



General Services Agency

Darlene A. Smith, Director

September 14, 1995

Mr. Scott Seery, CHMM
Senior Hazardous Materials Specialist
Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502-6577

ENVIRONMENTAL
PROTECTION
95 SEP 18 AM 8:46

SUBJECT: STOCKPILED SOIL AT THE SANTA RITA UST 18/19 SITE, DUBLIN, CA

Dear Mr. Seery:

Enclosed for your review is a copy of Versar's September 12, 1995 report of SESOIL results for stockpiled soil at the subject site (see Attachment A). In this report, Versar recommends, "spreading the soil stockpiles in areas slated for commercial or industrial development."

Attachment B is a map of the development plan for Santa Rita. Highlighted in yellow are two areas we are considering for spreading the stockpiled soil. Both of these areas are zoned for general commercial. The final decision as to which area will be used will be based on our contractor's access requirements. The stockpiled soil would be spread in a 6" to 12" layer over the ground surface at the selected area.

Approximately 100 cubic yards of surplus backfill material have been transferred to the UST 18/19 site from Highland Hospital, in accordance with our September 7, 1995 conversation. Analytical data for the soil is presented in Appendix C. We propose to spread it along with the UST 18/19 soil stockpiles.

Your prompt attention to this matter is requested so that we can complete this work prior to the scheduled demolition of the structures surrounding the UST 18/19 site. I am available to meet with you to discuss this if it will help expedite matters.

Thank you for your continued assistance.

Sincerely,

Rod Freitag, P.E.
Environmental Program Manager

attachments

cc: (w/o attachments)

Pat Cashman
Stuart Cook
Jim de Vos
Candace Fitzgerald

RDF:rdg:\project\env\7087sr\sesoil.doc

SEP 13 1995



September 12, 1995

Mr. Rod Freitag
Environmental Program Manager
County of Alameda
General Services Agency
1401 Lakeshore Drive, 11th Floor
Oakland, California 94612

Subject: DISPOSAL OF STOCKPILED SOIL,
SANTA RITA CORRECTIONAL FACILITY SITE,
DUBLIN, CALIFORNIA.
Versar Project 2241-014

Dear Mr. Freitag,

Versar, Inc. (Versar) is pleased to submit to the County of Alameda General Services Agency (County) this letter report for the evaluation of contaminant levels in two soil stockpiles at the underground storage tank site 18/19, a site at the former Santa Rita Correctional Facility. Versar's evaluation is based on previously modeled stockpiles from the Old Greystone Fueling Area using the EPA SESOIL software program included in the Riskpro package (General Sciences Corporation, 1989). The previous model was used to estimate the potential vertical migration of specific petroleum hydrocarbons reported to be present in the excavation stockpiles generated from the excavation of an underground storage tank at the former Santa Rita Correctional Facility. Since these two environments are similar, Versar proposes to extrapolate the degradation rates from the previously modeled contaminants.

The laboratory analytical data used for the current stockpile modeling is presented in Attachment A. It should be noted that the characteristics of the soil types used for this modeling exercise were adapted from the data collected from the Old Graystone Fueling Area by Environmental Science and Engineering, Inc. (ESE).

Objective

The objective of the modeling is to estimate the potential amount and depth of migration of specific petroleum hydrocarbon components through the subsurface of the site over a given time period of 30 years and assess the suitability for disposal of the soil by spreading onsite, as expressed within the proceeding recommendations.

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• SAN FRANCISCO BAY AREA OFFICE •

1255 HARBOR BAY PARKWAY, SUITE 100 • ALAMEDA, CALIFORNIA 94502 • TELEPHONE: (510) 814-5900 FAX: (510) 814-5901



Data and Modeling Analysis

The laboratory analytical results reported the presence of petroleum hydrocarbons as diesel, and petroleum oil and grease in the two stockpiles. To provide an estimate of the potential vertical migration beneath the site computer aided modeling was performed for petroleum hydrocarbons as diesel, and petroleum oil and grease as further described below.

The two soil stockpiles are currently located in the area of the former hospital boiler, Tanks 18 and 19, at the former Santa Rita Hospital and consist of approximately 360 cubic yards of soil. Diesel concentrations were reported as high as 140 milligrams per kilogram (mg/kg) and petroleum oil and grease concentrations were reported as high as 360 mg/kg. The average concentration of diesel is 61.9 mg/kg. The average concentration of petroleum oil and grease is 273 mg/kg.

The initial setup of the SESOIL model requires input parameters of climate, soils, chemical, and application data. The climate data used was extracted from a database supplied with the software. The selected climate data is specific for Oakland, California. The soils data is based on lithologic logs from the site investigation performed by ESE for the Old Graystone Fueling Area. The logs classify four distinct lithologic units between the ground surface and the water table (located at approximately 8 meters below ground surface). The soil parameters were defined to represent the four lithological units. Graphs showing the contaminant depth versus time and adsorbed concentration versus time (at maximum concentration depth) are included as Attachment B.

The primary assumptions associated with the previous SESOIL estimation remain constant and include the following:

- All data provided to Versar represents an accurate assessment of the current site conditions.
- The site will not be used for residential development.
- The site will not be impacted with additional contaminants.
- There are no preexisting contaminated conditions beneath the soil stockpile.
- All non-detect analytical results represent a contaminant concentration equal to the method detection limit or reporting limit.
- The diesel and petroleum oil and grease ligand are non-biodegradable and non-volatile (this assumption is used to maintain a conservative approach).
- The soil pile and contaminants are homogenous.



- The contaminants are applied to the upper layer of soil (beneath the soil stockpile) on the first day of the first month of the simulation.
- All other parameters are as stipulated on the printout for each simulation.

Discussion of Results

The results of the model extrapolation for nondegrading diesel ligand indicate that after 30 years and maximum migration depth of 1.118 m the diesel will have degraded from 26.5 mg/kg to 6.4×10^{-9} mg/kg. Based on the rate of decay, the maximum concentration of diesel observed in the soil, and practical detection limit for diesel in soil, the maximum observable depth of diesel contaminant migration will be approximately 1.5 meters over the next 30 years with 90 percent of the initial contaminant having been degraded or volatilized the first four years.

Based on the rate of decay, the maximum concentration of petroleum oil and grease observed in the soil, and practical detection limit for petroleum oil and grease in soil, the maximum observable depth of the contaminant migration will be approximately 2.3 meters over the next 30 years with 90 percent of the initial contaminant having been degraded or volatilized the first four years.

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Note that the calculated concentrations of the residual contaminants are well below the practical detection limits (PDL) of the analytical methods used to identify the specific analytes. In addition, the analytes are only present in the uppermost sand layer. The non-biodegradable oil and grease ligand migrated to just above the bottom of the sand but did not penetrate the clay. This ligand migration is shown to be false by the diesel model which calculates a maximum depth of 1.118 m for diesel. Based on these results, there is a very low likelihood that diesel or petroleum oil and grease present in the soil stockpiles will migrate to the groundwater.

Conclusions

The conclusions stated below are derived from the results of the modeling projected for a 30 year time period for the petroleum hydrocarbon components of diesel and oil and grease.

- The maximum migration depth of diesel is 1.5 m with a maximum average concentration of 5.4×10^{-6} $\mu\text{g}/\text{kg}$ adsorbed to the soils. The majority of the diesel is degraded within the first four years. The diesel remaining after 30 years is calculated to be at a concentration well below the PDL for the analytical method used for detecting diesel fuel.
- The maximum depth of migration of petroleum oil and grease in a nondegradable oil and grease ligand is 2.3 m with a maximum average concentration of 2.63 x



10⁻⁵ µg/kg adsorbed to the soils. The majority of the petroleum oil and grease is degraded within the first four years.

- The likelihood of the petroleum hydrocarbon contamination impacting the groundwater beneath the site within the 30 year time period is very low. The model results indicate that degradation of the contaminants is occurring at a rate that will preclude their impact with groundwater. After ten years, the contaminant concentrations are estimated to have degraded to concentrations well below current reporting limits.

Recommendations

Based on the conclusions of the model extrapolation, Versar feels that these soils may be spread onsite without adversely impacting the shallow groundwater at the site. Although the contaminants detected within the soil stockpiles, TPH as diesel, oil, and grease are not considered to be significant human health risks, Versar recommends spreading the soil stockpiles in areas slated for commercial or industrial development, but not in areas slated for residential development. If the County wants to dispose of the soil in an area of residential development, Versar recommends that additional sampling of the soil as well as human health risk screening be conducted prior to the placement of the soil.

Should you have any questions or require any additional information, please do not hesitate to contact me at (510) 814-5929. Versar appreciates the opportunity to continue to provide environmental consulting services to you.

Sincerely,
Versar, Inc.

John C. Bird, R.E.A.
Senior Hydrogeologist
Program Manager

Tim Berger, R.G., C.E.G.
Project Geologist
R.G. No. 05225



Attachment A

JUN 06 1995

McCAMPBELL ANALYTICAL INC. 110 2nd Avenue South, #D7, Pacheco, CA 94553
 Tele: 510-798-1620 Fax: 510-798-1622

Environmental Science & Eng. 4090 Nelson Ave., Suite J Concord, CA 94520	Client Project ID: # 65-95-068; Alameda County GSA, UST # 18,19 Site	Date Sampled: 05/26/95
	Client Contact: Bart Miller	Date Received: 05/26/95
	Client P.O.: # SMSA-C-021	Date Extracted: 05/26/95
		Date Analyzed: 05/26/95

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*
 EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g) ⁺	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
52885	SP-4	S	ND	ND	ND	ND	ND	106
52886	SP-5	S	ND	ND	ND	ND	ND	107
52887	SP-6	S	ND	ND	ND	ND	ND	101
52888	SP-7	S	ND	ND	ND	ND	ND	103
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W	50 ug/L	0.5	0.5	0.5	0.5	0.5	
	S	1.0 mg/kg	0.005	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L
 # cluttered chromatogram; sample peak coelutes with surrogate peak
 + The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

JUN 08 '95

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Lab ID	Client ID	Matrix	TPH(g) ⁺	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
52882	SP-1	S	---	ND	ND	ND	ND	107
52883	SP-2	S	---	ND	ND	ND	ND	103
52884	SP-3	S	---	ND	ND	ND	ND	107
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

* The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

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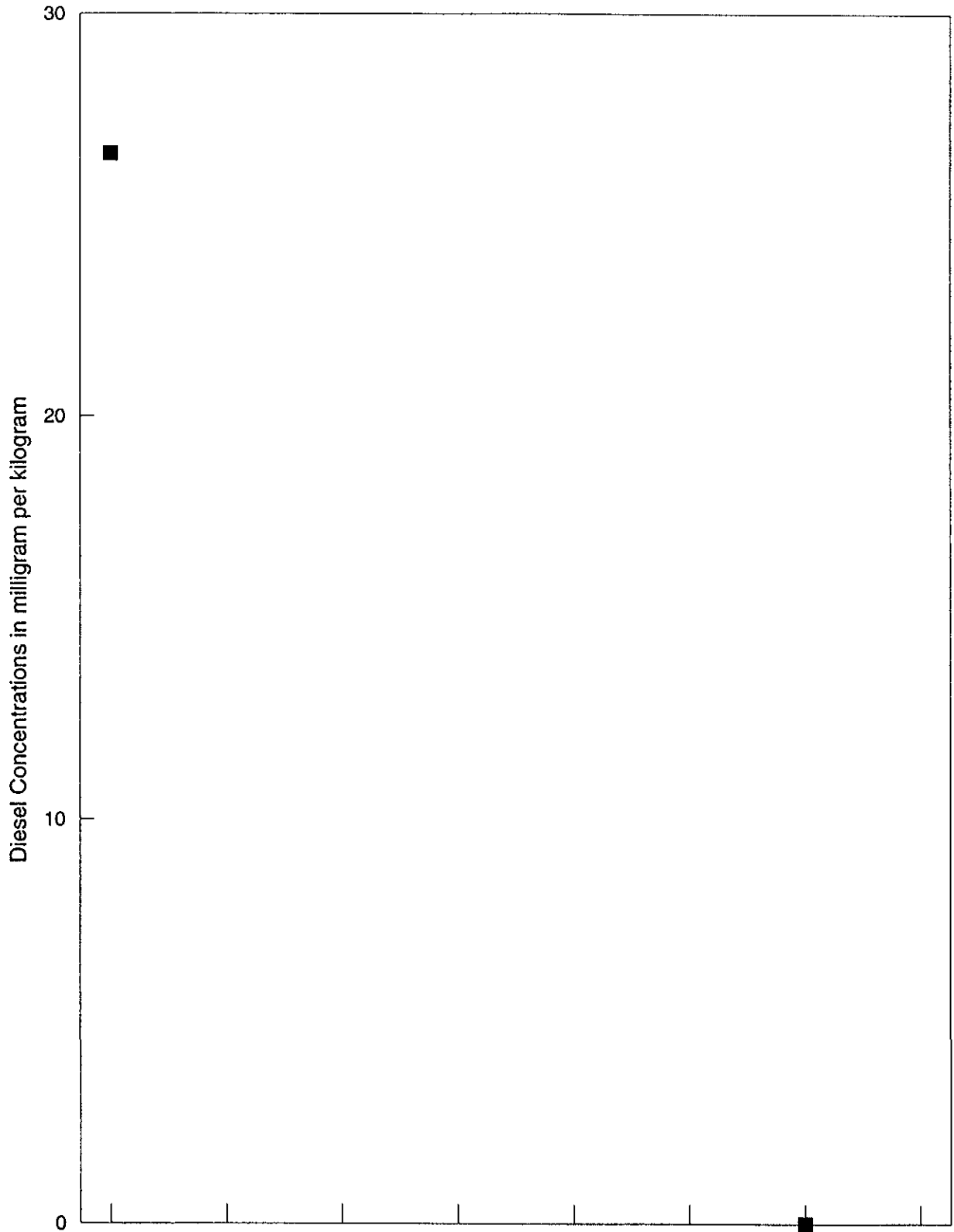
Petroleum Oil & Grease (with Silica Gel Clean-up) *
EPA methods 413.1, 9070 or 9071; Standard Methods 5520 D/E&F or 503 D&E for solids and 5520 B&F or 503 A&E for liquids

Lab ID	Client ID	Matrix	Oil & Grease *
52882	SP-1	S	360
52883	SP-2	S	190
52884	SP-3	S	270
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W	5 mg/L	
	S	50 mg/kg	

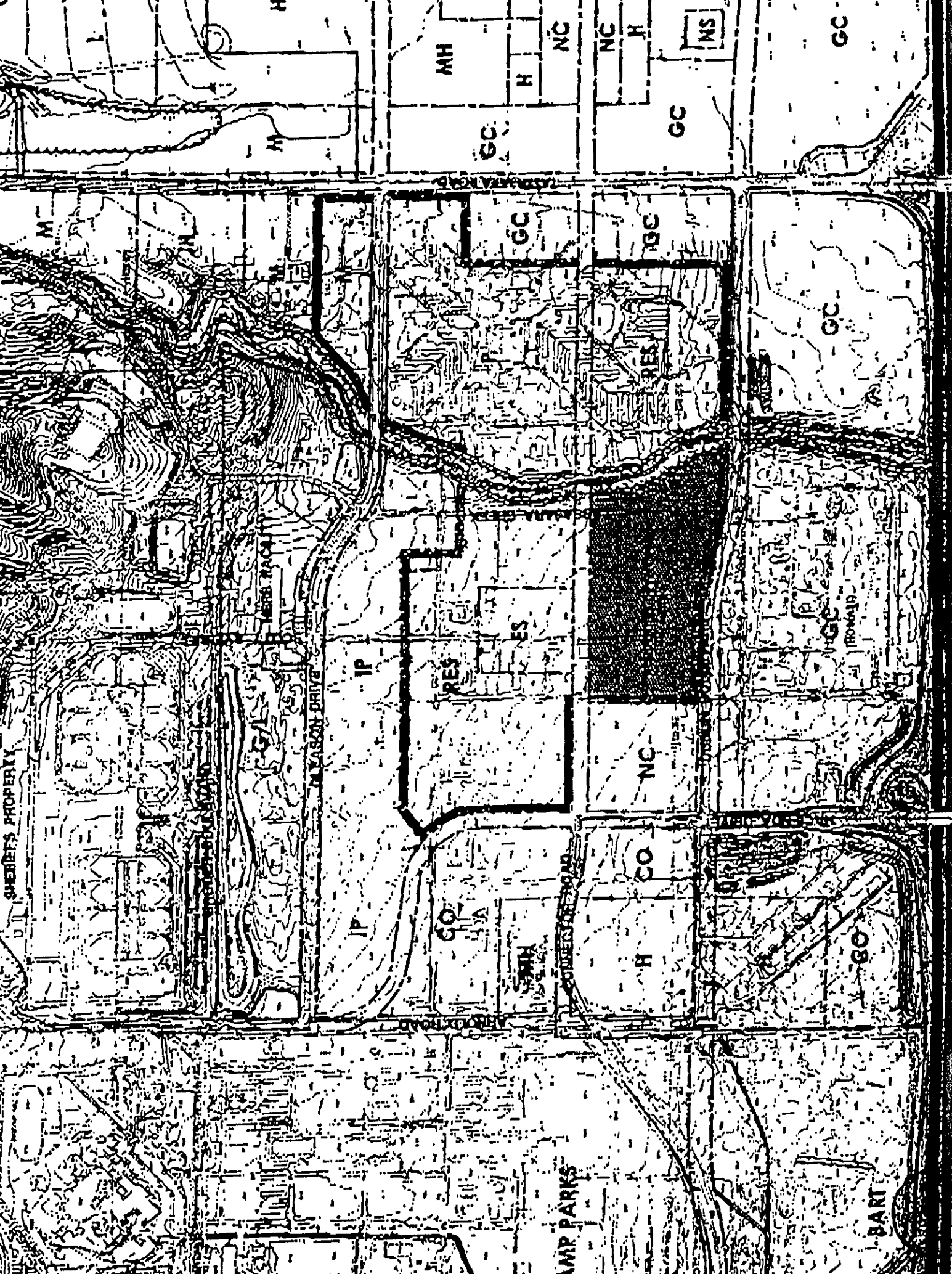
* water samples are reported in mg/L and soils in mg/kg
 h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5vol. % sediment.

Attachment B

Diesel Concentrations Decrease Over Time



Years	0	5	10	15	20	25	30
■ Data A	26.5						6.4 x 10 ⁻⁹



D.T. SHERIFFS PROPERTY

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