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Sun Pipe Line Company
RD #3 Box 135
Honey Brook PA 19344

March 11, 1994

Mr. Stephen Ross
Township Manager
West Whiteland Township
222 North Pottstown Pike
Exton, PA 19341

Via: Hand Delivery

Dear Mr. Ross:

The following is in response to the West Whiteland Township Board of Supervisors' request for additional information to support Sun Pipe Line Company's (Sun) request to discharge the Ship Road Treatment System effluent to the sanitary sewer system which discharges to the DARA treatment facility.

BACKGROUND

A leak was discovered in Atlantic Pipeline Corp.'s 12 inch diameter pipeline beneath Ship Road in West Whiteland Township on November 11, 1987. An investigation following the leak indicated that approximately 70 to 79 thousand gallons of refined product (primarily unleaded gasoline) were released as a result of this incident.

The remediation effort has evolved over time in response to site conditions, water table fluctuations and free product thickness. Remediation activities have included: the installation of 65 monitoring wells and 10 recovery wells; the installation of a ground water treatment system which includes two air stripping towers; the installation of a ThermTech 100 catalytic oxidizer to treat air emissions from the tower; and, most recently, the installation of a vapor extraction system in response to the elimination of free product from the site.

To date an estimated 67,531 gallons of product have been recovered and removed from the site. The balance of product has been removed by the vapor extraction system, has volatilized or has been eliminated by natural biodegradation. Although product recovery/removal effected by these techniques is difficult to accurately quantify, the fact remains that no measurable free

product can be found today in any of the monitoring or recovery wells.

The current focus of the remediation effort involves the removal of dissolved gasoline constituents from the ground water. These constituents (primarily benzene, toluene, ethylbenzene and xylenes - BTEX) are removed by pumping ground water from the recovery wells to the stripping towers where an air stream is forced up through the packing over which the affected water falls. This process removes the contaminants from the water and transfers them to the air which is subsequently sent to the catalytic oxidizer for treatment.

This process is very effective with regard to removing the gasoline constituents in an environmentally sound fashion. It is, however, not effective in removing naturally occurring manganese. This manganese precipitates in the stripping towers and clogs the packing creating inefficiencies and operating problems. In addition, some of the manganese remains in suspension through the treatment system and is released to the East Branch of Chester Creek.

MANGANESE TREATMENT ALTERNATIVES

Sun has investigated several alternatives for removing manganese from the water prior to its introduction into the treatment system. Given the residential setting of the treatment system, the only alternative considered practical is in-situ treatment of the groundwater. The primary treatment mechanism for removing manganese is to change the oxidation potential of the affected ground water. By increasing the oxidation potential, manganese will precipitate and can be filtered from the water. In-situ treatment involves injecting air into the ground through a series of points located around the site through the installation of an air sparging system. The natural soil pores of the geologic formation are used to filter the precipitated manganese from the ground water before it is extracted from the ground. In addition to the manganese removal benefits, the introduction of air into the aquifer at the Ship Road site will enhance the aerobic bacterial environment. The resulting increased oxygen concentration should expedite the rate of biodegradation of dissolved and residual gasoline constituents present in the aquifer (see Figures 1 and 2).

Figure 3 shows the impact of the air sparging system on manganese concentrations. It is anticipated that the gradual reduction in manganese reaching the tower will reduce the tendency of the packing to clog and will have a beneficial impact on overall treatment system operations. Based on data collected to date, however, it does not appear that the air sparging system will remove the manganese below state guidelines. In order to achieve this result, it will be necessary to either provide green sand

filters or discharge the treatment system effluent to the sanitary sewer system.

There are several disadvantages with respect to using green sand filters for this purpose. The manganese is removed from the filters in the form of a sludge which would have to be placed into drums and temporarily stored on site prior to removal. The back flushing and waste handling activities associated with this effort would increase the level of activity at the site and cause disruption to the neighborhood. Although Sun would do everything possible to avoid any odors caused by operation of these filters, there is a potential for some smell given certain levels of heat and humidity. Finally, a potential source of revenue for West Whiteland Township would be eliminated in favor of payments to contractors and consultants. Disadvantages to Sun associated with this equipment include higher fuel and power costs, higher operating costs and potential negative impacts on a community already inconvenienced by activities associated with this leak.

Sun has been unable to identify any negative impacts associated with discharge of the treated water to the sanitary sewer system. The residual manganese will not affect sewage treatment system operation. There does not appear to be hydraulic constraints given the Ship Road treatment system flow rates. Finally, the time frame to complete the remediation is not expected to exceed five years. This appears to fit very well with West Whiteland Township's development plans.

DESCRIPTION OF SEWER CONNECTION PROPOSAL

Sun proposes to construct a PVC line from the treatment system to the Chester Creek Pumping Station. One alternative routing for this line is shown in Figure 4. Water would flow to the pumping station by gravity. The only pumps involved would be located in the recovery wells for the purpose of moving water to the stripper towers. The initial flow rate would not exceed 144,000 gallons per day. The water would be treated by air stripping and sampled to confirm that levels of BTEX did not exceed DARA standards. Two years of monthly sampling results have been forwarded to DARA's consultant, Gannett-Flemming Engineers, in order to process this application. The latest laboratory analyses show levels for each of these substances are below 0.001 MG/L. This means that each BTEX compound was not detected by the analytical laboratory at a level of 1.0 part per billion. Current levels of manganese are 13.25 MG/L, however, this is expected to decrease significantly with the addition of the air sparging equipment.

Sun expects to pay a connection fee and a usage fee to West Whiteland Township. The costs associated with laying the line to Chester Creek Pumping station would also be borne by Sun. Finally Sun would be responsible for costs associated with required water

sampling and analysis. West Whiteland Township would be expected to operate the pumping station.

CONCLUSION

We hope the information provided in this letter meets the requirements of the Board of Supervisors. We are confident that allowing Sun to discharge the treatment system effluent to the sanitary sewer is the best alternative available to both Sun and to West Whiteland Township. More importantly, this alternative is the best choice from an environmental perspective. We recognize that affirmative action on this proposal by the Board of Supervisors will represent only a first step in completing the actual connection. In addition to developing a satisfactory agreement, an engineering review must be completed and a design must be finalized. In this regard, Sun would be willing to consider reimbursing West Whiteland Township for reasonable and necessary costs for engineering services. We would, however, appreciate having an estimate of these costs to avoid any misunderstanding in the future.

In closing, we sincerely hope that we can work with West Whiteland Township to implement the proposed connection. As we are convinced that this is in the best interest of both parties, we would appreciate an expeditious review by the Board of Supervisors. We would be happy to respond to requests for additional information or to attend the next Board meeting if this would be helpful. You may direct any such request to the undersigned at the address on the letterhead or you may call me at (610) 942-1900 or (610) 942-2911.

Thank you for your consideration.

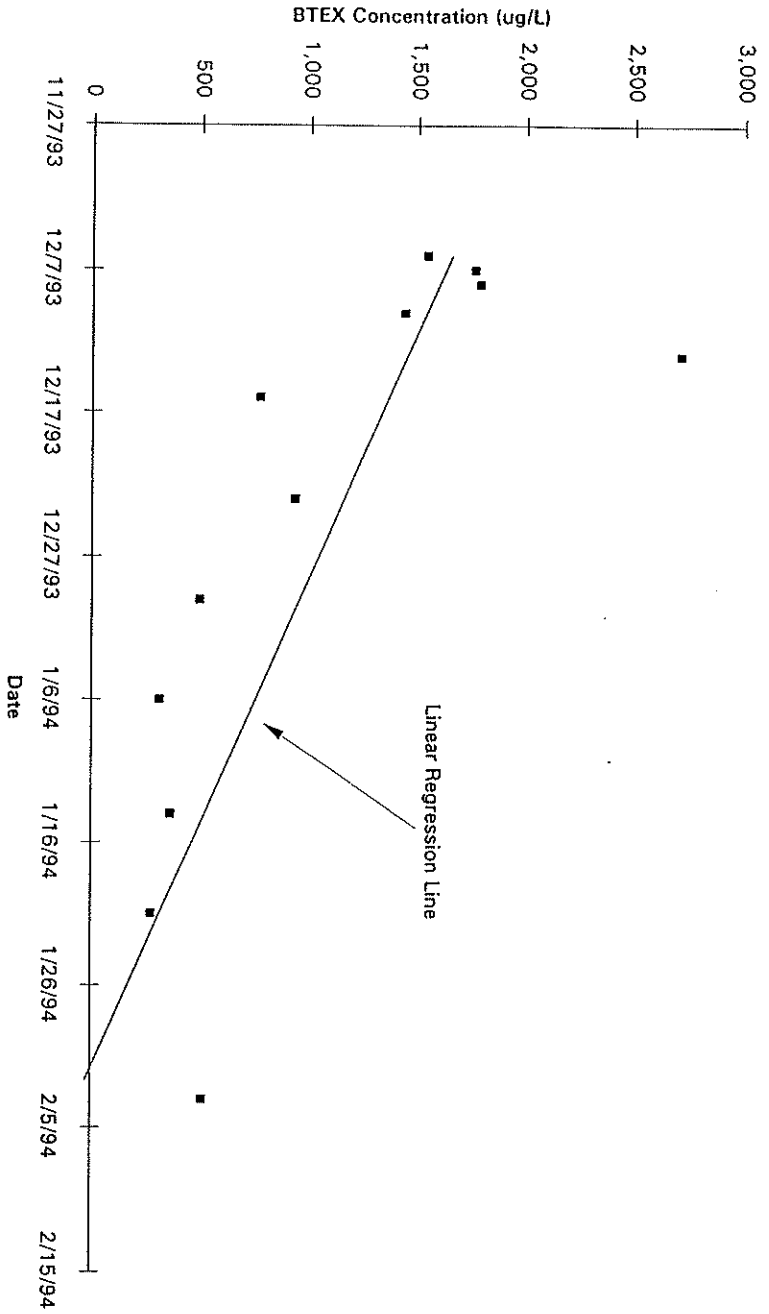
Sincerely,



David R. Chalson
Superintendent

FIGURE 1

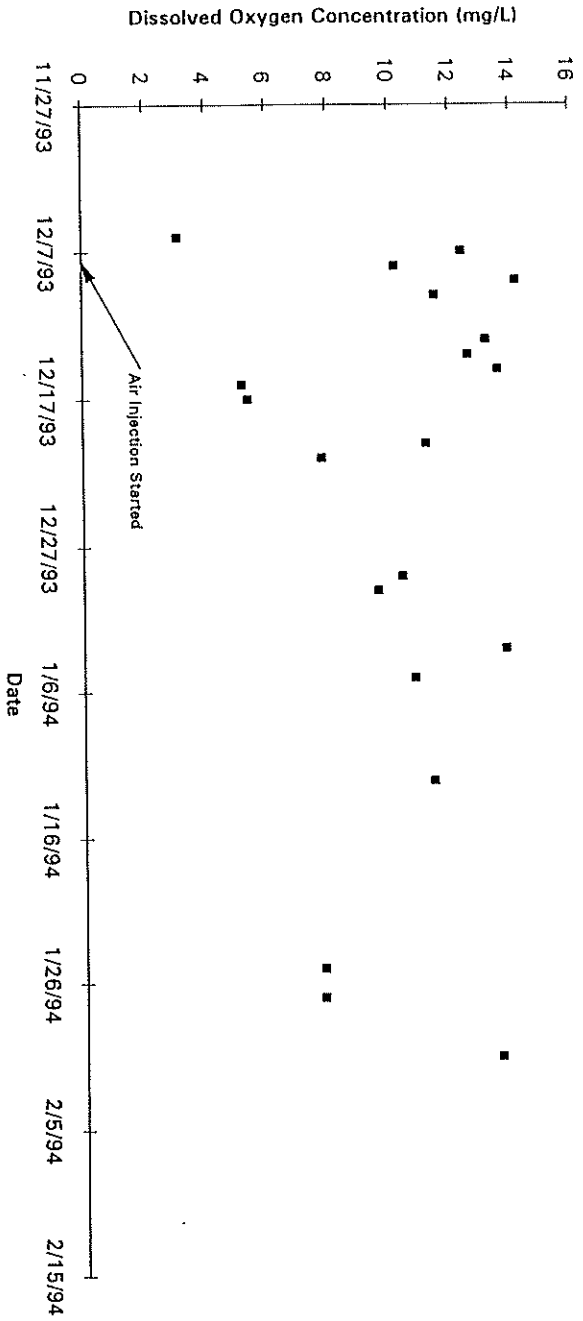
BTEX Concentration (Laboratory Data) Versus Time in Monitoring Well RW-64, Sun Pipe Line Company, Ship Road Site, West Whiteland Township, Pennsylvania.



RW45UN.XLC

FIGURE 2

Dissolved Oxygen Concentration (Field Data) Versus Time in Recovery Well RW-64, Sun Pipe Line Company, Ship Road Site, West Whiteland Township, Pennsylvania.



PA-400-1-C

FIGURE 3

Manganese Concentration (Laboratory Data) Versus Time in Monitoring Well RW-64, Sun Pipe Line Company, Ship Road Site, West Whiteland Township, Pennsylvania.

