Site Management Plan

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Prepared for:

Sierra Pacific Industries

November 8, 2005

Project No. 9329.000, Task 24

Geomatrix

Geomatrix

November 8, 2005
Project 9329.000, Task 24

Executive Officer
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403

Attention: Dean Prat

Subject: Site Management Plan
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Dear Mr. Prat:

As requested by Sierra Pacific Industries, we have enclosed a copy of the subject report.

Sincerely yours,
GEOMATRIX CONSULTANTS, INC.

Mike Keim
Senior Environmental Scientist

Edward P. Conti, CEG, CHG
Principal Geologist

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Enclosure

cc: Bob Ellery, Sierra Pacific Industries (with enclosure)
Gordie Amos, Sierra Pacific Industries (with enclosure)
Fred Evenson, Law Offices of Frederic Evenson (with enclosure)
Jim Lamport, Ecological Rights Foundation (with enclosure)

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Prepared by:

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PROFESSIONAL CERTIFICATION

SITE MANAGEMENT PLAN
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

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This report was prepared by Geomatrix Consultants, Inc., under the professional supervision of Edward P. Conti. The findings, recommendations, specifications and/or professional opinions presented in this report were prepared in accordance with generally accepted professional hydrogeologic practice, and within the scope of the project. There is no other warranty, either express or implied.

Edward P. Conti, CEG, CHG
Principal Geologist

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1.0 INTRODUCTION

This *Site Management Plan* presents the measures to be taken to minimize risks associated with residual chemicals of concern in site media and to control activities that could interfere with the effectiveness of the remedy or increase the extent of chemicals of concern at the Sierra Pacific Industries (SPI) Arcata Division Sawmill located in Arcata, California (the site, Figure 1). The *Site Management Plan* has been prepared as part of the preferred final remedy set forth in the *Final Feasibility Study for Remediation of Wood Surface Protection Chemicals* (Geomatrix, 2003c) and the *Pilot Study Work Plan for Implementation of Proposed Remedial Action* (Geomatrix, 2004d). The *Site Management Plan* addresses the former green chain area where residual wood surface protection chemicals are present in the subsurface. As agreed during the December 7, 2004, telephone conference among representatives of SPI, the California Regional Water Quality Control Board, North Coast Region (RWQCB), and Geomatrix Consultants, Inc. (Geomatrix), the *Site Management Plan* also addresses the truck shop area where residual chemicals are present in the subsurface.

Geomatrix has prepared this *Site Management Plan* on behalf of SPI following approval of the pilot study work plan (RWQCB, 2004). This report is organized as follows:

- Site Description and Background, including a discussion of current conditions, site history, and subsurface lithology and hydrogeology - Section 2.0.
- Known Environmental Conditions, including regulatory status, a summary of previous investigations and remedial activities, and a description of the baseline health risk assessment and the risk-based remediation goals - Section 3.0.
- Responsibilities for Plan Implementation – Section 4.0.
- Scenarios Covered by the *Site Management Plan* – Section 5.0.
- Soil Management Plan - Section 6.0.
- Representations and Limitations - Section 7.0.

- References used in developing this document - Section 8.0.

Terms used in this *Site Management Plan* include the following:

- Owner – current property owner at any given time (term also applies to leaseholders)
- Contractor – party engaged by the Owner or other parties and conducting on-site activities
- Engineer – current engineer/consultant engaged by the Owner to assist in implementing this *Site Management Plan*

2.0 SITE DESCRIPTION AND BACKGROUND

2.1 SITE DESCRIPTION AND CURRENT LAND USE

The approximately 68-acre site is located on the Samoa Peninsula, landward from the northern shoreline of Humboldt Bay and approximately 4 miles west of the town of Arcata, California. The site is bounded to the north and east by the Mad River Slough, to the northwest by an old railroad grade, and to the south by New Navy Base Road and mud flats of Humboldt Bay (Figure 1).

The site is currently an active sawmill; features are shown on Figure 2. The current mill facility consists of an administrative building, a main sawmill building, numerous wood-processing buildings, log storage areas, milled lumber storage areas, loading/unloading areas, and the truck shop area for vehicle maintenance and fueling. A 140-foot-deep water supply well (Feature 48 on Figure 2) provides water for log sprinkling.

The former green chain area is located in the eastern portion of the site and coincides with the current sorter building (Feature 8 on Figure 2). Figure 3 presents a plan map of the former green chain area. The truck shop area is located in the southwestern portion of the site and includes the truck shop building (Feature 22 on Figure 2) and the immediately surrounding features and pavement. Figure 4 presents a plan map of the truck shop area.

2.2 SITE HISTORY

The sawmill has operated at the site since approximately 1950. Prior to construction of the mill facilities, the site consisted of undeveloped sand dunes and mud flats and pasture. During construction of mill facilities in the 1950s and 1960s, portions of the Mad River Slough on the eastern, northern, and southern sides of the site were filled.

2.2.1 Former Green Chain Area

Wood surface protection activities historically conducted at the site included the use of an anti-stain solution containing chlorinated phenols, including pentachlorophenol and tetrachlorophenol, to control sap stain and mold on a small amount of milled lumber. The anti-stain solution was applied in an aboveground dip tank located in the middle of the former green chain, which was located immediately south of the eastern end of the current sorter building (Feature 49 on Figure 2, and shown on Figure 3). Use of the anti-stain solution in the former green chain area reportedly commenced in the early to mid-1960s and was discontinued in 1985 (EnviroNet, 2002). At the direction of the RWQCB, SPI stopped purchasing anti-stain solution containing chlorinated phenols in 1985 and commenced a process of relocating the remaining solution containing chlorinated phenols to a new on-site dip tank facility for recycling (MFG, 2003b). Due to the difficulty of disposing of the old solution containing chlorinated phenols, the remaining solution from the old dip tank was mixed with a new anti-stain solution that did not contain chlorinated phenols at the new dip tank facility (Feature 21 on Figure 2). Recycling of the solution containing chlorinated phenols in the new dip tank was completed in 1987, at which time the drip basin adjacent to the old dip tank was cleaned out, filled with sand, and capped with 3 to 4 inches of concrete (MFG, 2003b). The new dip tank has been cleaned three times since 1987.

2.2.2 Truck Shop Area

For an unknown period of time ending in the 1970s, an underground storage tank (UST) was used to store waste oil from vehicle maintenance activities (Figure 4; MFG, 2003c). The UST was located behind (north of) the truck shop building and buried at a depth so that the waste oil would flow by gravity from drip pans inside the truck shop. Based on personal accounts of employees from that period, use of the tank was discontinued during the 1970s. In April 2003, the UST was located and removed. Further information is presented in Section 3.2 (Summary of Environmental Conditions).

2.3 SITE GEOLOGY AND HYDROGEOLOGY

2.3.1 Site Geology

The site is located adjacent to the Mad River Slough near the northern shoreline of Humboldt Bay. The eastern, northern, and southern portions of the site were filled in the 1950s and 1960s.

Environmental borings have been advanced to a maximum depth of approximately 20 feet below ground surface (bgs). Surface paving materials consist of concrete, asphalt, baserock, and sand with gravel and are about 1- to 2-feet thick. Shallow subsurface lithology (shallow zone; less than 8 to 10 feet bgs) is predominantly fine- to medium-grained sand of apparent sand dune origin.

In the eastern portion of the site near the former green chain area, wood and fill material was locally observed in the shallow zone during investigation activities including the installation of monitoring wells MW-13D and MW-15D. Soil beneath the fine- to medium-grained sand consisted of more sand and locally of fine-grained material, classified as "bay mud." The fine-grained material was encountered during the installation of monitoring wells MW-3, MW-10, MW-15D, MW-16D, and MW-17 at depths of approximately 6 to 8 feet bgs and during the installation of monitoring well MW-15 at a depth of approximately 15 feet bgs. Soil described during the installation of a water supply well at the site (Feature 48 on Figure 2) suggests that subsurface soil between the ground surface and 140 feet bgs is predominantly composed of sand (EnviroNet, 2001).

In the truck shop area, where the maximum depth of exploration has been approximately 10 feet bgs, the subsurface lithology observed in eight borings generally consisted of fine-grained sand with varying amounts of clay, silt, and gravel. Peat was observed beneath the sand in four borings at depths ranging from approximately 7.0 to 8.5 feet bgs and had an approximate thickness of 0.8 to 1.0 foot. The peat in the four borings and the sand in two borings were underlain by silt to a depth of approximately 10 feet bgs (MFG and Geomatrix, 2004b).

2.3.2 Site Hydrogeology

The groundwater surface measured in 21 site monitoring wells in the eastern portion of the site (near the former green chain area) has ranged between approximately 0.5 and 5.5 feet bgs in the 17 shallow wells (i.e., screened from 2 to 8 feet bgs) and between approximately 4 and 6 feet bgs in the four deep wells (i.e., screened from 15 to 20 feet bgs). The groundwater flow in this area is generally to the east, toward the Mad River Slough (Geomatrix, 2003c).

In the southwestern portion of the site, in the vicinity of the truck shop, groundwater likely flows to the south-southeast, toward Humboldt Bay, with groundwater surface measurements in borings ranging from approximately 3.5 to 5.2 feet bgs (MFG and Geomatrix, 2004b).

Tidal fluctuations in the Mad River Slough and nearby Humboldt Bay influence groundwater levels at the site in the vicinity of the slough. A 2002 tidal influence study conducted at the site by EnviroNet suggested that tidal effects become negligible at distances greater than 100 feet from the slough shore (EnviroNet, 2003).

3.0 KNOWN ENVIRONMENTAL CONDITIONS

3.1 REGULATORY STATUS

Activities at the site currently are subject to the following regulatory orders and site-specific permits:

- Cleanup and Abatement Order No. R1-2003-0127 (November 13, 2003) and revised Monitoring and Reporting Program No. R1-2003-0127 (March 4, 2005), issued by the RWQCB.
- Adopted Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) Permit Order No. R1-2002-0042 (August 26, 2002) and Monitoring and Reporting Program No. R1-2002-0042 (August 26, 2002), issued by the RWQCB.
- 5-Year Agreement Regarding Proposed Stream or Lakebed Alteration, Notification No. R1 04-0569 (September 17, 2004), issued by the California Department of Fish and Game.
- Water Quality Order No. 97-03-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001, Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities, issued by the State Water Resources Control Board.

3.2 SUMMARY OF ENVIRONMENTAL CONDITIONS

3.2.1 Former Green Chain Area

Between 2001 and 2004, soil and groundwater investigations were performed in and near the former green chain area where the anti-stain solutions containing pentachlorophenol and tetrachlorophenol were applied. During these investigations, 63 soil borings were advanced and 21 groundwater monitoring wells were constructed to assess the extent of wood surface protection chemicals in subsurface soil and groundwater. Detailed information is presented in the reports *Final Feasibility Study for Remediation of Wood Surface Protection Chemicals* (Geomatrix, 2003c) and *Monitoring Wells MW-20 and MW-21 Installation and Soil Sampling Report* (Geomatrix, 2004b). Groundwater monitoring at the site currently is performed on a semi-annual frequency. Further information is presented in the *Groundwater Monitoring and*

Progress Report, March 2005 Sampling Event (Geomatrix, 2005b). Figure 5 illustrates the extent of pentachlorophenol in subsurface soil, and Figure 6 illustrates the extent of pentachlorophenol in shallow groundwater as of December 2004. As illustrated on Figure 5, residual pentachlorophenol in soil is present in the immediate vicinity of the former dip tank location and to the east, near wells MW-7 and MW-21. As illustrated on Figure 6, pentachlorophenol in groundwater is limited to the area of wells MW-7, MW-20, and MW-21.

Between May and November 2003, sampling and excavation activities were undertaken near the former dip tank location to remove the residual source of pentachlorophenol in site soil. Approximately 145 cubic yards of solids (soil, woody material, and concrete debris) and 4,550 gallons of water were removed and disposed. Based on a laboratory analysis of a wood sample from a buried railroad tie in the former green chain area, it is suspected that, while the residual pentachlorophenol in soil in the vicinity of the former dip tank was removed, residual pentachlorophenol may be present in buried railroad ties that are inaccessible because of current operations and structures. Detailed information is presented in the reports *Report on Interim Remedial Measures: Source Area Removal* (Geomatrix and MFG, 2003) and *Addendum to Report on Interim Remedial Measures: Source Area Removal* (Geomatrix, 2004c).

During November 2003, a baseline human health risk assessment was conducted to evaluate potential health risks for future on-site and off-site human receptors due to wood surface protection chemicals and other chemicals of concern detected in soil and groundwater at the site. At that time, it was determined that there were no complete exposure routes for on-site workers or off-site residents in areas where chemicals of concern had been detected, and that determination remains current. The areas of soil where chemicals were detected are paved, preventing direct contact. Groundwater has not migrated beyond the former green chain area for use as a potential drinking water source, and no on-grade buildings are located over areas with volatile organic compounds in soil or groundwater. Future potential exposures to chemicals in soil and groundwater were quantitatively evaluated. In addition, risk-based remediation goals were developed to be used in evaluating concentrations of chemicals of concern detected in site soil and groundwater during future phases of investigation and remediation. Detailed information is presented in the report, *Baseline Human Health Risk Assessment of On-Site Soil and Groundwater* (Geomatrix, 2003a), and a summary of conclusions is included in Section 3.3 of this report.

On December 2, 2003, the *Final Feasibility Study for Remediation of Wood Surface Protection Chemicals* (Geomatrix, 2003c) was submitted to the RWQCB. The *Feasibility Study* presents an evaluation of alternatives for remediation of the anti-stain chemicals at the site. The proposed alternative was source removal and monitored natural attenuation. On March 1, 2004, RWQCB staff issued a letter that approved the *Feasibility Study* and required a pilot study to demonstrate that natural attenuation is occurring. After the pilot study is completed and a pilot study report is submitted, the RWQCB will consider adopting the proposed alternative as the final remedy. On April 29, 2004, the *Pilot Study Work Plan for Implementation of Proposed Remedial Action* (Geomatrix, 2004d) was submitted to the RWQCB. On June 9, 2004, the RWQCB staff issued a letter approving the pilot study work plan. Implementation of the pilot study has begun. The pilot study will be completed in 2006. Information on pilot study progress is included in the progress report section of the routine groundwater monitoring reports.

Groundwater monitoring at the site currently is ongoing, and more recent data and information than that presented in this *Site Management Plan* are included in the routine monitoring reports. The most recent report is the *Groundwater Monitoring and Progress Report, March 2005 Sampling Event* (Geomatrix, 2005b).

3.2.2 Truck Shop Area

In 2003, soil and groundwater investigations were performed in the truck shop area to assess the presence of chemicals at two locations: the waste oil UST and the former plywood-covered ditch. Usage of the waste oil UST was believed to have been discontinued during the 1970s, but it was uncertain whether the UST had been removed. The former plywood-covered ditch is located in the truck shop area and is approximately 20 feet long and about 3 feet wide. The ditch runs between the parts storage area and the oil shed, immediately northwest of the Hyster Shop (Figure 4). The ditch was excavated to install an underground electrical conduit and temporarily was covered with plywood during the installation process. The ditch currently contains an electrical conduit and is backfilled with native soil. Because the ditch is no longer covered with plywood, it is referred to as the former plywood-covered ditch. Figure 7 illustrates the laboratory analytical results for soil samples from the truck shop area, and Figure 8 illustrates the laboratory analytical results for grab groundwater samples from the truck shop area.

In April 2003, investigations near the suspected waste oil UST location resulted in the discovery of a 1,000-gallon UST. The UST was removed, 630 gallons of fluids were disposed,

and about 23 cubic yards of soil were disposed. Ten soil borings were advanced for soil and grab groundwater sample collection during the initial and post-removal investigation activities. The results of these activities indicated that some residual petroleum hydrocarbons and other chemicals are present in soil and groundwater near the former tank location. Specifically, the detected chemicals include total petroleum hydrocarbons (TPH) as gasoline (TPHg), TPH as diesel (TPHd), and TPH as motor oil (TPHmo); volatile organic compounds (VOCs; acetone, p-isopropyltoluene, and methyl ethyl ketone [MEK]); and semi-volatile organic compounds (SVOCs; benzoic acid and phenol). Detailed information is presented in the reports, *Waste Oil Underground Storage Tank Investigation and Closure Report* (MFG, 2003c) and *Former Waste Oil Underground Storage Tank Additional Investigation Report* (MFG and Geomatrix, 2004b).

In April 2003, four shallow soil samples were collected at the plywood-covered ditch, and VOCs (chlorobenzene; 1,4-dichlorobenzene; naphthalene; and 1,2,4-trimethylbenzene), TPHd, TPHmo, and oil and grease were detected. Based on information from SPI personnel, an aboveground kerosene tank formerly was near the plywood-covered ditch.

In July and August, 2003, SPI personnel excavated about 19 cubic yards of accessible impacted soil from the vicinity of the former plywood-covered ditch. The excavation was limited by the presence of underground utilities and the parts storage shed. Eight confirmation soil samples were collected, and VOCs, TPHg, TPHd, and TPHmo were detected. Detailed information is presented in the reports *Plywood Covered Ditch Investigation Report* (MFG, 2003a) and *Plywood Covered Ditch Soil Excavation Report* (MFG and Geomatrix, 2004a).

3.3 SUMMARY OF HUMAN HEALTH RISK ASSESSMENT

3.3.1 Baseline Human Health Risk Assessment

The *Baseline Human Health Risk Assessment of On-Site Soil and Groundwater* (*Baseline Human Health Risk Assessment*; Geomatrix, 2003a) was developed to evaluate potential health risks for on-site and off-site human receptors due to chemicals detected in soil and groundwater at the site. Data from the following reports were used in the November 2003 *Baseline Human Health Risk Assessment*:

- *Results of the Remedial Investigation* (EnviroNet, 2003),
- *Plywood Covered Ditch Investigation Report* (MFG, 2003a),
- *Waste Oil Underground Storage Tank Investigation and Closure Report* (MFG, 2003c), and

- *Former Teepee Burner Investigation Report* (MFG, 2003d).

At the time of the November 2003 *Baseline Human Health Risk Assessment*, there were no complete exposure routes for on-site workers or off-site residents in areas where chemicals of potential concern had been detected. The areas of affected soil were paved, preventing direct contact. Groundwater had not migrated beyond the former green chain area for use as a potential drinking water source, and on-grade buildings were not located over areas with volatile organic compounds detected in soil or groundwater. These conditions are consistent with conditions in August 2005.

Future potential exposures to chemicals in soil and groundwater were quantitatively evaluated for the following receptors: an outdoor industrial worker, an indoor industrial worker, a construction worker, a trench/utility worker, and an off-site resident. Future site conditions assumed unrestricted access to chemicals in soil and groundwater consistent with the receptor and the potential for future buildings to be constructed over areas affected by volatile organic compounds.

Metals are not considered chemicals of potential concern at the site because the detected metals concentrations in site soil samples have been consistent with background values (Kearney Foundation of Soil Science, 1996). Petroleum hydrocarbon mixtures such as total petroleum hydrocarbons were not evaluated in the *Baseline Human Health Risk Assessment* because they represent complex mixtures of compounds with varying toxicities. Therefore, in the *Baseline Human Health Risk Assessment*, potential human health risk related to TPH was evaluated quantitatively using data for the key individual constituents of petroleum hydrocarbons (e.g., polycyclic aromatic hydrocarbons and other aromatic hydrocarbons).

The estimated cancer risks and noncancer hazard indexes based on potential exposure to chemicals in soil and groundwater were as follows:

- For the outdoor industrial worker, the future carcinogenic risk was at $1x10^{-5}$, and the noncarcinogenic hazard index was less than 1.
- For the indoor industrial worker, the future carcinogenic risk was not quantified because no carcinogenic chemicals that may volatilize were detected in soil or groundwater. The noncarcinogenic hazard index was less than 1.
- For the construction worker, the potential carcinogenic risk was less than $1x10^{-4}$, and the noncarcinogenic hazard index was 1.

- For the trench/utility worker, the potential carcinogenic risk was greater than $1x10^{-4}$ ($3x10^{-4}$), and the noncarcinogenic hazard index was 1.

- For the off-site resident, the potential carcinogenic risk was less than $1x10^{-6}$, and the noncarcinogenic hazard index was significantly less than 1.

Potential dermal exposure to pentachlorophenol in groundwater accounted for over 95 percent of the carcinogenic risk and noncarcinogenic hazard index for the construction and trench/utility workers. It should be noted that exposure to pentachlorophenol in groundwater via dermal contact may be overestimated based on the assumed permeability of pentachlorophenol through the skin, as acknowledged in U.S. EPA's dermal exposure guidance (U.S. EPA, 2001). In addition, the most recent (March 2005) pentachlorophenol concentration in groundwater at monitoring well MW-7 (24,000 ug/L) was about half the exposure point concentration used in the risk assessment (51,000 ug/L), which was the maximum historical concentration detected.

3.3.2 Risk-Based Remedial Goals

Risk-based remediation goals were developed for chemicals detected in soil and groundwater for all five receptors evaluated in the *Baseline Human Health Risk Assessment*. Risk-based remediation goals were quantified for a noncarcinogenic hazard index of 1 and carcinogenic risks of $1x10^{-4}$, $1x10^{-5}$, and $1x10^{-6}$. Subsequent data collected during ongoing investigations has been compared to these risk-based remediation goals to evaluate potential health risks and risk management controls, if necessary. As new chemicals are detected in soil and groundwater at the site, additional risk-based remedial goals are developed.

The risk-based remedial goals for chemicals detected at the site through August 2005 are presented on Table 1 (soil) and Table 2 (groundwater). Risk-based remedial goals in the tables for the cancer endpoint are based on a $1x10^{-5}$ risk value. Metals are not included in the tables because they are consistent with background. Total petroleum hydrocarbons are not included in the tables because they represent complex mixtures of compounds with varying toxicities.

Future investigations or testing may identify chemicals in soil or groundwater that have neither been detected previously nor considered in the *Baseline Human Health Risk Assessment*. In that situation, risk-based remediation goals will be calculated according to the methodology used in the *Baseline Human Health Risk Assessment* for the most conservative exposure scenario.

3.3.3 Comparison of Additional Data To Risk-Based Remediation Goals

Since the completion of the *Baseline Human Health Risk Assessment* in November 2003, additional data have been collected in the former green chain and truck shop areas and reported in the following documents:

- *Report on Interim Remedial Measures: Source Area Removal* (Geomatrix and MFG, 2003);
- *Fourth Quarter 2003 Groundwater Monitoring Report* (Geomatrix, 2004a);
- *Plywood Covered Ditch Soil Excavation Report* (MFG and Geomatrix, 2004a),
- *Former Waste Oil Underground Storage Tank Additional Investigation Report* (MFG and Geomatrix, 2004b);
- *Monitoring Wells MW-20 and MW-21 Installation and Soil Sampling Report* (Geomatrix, 2004b);
- *Addendum to Report on Interim Remedial Measures: Source Area Removal* (Geomatrix, 2004c);
- *Groundwater Monitoring and Progress Report, First Quarter 2004* (Geomatrix, 2004e);
- *Groundwater Monitoring and Progress Report, Second Quarter 2004* (Geomatrix, 2004f);
- *Groundwater Monitoring and Progress Report, Third Quarter 2004* (Geomatrix, 2004g);
- *Groundwater Monitoring and Progress Report, Fourth Quarter 2004* (Geomatrix, 2005a); and
- *Groundwater Monitoring and Progress Report, March 2005 Sampling Event* (Geomatrix, 2005b).

In the former green chain area, the more recent data (from the completion of the interim remedial measure and ongoing groundwater monitoring) indicate that pentachlorophenol and dioxins/furans exceeded risk-based remediation goals in soil and in some concrete and woody material. The risk-based remediation goals are based on unrestricted commercial/industrial use of this area. Currently, this area is paved, preventing direct exposure to soil. Pentachlorophenol in groundwater at monitoring well MW-7 and in a grab sample of groundwater exposed in the excavation pit (prior to excavation) in the source area exceeded

risk-based remediation goals set for a trench/utility worker. Workers doing trenching or utility work should wear personal protective equipment to prevent direct contact with soil, groundwater, and fine particles generated from the disturbance of concrete or wood in these areas.

In the truck shop area, the more recent data (from the former plywood-covered ditch excavation and the additional investigation near the waste oil UST) indicate that nine VOCs exceeded the risk-based remediation goals at the former plywood-covered ditch: naphthalene, 1,2-dichlorobenzene, and the substituted benzenes (n-butyl benzene, sec-butyl benzene, ethylbenzene, isopropylbenzene, n-propylbenzene, and 1,2,4- and 1,3,5-trimethylbenzene). The risk-based remediation goals for these VOCs are based on a future indoor industrial worker. Currently, there are no buildings located over this area, and the garage-type buildings nearby are not comparable in construction to the structures considered in developing the risk-based remediation goals. The buildings in the area are very well ventilated and would not create the "chimney effect" that results in an accumulation of subsurface vapors in indoor air. While the presence of these chemicals is not considered to be problematic under current usage, the presence of these chemicals should be reviewed before construction of new, permanent buildings in this area. None of the more recent data collected near the former waste oil UST exceeded the risk-based remediation goals.

4.0 RESPONSIBILITIES FOR PLAN IMPLEMENTATION

This section discusses responsibilities for implementing this *Site Management Plan* and the circumstances under which this *Site Management Plan* may be modified.

4.1 RESPONSIBILITIES

The owner (SPI) shall oversee implementation of this *Site Management Plan* at the site. The owner's employees shall be made aware of the requirements of the *Site Management Plan*. In addition the Owner shall provide a copy of this *Site Management Plan* to third-party contractors working at the site, such as utility contractors, who may encounter subsurface materials during execution of their work.

4.2 MODIFICATIONS TO SITE MANAGEMENT PLAN

This *Site Management Plan* was developed based on Geomatrix's understanding of current conditions at the property and applicable regulations. It may be necessary to modify this *Site*

Management Plan from time to time for any of several reasons, including but not limited to the following:

- change in property use;
- change in understanding of environmental conditions (e.g., new data or exposure pathways);
- intrusive activity that is not addressed by this *Site Management Plan*;
- new chemical toxicity information; or
- new legal requirements.

The Owner is responsible for providing a modified *Site Management Plan* to the RWQCB when substantial changes occur to the assumptions or conditions documented in the *Site Management Plan*.

5.0 SCENARIOS COVERED BY THE SITE MANAGEMENT PLAN

This section describes the two scenarios during which workers could encounter and/or be exposed to chemicals present in the subsurface in the former green chain area and the truck shop area. Procedures to be followed if chemically affected materials are encountered are described in Section 6.0, Soil Management Plan.

5.1 ONGOING MAINTENANCE

Ongoing maintenance is anticipated to include repair or maintenance activities that take place at depths less than or equal to 3 feet bgs. In the former green chain area, such activities are not expected to encounter significant volumes of affected soil because the interim remedial measure performed in 2003 removed the soil in the source area (Geomatrix, 2003b), although some residual affected soil is present as illustrated on Figure 5. Such activities could encounter buried railroad ties and concrete that may or may not be chemically affected. Ongoing repair or maintenance activities are not expected to encounter significant volumes of affected groundwater, even though groundwater at the site is shallow, because the area of affected groundwater is limited to wells MW-20, MW-7, and MW-21. The area near and including the former green chain where affected soil and/or groundwater may be encountered and where the *Site Management Plan* applies is illustrated on Figures 3, 5, and 6.

In the truck shop area, ongoing maintenance activities are not expected to encounter significant volumes of affected soil, although some residual chemicals are present in soil and groundwater (Figures 7 and 8, respectively). The area near and including the truck shop where affected soil and/or groundwater may be encountered and where the *Site Management Plan* applies is illustrated on Figures 4, 7, and 8.

5.2 FUTURE REDEVELOPMENT OF HARDSCAPED AREAS

Potential future redevelopment is anticipated to encompass demolition and construction activities that take place at depths greater than 3 feet bgs. These activities are envisioned to take place over broader areas than the maintenance activities discussed above. In the former green chain area, such activities would be expected to encounter some limited volumes of affected soil, some affected construction materials (railroad ties and/or concrete), and potentially affected groundwater. Figure 3 illustrates the portion of the former green chain area where affected soil and/or groundwater may be encountered.

In the truck shop area, potential future redevelopment activities may encounter moderate volumes of affected soil because of the chemical usage throughout this area and the residual affected soil that was inaccessible due to the presence of existing structures. Figure 4 illustrates the portion of the truck shop area where affected soil and/or groundwater may be encountered. In addition, as indicated in Section 3.2.2, future redevelopment of the area around the former plywood- covered ditch will require further evaluation because of the presence of VOCs at concentrations that exceed the risk-based remediation goals for indoor worker exposure. Under current conditions, there are no conventional buildings over this area.

6.0 SOIL MANAGEMENT PLAN

The purpose of the soil management plan is to provide guidelines for construction safety measures and soil handling during future earthwork activities at the site. These guidelines are to be utilized by all parties involved in any activities where disturbance of on-site soil will occur (i.e., excavation, grading, and landscaping), including the site Owner of record at the time of the activity and its designated Engineer and Contractors. The soil handling guidelines present the procedures for handling soil at and around the site in the event that stained soil or suspect material (e.g., odors, sludge, tanks) are encountered.

6.1 REGULATORY REQUIREMENTS AND PROPOSITION 65 NOTIFICATION

Earthwork activities may be subject to federal, state, and local laws and regulations, including but not limited to those promulgated by the U.S. Environmental Protection Agency, California Environmental Protection Agency (Cal-EPA), California Coastal Commission, California Department of Fish and Game, and Humboldt County. These laws address issues such as dust generation, hazardous waste, storm water, habitat protection, and community right-to-know. While some of these issues are discussed in this *Site Management Plan*, it is the responsibility of the Owner to ensure that all earthwork activities comply with current applicable laws and regulations.

Chemicals (e.g., dioxins) identified under California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) that are known to cause cancer and/or reproductive toxicity have been identified in soil and groundwater at the site. Tables 1 and 2 identifiy chemicals listed under Proposition 65 as of May 27, 2005 (Cal-EPA, 2005). Proposition 65 warnings are required if the estimated exposure to a person exceeds State of California Office of Environmental Health Hazard Assessment (OEHHA) "safe harbor level" (SHL). SHLs are called no significant risk levels (NSRLs) for carcinogens, and maximum allowable dose levels (MADLs) for chemicals with reproductive end points. Based on exposure assumptions that are typically used for risk assessments and accepted by regulatory agencies, it is possible that exposures to construction workers could exceed the SHLs for one or more of the chemicals in the areas subject to this SMP. Therefore, we recommend that Contractors independently evaluate the need for Proposition 65 notification to their workers.

The evaluation of Proposition 65 exposures may not be limited to dioxin-affected soil. It also is recommended that Contractors provide their own evaluation of the need for Proposition 65 notification associated with activities under their control. Such activities may involve exposure issues beyond the presence of dioxins in soil; for example, equipment diesel exhaust or background levels of other inorganic constituents in soil.

6.2 CONSTRUCTION SAFETY MEASURES

6.2.1 Control of Access to Work Area

Vehicle and personnel access to the areas identified on Figures 3 and 4 will be controlled when subsurface soil is exposed. Caution tape, cones, fencing, steel plates, or other measures shall be used to clearly designate the active area and to prevent access by the public. Stockpiles of affected soil shall be secured by covering the stockpiles with plastic sheeting.

6.2.2 Management of Open Excavations

For excavations that must be left open after the end of a work day, the need for dust control measures will be evaluated and implemented as necessary to prevent dust generation while the excavation is unattended. In addition, public access to the excavation will be controlled by implementation of access controls as described above.

6.2.3 Dust Control and Monitoring

Dust may be generated by site construction activities. When earthwork activities occur, the need for dust control measures should be evaluated. General dust control measures and other recommended practices include: sprinkling water to maintain soil moisture, covering trucks hauling soil, sweeping roads and staging areas, restricting non-essential traffic, limiting vehicle speeds on unpaved areas, and covering exposed soil stockpiles. Similarly, the need for air sampling and monitoring should be reviewed before beginning construction activities.

6.3 SOIL HANDLING GUIDELINES

The following steps will be followed by the Owner, Contractor, or Engineer if work is conducted in the designated areas on Figures 3 and 4, or if stained soil or other suspect materials are encountered. Figure 9 presents the work flow diagram for such potential discoveries during earthwork activities.

1. In the event that apparent sludge or petroleum-affected soil or other suspect materials are encountered based on visual observation, the Contractor shall immediately notify the Owner.

2. The Contractor shall provide and place plastic sheeting of suitable thickness in a designated stockpile area prior to placing the material therein.

3. The Contractor shall excavate the material and place it in the plastic-lined area. The Contractor shall stockpile the material such that it does not mix or abut materials that are not visually impacted.

4. At the end of each day, the Contractor shall securely enclose the soil stockpile with plastic sheeting to prevent erosion or runoff, and shall maintain the cover while the stockpile is present on the site.

5. Soil generated from the site as part of future activities shall be profiled based on available knowledge and the requirements of the potential disposal facility(ies) and in accordance with applicable state and federal laws. The stockpile likely will need to be sampled as part of profiling. The Contractor shall provide access to the stockpile for sample collection by the Owner or their representatives (e.g., Engineer).

6. The Contractor shall load the stockpiled material for transportation and disposal as directed by the Owner or their representatives (e.g., Engineer).

In general, soil generated during on-site activities should be evaluated for potential reuse or off-site disposal consistent with available site knowledge. Soil to be disposed off site should be profiled consistent with the procedures described above. Prior to on-site reuse of such soil, testing should be performed to confirm the chemical concentrations in the material prior to evaluation by the Engineer for re-placement.

6.4 CONSTRUCTION DEWATERING

Depth to groundwater at the site typically is less than 5 feet bgs. If construction dewatering is necessary in or near the areas identified on Figures 3 and 4, the need for management of that water should be evaluated prior to construction. In general, if the groundwater is expected to be chemically affected, construction dewatering water should be pumped into holding tanks, and the water in the tanks should be sampled and analyzed for anticipated chemicals and these data evaluated to determine appropriate management options.

6.5 EQUIPMENT DECONTAMINATION

Equipment contacting soil in affected areas should be decontaminated by removing loose soil from the vehicle exterior with brooms or brushes. If necessary, the equipment can be decontaminated using water (e.g., pressure washing). Water from the cleaning processes shall be collected and containerized and sampled prior to proper disposal. Access to the decontamination area should be restricted. Other methods for handling decontamination water may be used if approved by the RWQCB or the appropriate agency.

6.6 COVER RESTORATION REQUIREMENTS

At the completion of ongoing maintenance or redevelopment activities, chemically affected soil remaining in place should be covered in a manner similar to the previous cover to reduce the potential for exposure (e.g., asphalt areas re-covered with asphalt or concrete).

7.0 REPRESENTATIONS AND LIMITATIONS

In preparing this *Site Management Plan*, Geomatrix Consultants, Inc. (Geomatrix) has relied upon certain information and representations provided by site employees and documents prepared by others. To the extent that conclusions and recommendations are based in whole or in part on such information, those conclusions and recommendations are contingent on its accuracy and validity, which Geomatrix has not been retained to confirm. Geomatrix assumes no responsibility for any consequences arising from any information or condition that was inaccurate, incomplete, concealed, withheld, misrepresented, or otherwise not fully and accurately disclosed or available to Geomatrix.

This *Site Management Plan* is based on current site conditions known by Geomatrix and current laws, policies, and regulations. No representation is made to any present or future developer or property owner of the site or portions of the site with respect to future site conditions, other than those specifically identified within this report.

Geomatrix disclaims any responsibility for any unintended or unauthorized use of this *Site Management Plan* by any party. Geomatrix has not made any commitment to, or assumed any obligation or liability to, any present or future developer, property owner, tenant, consultant, agent, contractor, user, or other party owning or visiting the site or portion of the site based upon or arising out of implementation of this *Site Management Plan*. It is expressly understood that while this *Site Management Plan* is intended to provide guidance and establish a framework for the management by others of residual chemicals in soil and groundwater to protect human health and the environment, Geomatrix has no obligations related to and does not warranty its implementation or adequacy.

8.0 REFERENCES

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TABLES

TABLE 1

RISK-BASED REMEDIATION GOALS FOR CHEMICALS IN SOIL[1]

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Chemical	Risk-Based Remediation Goal[2] (mg/kg)	Rationale	Proposition 65[3]
2,4,6-Trichlorophenol	40	Outdoor Worker - non-cancer	C
2,3,5,6-Tetrachlorophenol	10,000	Outdoor Worker - non-cancer	--
2,3,4,6-Tetrachlorophenol	10,000	Outdoor Worker - non-cancer	--
2,3,4,5-Tetrachlorophenol	10,000	Outdoor Worker - non-cancer	--
Total Tetrachlorophenol	10,000	Outdoor Worker - non-cancer	--
Pentachlorophenol	90	Outdoor Worker - cancer	C
Total Dioxin/Furan (2,3,7,8-TCDD TEQ)[4]	1.8×10^{-4}	Outdoor Worker - cancer	C, D
Cadmium	0.05 - 1.7	Background	D_M
Chromium	23 - 1579	Background	C[5]
Copper	9.1 - 96.4	Background	--
Iron	10,000 - 87,000	Background	--
Lead	12.4 - 97.1	Background	D_{FM}, C
Nickel	9 - 589	Background	C
Zinc	88 - 236	Background	--
Acetone	350	Indoor Worker - non-cancer	--
n-butylbenzene[2]	4.6	Indoor Worker - non-cancer	--
sec-butylbenzene[2]	7.7	Indoor Worker - non-cancer	--
Chlorobenzene	1.2	Indoor Worker - non-cancer	--
2-Chlorotoluene	NC	--	--
4-Chlorotoluene	NC	--	--
1,2-Dichlorobenzene[2]	24	Indoor Worker - non-cancer	--
1,3-Dichlorobenzene[2]	24	Indoor Worker - non-cancer	--
1,4-Dichlorobenzene	66	Indoor Worker - non-cancer	C
Ethylbenzene[2]	0.413	Indoor Worker - cancer	C
Methyl ethyl ketone	95	Indoor Worker - non-cancer	--
Naphthalene	1.4	Indoor Worker - cancer	C
Isopropylbenzene[2]	0.33	Indoor Worker - non-cancer	--
n-Propylbenzene[2]	2.8	Indoor Worker - non-cancer	--
P-Isopropyltoluene	NC	--	--
Toluene[2]	3.8	Indoor Worker - non-cancer	D
1,2,4-Trimethylbenzene	0.63	Indoor Worker - non-cancer	--
1,3,5-Trimethylbenzene	0.52	Indoor Worker - non-cancer	--
Total Xylenes[2]	125	Indoor Worker - non-cancer	--
Benzo(b)fluoranthene[2]	12	Outdoor Worker - cancer	
Chrysene[2]	120	Outdoor Worker - cancer	
Fluorene[2]	17,000	Indoor Worker - non-cancer	
Phenanthrene[2]	21,000	Outdoor Worker - non-cancer	
Pyrene[2]	15,000	Outdoor Worker - non-cancer	

Notes:

[1] Except where noted, lowest risk-based remediation goals (RBRGs) for a 10^{-5} risk of hazard index of 1 among receptors evaluated in Baseline Human Health Risk Assessment (Geomatrix, 2003).

[2] RBRG calculated for chemicals identified after Baseline Human Health Risk Assessment, in milligrams per kilogram (mg/kg).

[3] Chemical listed under Proposition 65 (May 27, 2004 list):
C = Carcinogen
D = Developmental toxicant
D_M = Developmental toxicant, male

[4] Dioxins/furans reported as 2,378 tetrachloro-dibenzo-p-dioxins toxicity equivalents.

[5] Hexavalent compounds only.

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TABLE 2

RISK-BASED REMEDIATION GOALS FOR CHEMICALS IN GROUNDWATER[1]

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Chemical	Risk-Based Remediation Goal[2] (mg/L)	Rationale	Proposition 65[3]
2,4,6-Trichlorophenol	0.74	Trench Utility Worker - cancer	C
2,3,5,6-Tetrachlorophenol	210	Trench Utility Worker - non-cancer	--
2,3,4,6-Tetrachlorophenol	90	Trench Utility Worker - non-cancer	--
2,3,4,5-Tetrachlorophenol	130	Trench Utility Worker - non-cancer	--
Pentachlorophenol	1.8	Trench Utility Worker - cancer	--
Benzoic Acid[2]	280,000	Trench Utility Worker - non-cancer	--
3 or 4 methylphenol[2]	9.2	Trench Utility Worker - non-cancer	--
Phenol[2]	68,000	Trench Utility Worker - non-cancer	--
Total Dioxin/Furan (2,3,7,8-TCDD TEQ)[2,4]	3.2×10^{-7}	Trench Utility Worker - cancer	C, D
Acetone[2]	2500	Indoor Worker - non-cancer	--
Ethylbenzene[2]	2.3	Indoor Worker - cancer	C
Napthhalene[2]	17	Indoor Worker - non-cancer	C
n-Propylbenzene[2]	12	Indoor Worker - non-cancer	--
1,2,4-Trimethylbenzene[2]	0.9	Indoor Worker - non-cancer	--
1,3,5-Trimethylbenzene[2]	0.94	Indoor Worker - non-cancer	--

Notes:

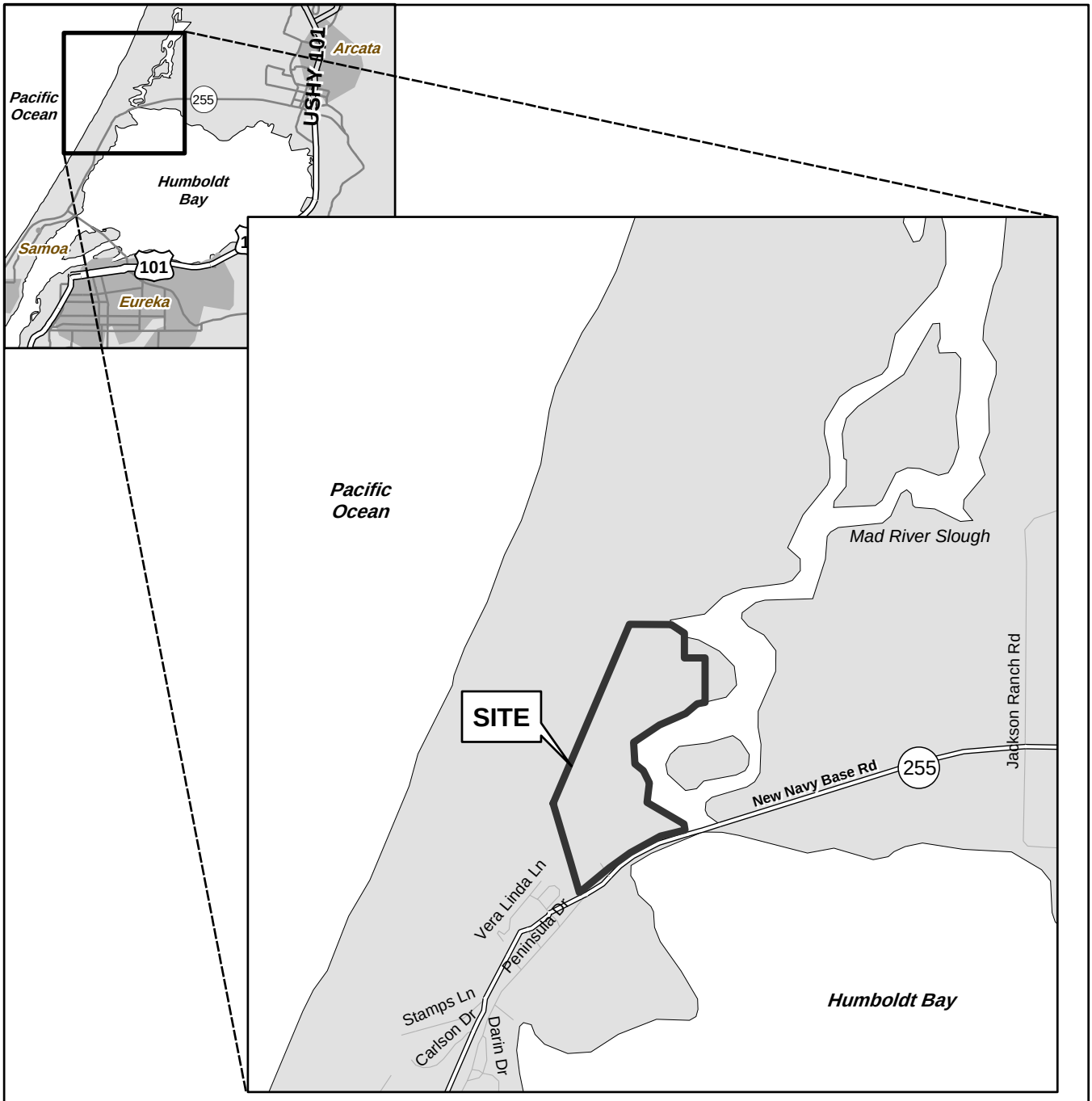
[1] Except where noted, lowest risk-based remediation goals (RBRGs) for a 10^{-5} risk of hazard index of 1 among receptors evaluated in Baseline Human Health Risk Assessment (Geomatrix, 2003).

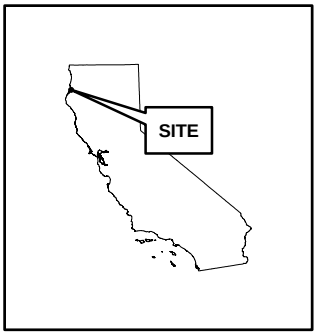
[2] RBRG calculated for chemicals identified after Baseline Human Health Risk Assessment, in milligrams per liter (mg/L).

[3] Chemical listed under Proposition 65 (May 27, 2004 list):
C = Carcinogen
D = Developmental toxicant
D_M = Developmental toxicant, male

[4] Hexavalent compounds only.

FIGURES





California

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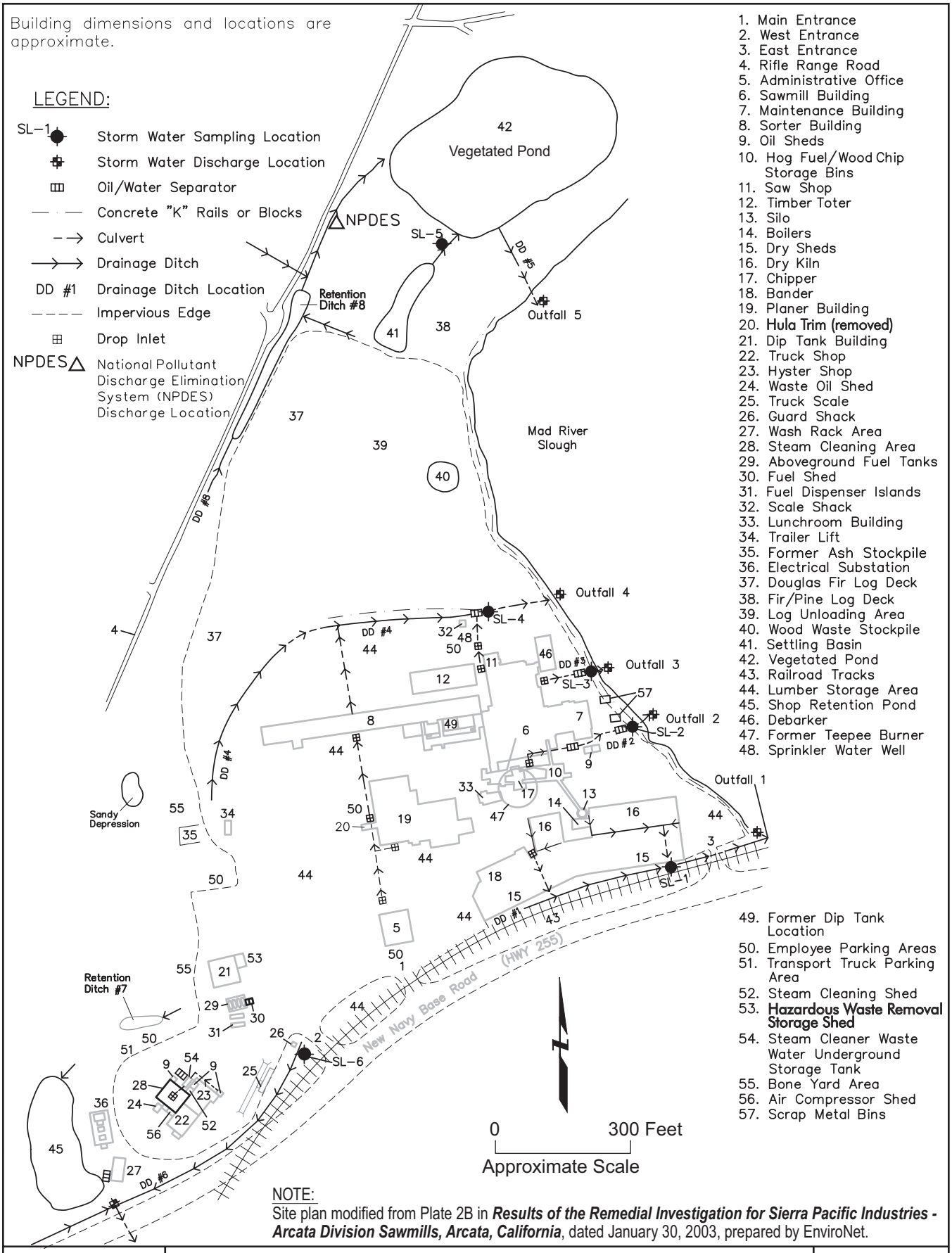
GEOMATRIX

SITE LOCATION MAP
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Project No.
9329

Figure No.
1



NOTE:
Site plan modified from Plate 2B in ***Results of the Remedial Investigation for Sierra Pacific Industries - Arcata Division Sawmills, Arcata, California***, dated January 30, 2003, prepared by EnviroNet.

GEOMATRIX

SITE PLAN
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Project No.
9329

Figure
2

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STORMWATER DISCHARGE - OUTFALL 4

MAD RIVER SLOUGH BOUNDARY

MAD RIVER SLOUGH

SCALE SHACK

WELL HOUSE

AREA WHERE SITE MANAGEMENT PLAN APPLIES

MW-3

MW-4

MW-19D

MW-15D

MW-5

MW-6

MW-21

MW-7

SAW MILL BUILDING

STORMWATER DISCHARGE - OUTFALL 3

MW-1

MW-2

MW-13D

MAINTENANCE BUILDING

FORMER GREEN CHAIN AREA

SORTER

MW-20

MW-8

MW-9

MW-18

MW-10

MW-12

MW-11

MW-14

OIL SHED

STORMWATER DISCHARGE - OUTFALL 2

MW-17

MW-16D

CHIPPER

PLANER BUILDING

EXPLANATION

MW-1 MONITORING WELL (D = DEEP)

OIL-WATER SEPARATOR/ SETTLING BASIN

APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)

STORM DRAIN

N

0 50

SCALE IN FEET

BASEMAP SOURCE:
"SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

SAMPLE LOCATION DATA SOURCES:
Monitoring wells MW-20 and MW-21 surveyed and monitoring wells MW-1 through MW-19 re-surveyed on February 13, 2004 by Omsberg & Company Surveyors of Eureka, California. Horizontal and vertical control surveyed to North American Datum (NAD) of 1983 and National Geodetic Vertical Datum (NGVD) of 1929, respectively.

FORMER GREEN CHAIN AREA PLAN
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

GEOMATRIX

Project No. 9329

Figure 3

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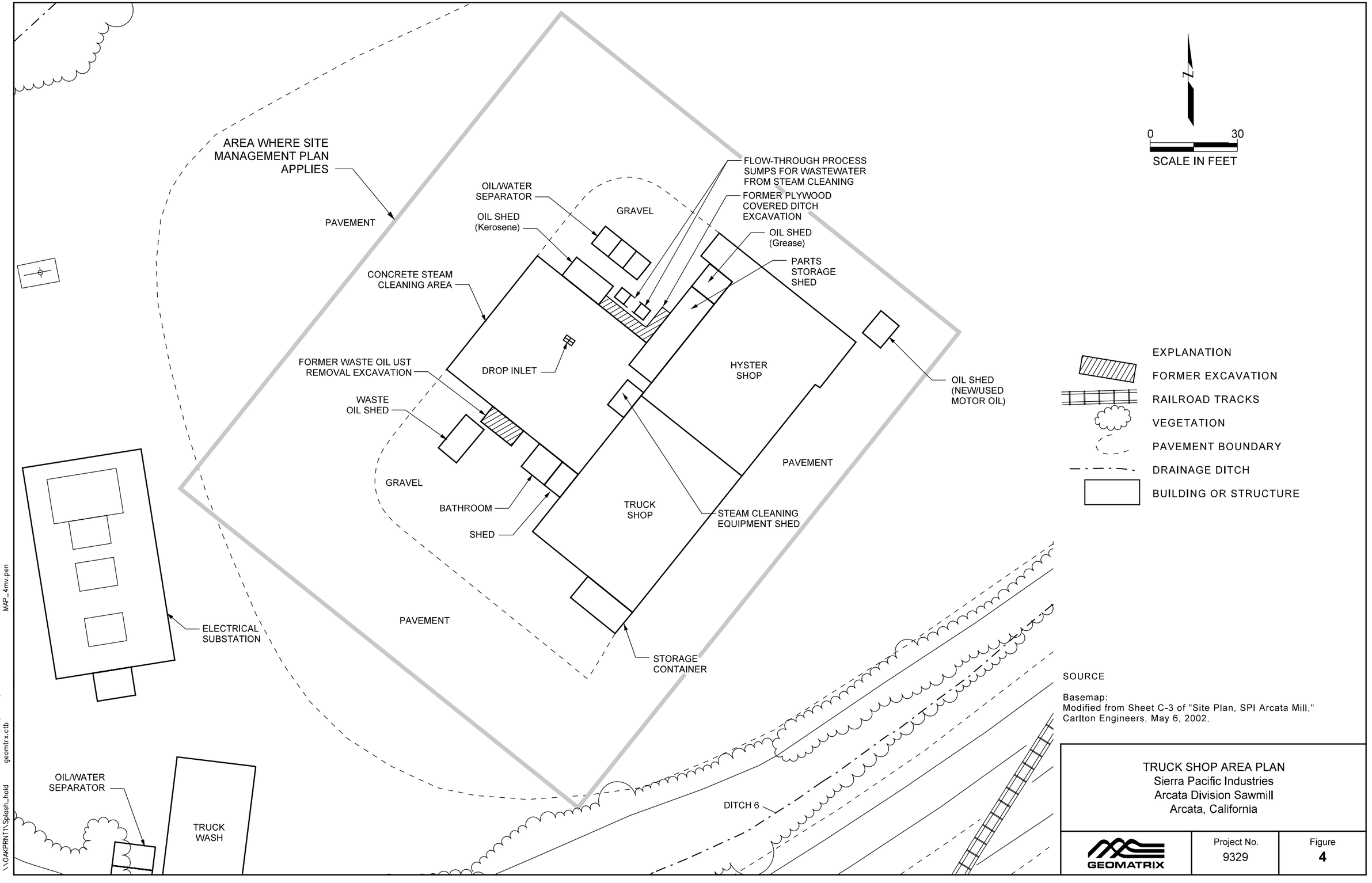

SOURCE

Basemap:
Modified from Sheet C-3 of "Site Plan, SPI Arcata Mill," Carlton Engineers, May 6, 2002.

TRUCK SHOP AREA PLAN
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

GEOMATRIX

Project No. 9329

Figure 4

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STORMWATER DISCHARGE - OUTFALL 4

MAD RIVER SLOUGH BOUNDARY

MAD RIVER SLOUGH

SCALE SHACK

WELL HOUSE

AREA WHERE SITE MANAGEMENT PLAN APPLIES

FORMER GREEN CHAIN AREA

SORTER

MAINTENANCE BUILDING

SAW MILL BUILDING

PLANER BUILDING

CHIPPER

OIL SHED

STORMWATER DISCHARGE - OUTFALL 3

STORMWATER DISCHARGE - OUTFALL 2

APPROXIMATE LIMIT OF INTERIM REMEDIAL MEASURES SOURCE AREA REMOVAL (June - November 2003)

B-19	
Depth	PCP
1.5'	1
3'	ND

B-62	
Depth	PCP
1'	ND
3'	21

B-3	
Depth	PCP
1.5'	50
3'	71/68
5'	ND
6.5'	ND

B-4	
Depth	PCP
1'	3.1
3'	20
5'	ND
6.5'	ND

B-11	
Depth	PCP
1'	1
3'	ND

MW-7	
Depth	PCP
1.5'	20
3'	19
5.5'	ND

B-27	
Depth	PCP
2'	1.4/ND
3'	ND

B-2	
Depth	PCP
1.5'	3.2
3'	ND

MW-21	
Depth	PCP
1.5'	ND
3'	4.1
5'	ND
7'	ND

B-33	
Depth	PCP
4'	4.7
5'	ND
6.5'	ND

B-61	
Depth	PCP
1.2'	2.5
3'	ND

B-14	
Depth	PCP
1'	ND
3'	5.5/3.3
5'	2.4
6.5'	ND

B-34	
Depth	PCP
4'	2.2
5'	1.9
6.5'	ND

B-57	
Depth	PCP
3'	1.9

B-58	
Depth	PCP
5'	1.2

B-6	
Depth	PCP
3.5'	1/ND
5'	ND
7'	ND
9'	ND

B-36	
Depth	PCP
2'	1.3
3'	ND

B-63	
Depth	PCP
1'	ND
3'	17

B-38	
Depth	PCP
2'	59
3'	27
4.5'	ND

B-9	
Depth	PCP
1.5'	ND
3'	7.6/1.3
5'	ND

EXPLANATION

B-51 SOIL BORING WHERE ONE OR MORE SOIL SAMPLES HAD DETECTIONS OF PENTACHLOROPHENOL

B-50 SOIL BORING WHERE NO SOIL SAMPLES HAD DETECTIONS OF PENTACHLOROPHENOL

B-9 (Depth / PCP: 1.5' ND; 3' 7.6/1.3; 5' ND) SAMPLE LOCATION

PENTACHLOROPHENOL IN SOIL (mg/kg)

SAMPLE DEPTH (feet below ground surface)

ND NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT

OIL-WATER SEPARATOR/ SETTLING BASIN

STORM DRAIN

BASEMAP SOURCE:
"SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

SOIL BORING DATA SOURCES:
(1) "Results of the Remedial Investigation for SPI Arcata Sawmill, Arcata, California", by Environet, dated 1/2003.
(2) "Report on Interim Remedial Measures: Source Area Removal, SPI Arcata Sawmill", by Geomatrix, dated 12/2003.
(3) "Former Teepee Burner Investigation Report", by MFG, Inc., dated 7/21/03.
(4) Monitoring wells MW-20 and MW-21 surveyed and monitoring wells MW-1 through MW-19 re-surveyed on February 13, 2004 by Omsberg & Company Surveyors of Eureka, California. Horizontal and vertical control surveyed to North American Datum (NAD) of 1983 and National Geodetic Vertical Datum (NGVD) of 1929, respectively.

N

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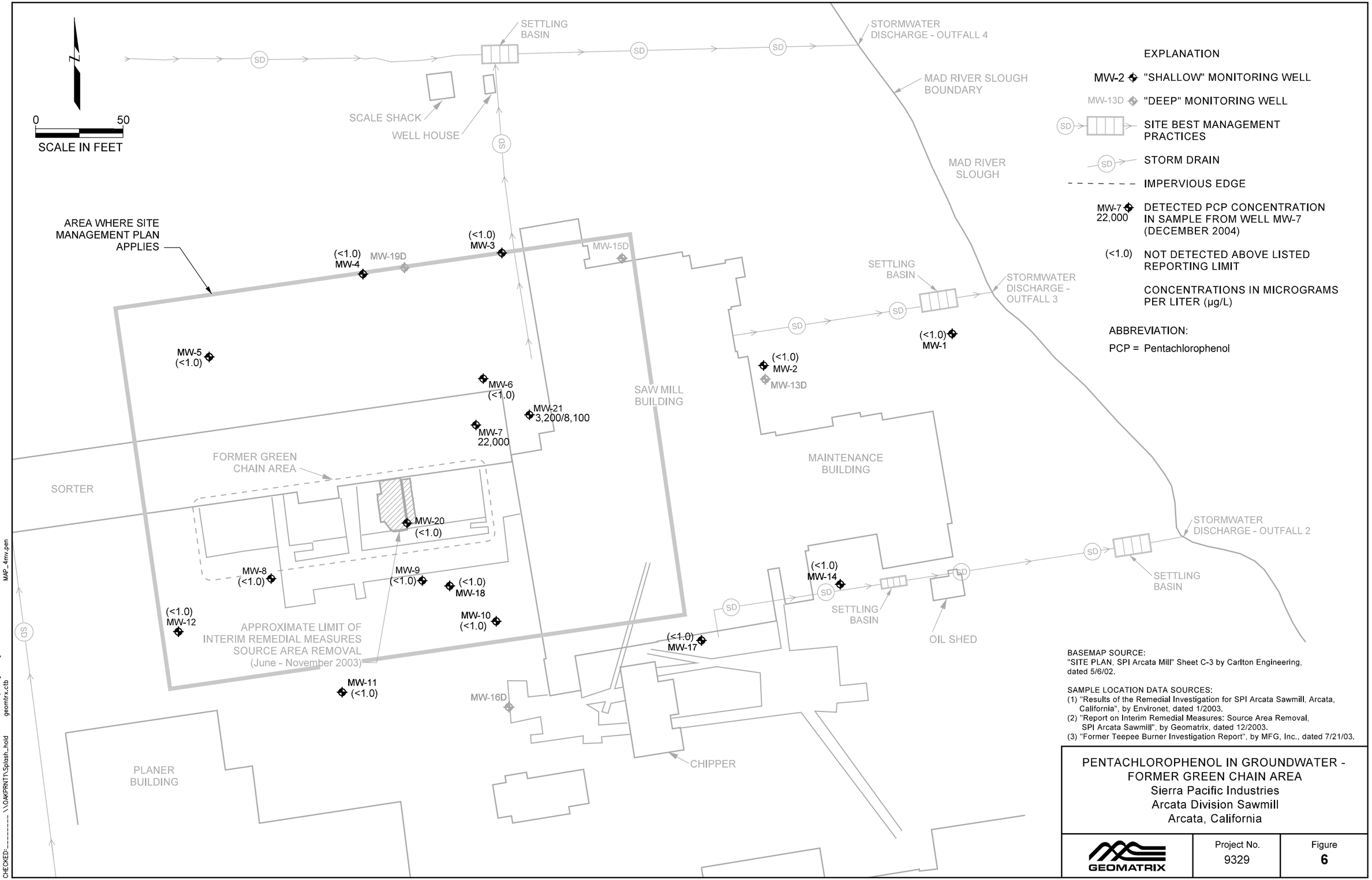
SCALE IN FEET

PENTACHLOROPHENOL IN SOIL - FORMER GREEN CHAIN AREA
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

GEOMATRIX

Project No. 9329

Figure 5



BASEMAP SOURCE:
"SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

SAMPLE LOCATION DATA SOURCES:
(1) "Results of the Remedial Investigation for SPI Arcata Sawmill, Arcata, California", by Environet, dated 1/2003.
(2) "Report on Interim Remedial Measures: Source Area Removal, SPI Arcata Sawmill", by Geomatrix, dated 12/2003.
(3) "Former Teepee Burner Investigation Report", by MFG, Inc., dated 7/21/03.

PENTACHLOROPHENOL IN GROUNDWATER - FORMER GREEN CHAIN AREA
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

GEOMATRIX | Project No. 9329 | Figure 6

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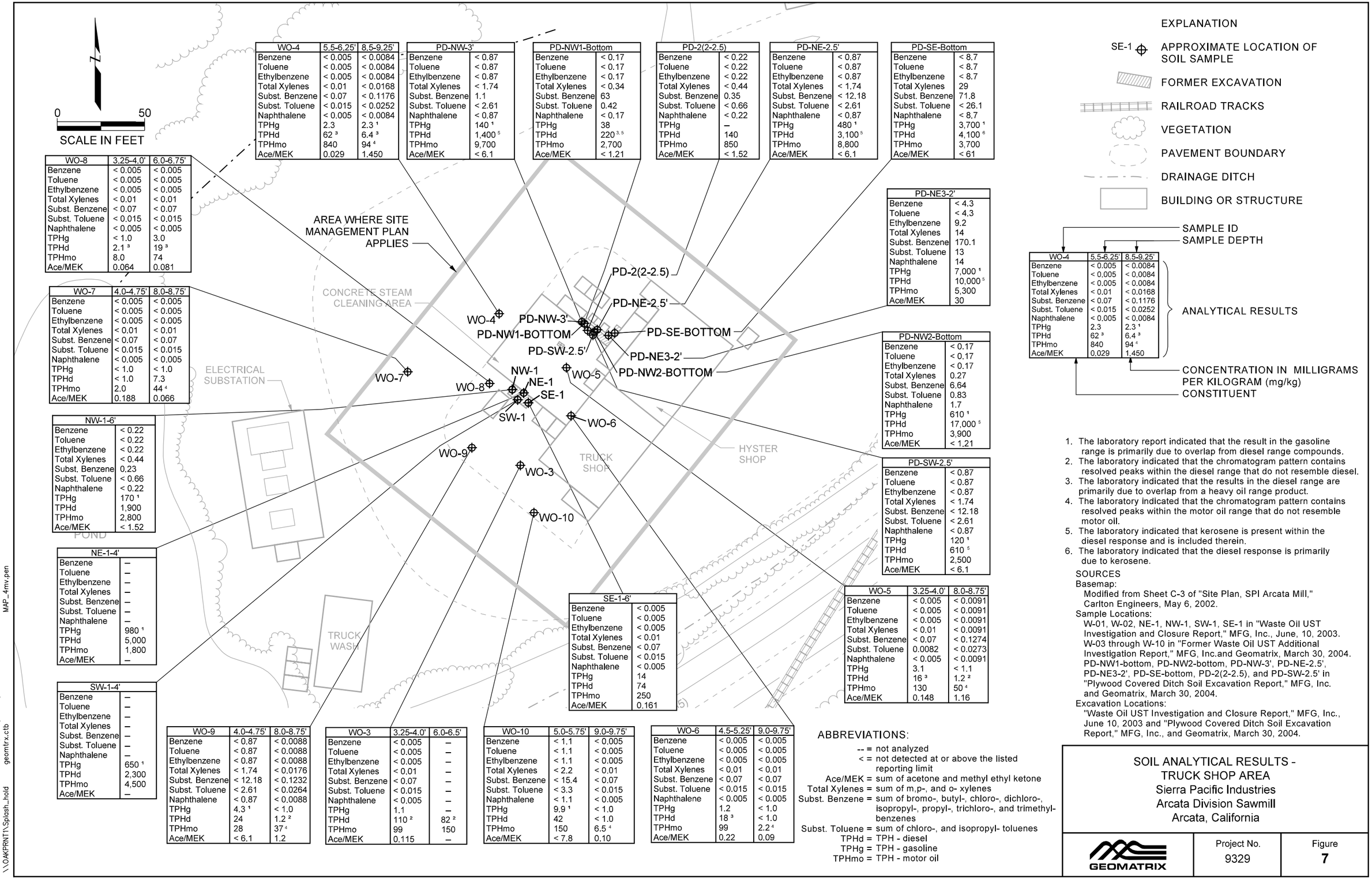

WO-4	5.5-6.25'	8.5-9.25'
Benzene	< 0.005	< 0.0084
Toluene	< 0.005	< 0.0084
Ethylbenzene	< 0.005	< 0.0084
Total Xylenes	< 0.01	< 0.0168
Subst. Benzene	< 0.07	< 0.1176
Subst. Toluene	< 0.015	< 0.0252
Naphthalene	< 0.005	< 0.0084
TPHg	2.3	2.3 [1]
TPHd	62 [3]	6.4 [3]
TPHmo	840	94 [4]
Ace/MEK	0.029	1.450

PD-NW-3'	
Benzene	< 0.87
Toluene	< 0.87
Ethylbenzene	< 0.87
Total Xylenes	< 1.74
Subst. Benzene	1.1
Subst. Toluene	< 2.61
Naphthalene	< 0.87
TPHg	140 [1]
TPHd	1,400 [5]
TPHmo	9,700
Ace/MEK	< 6.1

PD-NW1-Bottom	
Benzene	< 0.17
Toluene	< 0.17
Ethylbenzene	< 0.17
Total Xylenes	< 0.34
Subst. Benzene	63
Subst. Toluene	0.42
Naphthalene	< 0.17
TPHg	38
TPHd	220 [3,5]
TPHmo	2,700
Ace/MEK	< 1.21

PD-2(2-2.5)	
Benzene	< 0.22
Toluene	< 0.22
Ethylbenzene	< 0.22
Total Xylenes	< 0.44
Subst. Benzene	0.35
Subst. Toluene	< 0.66
Naphthalene	< 0.22
TPHg	--
TPHd	140
TPHmo	850
Ace/MEK	< 1.52

PD-NE-2.5'	
Benzene	< 0.87
Toluene	< 0.87
Ethylbenzene	< 0.87
Total Xylenes	< 1.74
Subst. Benzene	< 12.18
Subst. Toluene	< 2.61
Naphthalene	< 0.87
TPHg	480 [1]
TPHd	3,100 [5]
TPHmo	8,800
Ace/MEK	< 6.1

PD-SE-Bottom	
Benzene	< 8.7
Toluene	< 8.7
Ethylbenzene	< 8.7
Total Xylenes	29
Subst. Benzene	71.8
Subst. Toluene	< 26.1
Naphthalene	< 8.7
TPHg	3,700 [1]
TPHd	4,100 [6]
TPHmo	3,700
Ace/MEK	< 61

WO-8	3.25-4.0'	6.0-6.75'
Benzene	< 0.005	< 0.005
Toluene	< 0.005	< 0.005
Ethylbenzene	< 0.005	< 0.005
Total Xylenes	< 0.01	< 0.01
Subst. Benzene	< 0.07	< 0.07
Subst. Toluene	< 0.015	< 0.015
Naphthalene	< 0.005	< 0.005
TPHg	< 1.0	3.0
TPHd	2.1 [3]	19 [3]
TPHmo	8.0	74
Ace/MEK	0.064	0.081

WO-7	4.0-4.75'	8.0-8.75'
Benzene	< 0.005	< 0.005
Toluene	< 0.005	< 0.005
Ethylbenzene	< 0.005	< 0.005
Total Xylenes	< 0.01	< 0.01
Subst. Benzene	< 0.07	< 0.07
Subst. Toluene	< 0.015	< 0.015
Naphthalene	< 0.005	< 0.005
TPHg	< 1.0	< 1.0
TPHd	< 1.0	7.3
TPHmo	2.0	44 [4]
Ace/MEK	0.188	0.066

NW-1-6'	
Benzene	< 0.22
Toluene	< 0.22
Ethylbenzene	< 0.22
Total Xylenes	< 0.44
Subst. Benzene	0.23
Subst. Toluene	< 0.66
Naphthalene	< 0.22
TPHg	170 [1]
TPHd	1,900
TPHmo	2,800
Ace/MEK	< 1.52

NE-1-4'	
Benzene	--
Toluene	--
Ethylbenzene	--
Total Xylenes	--
Subst. Benzene	--
Subst. Toluene	--
Naphthalene	--
TPHg	980 [1]
TPHd	5,000
TPHmo	1,800
Ace/MEK	--

SW-1-4'	
Benzene	--
Toluene	--
Ethylbenzene	--
Total Xylenes	--
Subst. Benzene	--
Subst. Toluene	--
Naphthalene	--
TPHg	650 [1]
TPHd	2,300
TPHmo	4,500
Ace/MEK	--

SE-1-6'	
Benzene	< 0.005
Toluene	< 0.005
Ethylbenzene	< 0.005
Total Xylenes	< 0.01
Subst. Benzene	< 0.07
Subst. Toluene	< 0.015
Naphthalene	< 0.005
TPHg	14
TPHd	74
TPHmo	250
Ace/MEK	0.161

PD-NE3-2'	
Benzene	< 4.3
Toluene	< 4.3
Ethylbenzene	9.2
Total Xylenes	14
Subst. Benzene	170.1
Subst. Toluene	13
Naphthalene	14
TPHg	7,000 [1]
TPHd	10,000 [5]
TPHmo	5,300
Ace/MEK	30

PD-NW2-Bottom	
Benzene	< 0.17
Toluene	< 0.17
Ethylbenzene	< 0.17
Total Xylenes	0.27
Subst. Benzene	6.64
Subst. Toluene	0.83
Naphthalene	1.7
TPHg	610 [1]
TPHd	17,000 [5]
TPHmo	3,900
Ace/MEK	< 1.21

PD-SW-2.5'	
Benzene	< 0.87
Toluene	< 0.87
Ethylbenzene	< 0.87
Total Xylenes	< 1.74
Subst. Benzene	< 12.18
Subst. Toluene	< 2.61
Naphthalene	< 0.87
TPHg	120 [1]
TPHd	610 [5]
TPHmo	2,500
Ace/MEK	< 6.1

WO-5	3.25-4.0'	8.0-8.75'
Benzene	< 0.005	< 0.0091
Toluene	< 0.005	< 0.0091
Ethylbenzene	< 0.005	< 0.0091
Total Xylenes	< 0.01	< 0.0091
Subst. Benzene	< 0.07	< 0.1274
Subst. Toluene	0.0082	< 0.0273
Naphthalene	< 0.005	< 0.0091
TPHg	3.1	< 1.1
TPHd	16 [3]	1.2 [2]
TPHmo	130	50 [4]
Ace/MEK	0.148	1.16

WO-9	4.0-4.75'	8.0-8.75'
Benzene	< 0.87	< 0.0088
Toluene	< 0.87	< 0.0088
Ethylbenzene	< 0.87	< 0.0088
Total Xylenes	< 1.74	< 0.0176
Subst. Benzene	< 12.18	< 0.1232
Subst. Toluene	< 2.61	< 0.0264
Naphthalene	< 0.87	< 0.0088
TPHg	4.3 [1]	< 1.0
TPHd	24	1.2 [2]
TPHmo	28	37 [4]
Ace/MEK	< 6.1	1.2

WO-3	3.25-4.0'	6.0-6.5'
Benzene	< 0.005	--
Toluene	< 0.005	--
Ethylbenzene	< 0.005	--
Total Xylenes	< 0.01	--
Subst. Benzene	< 0.07	--
Subst. Toluene	< 0.015	--
Naphthalene	< 0.005	--
TPHg	1.1	--
TPHd	110 [2]	82 [2]
TPHmo	99	150
Ace/MEK	0.115	--

WO-10	5.0-5.75'	9.0-9.75'
Benzene	< 1.1	< 0.005
Toluene	< 1.1	< 0.005
Ethylbenzene	< 1.1	< 0.005
Total Xylenes	< 2.2	< 0.01
Subst. Benzene	< 15.4	< 0.07
Subst. Toluene	< 3.3	< 0.015
Naphthalene	< 1.1	< 0.005
TPHg	9.9 [1]	< 1.0
TPHd	42	< 1.0
TPHmo	150	6.5 [4]
Ace/MEK	< 7.8	0.10

WO-6	4.5-5.25'	9.0-9.75'
Benzene	< 0.005	< 0.005
Toluene	< 0.005	< 0.005
Ethylbenzene	< 0.005	< 0.005
Total Xylenes	< 0.01	< 0.01
Subst. Benzene	< 0.07	< 0.07
Subst. Toluene	< 0.015	< 0.015
Naphthalene	< 0.005	< 0.005
TPHg	1.2	< 1.0
TPHd	18 [3]	< 1.0
TPHmo	99	2.2 [4]
Ace/MEK	0.22	0.09

EXPLANATION

- SE-1 ⊕ APPROXIMATE LOCATION OF SOIL SAMPLE
- FORMER EXCAVATION
- RAILROAD TRACKS
- VEGETATION
- PAVEMENT BOUNDARY
- DRAINAGE DITCH
- BUILDING OR STRUCTURE

WO-4	5.5-6.25'	8.5-9.25'
Benzene	< 0.005	< 0.0084
Toluene	< 0.005	< 0.0084
Ethylbenzene	< 0.005	< 0.0084
Total Xylenes	< 0.01	< 0.0168
Subst. Benzene	< 0.07	< 0.1176
Subst. Toluene	< 0.015	< 0.0252
Naphthalene	< 0.005	< 0.0084
TPHg	2.3	2.3 [1]
TPHd	62 [3]	6.4 [3]
TPHmo	840	94 [4]
Ace/MEK	0.029	1.450

SAMPLE ID
SAMPLE DEPTH
ANALYTICAL RESULTS
CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONSTITUENT

1. The laboratory report indicated that the result in the gasoline range is primarily due to overlap from diesel range compounds.
2. The laboratory indicated that the chromatogram pattern contains resolved peaks within the diesel range that do not resemble diesel.
3. The laboratory indicated that the results in the diesel range are primarily due to overlap from a heavy oil range product.
4. The laboratory indicated that the chromatogram pattern contains resolved peaks within the motor oil range that do not resemble motor oil.
5. The laboratory indicated that kerosene is present within the diesel response and is included therein.
6. The laboratory indicated that the diesel response is primarily due to kerosene.

SOURCES

Basemap:
Modified from Sheet C-3 of "Site Plan, SPI Arcata Mill," Carlton Engineers, May 6, 2002.

Sample Locations:
W-01, W-02, NE-1, NW-1, SW-1, SE-1 in "Waste Oil UST Investigation and Closure Report," MFG, Inc., June, 10, 2003.
W-03 through W-10 in "Former Waste Oil UST Additional Investigation Report," MFG, Inc.and Geomatrix, March 30, 2004.
PD-NW1-bottom, PD-NW2-bottom, PD-NW-3', PD-NE-2.5', PD-NE3-2', PD-SE-bottom, PD-2(2-2.5), and PD-SW-2.5' in "Plywood Covered Ditch Soil Excavation Report," MFG, Inc. and Geomatrix, March 30, 2004.

Excavation Locations:
"Waste Oil UST Investigation and Closure Report," MFG, Inc., June 10, 2003 and "Plywood Covered Ditch Soil Excavation Report," MFG, Inc., and Geomatrix, March 30, 2004.

ABBREVIATIONS:

-- = not analyzed
< = not detected at or above the listed reporting limit
Ace/MEK = sum of acetone and methyl ethyl ketone
Total Xylenes = sum of m,p-, and o- xylenes
Subst. Benzene = sum of bromo-, butyl-, chloro-, dichloro-, isopropyl-, propyl-, trichloro-, and trimethyl-benzenes
Subst. Toluene = sum of chloro-, and isopropyl- toluenes
TPHd = TPH - diesel
TPHg = TPH - gasoline
TPHmo = TPH - motor oil

SOIL ANALYTICAL RESULTS - TRUCK SHOP AREA
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

GEOMATRIX | Project No. 9329 | Figure 7

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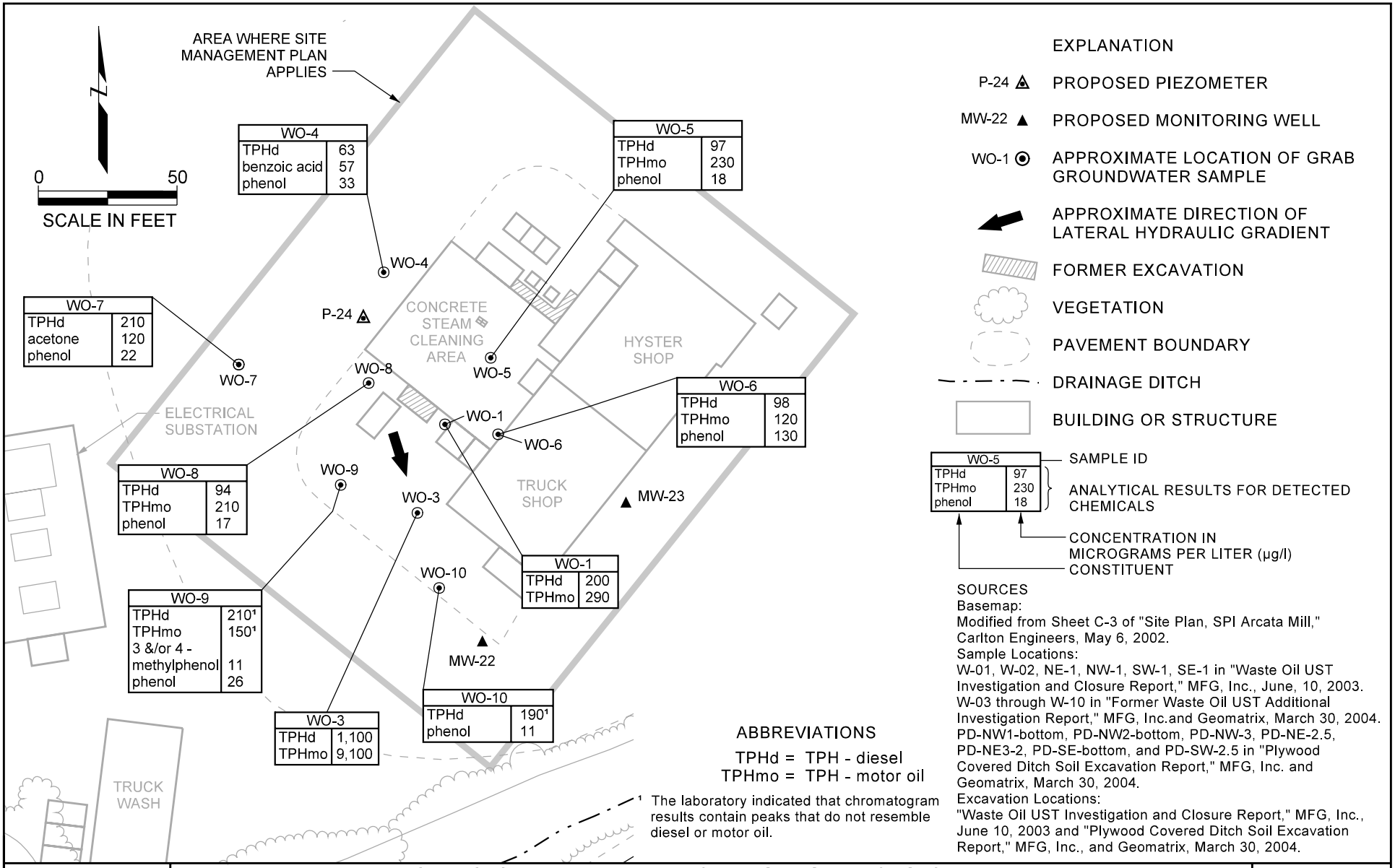

ABBREVIATIONS

TPHd = TPH - diesel
TPHmo = TPH - motor oil

¹ The laboratory indicated that chromatogram results contain peaks that do not resemble diesel or motor oil.

SOURCES
Basemap:
Modified from Sheet C-3 of "Site Plan, SPI Arcata Mill," Carlton Engineers, May 6, 2002.
Sample Locations:
W-01, W-02, NE-1, NW-1, SW-1, SE-1 in "Waste Oil UST Investigation and Closure Report," MFG, Inc., June, 10, 2003.
W-03 through W-10 in "Former Waste Oil UST Additional Investigation Report," MFG, Inc.and Geomatrix, March 30, 2004.
PD-NW1-bottom, PD-NW2-bottom, PD-NW-3, PD-NE-2.5, PD-NE3-2, PD-SE-bottom, and PD-SW-2.5 in "Plywood Covered Ditch Soil Excavation Report," MFG, Inc. and Geomatrix, March 30, 2004.
Excavation Locations:
"Waste Oil UST Investigation and Closure Report," MFG, Inc., June 10, 2003 and "Plywood Covered Ditch Soil Excavation Report," MFG, Inc., and Geomatrix, March 30, 2004.

GEOMATRIX

GRAB GROUNDWATER ANALYTICAL RESULTS - TRUCK SHOP AREA
April, July, and August 2003
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Project No. 9329

Figure 8

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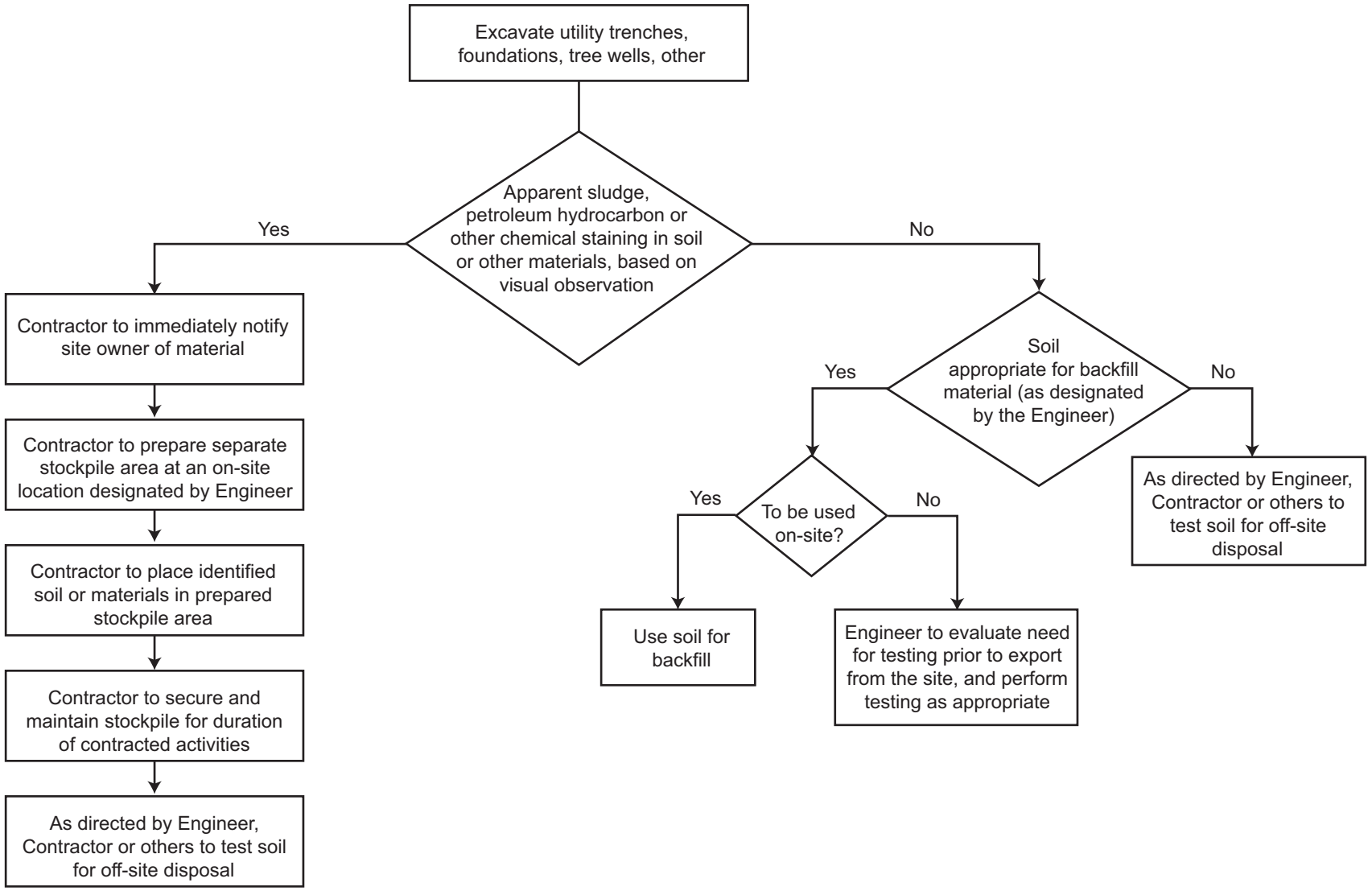

GEOMATRIX

GUIDELINES FOR SOIL MANAGEMENT
FOR AREAS UNDER SITE MANAGEMENT PLAN
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Project No.
9329

Figure
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