California Regional Water Quality Control Board
North Coast Region

MONITORING AND REPORTING PROGRAM NO. R1-2009-0001

FOR

IN-SITU GROUNDWATER TREATMENT

WILLITS ENVIRONMENTAL REMEDIATION TRUST
Former Remco Hydraulics Facility
934 South Main Street
Willits, California

Mendocino County

MONITORING

The groundwater monitoring program consists of sampling a total of 28 A-zone wells identified as primary performance wells IMW-1, IMW-2, IMW-3, IMW-4, IMW-5, MLW-10U, MLW-7-1, W26A, W28A, W12A, W29A1, W51A, W38A; secondary performance wells MLW-4-1, W50A, W27A, IMW-6, W22A, IMW-,7 W54A, IMW-10, IMW-11, IMW-12, and contingency wells W19A, IMW-8, W18A, IMW-9, IMW-10, and W17A. IMW-10 is both a secondary performance well and a contingency well.

The primary performance wells are located within or in close proximity to the injection areas, the secondary performance wells are located downgradient of the injection areas, and the contingency monitoring wells are located near the property boundary. The wells and injection areas are depicted on Figure 2.

Pre-Injection Groundwater Monitoring

1. The 28 A-zone groundwater monitoring wells shall be sampled prior to the injection of the reducing agents for the constituents listed in the Table 1 below. The sampling will establish baseline conditions for the contingency plan.

2. The depth to groundwater shall be determined to at least 0.01 foot increments in the 28 A-zone groundwater monitoring wells prior to injection.

Post-Injection Groundwater Monitoring

3. The depth to groundwater shall be determined to at least 0.01 foot increments in all A-zone wells during the injection, and during all sampling events.

4. The primary performance wells shall be sampled within 30 days of the injection program, followed by quarterly sampling for volatile organic compounds, 1,4-Dioxane, and dissolved iron, manganese, arsenic and antimony. The analytical methods are listed in Table 1 below. These monitoring wells shall be sampled quarterly for the duration of the treatment process.

5. The downgradient secondary performance wells shall be added to the quarterly monitoring program if increasing concentrations of byproducts such as dissolved metals or vinyl chloride are observed at the upgradient primary monitoring well locations.

6. The downgradient contingency monitoring wells shall be added to the quarterly monitoring program if increasing concentrations of byproducts such as dissolved metals or vinyl chloride are observed at the upgradient secondary performance monitoring well locations.

7. All groundwater monitoring wells shall be sampled for the following constituents using the methods provided below for the baseline sampling:

TABLE 1

Constituent	**EPA Analytical Method**
VOCs	Method 8260(B)
1,4-Dioxane	Method 8270C low level
Dissolved Iron, Manganese, Arsenic and Antimony	Method 6010/6020B
Alkalinity	Method 310.1
Nitrate	Method 300.0
Sulfate	Method 300.0
Dissolved Organic Carbon	Method 415.1
Redox Potential, pH, Dissolved Oxygen, Temperature, Conductivity	Field Measurements

8. All laboratory analyses must be performed by a laboratory certified for those analyses by the State of California Department of Health Services. Analytical methods for sample analyses shall achieve practical quantification reporting limits that are adequate for evaluating regulatory action levels for each constituent.

9. Contingency Plan

The degradation of VOCs may result in temporary increases of certain VOC breakdown compounds (e.g., vinyl chloride). Further, these injections may temporarily mobilize naturally-occurring iron, manganese, arsenic and/or antimony in groundwater at the Site. No contingent actions are intended to be implemented as long as increasing concentrations of trigger constituents (VOCs and metals) are fully contained within the property boundary. If, due to the IRA, verified increases of trigger constituents are observed in contingency wells located near the property boundary, then the discharger will implement a contingent action (i.e., groundwater extraction) to control the migration of contaminated shallow groundwater off the Site.

Trigger Levels

A trigger level is achieved when an increasing trend of a VOCs (e.g., vinyl chloride and metals) is observed and/or is above its appropriate drinking water standards (e.g., California Maximum Contaminant Level or MCLs), in any of the following secondary performance and/or contingency monitoring wells: IMW-10, IMW-11, IMW-12, WI9A, IMW-8, WI8A, IMW-9, or WI7A. The results of groundwater sampling will be evaluated by trend analysis using a Mann-Kendall Test.[1] If an upward trend is detected at a 95 percent confidence level, and the MCL is exceeded for the constituent with the observed increasing trend, the well will be resampled within three days of receipt of data from the analytical laboratory. The subject sample will be analyzed with an expedited turn-around time to confirm the results. If the resampling confirms an increasing trend, sampling of contingency monitoring wells shall commence within one week.

The discharger shall provide verbal notification within 48 hours, and submit a letter notifying the Executive Officer of any increasing trends, determined by the methods described above, within 5 working days of the receipt of the results from the laboratory (5 working days will provide sufficient time for the discharger to review and verify the data and perform the statistical analysis required to verify the increasing trend).

Contingency Actions

If an increase in VOCs or metals is confirmed at any contingency well, groundwater extraction will commence to control shallow groundwater migration in the subject area. Based on an evaluation of the current capture zones associated with extraction wells W20A, W52A, and GMX-7A, it is anticipated that extracting from existing wells IMW-8, WI8A and IMW-9 will effectively control the shallow groundwater downgradient of the proposed IRA along the property boundary (see Figure 2). If warranted, additional groundwater extraction will be conducted at the contingent monitoring wells or other existing wells as directed by the Executive Officer.

The discharger shall install additional extraction wells on the Site as directed by the Executive Officer to control off-site migration.

[1] A description of the Mann-Kendall Test is provided as Attachment I.

Additional Monitoring and Extraction Wells

To mitigate any delays related to implementing the contingency action and provide additional data to evaluate the effectiveness of the IRA, the discharger will install three additional monitoring wells (to be identified as IMW-l0, IWM-11 and IMW-12) at the locations shown on Figure 2, prior to injection activities. Monitoring well IMW-10 is proposed to be located immediately upgradient of W19A and will be used as an extraction well if trigger levels are achieved in this area.

The discharger shall include monitoring well IMW-10 as a secondary performance well and a contingency well in the IRA monitoring program. Monitoring wells IMW-11 and IMW-12 are proposed to be located upgradient of IMW-8 and W18A, respectively. These wells are intended to provide additional resolution of groundwater conditions downgradient of the injections areas while still significantly upgradient of the property boundary and contingency wells. Monitoring wells IMW-11 and IMW-12 will also be used as secondary performance monitoring wells. If increasing concentrations of trigger constituents are confirmed in monitoring well IMW-12 (upgradient of W18A), the discharger will install another monitoring well immediately upgradient of W18A. This well, IMW-13, will be converted to an extraction well as needed.

REPORTING

10. The depth to groundwater shall be determined to at least 0.01 foot increments in all A-zone wells identified above prior to injection, during the injection, and during all sampling events.

11. The results of the all sampling events shall be submitted within 30 days following the sampling event. The monitoring report shall summarize all monitoring data collected for the in-situ treatment, and include signed laboratory reports and field logs with instrument calibration records and measurements.

12. Verbal reporting to Regional Water Board staff shall be provided within 48 hours of receipt of sampling data that triggers the Contingency Actions.

13. Monitoring data and reports shall also be submitted electronically to the State Water Resources Control Board's Geographic Environmental Information Management System database (GeoTracker) as required by Title 23, Division 3, Chapter 30, Article 2, Sections 3890-3895 of the California Code of Regulations).

Ordered by _____
Catherine Kuhlman
Executive Officer

January 29, 2009