COMMONWEALTH OF PENNSYLVANIA

Department of Environmental Resources

J.C. CLEANERS SITE
BOROUGH OF GETTYSBURG
ADAMS COUNTY

STATEMENT OF DECISION

The Commonwealth of Pennsylvania, Department of Environmental Resources ("Department") files this statement of the basis and purpose of its decision in accordance with Section 506(e) of the Pennsylvania Hazardous Sites Cleanup Act, the Act of October 18, 1988, P.L. 756, No. 108 ("HSCA"), 35 P.S. 6020.506(e).

The remedial response will involve groundwater and soil vapor extraction and treatment to remove volatile organic compounds (VOCs), including tetrachloroethylene (PCE), trichloroethylene (TCE), and 1,2-Dichlorothylene (1,2-DCE). These VOCs are commonly used solvents or decay products from those solvents used in dry cleaning operations. The Gettysburg Municipal Authority Water System is currently treating water from their supply well No. 6 with an air stripper to remove these contaminants from drinking water. The remedial response will remove the source of this contamination from the groundwater and soil and prevent further migration of the contaminants.

I. SITE INFORMATION

A. Site Location and Description

The J.C. Cleaners site is a dry cleaning facility located at 30 West Railroad Street, Gettysburg, Adams County, Pennsylvania. The site is in an area densely populated by commercial establishments and residential neighborhoods. The Gettysburg Municipal Water Authority well No. 6 is located approximately 600 feet northwest of the site.

B. Site History

The building at 30 West Railroad Street was originally used as a milk collection house for area dairy farms. In 1945 the deed was transferred from the dairy to James A. Knox and Hilda M. Knox, who began operating it as a dry cleaning facility. Prosperity Dry Cleaners was incorporated in Pennsylvania on June 28, 1968. James A. Knox, Sr. and Hilda M. Knox continued operating the dry cleaners until 1976. In 1976 the property was purchased by C. David Ruff, who owned the property until 1983. John L. Sweeney and Catherine C. Sweeney leased the property from Mr. Ruff in 1976 and purchased it in 1983. John L. Sweeney and Catherine C. Sweeney have operated the facility as a commercial dry cleaning business, operating under the name J.C. Cleaners.

C. Release of Hazardous Substances

J.C. Cleaners was identified as a potential source of tetrachloroethylene (PCE) and trichloroethylene (TCE) contamination to the

Gettysburg Municipal Authority supply well No. 6, as PCE is commonly used in dry cleaning processes. In October 1986, the Department determined that J.C. Cleaners was discharging wastewater from the dry cleaning process into a drain located inside the building and that the wastewater was leaving the drain and contaminating the groundwater.

A water sample collected from the J.C. Cleaners private well detected 1,250 ug/l of PCE, 100 ug/l of TCE, and 5 ug/l of vinyl chloride. On October 8, 1986, the Department issued a Notice of Violation for unlawful discharge of wastewater to J.C. Cleaners. The owners, upon receiving the notice of violation, discontinued disposal of their wastewater into the drainage system. The Department issued an Administrative Order on November 3, 1986, which stated that the operations at the J.C. Cleaners facility had resulted in PCE contamination of groundwater beneath the site. The owners/operators initially filed an appeal of the order, but subsequently withdrew their appeal. The Gettysburg Municipal Water Authority constructed and operates an air stripping tower for municipal supply well No. 6 to treat the water before public distribution.

In July 1990, the Department's contractor Baker/TSA, Inc. began a remedial investigation to determine the nature and extent of contamination at the site. The investigation consisted of a soil-gas survey, installation of shallow and deep monitoring wells, pump and packer testing, and soil boring characterization. This investigation was completed in March 1991 and concluded that groundwater and soils were contaminated with volatile organic compounds (VOCs).

An evaluation of the monitoring wells determined that there is both shallow and a deep aquifer systems in the area. Sample analysis of these wells indicated that both the shallow and deep aquifers have been contaminated with VOCs including: PCE, TCE and 1,2-Dichloroethylene (1,2-DCE) were the primary volatile organic compounds detected. Maximum groundwater concentrations of these contaminants were 3,100 ug/l, 100,000 ug/l, and 36,300 ug/l, respectively. Benzene (13 ug/l) and Vinyl Chloride (1,200 ug/l) were also detected in groundwater samples.

Soil sampling conducted found that soil near the site are contaminated with PCE, TCE, and 1,2-DCE. PCE was the primary soil contaminant found with a maximum concentration of 480 ug/kg.

II. ANALYSIS OF ALTERNATIVES

Section 504 of the Hazardous Sites Cleanup Act (HSCA) requires that final remedial responses must meet or otherwise address all applicable, or relevant and appropriate requirements (ARARs) and be cost effective. Section 504 also requires that, pending promulgation of HSCA cleanup regulations, HSCA responses are to be consistent with the cleanup standards of Section 121 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Section 121 of CERCLA states that remedial responses must protect the public health and the environment, be cost effective, and utilize permanent and effective solutions and treatment technologies to the maximum extent practicable.

Based on the statutory requirements the alternative responses are analyzed to determine: 1. the extent to which each alternative protects the public health and the environment; 2. the extent to which each alternative complies with or otherwise addresses ARARs; 3. the extent to which each alternative is feasible, effective, implementable, permanent, and 4. the relative cost effectiveness of each alternative.

The objectives at the J.C. Cleaners site are as follows:

o Remediate groundwater to background levels consistent with the Pennsylvania *Groundwater Quality Protection Strategy*.

o Eliminate leaching of hazardous substances now in the soil into the groundwater. This leaching would result in groundwater degradation and increase the time necessary to accomplish the groundwater remediation.

Applicable, Relevant and Appropriate Requirements (ARARs)

The following standards, requirements, criteria or limitations are legally applicable or relevant and appropriate under the circumstances presented by the site.

The primary requirements for remediation at the J.C. Cleaners site are the Clean Streams Law (35 P.S. §§ 691.1 et seq.), Solid Waste Management Act (35 P.S. §§ 6018.101 et seq.), and Water Well Drillers License Act (35 P.S. §§ 645.1 et seq.). Also the Air Quality Guidance "Air Quality Permitting Criteria for Remediation Projects Involving Air Strippers and Soil Decontamination Units" is a to be considered requirement for remediation activities at this site.

The Solid Waste Management Act of 1980 (Act 97) and the residual and hazardous waste regulations promulgated under that Act would be applicable for the management of wastes disposed at the site, and for the management of waste generated or managed during the remedial action. The hazardous waste regulations promulgated under that Act (25 Pa. Code §§ 264.90 - 264.100, and in particular 25 Pa. Code §§ 264.90(i) and (j), and 264.100(a)(9)) require that groundwater be remediated to background quality conditions.

The primary requirements for soil remediation would be to ensure that migration of soil contaminants to groundwater do not result in further degradation of groundwater quality.

Additional action-specific ARARs may be identified depending on the final design of the remedial systems selected for soils and groundwater.

Alternative Responses

The following are alternatives to be considered for remediation of soils and groundwater at the J.C. Cleaners site:

Groundwater Remedial Alternatives

Alternative 1. No Action/Monitoring

The no action/monitoring alternative was developed as a baseline against which other remedial alternatives can be compared. This alternative involves taking no action to remove, remediate, or contain the contaminated groundwater, at the J.C. Cleaners site. The Department would continue to monitor the situation.

Protection of Public Health and the Environment

This alternative does not provide for protection of human health or the environment because it would allow continued degradation of groundwater.

Compliance with ARARs

This alternative would not comply with the Commonwealth's ARARs for groundwater contamination.

Feasibility, Effectiveness, Implementability, Permanence

The no action alternative is feasible and implementable. Without remediation, it is likely that use of the air stripper at the Gettysburg Municipal Authority would be required for the foreseeable future.

Costs and Cost Effectiveness

The estimated capital, operation and maintenance costs associated with this alternative are all $ 0. The only cost involved with this option would be the minimal cost of groundwater monitoring.

Alternative 2. Groundwater Extraction and Treatment

Groundwater contamination would be remediated by containing the contaminated groundwater plume and remediation of the highest concentration of contamination nearest the facility through extraction of contaminated groundwater through one or more groundwater wells. The contaminated groundwater will then be pumped to a treatment facility.

Treatment of the volatile organic compounds in the groundwater can be accomplished with air-stripping, through activated carbon absorption units or oxidation with ozone and ultraviolet light.

Air-stripping treatment mixes water with air to volatilize contaminants. Vapor-phase carbon absorption units are added to air stripper to capture the volatile organics stripped from the groundwater.

The contaminated groundwater can also be treated with liquid-phase activated carbon absorption units. The extracted groundwater is pumped directly to the carbon units and the activated carbon absorbs the volatile

organic compounds. Liquid phase activated carbon absorption is typically used to treat water when the volume or level of contamination is low.

A third option for treatment of the contaminated groundwater is oxidation with ozone and ultraviolet light (UV/Oxidation). Advantages of the UV/Oxidation process is that the organic chemicals are converted to carbon dioxide, inorganic chlorides and water which can be discharged without further treatment and that no additional waste products are generated.

The treated water from either of the three treatment options could be discharged to the local stream, to the sanitary sewer system, to groundwater or distributed to the Gettysburg Municipal Authority drinking water supply system.

Protection of Public Health and Environment

This alternative would significantly reduce the long term human health and environmental risks from the site from exposure to contaminated groundwater which would be treated and removed from the site.

Compliance with ARARs

This alternative would comply with the Commonwealth's ARARs for groundwater contamination.

Feasibility, Effectiveness, Implementability, Permanence

This alternative is feasible, effective, implementable and would permanently remediate the contamination. A groundwater extraction system would provide for containment of the contaminated groundwater plume within the radius of influence of the extraction well system. This will prevent site related contamination from migrating and contaminating additional groundwater resources, and increasing the level of contamination to the Gettysburg municipal drinking water supply well. Contaminated groundwater removed from the aquifer will then be treated and discharged.

Costs and Cost Effectiveness

A accurate prediction of the total cost of the remediation of the project is difficult as we do not know how long the remediation effort will take. Cleanup costs estimates vary from $2,000,000 for a five year time frame to up to $4,000,000 for a thirty year cleanup.

Soil Remedial Alternatives

Alternative 1. No Action/Monitoring

Description of Alternative

No soil remedial action would be implemented. The Department would pump and treat the groundwater but not remediate the soil.

Protection of Public Health and Environment

This alternative does not provide for protection of human health or the environment because it would allow continued release of contaminates and degradation of groundwater.

Compliance with ARARs

Based on soil-to-groundwater modeling, the Department has determined that soil contaminant levels are above the levels that would result in no further degradation of groundwater to background quality. The no action alternative would therefore allow for the continued degradation of the groundwater and would not comply with the Commonwealth's ARARs for groundwater contamination.

Feasibility, Effectiveness, Implementability, Permanence

The no action alternative for soil remediation is feasible and implementable. Failure to remediate the soil would likely result in longer groundwater cleanup times.

Costs and Cost Effectiveness

No direct cost would be incurred by not remediating the soil.

Alternative 2. Excavation and Treatment or Disposal

Description of Alternative

This alternative would require that all contaminated soil which would result in contamination of groundwater above background cleanup levels, be excavated and disposed of off-site at an approved facility.

Because the excavation would be done in a developed area and beneath the building, this alternative would not be feasible due to the location of buildings, streets, railroad tracks and underground utilities. Therefore this alternative is eliminated from further consideration.

Alternative 3. Soil Vapor Extraction

Description of Alternative

This treatment alternative consists of placement of extraction wells in the unsaturated soil zone, application of a vacuum on these wells to extract the volatile organic compounds from the soil, and treatment of the extracted volatile organic compounds.

Protection of Public Health and Environment

Treatment of soil through vacuum extraction would remove or reduce contaminants in the soil to levels that would prevent continued degradation of the groundwater.

This alternative will provide for protection of human health and the environment, as contamination to current and future drinking water supplies will be eliminated and contaminated groundwater will be treated.

Compliance with ARARs

Treatment of soil through vacuum extraction would remove or reduce contaminants in the soil to levels that would prevent continued degradation of the groundwater. Because the groundwater extraction system(s) will attempt to contain and reduce contaminant concentrations to background levels, this alternative will comply with the Department's ARAR of background groundwater quality, the Clean Streams Law, and the Solid Waste Management Act.

Feasibility, Effectiveness, Implementability, Permanence

The technology is generally effective, under appropriate site conditions, and it is easily implementable. Modular soil vacuum extraction units are available.

Costs and Cost Effectiveness

Soil vapor extraction and treatment systems have low to intermediate capital costs. Final costs will be dependent on the final system(s) design. Operation and maintenance costs are generally low. Approximate costs for a system in place for one year is $100,000.

Because this alternative is technically feasible, is easily implementable, and has relatively low costs, this alternative will be retained for further analysis.

Alternative 4. In-situ Soil Washing

Description of Alternative

This treatment alternative would consist of injection of an organic solvent in the contaminated soils area, which would dissolve the contaminants in the soils and flush them to the groundwater. Extraction wells would be placed around the contaminated soil area to contain and extract groundwater with the solvent/contaminant. The groundwater would then be treated and discharged.

Due to varying and unknown geology beneath it would be impossible to design a collection system capable of 100 percent capture of the organic solvents. The addition of the organic solvent to the groundwater would not be protective of public health due to the potential for further contamination of the nearby Municipal water supply well. Therefore, this alternative has been eliminated from further consideration.

III. SELECTED RESPONSE

The selected groundwater remedial response action is containment and extraction of contaminated groundwater to background concentrations, to the extent feasible, and treatment and discharge of the treated water.

Groundwater remediation would be accomplished through the extraction of highly contaminated groundwater nearest the J.C. Cleaner facility, treatment of the extracted contaminated groundwater, and discharge of the treated water. Current information shows that the deep and shallow groundwater flows exhibit only minimal interconnection. Deep groundwater extraction will be initiated first so that the true effect of the deep aquifer system on the shallow aquifer system can be determined.

The groundwater removed from the extraction well will be treated in an air stripper unit that would be installed on site. The air released from the air stripper would be treated with vapor phase activated carbon treatment units. The treated off gas will have no adverse environmental or health affects.

The conceptual design plan examined discharging the treated effluent to Stevens Run, to the municipal sewer system or to the Gettysburg Municipal Authority for use as an additional source. An additional prior option was the reinjection of the treated water to groundwater. This option was eliminated due to the difficultly that would be encountered in designing a reinjection system for the bedrock present on site to handle the estimated flow rate.

Discharge of treated water or piping untreated water to the Gettysburg Municipal Authority for treatment there would involve several additional requirements that would significantly increase costs. A pipeline would need to be constructed between J.C. Cleaners and the Gettysburg Municipal Authority which would require crossing the railroad tracks, several underground utilities and North Washington Street. The shallow groundwater and the liquid phase collected from the soil vapor extraction would be under the influence of surface water and thus would require filtration if used as a drinking water source. The Gettysburg Municipal Authority does not currently have filtration capability for water supplied from well No. 6.

The effluent standards that would apply to the discharge of treated water to the municipal sewer system are the same as those for discharge to a receiving stream. Discharge to the receiving stream will not use capacity of the local sewer plant and will be less costly while providing equivalent protection of the environment.

The treated effluent will be discharged to Stevens Run via the storm sewer adjacent to the J.C. Cleaners building. This is the lowest cost

alternative and provides equal or greater protection of public health.

The proposed soil remedial response action is to remediate contaminated soil, to the extent feasible, to levels that will result in no further degradation of groundwater quality. Soil remediation would be accomplished through the vacuum extraction of contaminants from the soil and treatment of the extracted vapors, in conjunction with the groundwater extraction system(s).

The proposed response for the site is protective of the public health and the environment, complies with all Applicable, Relevant and Appropriate legal requirements, and is technically feasible.

IV. MAJOR CHANGES FROM PROPOSED RESPONSE

There have been no major changes made from the Analysis of Alternatives & Proposed Response that was published in the Pennsylvania Bulletin on August 7, 1993.

V. RESPONSE TO PUBLIC COMMENTS

The Department's response to public comments concerning the selection of this response action is filed in the administrative record.

FOR THE COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

Date: 4/11/94

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