.5 Upgrade extraction system	Considered, then declined	Ground water well transducer data indicates hydraulic containment is consistently achieved with existing wells and extraction rates.
6.2.6 Replace the existing treatment plant	In progress	A 50% design was submitted in November 2004. The RSE team will provide input on design plans, per the site manager's request. Based on results from recommendation 6.2.1, design for the new treatment system excludes biological treatment but includes dissolved air flotation, filtration, and carbon. Construction is planned to begin in October 2005.

6.2.7 Augment monitoring in lower aquifer	In progress	Some modifications have already been made, including use of transducers to measure hydraulic gradients. Additional modifications will be made in the future.
Technical Improvement		
6.3 Other related items - Improve monitoring approach - Monitor seeps on beach - Consider new extraction points	Under consideration	Contingent on implementation of the above recommendations.
Progress Toward Final Cleanup Goals		
No recommendations		