LANCE
Environmental
Services

March 4, 1997

J.N. 9507

Mr. Richard Heggen
Washington Department of Ecology
Southwest Regional Office
5751 6th Avenue SE
Olympia, Washington 98504

Subject: Independent Remedial Action Report for the Sumner Facility of Golden State Foods

Dear Mr. Heggen:

On behalf of Golden State Foods Corporation (GSFC), Lance Environmental Services (LES) is submitting to the Washington Department of Ecology (WDOE) the enclosed application for review of the independent remedial action undertaken at the subject site. The application consists of the following items:

1. Request for Review, Independent Remedial Action Report (Form ECY 020-74).
2. Independent Remedial Action Report Summary (Form ECY 020-73).
3. The Independent Remedial Action Report document (two copies).
4. LES check no. 1064 in the amount of $1,000 for the review fee.

The Sumner facility of GSFC is an active food warehousing and transportation operation. A subsurface release of diesel from the onsite underground storage tank (UST) system was identified in 1989. Corrective actions performed by GSFC included excavation and offsite disposal of affected soils, replacement of the UST system, and long-term groundwater monitoring. Two additional USTs (used-oil and new-oil tanks) were decommissioned at the site in 1992. Minor oil-contaminated soils were encountered and were removed for offsite disposal. Groundwater monitoring was also conducted around these tanks to assess potential groundwater quality problems.

At this juncture, there is no evidence that the site presents a risk to human health or the environment; therefore, GSFC wishes to obtain a no further action determination from the WDOE.

I will look forward to the completion of your review. If you have any questions or require additional information about the site or remedial measures, please call me at 206/867-3016.

Sincerely,

LANCE ENVIRONMENTAL SERVICES

Don Lance

Donald Lance, R.G.
Principal Geologist

Enclosures - as stated

DL/9507/xxx.ltr

17211 N.E. 95th Street • Redmond, Washington 98052-3226 • 206/867-3016 • Fax 206/885-2597

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Request for Review
Independent Remedial Action Report

Please submit the following documents to the appropriate Ecology Office *(see back of form)*

- *Request for Review (ECY 020-74)*
- *Independent Remedial Action Report Summary (ECY 020-73)*
- *A check or money order for $1,000, payable to:* **Department of Ecology**
- *An Interim or Final Independent Remedial Action Report*

Ecology's Independent Remedial Action Program provides for the review of Independent Remedial Action reports on a first-come, first-served basis. The Filing Fee paid with this submittal covers an initial review and is not refundable. The initial review will be completed within 90 days.

- If the enclosed remedial action report is **accepted** for detailed review, you will be notified if additional fees are required before detailed review begins (see fee schedule below).
- If the enclosed remedial action report is **incomplete**, you forfeit the $1,000 Filing Fee. The report will be returned with suggestions about what additional information is needed. An additional $1,000 fee will be required if you choose to resubmit.

Note: A copy of this form will be mailed to you. If you wish to inquire about the status of this request for review, please refer to the TCP I.D. number located on the bottom right corner of this form.

- **TOTAL COST OF REMEDIAL ACTION** *(include both contracted work and work performed by owner/operator)*:

Person/Entity Performing Work	Cost
See the attached cost summary	$
	$
	$
Total Cost of Remedial Action	$ 127,350

Applicant Name: Golden State Foods Corp. Phone: (206) 863-3800

Applicant Address: 1409 Puyallup St. Sumner, WA 98390 Contact: Ron Kitts Operations Mgr.

Site Name: Golden State Foods Corp. Site Location: Same as above

Site Owner Name *(if different than Applicant)*: Contact: John Murphy Phone: (714) 252-2000

Site Owner Address: 18301 Von Karman Ave., Suite 1100, Irvine, CA 92715

(Applicant completes above this line, Ecology completes below this line)

FOR ECOLOGY USE ONLY

APPLICABLE REVIEW FEE *(see schedule below)* $

Received	Amount	Date	Received by
Filing Fee	$		
*Fee Balance	$		

***Note:** A fee balance may be required. Please keep your receipt for submittal of your fee balance.

FEE SCHEDULE

Cost of Remedial Action	Fee
Filing Fee *(applies to Detailed Review Fee)*	$ 1,000
DETAILED REVIEW FEE	
Minimum Fee:	$ 1,000
$50,000 - $750,000:	2% of Cost
Maximum Fee:	$15,000

173-02-94-005000-5000- 30 (LUST/Non-LUST) - 50 (Office) : $

LUST/Non-LUST Office: ☒ LUST-30 ☐ Non-LUST-20 ☐ NWRO-40 ☒ SWRO-50 ☐ ERO-60 ☐ CRO-70 ☐ IND-80 ☐ SCS-90

Office/Receipt #

ECY 020-74 (7/93)

TCP I.D. # (SIS or LUST):

Where to Submit Your Forms, Report, and Fees

If you are mailing your report, you may mail all reports, regardless of site location, to:

Department of Ecology
Independent Report Review
P. O. Box 5128
Lacey, WA 98503-0210

If you need to ask questions and your site is in . . .

Call the Ecology Regional Office . . .

County:	**Regional Office:**
Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	**Central Region** 106 S. 6th Avenue Yakima, WA 98902-3387 Phone: (509) 575-2491 Location: Same as Mailing
Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	**Eastern Region** N. 4601 Monroe, Suite 100 Spokane, WA 99205-1295 Phone: (509) 456-6310
Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	**Northwest Region** 3190 160th Ave SE Bellevue, WA 98008-5452 Phone: (206) 649-7000
Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum	**Southwest Region** 7272 Cleanwater Lane SW. Olympia, WA 98504 Phone: (206)753-2353
- **OR** - if your site is part of a major pulp or paper mill, aluminum smelter, or oil refinery,	**Industrial Section** 2404 Chandler Court SW, Suite 260 Tumwater, WA 98501 Phone: (206) 586-1074
- **OR** - if your site is part of a federal facility.	**Site Cleanup Section** 637 Woodland Square Loop SE Lacey, WA 98503 Phone: (206) 438-3000

SUMMARY OF ESTIMATED REMEDIATION COSTS
Golden State Foods Facility
Sumner, Washington

Remediation Activity	Service Provider	Cost
Diesel UST System		
- Source investigation, soil excavation, groundwater monitoring well installations	B & C Equipment Co.	$54,294
- Source investigation	Pacific Inspection and Research Laboratory	1,152
- Offsite laboratory analyses	Sound Analytical Services Inc.	747
- Onsite field laboratory services	Shannon & Wilson, Inc.	2,197
- Consultant services and closure report preparation	Harding Lawson Associates	5,925
- Contaminated soil treatment and disposal	Fife Sand and Gravel	32,259
- Attorney fees	Perkins Coie	2,495
Oil UST System		
- Contaminated soil disposal following UST decommissioning	Regional Disposal Co.	1,125
- Groundwater monitoring well installations and sampling	Thomas Hill & Associates	5,534
Long-Term Groundwater Monitoring		
- Groundwater monitoring services	Thomas Hill & Associates	3,272
- Groundwater monitoring services	Lance Environmental Services	7,260
- Independent remedial action report preparation, decommissioning of groundwater monitoring wells	Lance Environmental Services	11,090
Total Estimated Remediation Costs:		**$127,350.00**

Independent Remedial Action Report Summary

This summary is a required component of your Independent Remedical Action Report.

FOR ECOLOGY USE ONLY			
ERTS No.	TCP I.D. No.	Date Received	☐ NFA ☐ SHA Referral ☐ Interim Action ☐ Emergency Action
LUST No.	U.B.I. No.	Initial Investigation (Date)	
Reviewed by		Total Hours for Review	
Does the cleanup comply with cleanup standards? Yes ☐ No ☐		Total Fee	

Please Print Clearly or Type

General Information

Name of Site Owner: Golden State Foods Corp.			Phone: 714/252-2000	
Address: 18301 Von Karman Ave., Suite 1100, Irvine, CA		92715	USA	
Street	State/Province	Zip	Country	
Authorized Contact: John Murphy			Phone: 714/252-2000	
Name of Facility Operator: Golden State Foods Corp.			Phone: 206/863-3800	
Address: 1409 Puyallup St.	Sumner, WA	98390		
Street	State	Zip		
Authorized Contact: Ron Kitts			Phone: 206/863-3800	
Name of Consultant: Donald Lance			Phone: 206/867-3016	
Name of Firm: Lance Environmental Services			FAX: 206/885-2597	
Address: 17211 NE 95th St.	Redmond, WA	98052		
Street	State	Zip		

Please indicate which of the above persons completed this report. If the report was completed by someone other than listed above, please provide their name, address, and a daytime phone.

Report was prepared by Donald Lance

Report Information

Has a cleanup been conducted? Yes ☒ No ☐	Is this a Leaking Underground Storage Tank (LUST) report? Yes ☒ No ☐
Type of report (check all that apply) ☐ Combined release and independent remedial action report ☒ Final Independent remedial action report ☐ Interim action report	Date release was reported to Ecology: Unknown - probably in August 1989 Date cleanup was completed: Final groundwater monitoring - Sept. 1996

Ecology is an equal opportunity agency. To receive this document in an alternative format, contact Toxics Cleanup Program at (360) 407-7170 or (360) 407-6006 (TDD).

Facility Information

Site Name: Golden State Foods, Sumner Division Distribution Center

Other Names *(the site may be known as)*:

Site Control Person if other than Owner/Operator. *(This must be a person who is on-site during normal working hours and is authorized and qualified to answer questions about the site, or a person who is available during normal business hours and has knowledge about the site and the remediation.)*

Name: Ron Kitts, Operations Manager Phone: 206/863-3800

Site Mailing Address *(or site contact mailing address)*:

1409 Puyallup St., Sumner, WA 98

Site Location Address *(including zip code)*:

Same

Closest City: County *(where site is located)*: Pierce

Township 20N Range 4E Section 13 & 24 Quarter-Quarter _____ Meridian Willamette

Longitude: Degree 122 Minute 14 Second 11

Latitude: Degree 47 Minute 12 Second 51

SW 1/4 of SE 1/4 Sec. 13
NW 1/4 of NE 1/4 Sec. 24

Ownership and Operator Type. Complete the table below by checking the appropriate box to identify the type of owner and operator for the facility. (For example, if the property owner is a port district and the operator a private individual, then check the operator for the facility. (For example, if the property owner is a port district and the operator a private individual, then check the boxes under owner identification column in the municipal, code #2 row, and under the operator identification column in the private party, code #1 row.)

Ownership/Operator Type	Code #	Owner Identification	Operator Identification
Private Party	1	X	X
Municipal (Public)	2		
County	3		
Federal	4		
State	5		
Tribal	6		
Mixed	7		
Other	8		
Unknown	9		
Public Entity Acquisition through Bankruptcy	10		
Financial Institution Acquisition thru Bankruptcy	11		

Standard Industrial Classification (SIC) Codes. List all that apply. If none apply, or if you don't know your SIC code, list activities conducted at the site, e.g., automotive repair and maintenance, construction equipment storage, etc.

SIC No. 5142-00 - Wholesale distribution of pre-packaged frozen foods

Hazardous Substances Management Practices(s). The hazardous substance(s) cleaned up from the site was the result of which of the following sources, activities, or actions? Please circle all that apply to the facility.

1 = Drug Lab
2 = Drum
3 = A Leaking Impoundment
4 = Improper Handling
5 = Landfill
6 = Land Application
7 = Pesticide Application
8 = Pesticide Disposal
9 = A Spill
10 = Storm Drain
(11) = Leaking Tank (a) below ground; (b) above ground
12 = Unknown

Property Type *(circle one)* Commercial (Industrial) Residential

Is the property being used? Yes ☒ No ☐ Unknown ☐

Release Information

Date of Release *(if known)*	Date of Discovery	Number of drinking water supply wells within ½ mile of the site
Early 1989	August 1989	None

If drinking water systems are affected, are the systems public, private, or both? *(circle one)*	Are there any drinking water systems affected? Yes ☐ No ☒ Unknown If drinking water systems are affected, has alternate drinking water been provided? Yes ☐ No ☐ Unknown ☐

General Hazardous Substance Categories. Using the contaminants listed below, complete the unshaded portions of the table. *(A more detailed description of the contaminants can be found in Appendix C of the guidance.)*

Contaminants. For each of the applicable contaminants, enter the appropriate letter designating the status of the contaminants: C = Confirmed or S = Suspected. *(Contaminant status definitions are defined in Appendix C of the guidance.)*	Affected Media *(Shaded area for ECOLOGY USE ONLY)*									
	Ground Water		Surface Water		Drinking Water		Soil		Air	
1. Halogenated Organic Compounds										
2. Metals – Priority Pollutants										
3. Metals – Other										
4. Polychlorinated Bi-Phenyls (PCBs)										
5. Pesticides/Herbicides										
6. Unleaded Gas										
Leaded Gas										
Diesel	C						S			
Waste Oil							S			
Heat Fuel										
Other *(Specify)* Lube Oil							C			
7. Phenolic Compounds										
8. Non-Halogenated Solvents										
9. Dioxins										
10. Polynuclear Aromatic Hydrocarbons (PAHs)										
11. Reactive Wastes										
12. Corrosive Wastes										
13. Radioactive Wastes										
14. Conventional Contaminants Organics										
15. Conventional Contaminants Inorganics										
16. Base/Neutral Organic Compounds										
17. Asbestos										

Cleanup Information

Indicate cleanup level methods used by completing Table 5-A below. *(check all that apply)*

TABLE 5-A	Soil	Ground Water	Air	Surface Water
Method A	X	X		
B				
C				
Have these levels been met throughout the site? *(circle only one)*	(YES) NO	(YES) NO	YES NO	YES NO

Indicate the treatment methods used by completing Tables 5B - 5D below *(check all that apply)* *(See Appendix D)*

TABLE 5-B	Destruction or Detoxification				Media Transfer		
	Carbon Adsorption[1]	Biological Treatment	Chemical Destruction	Incineration	Air Stripping/ Air Sparging	Aeration/Vapor Extraction	Thermal Desorption
Soil	-NA-	X			-NA-		
Ground Water				-NA-		-NA-	-NA-
Surface Water				-NA-		-NA-	-NA-
Air		-NA-				-NA-	
Wastes	-NA-				-NA-		-NA-

[1] Carbon followed by regeneration; use of granular activated carbon followed by landfilling would be classified in these tables as volume reduction and off-site landfill

Cleanup Information (continue

TABLE 5-C

	Immobilization		Reuse/Recycling[2]	Separation/Volume Reduction		
	Vitrification	Solidification/ Stabilization	Specify	Solvent Extraction	Soil Washing	Physical Separation[3]
Soil						
Ground Water	-NA-	-NA-		-NA-	-NA-	
Surface Water	-NA-	-NA-		-NA-	-NA-	
Wastes						

[2]For example, reuse of free petroleum product recovered in a pump and treat system.
[3]For example, oil/water separators.

TABLE 5-D

	Land Disposal/Containment		Institutional Controls	Others
	Containment or On-Site Landfill	Off-Site Landfill	Specify	Specify Treatment Method
Soil		X		
Ground Water		-NA-		Natural attenuation
Surface Water	-NA-	-NA-		
Wastes				

Lust Site Information Complete this table for ALL tanks, including unregulated (*unleaded, leaded, diesel, bunker-C, waste oil, heating oil, aviation fuel, other? Identify).

Tank Description					Tank Status (Y or N)		
Tank ID	Size	*Product	Was free product encountered? YES / (NO) On Ground Water	In Excavation	Left In Place?	Removed?	Closed in Place?
	10,000 gal	Diesel				Y	
	10,000 gal	Diesel				Y	
	500 gal	Lube Oil				Y	
	500 gal	Used Oil				Y	

Environmental Indicators **Answer the following questions as they are applicable to your site:**

How many cubic yards of soil have been treated? 855 | Where soil treatment was conducted, was it done on-site, (off-site) or both? *(circle one)*

Provide the name and address of the facility where soil was treated off-site.
Name Fife Sand & Gravel
Address 3120 Freeman Rd. East
State/Zip Puyallup, WA 98371

Provide the name and address of the facility where soil was disposed.
Name City of Tacoma Landfill
Address
State/Zip

How many cubic yards of soil have been disposed of off-site? 20.5 tons
(Calculate these quantities of soil while the soil is in place, prior to any excavation and/or treatment.)
If ground water pump and treatment was conducted, how many gallons of ground water have been treated to date? _____ gallons
How many years is the ground water extraction system expected to continue in operation? _____ years
Estimate the number of people potentially exposed to contaminants above MTCA cleanup levels but, due to cleanup, are no longer exposed: A. Ø Working on-site B. Ø Visiting the site C. Ø Living near the site

Corrective Actions for Dangerous Waste Facilities

Does the facility have a dangerous waste identification number?	☐ Yes. Specify	☒ No
Is the facility a dangerous waste treatment, sludge, or disposal facility?	☐ Yes	☒ No
If yes, check appropriate regulatory status box	☐ RCRA interim status	
	☐ RCRA operating permit	
	☐ RCRA post closure permit	
	☐ Other, specify	

INDEPENDENT REMEDIAL ACTION REPORT
CLEANUP OF PETROLEUM HYDROCARBONS
GOLDEN STATE FOODS FACILITY
SUMNER, WASHINGTON

Prepared for:

Golden State Foods Corporation
1409 Puyallup Street
Sumner, Washington 98390

LES Project No. 9507

Donald Lance

Donald Lance, R.G.
Principal Geologist

March 4, 1997

LANCE Environmental Services

17211 NE 95th Street
Redmond, Washington 98052-3226
Telephone: 206/867-3016
Facsimile: 206/885-2597

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TABLES

FIGURES

APPENDICES

DISTRIBUTION

1.0 INTRODUCTION

This report was prepared by Lance Environmental Services (LES) on behalf of Golden State Foods Corporation (GSFC). It is intended to serve as the Independent Remedial Action Report prepared in partial fulfillment of regulatory requirements for closing a hazardous release site in accordance with the Model Toxics Control Act[1]. This report will be issued to the Southwest Regional Office of the Washington Department of Ecology (WDOE) for review under the Independent Remedial Action Program.

1.1 OVERVIEW

Environmental cleanup activities at the Sumner facility of GSFC (also called the "site" in this report) were first undertaken following a release of diesel fuel from the onsite underground storage tank (UST) system in 1989. Soil cleanup was completed shortly following the release. Low concentrations of diesel were detected in groundwater; therefore, monitoring wells were installed and periodic groundwater monitoring continued until 1996. No groundwater treatment activities were conducted.

In addition to the diesel release, a small petroleum hydrocarbon release in soil was identified during the 1992 decommissioning of two onsite USTs used for oil storage. Affected soil was excavated and removed for disposal. Groundwater in monitoring wells adjacent to the former USTs was periodically sampled to assess potential effects from the release.

1.2 OBJECTIVE

The objective of this report is to present the site-specific information and data that will allow the WDOE to make a determination about the adequacy of the environmental cleanup conducted by GSFC. GSFC requests that the site cleanup and monitoring activities be considered complete or closed and that a "no further action" status be issued by the WDOE.

1.3 FACILITY DESCRIPTION

GSFC Sumner facility is a food-products storage and warehousing center that distributes, by truck, food items and supplies to restaurants in Washington, and parts of Oregon, Idaho, and Montana. Operations at the facility are conducted 24-hours per day to meet customer demands. Trucking operations are supported by onsite fueling (diesel only), tractor and trailer washing, and a maintenance and repair shop.

The facility is located in the Sumner Industrial Park at the north edge of Sumner, Washington (Figure 1). The street (and mailing) address is:

Golden State Foods Corporation
1409 Puyallup Street
Sumner, Washington 98390

1.4 REPORT CONTACTS

Two points of contact are available to respond to questions about the information presented in this report, and to provide any additional information necessary to complete the WDOE's review and evaluation:

Mr. Ron Kitts, Operations Manager	Mr. Donald Lance
Golden State Foods Corporation	Lance Environmental Services
1409 Puyallup Street	17211 NE 95th Street
Sumner, Washington 98390	Redmond, Washington 98052
206/863-3800	206/867-3016
206/863-3974 (fax)	206/885-2597 (fax)

[1] The Model Toxics Control Act Cleanup Regulation, Chapter 173-340, Washington Administrative Code, Amended December 1993.

2.0 SITE DESCRIPTION

This section summarizes the site history, provides a physical description of the site, and presents a brief description of the local geology and hydrogeology.

2.1 SITE HISTORY

The GSFC facility was constructed in 1980/1981 by Hansen, Hansen, & Johnson (general contractors) in a newly established business/industrial park located adjacent to the White River. Initial construction included the warehouse structure (with large refrigeration capacity) and offices; and the truck maintenance, fueling, and truck wash facilities. A major expansion in warehouse and office capacity was completed in 1988. Currently, there is about 80,000 square feet of covered operational facility. Prior to business/industrial development, the GSFC property and surrounding area had a long history of agricultural uses.

During initial construction, two 10,000-gallon diesel USTs and a fuel dispensing island (with two dispensers) were installed by Tacoma Plumbing and Heating. Also at that time, two 500-gallon USTs were installed adjacent to the maintenance shop for storage of new lube oil and used oil. All tanks and lines were of steel construction and coated with an asphaltic paint for corrosion protection.

The two 10,000-gallon USTs and associated piping were decommissioned by removal and were replaced in January/February 1990. A replacement UST system, consisting of a single 15,000-gallon, fiberglass-coated steel tank and double-wall fiberglass product lines, was installed. The two 500-gallon USTs were permanently decommissioned by removal in October 1992. Additional details regarding the UST decommissioning activities are discussed in Section 3.0 below.

2.2 SITE CONFIGURATION

Figure 2 shows the approximate current site configuration. The entire facility within the property boundaries covers an area of about six acres. Those areas not covered by structures or landscaping are surfaced with asphaltic pavement. The GSFC and surrounding properties are flat lying, as would be expected in the valley bottom along the White River floodplain. Local areal topography is illustrated in Figure 1.

Land uses adjacent to the GSFC facility are as follows:

North - cultivated farm land
East - Beatrice Cheese plant
South - Pasquier Panel Products plant, and property cleared and graded for new building construction
West - Pacific Northwest Baking Company plant, and cultivated farm land

2.3 REGIONAL AND LOCAL GEOLOGY AND HYDROGEOLOGY

Sumner is located in the Puget Lowland, a geomorphic province lying between the Cascade Range to the east and the Olympic Mountains and Vancouver Island to the west. The Puget Lowland is underlain by a large thickness of semiconsolidated and unconsolidated sediments that partly fill a large north-south trending structural basin known as the Puget Trough. The near-surface deposits consist largely of glacial drift laid down during the Vashon period of the Fraser glaciation (late Pleistocene time) (USGS, 1962). The Vashon till covers much of the hilly areas east and west of Sumner. Most of Sumner, however, resides in the flat-lying valley of the White River.

Local soils belong to the Puyallup-Sultan association and consist of well drained to poorly drained soils that formed in alluvium and on river flood plains. Native soil in the vicinity of the GSFC site is classified as Snohomish silty clay loam, a poorly drained soil formed in alluvium and decaying plant remains. Typical profile shows a surface layer of dark grayish brown silty clay loam about 17 inches thick. Between depths of 17 and 29 inches, it is dark reddish brown peat and thin strata of mineral material. Between depths of 29 and 80 inches, it is gray and greenish gray clay and silty clay (SCS, 1979).

Descriptions of soils encountered onsite during previous environmental work seems to vary, depending upon the contractor:

- B & C Equipment (1989) - soils encountered during excavations and soil borings:

pavement bottom to 2 feet	sand and gravel
2 to 8 feet	gray clay
8 to 20 feet	interbedded silty clay and sand

- Harding Lawson Associates (1990) - soils in excavation beneath maintenance shop floor:

0 to 6 inches	concrete slab
6 to 24 inches	gray sand (fill)
2 to 5 feet	gray and brown sandy silt with organic material (peat)
5 to 7 feet	gray clay and silt

- Thomas Hill & Associates (1993a)- soil description from UST excavation cavity:

pavement bottom to 5.5 feet	dark gray clay with some fine sands
5.5 to 9 feet	dark gray clay
9 to 9.5 feet	dark fine sand

- Thomas Hill & Associates (1993b)- soil description from two groundwater monitoring well logs:

pavement bottom to 4 feet	gray sand-silt mix
4 to 5.5 feet	gray clay and silt
5.5 to 16 feet	brown silt and fine sand

Unconfined groundwater beneath the site is shallow, as might be expected of a valley-bottom water table. Based on groundwater monitoring data collected at the site, groundwater depths depend upon seasonal precipitation and may fluctuate between about 2 and 7 feet below ground surface. The groundwater flow direction also varies with the season, and ranges about 90 degrees, from northwest to southwest.

3.0 RELEASE RESPONSE AND CORRECTIVE ACTIONS

Two separate releases of petroleum hydrocarbons (diesel and lube or used oil) from UST systems occurred at the GSFC facility, as noted in Section 1.0. The investigation and cleanup activities associated with each release are described separately below.

3.1 PREVIOUS INVESTIGATIONS

Several environmental contractors and consultants participated in the investigations and cleanup activities conducted at the site. Their work is represented in the following reports and communications (obtained from GSFC and WDOE files):

Pacific Inspection and Research Laboratory	- October 13, 1989, report to GSFC presents findings of their investigation of the cause of the diesel release.
B & C Equipment	- October 16 , 1989, report to GSFC presents the results of the initial soil and groundwater investigation performed following the diesel release; and documents the excavation and stockpiling of diesel-affected soil.
Shannon & Wilson	- March 21, 1990, report to GSFC presents the results of the sampling and onsite laboratory testing of soils beneath a portion of the maintenance shop floor.
Harding Lawson Associates	- April 27, 1990, report to GSFC documents and summarizes the soil removal and closure activities for soil beneath the maintenance shop floor.
Thomas Hill & Associates	- March 8, 1993, report to GSFC presents documentation of the decommissioning of the two 500-gallon oil USTs.
	- March 8, 1993, report to GSFC presents the results of the excavation and disposal of oil-affected soil removed from the oil UST cavity. The report also documents the installation of two groundwater monitoring wells adjacent to the UST cavity.
	- Several groundwater monitoring reports issued between December 24, 1992 and February 10,1995.
Lance Environmental Services	- Several groundwater monitoring reports issued between December 26, 1995, and November 2, 1996.

Copies of these reports are presented in Appendix 1. Several of the reports are also listed below, along with other pertinent documents, in Section 6.0 (References).

3.2 DIESEL RELEASE

The first indications of a subsurface release of fuel from the diesel UST system occurred in January 1989. At that time, Joe Hall Construction conducted tightness testing to evaluate the integrity of the UST system. This was part of GSFC's periodic monitoring of the system performance. Results of the tests were inconclusive and tightness could not be demonstrated. Several months later, recurrent water contamination was noted in fuel from the dispenser called the C pump (a self-contained suction pump). That dispenser was subsequently shut down until the cause of the problem could be determined.

In July 1989, B & C Equipment Co. (B & C) performed additional tightness testing, which indicated a probability of leakage from the system suction line. The system pressure line tested tight. On August 18, 1989, B & C uncovered the lines and found that the C pump line (a 1.5-inch steel line) was badly corroded and was leaking near the west end of the dispenser island. An investigation subsequently concluded that the corrosion occurred where a galvanized steel electrical conduit, buried with the dispenser line, was in contact with the C pump line (PIRL, 1989). The conduit carried the electrical wiring for operation of the submersible turbine pump that supplied the A and B dispensers (a pressurized line). It is probable that the metals in contact, or induced currents from the electrical lines, generated destructive electrical cells that resulted in galvanic corrosion. Heavy corrosion was observed wherever the two lines were touching.

3.2.1 Soil Investigation and Corrective Actions

Three phases of work resulting from the diesel release are discussed below in chronological order. These include soil investigation and cleanup activities and replacement of the diesel UST system.

Phase 1

On August 22, 1989, B & C began the collection of a series of soil samples to assess the extent of diesel contamination in soil around the leaking dispenser line. Initial samples were collected from the dispenser line trench and from two test pits that were excavated north and south of the dispenser lines. Figure 3 shows the sample location and excavation sketch, and provides a tabulation of the analytical results. This information was copied from the reference B & C Equipment (1989). The soil samples were analyzed for total petroleum hydrocarbons (TPH) using USEPA Method 418.1M. At least one sample was analyzed for TPH by USEPA Method 8015 to confirm that diesel was the only fuel present.
ok to use in 1989

The TPH concentration of several of the initial soil samples exceeded the WDOE soil cleanup level of 200 parts per million (ppm) (see samples A through H on Figure 3). Consequently, a plan was undertaken to begin excavation of contaminated soils at the source area (dispenser island), where concentrations were highest, and excavate outward to the limits of contamination or where TPH concentrations were less than 200 ppm. The phases of excavation conducted by B & C and the overall extent of excavation is shown on Figure 3. Average depth of the excavation was 4.5 feet. B & C estimated that 600 to 700 cubic yards of contaminated soil was excavated and temporarily stockpiled onsite.

The contaminated soil was removed from the site between November 29 and December 7, 1989, and hauled to Fife Sand and Gravel (in Puyallup, Washington) for aeration/biological treatment. At that time, the soil volume was estimated to be 594 cubic yards, based on the capacity of the haul trucks.

In addition to the soil investigation and excavation activities, B & C installed five groundwater monitoring wells at the site. These wells are discussed in Section 3.2.3, below.

Phase 2

Shortly following the phase 1 excavation work, GSFC decommissioned the two existing 10,000-gallon diesel USTs and installed a new system that used a single 15,000-gallon, fiberglass-coated, steel tank and double-wall fiberglass dispenser lines. Joe Hall Construction performed both the decommissioning and the installation work.

The existing USTs were decommissioned by removal on January 19, 1990. No decommissioning report was prepared to document the removal activities (Joe Hall Construction, 1997). Notes from the GSFC files indicate that about five cubic yards of diesel-contaminated soil were removed from around the fill pipe of one of the USTs. This was apparently the result of tank overfilling by the fuel supplier during some past filling event(s). The soil was transported to Fife Sand and Gravel on February 6, 1990, for aeration/biological treatment. Reportedly, the tanks and piping were also hauled to Fife Sand and Gravel for disposal (Thomas, 1996).

According to field notes recorded by Enrico Baroga (Tacoma-Pierce County Health Department [TPCHD]), five site assessment soil samples were collected from the sidewalls and bottom of the UST cavity. Mr. Baroga's field observations indicated that the samples showed no evidence of diesel contamination. However, analytical results for this sampling could not be located in GSFC's or TPCHD's files to confirm the clean closure.

The replacement UST system was installed immediately following the decommissioning activities. All excavations resulting from the phase 1 soil cleanup and the phase 2 UST removal/installation were backfilled with gravel and paved with either asphalt or concrete, as appropriate.

Phase 3

B & C samples #18, #24, and #25 (Figure 3) indicated that additional soil contamination was present beneath the southwest corner of the maintenance shop floor (a concrete slab). B & C did not attempt to remove this soil.

Following consultation with the TPCHD, the lead regulatory agency for this project, GSFC decided to address the residual soil contamination problem by removing a portion of the shop floor and excavating the affected soil.

A section of the concrete-slab flooring, measuring approximately 20 feet x 20 feet, was removed from the southwest corner of the shop interior (Figure 4). Soil excavation, directed by GSFC staff, began on March 8, 1990, using a small backhoe. An onsite laboratory was set up to perform TPH analyses (using thin-layer chromatography) as a means of rapidly assessing the limits of contamination (Shannon & Wilson, 1990). Results of this excavation showed that diesel contamination was present starting at depths between about 2 and 3 feet below the floor and, in places, extended to a depth of about 7 feet. Soil was removed from the open area to an overall average depth of 6.5 feet below the floor. However, residual contamination exceeding the 200 ppm cleanup level remained beneath the building foundation footing (to the south and west) and in parts of the excavation sidewalls (to the north and east).

Following further consultation with the TPCHD, it was decided that additional soil samples should be collected to investigate the northern and eastern extent of soil contamination and that three of the existing groundwater monitoring wells (discussed in Section 3.2.3) be sampled for the presence of petroleum hydrocarbons. This work was performed by Harding Lawson and Associates (HLA) and is summarized in their report of April 27, 1990. On March 14, 1990, four soil samples (CS-1 through CS-4) were collected approximately where shown on Figure 4. Soil analytical results for TPH were all below the 200 ppm cleanup level. Groundwater analytical results for TPH were all below the method detection limit of 5 ppm.

Additional soil samples were collected from the open excavation on March 20 and April 13, 1990 (Figure 4). The analytical results confirmed the presence of residual diesel contamination (TPH concentrations between about 300 and 500 ppm) in the excavation sidewalls and below the foundation footings. A sample from the excavation bottom had a TPH concentration of 50 ppm.

how determined?

Based on the findings of the soil sampling, the estimated volume of soil remaining in place beneath the shop floor, and exceeding a TPH concentration of 200 ppm, is 25 to 50 cubic yards. This zone of residual contamination is about 3- to 4-feet thick and is located immediately beneath the foundation footing on the south and west sides of the excavation, and within the area that extends 4 to 5 feet beyond the north and east sides of the excavation. Additional soil removal was considered impractical because of 1) the existing structural impediments presented by the shop building, 2) the limited extent and volume of contamination, 3) the low permeability of the affected soil, and 4) the protected location of the soil beneath the building. Any threats to human health or the environment presented by this soil were viewed as unlikely (HLA, 1990). The excavation was subsequently backfilled with gravel and the concrete slab replaced. The diesel-contaminated soil (an estimated 256 cubic yards) was hauled to Fife Sand and Gravel on March 16, 1990, for aeration/biodegradation treatment.

obtained copy of letter

HLA recommended in their report that GSFC consider in situ bioremediation to enhance the natural degradation of diesel in the zone of contamination. Although GSFC installed perforated piping for the introduction of nutrient solutions, no further steps were taken to stimulate microbial biodegradation. HLA also recommended that an additional groundwater monitoring well be installed immediately west of the zone of contamination to monitor for evidence of potential downgradient migration of diesel. Installation of this well is discussed in Section 3.2.3, below.

GSFC submitted the HLA (1990) report to the TPCHD as the UST cleanup closure report. The TPCHD reviewed the report, determined that a public health/environmental hazard did not exist at the site, and authorized closure on condition that all terms of GSFC's closure plan be implemented (TPCHD, 1990).

3.2.2 Results of Soil Treatment

Diesel-contaminated soils removed from the GSFC facility were treated at Fife Sand and Gravel by aeration and/or biodegradation. The treatment process was completed in October 1990. Three soil samples for treatment confirmation were collected on October 9, 1990, by Norm Payton of the TPCHD, and were analyzed for TPH and for benzene, toluene, ethyl benzene, and xylenes (BTEX). The soils met all the TPCHD disposal criteria. A Waste Disposal Authorization was subsequently issued and the soil was hauled to the City of Tacoma Landfill. The disposal documentation is presented in Appendix 2.

3.2.3 Groundwater Investigation

Early concerns about potential groundwater contamination prompted the installation of five groundwater monitoring wells around the apparent zone of contamination. The wells (denoted GS-1 through GS-5) were installed by B & C on September 6th and 7th, 1989. Locations of the wells, and the implied groundwater flow direction on September 20, 1989, are shown in Figure 5, which is a sketch copied from the reference B & C Equipment (1989) . Each well boring was drilled to a depth of 18 feet below ground surface using a hollow-stem auger rig operated by Kring Drilling Co. The wells were constructed of 2-inch-diameter PVC pipe with 0.020-inch perforations in the screen section. Groundwater was encountered at about six feet below ground surface. The screened section of each well extended from the well bottom to about 2 feet below the well head. Additional well construction information may be obtained from the B & C reference noted above. Installation logs for these monitoring wells could not be located; B & C apparently did not prepare well logs to accompany their report.

First groundwater samples were obtained from the monitoring wells on September 11, 1989. Each sample was analyzed for TPH by USEPA Method 418.1M. The results were as follows:

Sample	TPH Concentration (mg/L)
GS-1	< 5.0
GS-2	< 5.0
GS-3	< 5.0
GS-4	15.0
GS-5	< 5.0

TPH std = 1000 ppb = 1 ppm.

As a minimum, these results indicated that diesel was present in groundwater around GS-4. The fairly high method detection limit (5.0 mg/L) precluded use of this data to determine if diesel was present in lower concentrations at any of the other monitoring wells. Analyses for other potential fuel components were not performed.

Note that GS-4 was located within the zone of soil contamination and was removed during the soil excavation activities illustrated on Figure 3.

During their investigation of the soil contamination beneath the shop building, HLA sampled three of the monitoring wells (HLA, 1990) installed by B & C. These were the wells originally designated as GS-1, GS-3, and GS-5. HLA, however, changed the monitoring well designations; that is, GS-1 was changed to MW-3,

GS-3 to MW-2, and GS-5 to MW-1 (compare Figure 4 with Figure 5). Samples from the three wells were analyzed for TPH by USEPA Method 418.1M. Results were all below the method detection limit of 5 ppm.

At the conclusion of their investigation, HLA recommended that an additional groundwater monitoring well be installed immediately west of the zone of residual contamination, beneath the shop building, to monitor for potential downgradient migration of diesel. This well was installed by GSFC some time in late April 1990; however, no well log or report describing the well installation was found in the GSFC or WDOE files to document the installation or first sample results.

Long-term groundwater monitoring using the onsite wells was later implemented by GSFC. The history and results of this monitoring is discussed in Section 4.0, below.

3.3 OIL RELEASE

A subsurface release of petroleum hydrocarbons (as heavy oil) was identified during decommissioning of the two 500-gallon USTs used by the maintenance shop for storage of new oil and used oil. The decommissioning, investigation, and remediation activities are described below.

3.3.1 UST Decommissioning

The two oil storage USTs were decommissioned by removal on October 21, 1992. ESE Corporation performed the excavation and removal contracting, and Thomas Hill & Associates (TH&A) provided oversight and conducted site assessment sampling. The decommissioning activities are documented in TH&A (1993a and 1993b) (see Appendix 1).

The excavation and extraction of the USTs was generally uneventful. The tops of the tanks were encountered at a depth of about 3 feet below grade and total excavation depth was about 9.5 feet. Exposed soils were described as dark gray clay with some fine sand in the upper 5.5 feet of the excavation. This was underlain by a dark gray clay extending to a depth of 9 feet. A fine sand was encountered below the clay. Groundwater was first encountered at a depth of about 9 feet below grade and stabilized at about 7.5 feet.

Five soil samples were collected from the tank cavity and one from the excavated soil stockpile to assess the potential presence of oil contaminants. Samples from the tank cavity were analyzed only for TPH (USEPA Method 418.1M). The stockpile sample was analyzed for TPH and for the following parameters:

Volatile organic compounds	- USEPA Method 8240
Semi-volatile organic compounds	- USEPA Method 8270
Polychlorinated biphenyls	- USEPA Method 8080
Toxic characteristic leaching procedure for lead	- USEPA Method 1311

The soil sample locations and analytical results are presented in Figure 6, which was copied from TH&A (1993a). TPH results for samples from the tank cavity were all below the method detection limit of 30 ppm. TPH for the stockpile soil, however, was 610 ppm, which exceeded the WDOE cleanup level of 200 ppm. All other analytes were reported at less than the practical quantitation limit except for one compound on the SVOC analyte list. That compound, di-n-butylphthalate, was detected at a concentration of 5.8 ppm. There is no record of use of this compound at the GSFC facility. Because di-n-butylphthalate is a common plasticizer, its detection may have been caused by a small particle of plastic or other synthetic substance in the sample.

Petroleum-like staining was noted in the crushed rock fill immediately underlying the floor of the truck wash bay. This staining was exposed in the upper portion of the east sidewall of the tank excavation. The apparent zone of contamination was about 5 feet wide and about 2.5 feet deep.

3.3.2 Investigation and Corrective Actions

GSFC implemented several actions to investigate the extent of the apparent oil release and assess its environmental effects. These included the installation and sampling of two groundwater monitoring wells, investigation of the extent of soil contamination, and the excavation and disposal of contaminated soil.

Holt Testing, Inc., under the direction of TH&A, installed two groundwater monitoring wells to evaluate potential effects of the release on groundwater. One well (designated MW-1A) was located immediately to the north of, and the other well (designated MW-2A) was located about 20 feet to the west of, the former tank cavity (see Figure 7).

Both well borings were drilled to a total depth of 15 feet below ground surface using a hollow-stem auger rig. Four-inch-diameter PVC piping was installed in the wells; the screened section was positioned between depths of about 4.5 feet to 14 feet. See TH&A (1993b) for installation details (Appendix 1).

Groundwater samples were obtained from the two wells on December 19, 1992. The samples were analyzed for TPH using USEPA Method 418.1M. Results showed that TPH concentrations were less than the method detection limit of 0.5 ppm (TH&A, 1993b).

To assess the extent of stained soil noted in the east sidewall of the UST cavity, TH&A excavated a shallow test pit through the concrete floor, about 5 feet inside the truck wash bay. A soil sample was obtained from the bottom of the test pit at a depth of about 3 feet below grade (Figure 7). TPH analysis of the sample showed a concentration less than the method detection limit of 25 ppm. Based on this data, TH&A concluded that the extent of oil contamination was limited to an area between the east sidewall of the UST excavation and the test pit.

As a result, on December 16, 1992, the upper 3 feet of the east sidewall was excavated an additional 2.5 feet to the east (into the truck wash bay) (Figure 7). This removed all of the stained soil. Two confirmation samples were collected from the east edge of the new excavation. The analytical results provided TPH concentrations of 28 ppm and 140 ppm, both below the 200 ppm cleanup level.

On January 18, 1993, all contaminated soils removed from the UST excavation were hauled to the Rabanco transfer station in Seattle for transport and disposal at the Regional Disposal Company's landfill in Roosevelt, Washington. The total amount of soil delivered to the transfer station, according to the weight receipt, was 20.5 tons. Disposal documents are presented in Appendix 3.

On April 23, 1993, Norm Payton (TPCHD) reviewed the UST closure reports (TH&A, 1993a and 1993b) and noted in his project file that the UST closure was complete.

4.0 LONG-TERM GROUNDWATER MONITORING

In December 1992, GSFC implemented long-term groundwater monitoring to evaluate the potential effects of the diesel and oil releases on groundwater. The planned monitoring program, however, did not establish a consistent quarterly regimen. As a result, the ensuing monitoring events for all onsite wells were conducted on:

December 19, 1992
February 26, 1994
January 28, 1995

The groundwater sampling and associated data from these monitoring events were collected by TH&A (see TH&A, 1993a and 1993b, Appendix 1). Results of the monitoring are discussed below.

This monitoring failed to satisfy the fundamental cleanup criteria established for the site. That is, the need to demonstrate that groundwater samples from the wells met the groundwater cleanup standards over a period of at least four consecutive calendar quarters was not achieved. This requirement is necessary to confirm that no risk to human health or the environment remains as a result of releases from the former onsite UST systems.

In November 1995, GSFC retained Lance Environmental Services (LES) to evaluate the requirements for closing the onsite environmental cleanup so that a "no further action" status could be obtained for the site. LES contacted Richard Heggen of the WDOE Southwest Regional Office to determine the most appropriate monitoring schedule to meet WDOE requirements. WDOE suggested that three additional monitoring events would suffice for the wells around the diesel release area.

Because groundwater from the wells near the former oil USTs had never shown evidence of contamination, one additional round of sampling was recommended. In addition to TPH, that additional sampling round was to include analyses for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), and selected metals.

LES subsequently conducted groundwater monitoring at the GSFC facility on:

December 1, 1995
May 31, 1996
September 25, 1996

These monitoring events, in conjunction with the TH&A monitoring data, were intended to provide data sufficient to reveal any trends (such as migration of residual contamination) caused by seasonal groundwater variations. Reports for the LES monitoring events are presented in Appendix 1.

The monitoring activities performed by TH&A and LES were basically the same. Groundwater levels were measured in each well and an estimated groundwater flow direction and gradient were calculated. The wells to be sampled were purged and samples collected for chemical analysis. Analytical Technologies Inc. (Renton, Washington) and OnSite Environmental Inc. (Redmond, Washington) were the project laboratories. Purge water and decontamination wash water were poured into the truck wash oil/water separator for disposal and eventual treatment in the City of Sumner sanitary system.

4.1 ANALYTICAL RESULTS

A tabulation of all groundwater TPH sample analyses for the GSFC facility is presented in Table 1. When TH&A began their monitoring activities, they arbitrarily changed the monitoring well designations. The TH&A well designations are shown on Figure 8 and are the primary well and sample identifications used in Table 1. The B &C and HLA well designations are included in Table 1 and are noted in parentheses in their appropriate locations.

TPH concentrations in Table 1 are compared with the Model Toxics Control Act (MTCA) Method A groundwater cleanup level of 1.0 ppm (see the bottom of Table 1). Three samples exceeded this cleanup level over the course of the monitoring period. The first was GS-4, which was installed by B & C within the zone of diesel-contaminated soil (Figures 3 and 5) and which yielded a groundwater TPH concentration of 15.0 ppm (see notes in Table 1). GS-4 was removed during the excavation of contaminated soil in September/October 1989. The other two TPH exceedances were detected in samples from WD-2 (1.3 ppm) and WD-4 (1.4 ppm), which were sampled on February 26, 1994. As discussed in TH&A's March 17, 1994, report, these exceedances may have occurred as result of contaminated rainwater runoff seeping past damaged well covers and/or leaking well caps. Many of the well covers were badly damaged by continual truck traffic that passed through this part of the facility.

GSFC subsequently rebuilt the damaged well head installations of WD-1, WD-2, WD-3, WD-4, and MW-2A. Heavy-duty well covers were installed and the well covers were raised several inches above the surrounding pavement to avoid exposure to runoff. The well head caps or plugs were also replaced. Following this rebuilding, petroleum hydrocarbons were not again detected in these wells.

During the monitoring event of February 26, 1994, the analysis of sample MW-2A for diesel-range TPH detected the presence of trace-level, toluene-range hydrocarbons. This may represent residual contamination from the former oil USTs or may have been caused by rainwater runoff contamination that entered the well (similar to WD-2 and WD-4).

Low to trace levels of other VOCs were also detected in samples from MW-2A during the December 1, 1995, and May 31, 1996, groundwater monitoring events:

Sample Date	VOC Compound Detected	Concentration (µg/L or ppb)	Quantitation Limit	Comment:
12/1/95	Acetone	5.3	5.0	Acetone was present in method blank
	Methylene Chloride	4.8	5.0	Estimated concentration
	Benzene	0.53	5.0	Estimated concentration
	m,p-Xylene	1.7	5.0	Estimated concentration
5/31/96	Acetone	9.6	5.0	Acetone was present in method blank
	Methylene Chloride	0.74	1.0	Estimated concentration
	Benzene	0.86	1.0	Estimated concentration
	m,p-Xylene	11	2.0	

Note that the same analytes were detected in both samples. Acetone in the samples is probably from laboratory cross contamination, as suggested by the presence of acetone in the method blanks. Methylene chloride is also a common laboratory contaminant; however, this was not confirmed by the method blank analysis. Benzene and m,p-xlene are constituents of motor fuels and other petroleum products. Their presence may represent emanations of residual hydrocarbons from soil possibly left over from the removal of contaminated soils identified during decommissioning of the oil USTs (see Section 3.3). Except for acetone, the concentrations shown above are all less than the MTCA Method A groundwater cleanup levels. Although not listed as a Method A compound, the detected acetone concentration is considerably less than the MTCA Method B formula value for groundwater, which is 800 µg/L.

None of the other analyses performed on the December 1, 1995, groundwater samples from MW-2A exceeded their respective analytical detection limits. No PAH compounds were detected exceeding the method practical quantitation limit of 20 µg/L. Also, there were no indications of the presence of PAHs down to the method detection limit of about 10 µg/L. None of the selected metals analytes (chromium, copper,

lead, and zinc) were detected above the method practical quantitation limit. Laboratory reports for these analyses are presented in the LES report of December 26, 1995, which is included in Appendix 1.

4.2 GROUNDWATER FLOW DIRECTION

Groundwater levels were measured during each monitoring event and compared with an onsite datum to determine relative elevations. Using the elevation data, groundwater flow directions were estimated. The flow directions ranged between northwest and southwest. This indicates that groundwater flows toward the White River, a distance of about 800 to 1,000 feet from the site. The estimated flow directions recorded during each of the monitoring events is as follows:

Monitoring Event	Estimated Flow Direction
9/12/89	Northwest
12/19/92	West to Southwest
2/26/94	West
1/28/95	Southwest
12/1/95	Southwest
5/31/96	West
9/25/96	West to Northwest

As shown in Figure 8, the onsite groundwater monitoring wells are appropriately positioned to allow detection of potential groundwater contaminants that may migrate from the former source areas in these flow directions.

Groundwater elevation contour maps are presented in B & C (1989) and in the three LES groundwater monitoring reports.

During 1995 and 1996, groundwater levels varied between about 2 feet and 7 feet below ground surface in the onsite monitoring wells. As would be expected, low groundwater levels occurred in late summer/early fall and high levels occurred in the winter. The seasonal fluctuation in groundwater levels noted in the wells was about 2 to 3.5 feet.

During the course of the groundwater investigations and long-term monitoring, no aquifer testing was performed to determine such parameters as hydraulic conductivity or transmissivity. Likewise, no groundwater velocity measurements were made.

5.0 SUMMARY AND CONCLUSIONS

Two releases of petroleum hydrocarbons from UST systems occurred at the GSFC Sumner facility. A release of diesel from a corroded dispenser line was confirmed in August 1989. In October 1992, a release of oil was encountered during the decommissioning of two 500-gallon USTs used by the maintenance shop for new and used oil storage.

Cleanup of the diesel release required the excavation and removal of about 600 cubic yards of contaminated soil. With the exception of a limited volume of soil beneath the maintenance shop floor, confirmation samples collected at the time of soil excavation showed that all soil exceeding the cleanup level of 200 ppm TPH was removed. About 250 cubic yards of diesel-contaminated soil was also removed from beneath the shop floor; however, 25 to 50 cubic yards of soil (averaging between about 300 and 500 ppm TPH) were not reasonably accessible and were left in place. All the diesel-contaminated soil was hauled offsite for aeration/biodegradation treatment at a local treatment facility. Following successful treatment, the soil was transported to the Tacoma Landfill for disposal.

To determine if groundwater was affected by the diesel release, six groundwater monitoring wells were installed around the perimeter of the affected area. Only one sample exceeded the groundwater cleanup level of 1.0 ppm TPH. This sample came from a well placed inadvertently within the zone of soil contamination. That well was later removed as excavation of soil proceeded toward the limits of contamination.

In January 1990, immediately following completion of the diesel cleanup, the existing diesel UST system was decommissioned by removal and was replaced with an upgraded system.

1992 Cleanup of the oil release involved over-excavation of the UST cavity after removing the tanks. A total of 20.5 tons of contaminated soil were hauled to the Rabanco transfer station in Seattle for ultimate disposal at the Roosevelt Regional Landfill. Confirmation samples collected from the tank cavity and the over-excavated area indicated that all soil exceeding the cleanup level of 200 ppm TPH was removed.

Two groundwater monitoring wells were installed near the former oil UST cavity to evaluate the potential presence of oil in the groundwater. No oil-range petroleum hydrocarbons were detected in groundwater samples obtained from these wells.

GSFC initiated long-term groundwater monitoring in December 1992 to assess potential long-term effects of the diesel and oil releases. The monitoring was not, however, implemented consistently. Only three monitoring events were conducted between December 1992 and November 1995. Following consultation with the WDOE, three additional monitoring events were completed. None of the analytes of interest detected in the groundwater samples exceeded the MTCA Method A or Method B groundwater cleanup levels.

Based on the information presented in this report, GSFC believes that adequate investigation, cleanup, and long-term groundwater monitoring have been completed at their Sumner facility. The groundwater monitoring data indicate that there is no apparent risk to human health or the environment as a result of the previous diesel and oil releases. It must be emphasized that diesel from the initial release has not been detected in the groundwater since the soil cleanup activities were completed in 1990. Oil-range petroleum hydrocarbons have never been detected in groundwater samples collected near the former oil USTs. GSFC therefore requests that the WDOE consider the information presented in this independent remedial action report and requests that a "no further action" status be assigned to the Sumner facility.

6.0 REFERENCES

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TABLE 1
Groundwater Analytical Summary - Total Petroleum Hydrocarbons
Golden State Foods Facility
Sumner, Washington

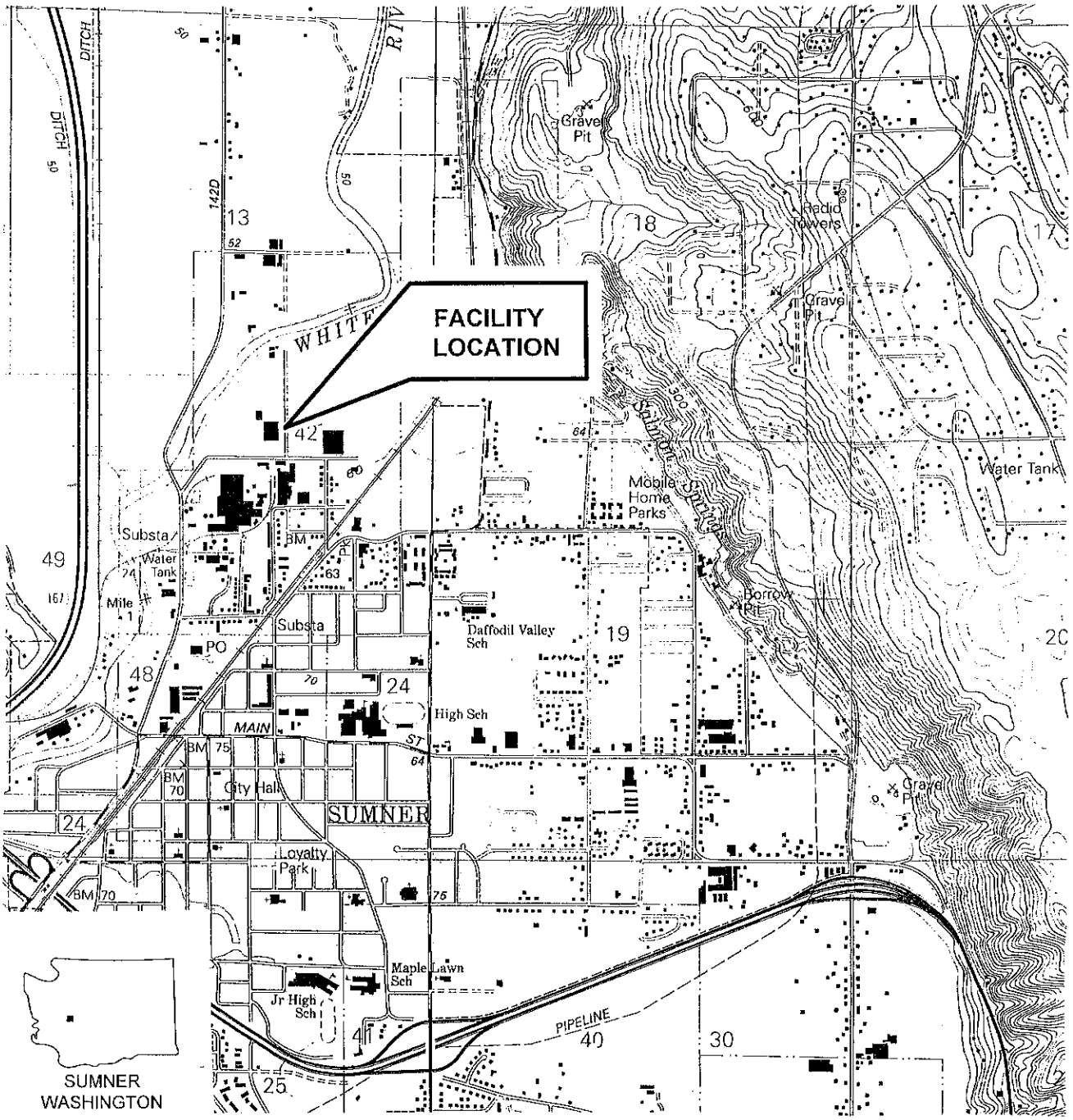
		Total Petroleum Hydrocarbons (mg/L)	
Sample I.D.	Sample Date	WDOE Method WTPH-D	WDOE Method WTPH-418.1 or USEPA Method 418.1M
WD-1	9/25/96	ND (0.50)	NA
	5/31/96	ND (0.50)	NA
	12/1/95	ND (0.50)	NA
	1/28/95	ND (0.5)	NA
	2/26/94	ND (0.25)	NA
	12/16/92	ND (0.20)	NA
(MW-1)	3/14/90	NA	ND (5.0)
(GS-5)	9/12/89	NA	ND (5.0)
WD-2	9/25/96	ND (0.50)	NA
	5/31/96	ND (0.50)	NA
	12/1/95	ND (0.50)	NA
	1/28/95	ND (0.5)	NA
	2/26/94	1.3	NA
	12/16/92	ND (0.20)	NA
(MW-2)	3/14/90	NA	ND (5.0)
(GS-3)	9/12/89	NA	ND (5.0)
WD-3	9/25/96	ND (0.50)	NA
	5/31/96	ND (0.50)	NA
	12/1/95	ND (0.50)	NA
	1/28/95	ND (0.5)	NA
	2/26/94	ND (0.25)	NA
	12/16/92	ND (0.20)	NA
WD-4	9/25/96	ND (0.50)	NA
	5/31/96	ND (0.50)	NA
	12/1/95	ND (0.50)	NA
	1/28/95	ND (0.5)	NA
	2/26/94	1.4	NA
	12/16/92	0.42	NA
(MW-3)	3/14/90	NA	ND (5.0)
(GS-1)	9/12/89	NA	ND (5.0)
WD-5	9/25/96	NA	NA
	5/31/96	NA	NA
	12/1/95	NA	NA

		Total Petroleum Hydrocarbons (mg/L)	
Sample I.D.	Sample Date	WDOE Method WTPH-D	WDOE Method WTPH-418.1 or USEPA Method 418.1M
	1/28/95	ND (0.5)	NA
	2/26/94	ND (0.25)	NA
	12/16/92	ND (0.20)	NA
(GS-2)	9/12/89	NA	ND (5.0)
MW-1A	9/25/96	NA	NA
	5/31/96	NA	NA
	12/1/95	NA	NA
	1/28/95	ND (0.5)	ND (0.5)
	2/26/94	ND (0.25)	NA
	12/19/92	NA	ND (0.5)
MW-2A	9/25/96	ND (0.50)	NA
	5/31/96	NA	NA
	12/1/95	NA	NA
	1/28/95	ND (0.5)*	ND (0.5)
	2/26/94	ND (0.25)	NA
	12/19/92	NA	ND (0.5)
MTCA Method A Groundwater Cleanup Levels:		1.0	1.0

Notes:

- Analytical results that are bolded and shaded exceed the MTCA Method A groundwater cleanup level.
- Sample I.D. numbers in parentheses represent a previous designation assigned to that monitoring well during a previous investigation.
- A monitoring well installed by B & C, designated as GS-4, was sampled once for TPH (USEPA Method 418.1M) before being removed during soil excavation activities. The sample was collected on 9/12/89 and yielded a TPH concentration of 15.0 ppm.
- mg/L = milligrams per liter; equivalent to parts per million (ppm)
- ND = not detected at or above detection, quantitation or reporting limit; the limits are shown in parentheses
- NA = not sampled or analyzed
- MTCA = Model Toxics Control Act
- WTPH-D = analysis of total petroleum hydrocarbons in the diesel range
- WTPH-418.1 = analysis of total petroleum hydrocarbons through heavy fuels and oils
- USEPA Method 418.1M = analysis of total petroleum hydrocarbons through heavy fuels and oils

* Results of this sample analysis indicated the potential presence of trace levels of toluene-range (C7) hydrocarbons



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

Source: USGS Sumner Quadrangle
7.5 Minute Topographic Map, 1993

LANCE Environmental Services

FACILITY LOCATION MAP

Golden State Foods Corporation
Sumner, Washington

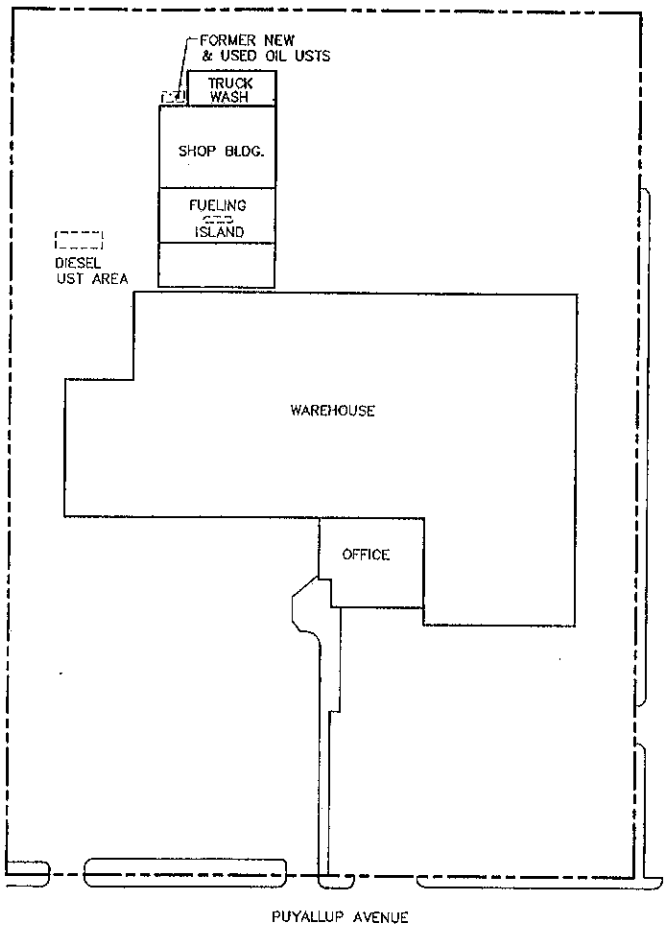
FIGURE 1

Drawn By	Job Number	Approved	Date	File Name
D.L.	9507	DML	12/14/95	9507-1

Cultivated Farm Land

Undeveloped Industrial Park Property

Cultivated Farm Land



Pacific Northwest Baking Co.

Beatrice Cheese Plant

Warehouse Storage

Undeveloped Industrial Park Property

Pasquier Panel Products

0 50 100 feet

LANCE Environmental Services

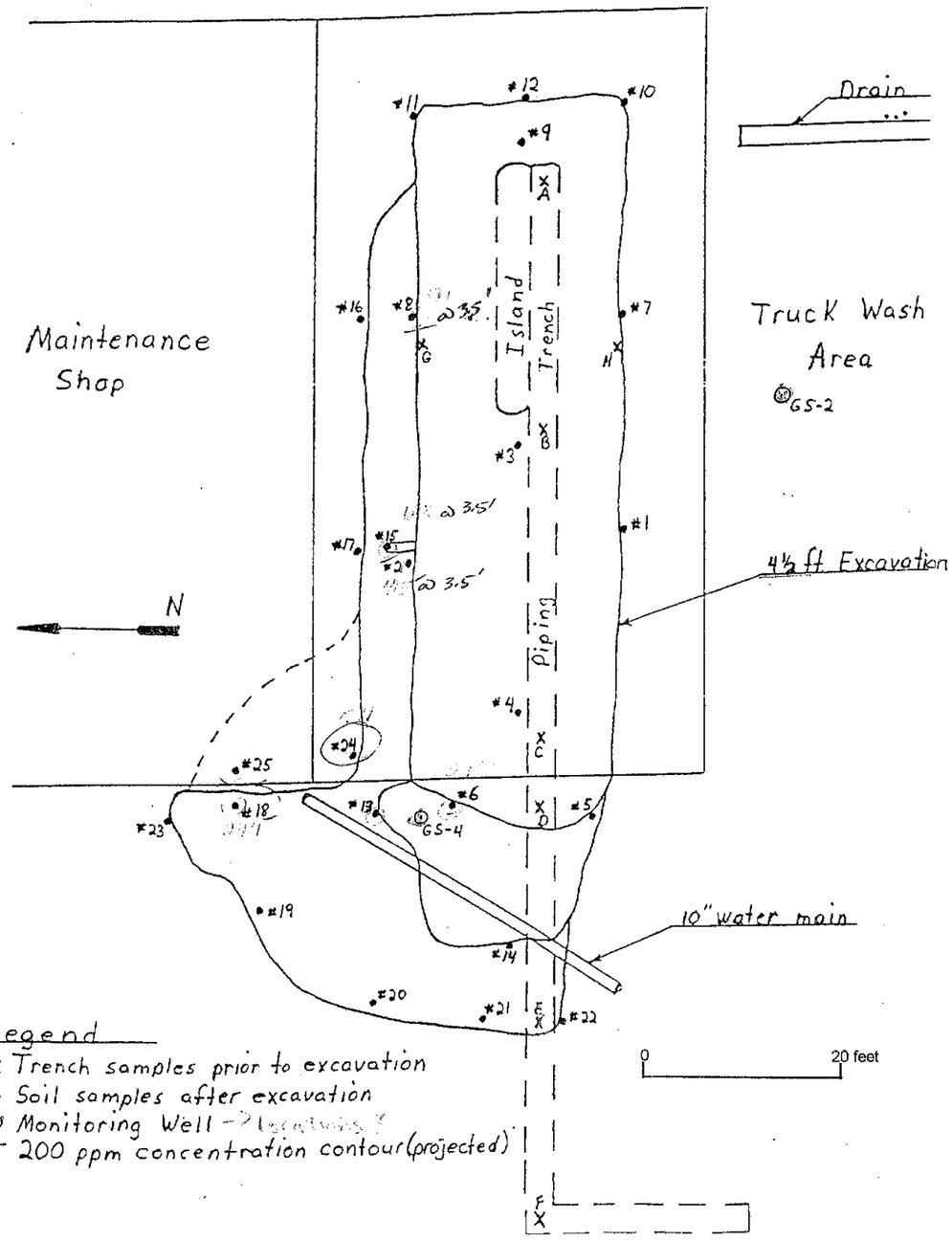
LAY OUT OF THE SUMNER FACILITY -- ADJACENT PROPERTY USES

Golden State Foods Corporation
Sumner, Washington

FIGURE **2**

Drawn By	Job Number	Approved	Date	File Name
D.L.	9507	DML	1/24/97	9507-2

Golden State Soil Sampling



Legend

x Trench samples prior to excavation

• Soil samples after excavation

Monitoring Well – 2 locations

--- 200 ppm concentration contour (projected)

Golden State Soil Sampling

Sample ID	Depth (ft)	TPH (ppm)*
A	2	22,814 —
B	3	4,177 —
C	3½-4	758 —
D	3	330 —
E	3	41.5
F	3	17.3
G	3-3½	44.6
H	3-3½	225 —
1	3½	96.4
2	3½	413 —
3	5	6.5
4	5	13.7
5	3½	8.3
6	3½	2,755 —
7	3½	18.4
8	3½	377 —
9	5	5.5
10	3½	23.9
11	3½	50.8
12	3½	12.8
13	3½	1,934 —
14	3½	917 —
15	3½	628 —
16	4	24
17	4	35.1
18	4	279 —
19	4	84.3
20	4	57.5
21	4	122.8 —
22	4	112.7
23	3½	84.4
24	3½	591 —
25	3½	729 —

0-2' SD & GR
2-8' gray CLAY
8-20' interbedded silty CL & SD.

N.A. = Exc. to 4.5' BGS

Drawing and data copied from:
B & C Equipment Co., October 16, 1989

*TPH = Total Petroleum Hydrocarbons by USEPA Method 418.1M

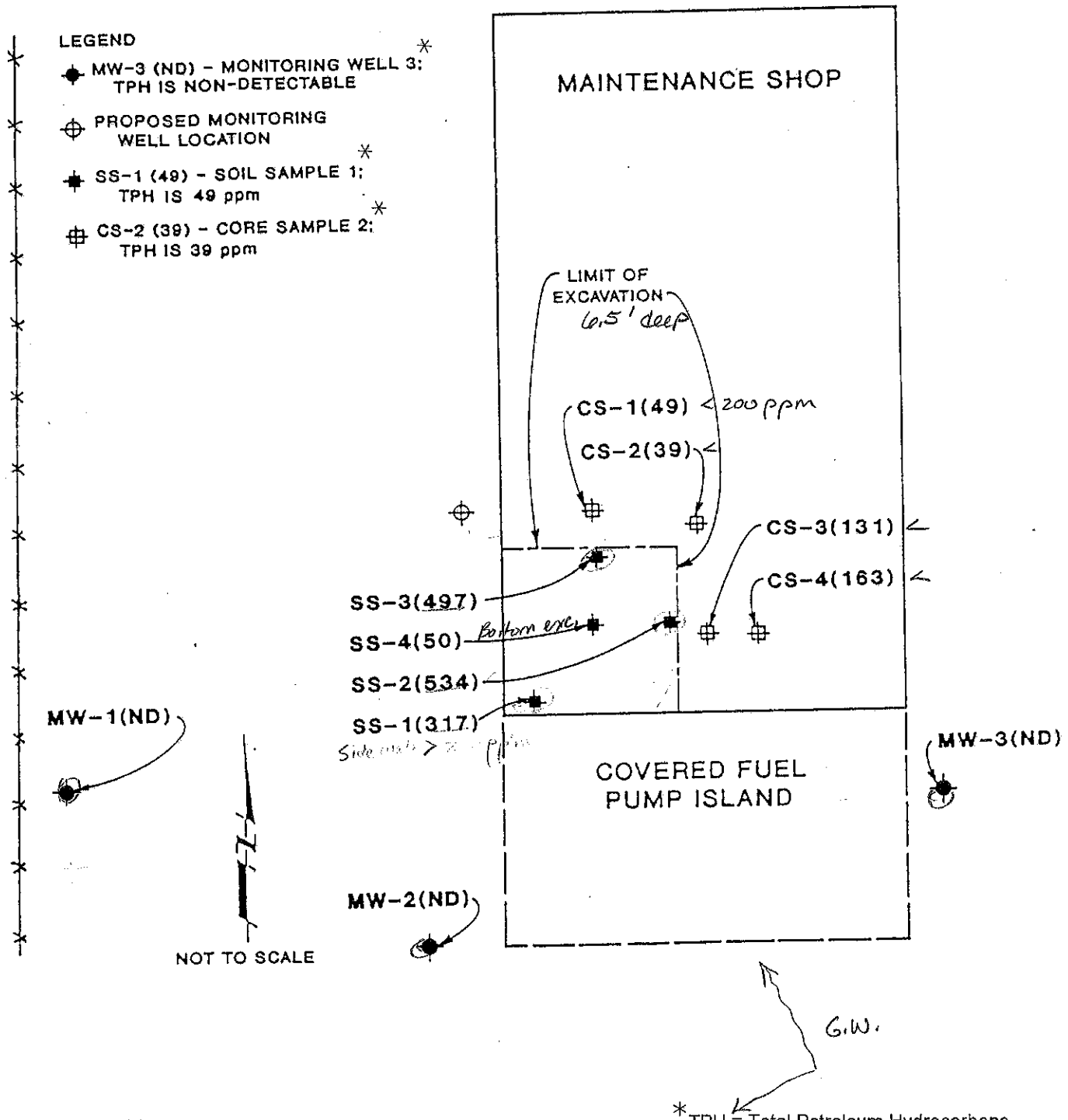
LANCE Environmental Services

EXCAVATION SKETCH, SOIL SAMPLING LOCATIONS, AND ANALYTICAL RESULTS

Golden State Foods Corporation
Sumner, Washington

Drawn By	Job Number	Approved	Date	File Name
D.L.	9507		1/24/97	9507-3

FIGURE 3



Drawing copied from:
Harding Lawson Associates, April 27, 1990

*TPH = Total Petroleum Hydrocarbons by USEPA Method 418.1M

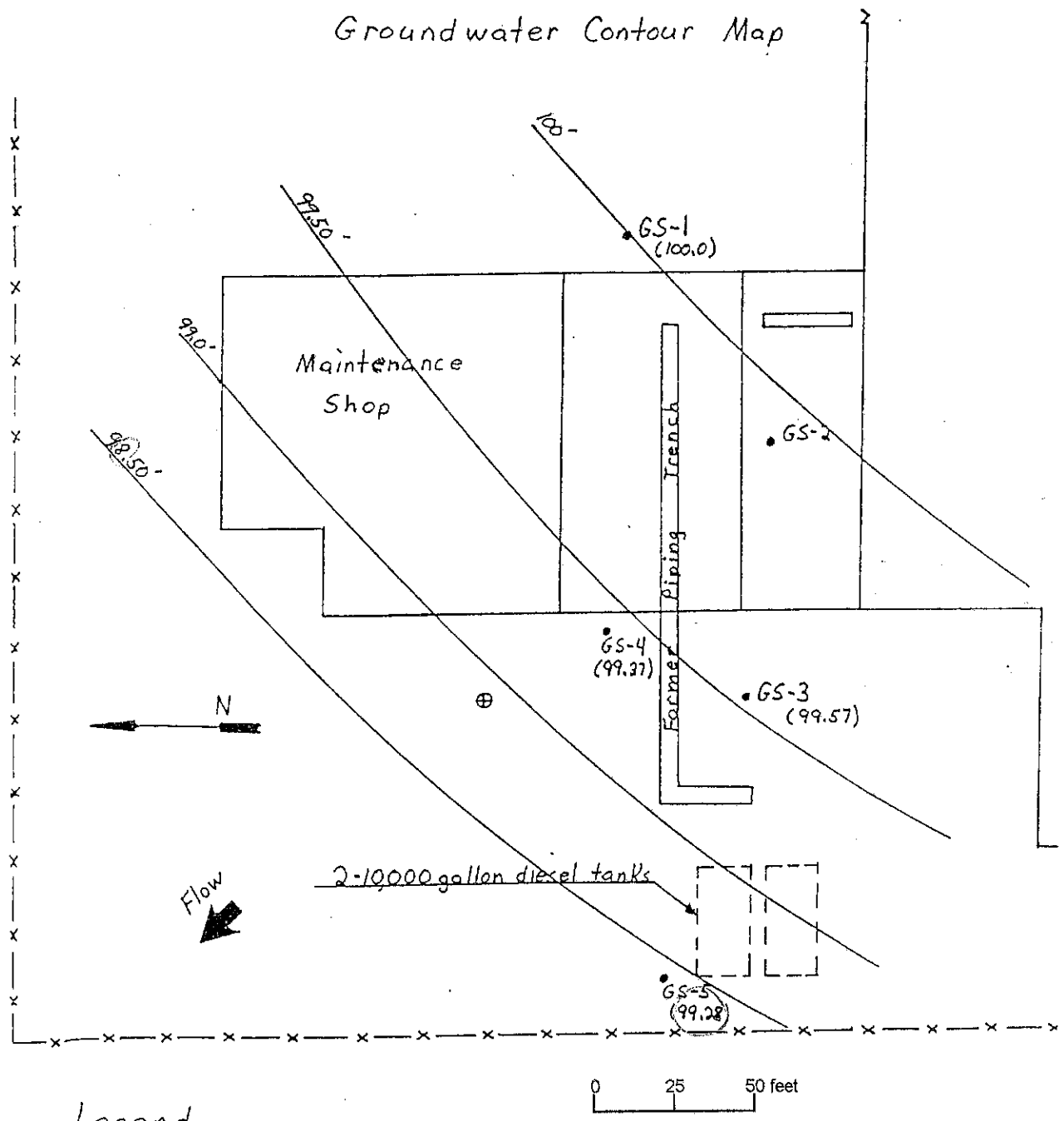
LANCE Environmental Services

MAINTENANCE SHOP EXCAVATION AND SOIL SAMPLING LOCATIONS

Golden State Foods Corporation
Sumner, Washington

FIGURE 4

Drawn By	Job Number	Approved	Date	File Name
D.L.	9507	EML	1/24/97	9507-4



Legend

- Monitoring Wells
- ⊕ Proposed Monitoring Well

Note: Groundwater Elevations are relative – Not to Mean Sea Level

Drawing copied from:
B & C Equipment Co., October 16, 1989

LANCE Environmental Services

LOCATION OF INITIAL GROUNDWATER MONITORING WELLS

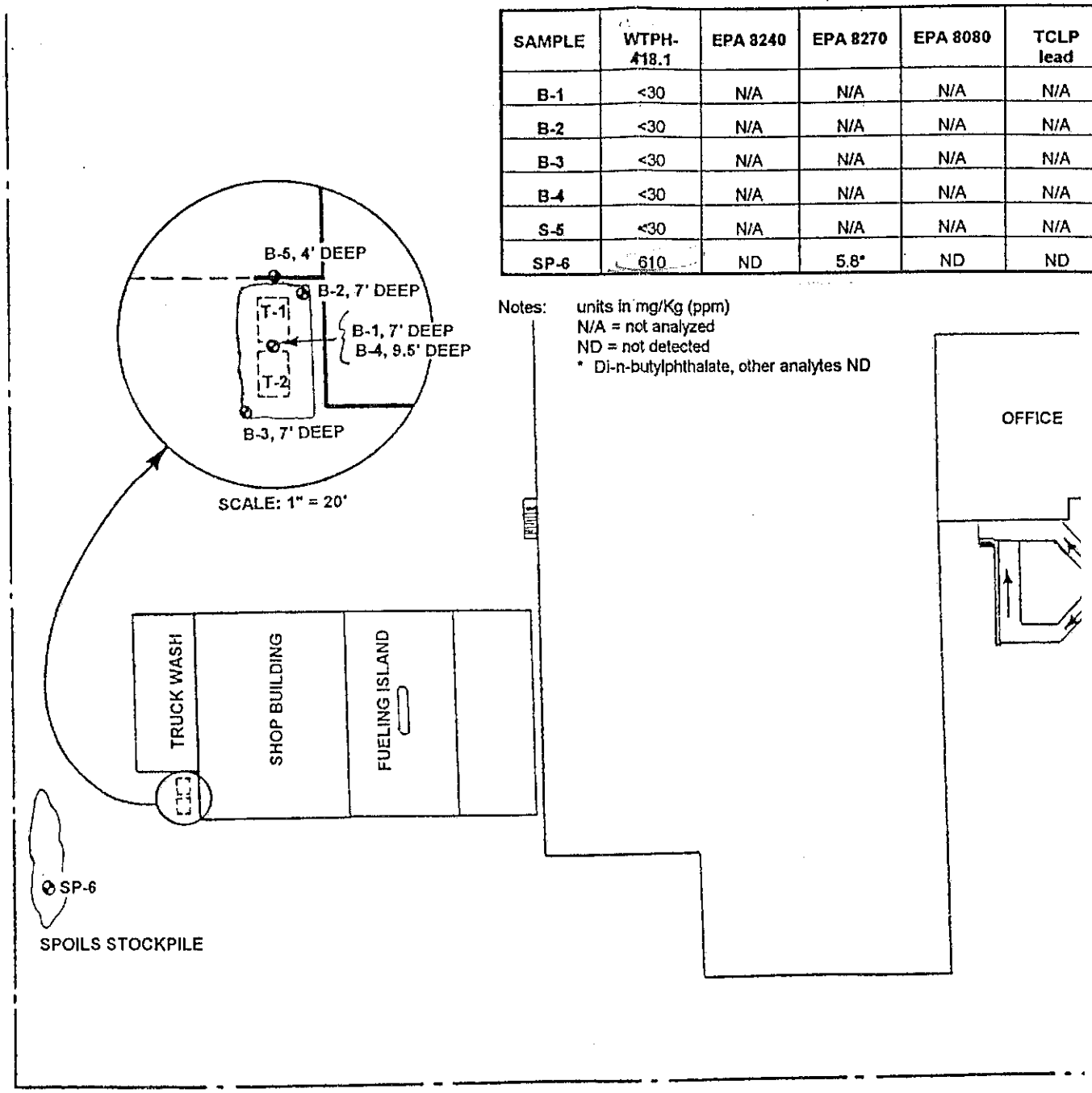
Golden State Foods Corporation
Sumner, Washington

FIGURE 5

Drawn By	Job Number	Approved	Date	File Name
D.L.	9507	DML	1/24/97	9507-5

SAMPLE	WTPH-418.1	EPA 8240	EPA 8270	EPA 8080	TCLP lead
B-1	<30	N/A	N/A	N/A	N/A
B-2	<30	N/A	N/A	N/A	N/A
B-3	<30	N/A	N/A	N/A	N/A
B-4	<30	N/A	N/A	N/A	N/A
S-5	<30	N/A	N/A	N/A	N/A
SP-6	610	ND	5.8*	ND	ND

Notes: units in mg/Kg (ppm)
N/A = not analyzed
ND = not detected
* Di-n-butylphthalate, other analytes ND



Drawing and analytical results copied from:
Thomas Hill & Associates, March 8, 1993

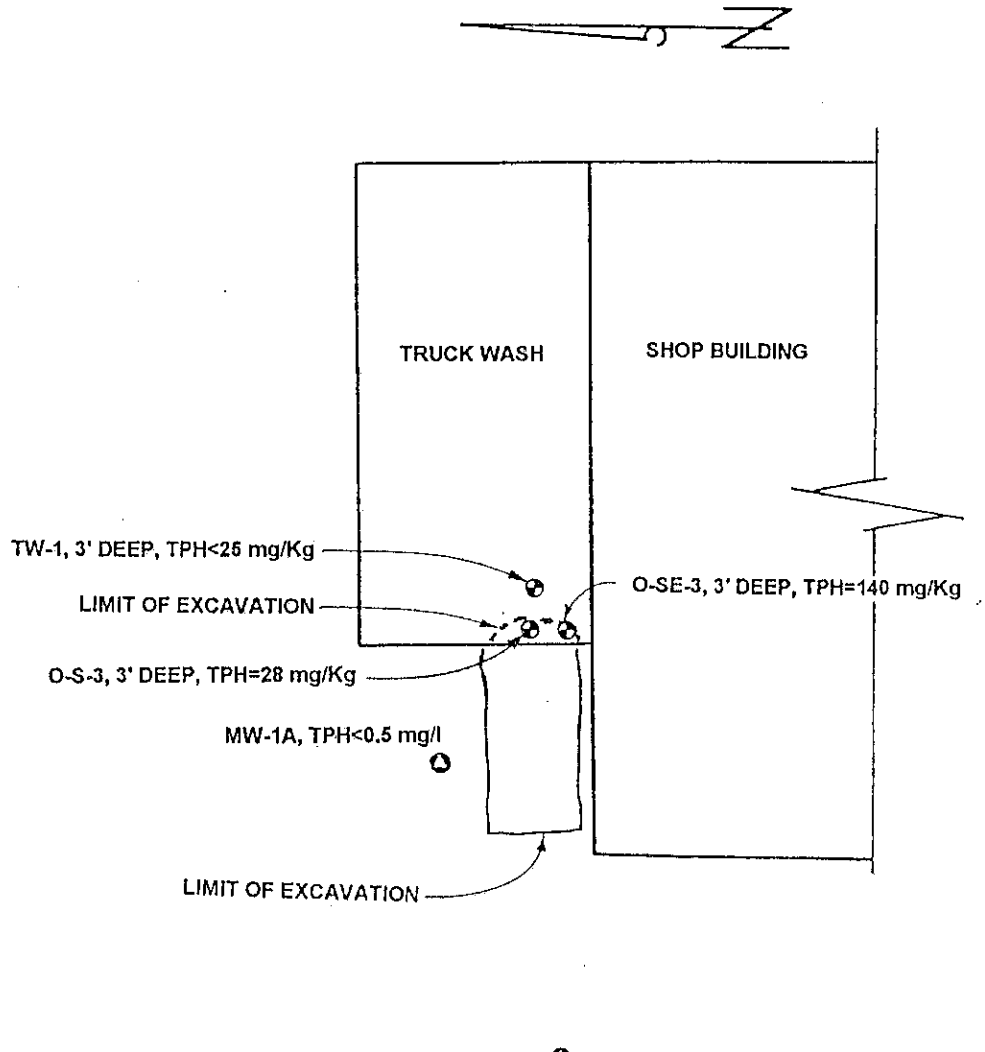
LANGE Environmental Services

SOIL SAMPLING LOCATIONS AND ANALYTICAL RESULTS OIL UST DECOMMISSIONING

Golden State Foods Corporation
Sumner, Washington

FIGURE 6

Drawn By	Job Number	Approved	Date	File Name
D.L.	9507	DML	1/24/97	9507-6



= SAMPLE LOCATION

= MONITORING WELL

TPH = Total Petroleum Hydrocarbons by USEPA Method 418.1M

Drawing copied from:
Thomas Hill & Associates, March 8, 1993

0 10 20 feet

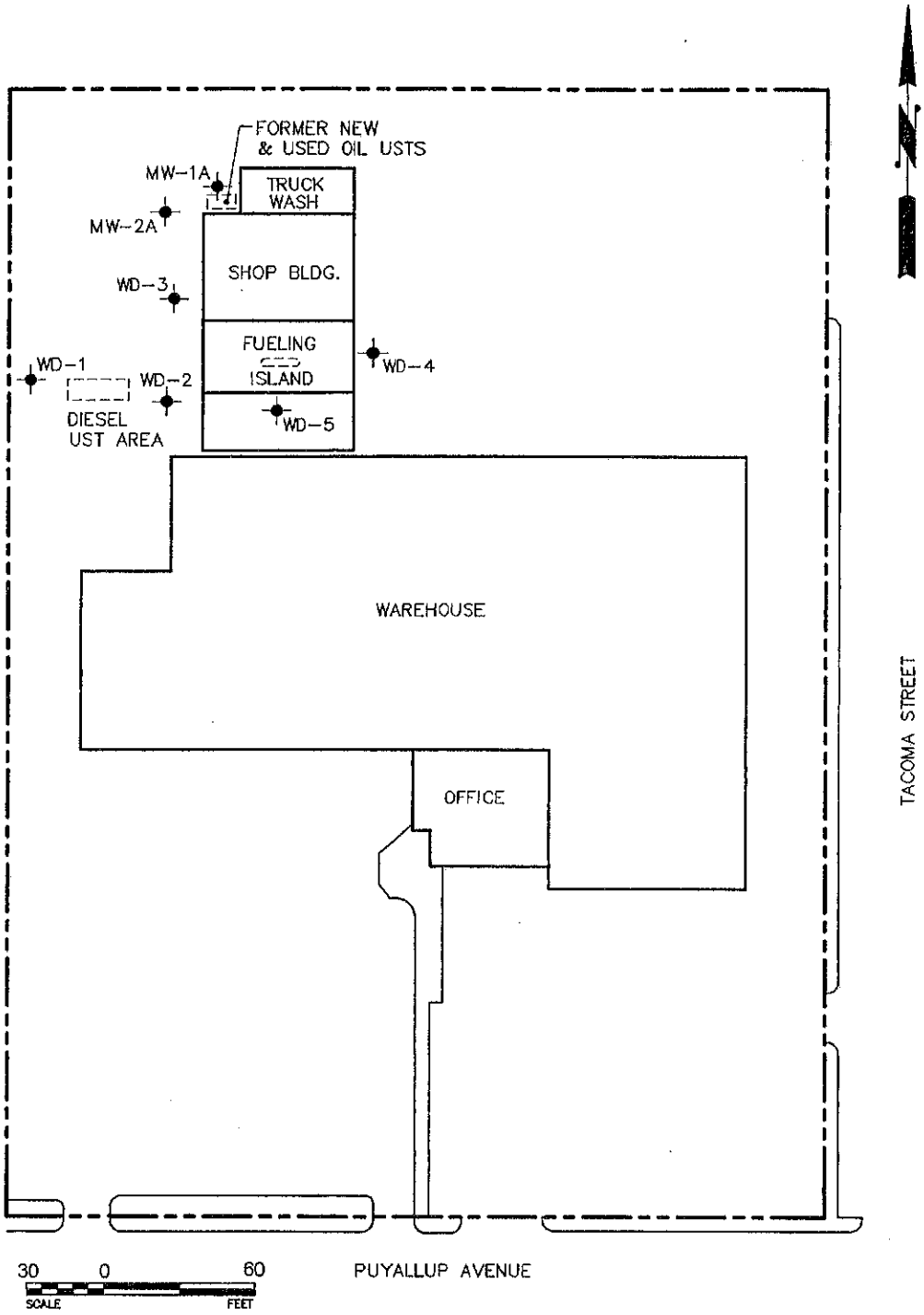
LANGE Environmental Services

OVER-EXCAVATION SOIL SAMPLING LOCATIONS OIL UST DECOMMISSIONING

Golden State Foods Corporation
Sumner, Washington

FIGURE 7

Drawn By	Job Number	Approved	Date	File Name
D.L.	9507		1/24/97	9507-7



Drawing copied from:
Thomas Hill & Associates, December 24, 1992

LANCE Environmental Services

CURRENT GROUNDWATER MONITORING WELL LOCATIONS AND DESIGNATIONS

Golden State Foods Corporation
Sumner, Washington

FIGURE
8

Drawn By	Job Number	Approved	Date	File Name
D.L.	9507	DML	1/24/97	9507-8

1064

Lance Environmental Services
17211 NE 95th Street
Redmond, Washington 98052

March 4 1997

19-2/1

Pay to the Order of Washington Dept. of Ecology $ 1,000.00

One Thousand and 00/100 Dollars

Security features are included. Details on back.

SEAFIRST BANK

Redmond Branch 658503
P.O. Box 615
Redmond, WA 98073

IRAP Review LES 9507

Donald Lance, Jr. MP

⑈125000024⑈ 72165 210⑈ 1064

Report

1,000, payable to: **Department of Ecology**
nt Remedial Action Report

l Action reports on a first-come,
able. The initial review will be

- If the enclosed remedial action report is **accepted** for detailed review, you will be notified if additional fees are required before detailed review begins (see fee schedule below).
- If the enclosed remedial action report is **Incomplete**, you forfeit the $1,000 Filing Fee. The report will be returned with suggestions about what additional information is needed. An additional $1,000 fee will be required if you choose to resubmit.

Note: A copy of this form will be mailed to you. If you wish to inquire about the status of this request for review, please refer to the TCP I.D. number located on the bottom right corner of this form.

- **TOTAL COST OF REMEDIAL ACTION** *(include both contracted work and work performed by owner/operator)*:

Person/Entity Performing Work	Cost
See the attached cost summary	$
	$
	$
Total Cost of Remedial Action	$ 127,350

Applicant Name: Golden State Foods Corp. Phone: (206) 863-3800

Applicant Address: 1409 Puyallup St. Sumner, WA 98390 Contact: Ron Kitts Operations Mgr.

Site Name: Golden State Foods Corp. Site Location: Same as above

Site Owner Name *(if different than Applicant)*: Contact: John Murphy Phone: (714) 252-2000

Site Owner Address: 18301 Von Karman Ave., Suite 1100, Irvine, CA 92715

(Applicant completes above this line, Ecology completes below this line)

FOR ECOLOGY USE ONLY

APPLICABLE REVIEW FEE *(see schedule below)* $

Received	Amount	Date	Received by
Filing Fee	$		
*Fee Balance	$		

*Note: A fee balance may be required. Please keep your receipt for submittal of your fee balance.

FEE SCHEDULE

Cost of Remedial Action	Fee
Filing Fee *(applies to Detailed Review Fee)*	$ 1,000
DETAILED REVIEW FEE	
Minimum Fee:	$ 1,000
$50,000 - $750,000:	2% of Cost
Maximum Fee:	$15,000

173-02-04-005000-5000- 30 (LUST/Non-LUST) - 50 (Office) : $

LUST/Non-LUST: ☒ LUST-30 ☐ Non-LUST-20

Office: ☐ NWRO-40 ☒ SWRO-50 ☐ ERO-60 ☐ CRO-70 ☐ IND-90 ☐ SCS-90

Office/Receipt #

ECY 020-74 (7/93)

TCP I.D. # (SIS or LUST): _____