

CLEANUP ACTION PLAN

at the

STOREY GAS STATION FACILITY

1310 East First Street

Cle Elum, Washington

for

SUZANNE STOREY, MARILYN STOREY,

and

JOANNE STOREY MANKUS

Cle Elum, Washington 98922

prepared by

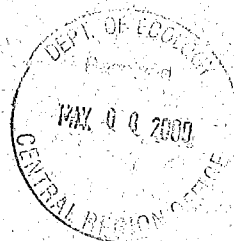


GALLOWAY ENVIRONMENTAL, INC.

Sammamish, Washington

(425) 688-8852

April 2000



ENVIRONMENTAL RESTORATION CLEANUP ACTION PLAN

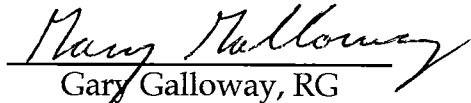
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SUZANNE STOREY, MARILYN STOREY,
and JOANNE STOREY MANKUS
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1310 East First Street
Cle Elum, Washington 98922

prepared by



Gary Galloway, RG
President

GALLOWAY ENVIRONMENTAL, INC.
3102—220th Place SE
Sammamish, Washington 98029-9540
(425) 688-8852

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INTRODUCTION

This Cleanup Action Plan (CAP) outlines the methods and procedures for conducting remedial action activities for petroleum hydrocarbon-impacted soils and groundwater at the Storey Service Station Site, located at 1310 East First Street in Cle Elum, Washington ("Storey Service Station"). The remedial action activities outlined in this CAP include the following scope of work:

- 1) On-site bioremediation of approximately 600 cubic yards of petroleum-impacted soil in a secure, lined treatment cell
- 2) Groundwater quality monitoring of four on-site groundwater wells; and
- 3) A Final Cleanup Action Report will be submitted to the Washington Department of Ecology ("WDOE" or "Ecology") within 30 days following the successful on-site remediation of petroleum-impacted soils currently stockpiled on-site.

This CAP was prepared as part of the Storey Family's (Storey) response to an Agreed Order issued on the site by the WDOE in October 1997.

Galloway Environmental, Inc. (GEI) will provide project management at the site, which will include the overall coordination and oversight during the environmental restoration of petroleum-impacted soil and groundwater at the property.

Personnel assigned to complete these services will be thoroughly trained and familiar with this site-specific CAP and all goals and objectives for this project.

SITE LOCATION AND LEGAL DESCRIPTION

The Storey Gas Station Facility is located in the City of Cle Elum, Washington, between First Street and State Route 903 (see *Figure 1-1 - Site Location Map*). The site address is currently identified as 1310 East First Street. The site latitude is 47° 11' 28"N and the longitude is 120° 54' 32"W.

The subject property is situated in the SE 1/4 of the SW 1/4 of Section 25, Township 20 North, Range 15 East, Willamette Meridian. The site consists of the following tracts of land.

- Steiner's Garden Tracts #2; East 20 feet of Lot 28, Lot 29 (Parcel #20-15-2552-0029-00) owned by Suzanne G. Storey, Marilyn Storey, and Joanne Storey Mankus.
- Steiner's Garden Tracts #2 — Lot 21 and East 20 feet of Lot 22 (Parcel #20-15-2552-0021-00) owned by Suzanne G. Storey, Marilyn Storey, and Joanne Storey Mankus.

The site vicinity is commercial and it is located on the eastern end of the main commercial "strip" of downtown Cle Elum. The site is bounded on

the north by East First Street and on the south by State Route 903. Residential homes and various commercial retail establishments border the property on the east and west and across First Street to the north. A Burlington Northern mainline extends from east to west along the south side of State Route 903.

1.2

SITE HISTORY AND PHYSICAL DESCRIPTION

Mr. Earl Storey purchased the property in 1949. At that time, there was a single residence on the site, which has since been moved to the northern portion of the property and is currently being used for storage of personal goods. The service station building (recently demolished), the Storey residence (located on-site), and three aboveground tanks were installed in 1949, at which time the service station began operating.

Storey operated the service station concurrently with a logging business from 1949 until 1968, at which time the logging business was discontinued. The cement block shop building was used for repair and maintenance of Storey's logging equipment. The service station building was destroyed by fire in 1959, but was subsequently replaced. Three aboveground tanks were installed during the reconstruction of the service station building. Three underground storage tanks were installed south of the service station building in 1964. Three 10,000-gallon aboveground tanks were installed in 1953 and were replaced by four other aboveground tanks in 1982. Five additional aboveground tanks were installed in approximately 1989.

In November 1995, Ecology responded to a reported release of petroleum product into Younger Creek — located at the southeastern portion of the site. In response to the release, Ecology investigated 24 service station/bulk fuel storage facilities in Cle Elum to determine the source of the spill. The Storey site was included in the investigation.

Ecology completed thirteen soil vapor borings, three soil borings and three groundwater-monitoring wells at the subject property. The results of the testing indicated that two monitoring wells exhibited concentrations of gasoline compounds exceeding the Model Toxics Control Act (MTCA) Method A Cleanup level.

Ecology issued an Agreed Order to the owners of the site in October 1997. Ecology determined that Earl Storey, Suzanne Storey, Marilyn Storey, and Joanne Storey Mankus were considered as "owners or operators" of the facility and were thereby notified of their status as "potentially liable persons" (PLPs) under RCW 70.105D.040 after notice and opportunity for comment on March 24, 1997. Attached to the Agreed Order was a Statement of Work for the Remedial Design/Feasibility Study (RI/FS) of the station site. The Statement was amended to allow for a phased approach to the remediation of the known site conditions to accommodate the proposed upgrading of the facility by Storey.

GEI completed the RI/FS for the subject property in April 2000. The results of this RI/FS confirmed that petroleum impacts were present on-site. These results are summarized in Section 1.3 — Previous Environmental Studies, below.

The Storeys have removed and replaced all of the former fuel storage tanks on the property since beginning the Facility upgrades in 1998. Currently, there are no underground storage tanks known to be on-site. Seven aboveground tanks provide fuel for the retail fueling business still in operation.

1.3

PREVIOUS ENVIRONMENTAL STUDIES

In November 1995, Ecology responded to a reported release of petroleum product into Younger Creek — located at the southeastern portion of the site. Ecology personnel observed petroleum product along the banks of the creek for approximately 1,000 feet downstream of the site. Ecology provided oleophilic booms for the containment of the WDOE-estimated 55-gallon oil spill, however these booms were swept away during a subsequent flood event and were not recovered.

In response to the release, Ecology investigated 24 service station/bulk fuel storage facilities in Cle Elum to determine the source of the spill. The Storey site was included in the investigation. Ecology's in-situ soil vapor sampling results indicated that the subject site was among four sites with potential petroleum contamination in soil. The other 23 sites are located upgradient of the subject site with respect to the inferred groundwater flow direction. Ecology conducted no sampling or testing immediately upgradient of the property to determine if petroleum contaminants may be migrating onto the subject property.

Ecology completed thirteen soil vapor borings, three soil borings and three groundwater-monitoring wells at the subject property. The results of the testing indicated that two monitoring wells exhibited concentrations of gasoline compounds exceeding the Model Toxics Control Act (MTCA) Method A Cleanup level. Ecology concluded that the petroleum contamination in the vicinity of the aboveground tank farm was most likely due to releases during petroleum product offloading and storage tank cleanout operations at the site. Products released from underground piping may also account for the soil and groundwater contamination detected in the vicinity of the USTs.

As stated previously, Ecology issued an Agreed Order to the owners of the site in October 1997. Ecology determined that Earl Storey, Suzanne Storey, Marilyn Storey, and Joanne Storey Mankus were considered as "owners or operators" of the facility and were thereby notified of their status as "potentially liable persons" (PLPs) under RCW 70.105D.040 after notice and opportunity for comment on March 24, 1997. Attached to the Agreed Order was a Statement of Work for the Remedial Design/Feasibility Study of the station site. The Statement was amended to allow for a phased approach to the remediation of the known site.

conditions to accommodate the proposed upgrading of the facility by Storey. This document reports the results of the implementation of that Statement of Work.

Ten aboveground storage tanks (ASTs), three underground storage tanks (USTs), and four fuel islands and associated piping have been properly decommissioned from the site. These tanks have been replaced with seven new ASTs situated in a new aboveground concrete secondary containment basin. A "Draft" Spill Prevention, Control and Countermeasures (SPCC) Plan has been forwarded to EPA Region X. This Plan will be finalized and forwarded to the EPA when the facility upgrades are completed.

GEI conducted a phased series of site investigations after acceptance of the RI/FS Work Plan by Ecology (November 1997). These investigations included the following scope of work.

- 1) Two phases of test pit soil sampling and analysis — the soil samples were field-screened for the contaminants of concern and representative samples were submitted for laboratory analysis.
- 2) Four groundwater-monitoring wells were installed and properly developed — one up-gradient and three down-gradient wells. The wells were sampled at approximately regional high and low water table (three sampling periods). The water samples were submitted for laboratory analysis. Also, hydrogeologic gradient and flow analysis was completed on the wells.
- 3) Surface water and sediment samples were collected from an on-site drainage ditch. These samples were submitted to a laboratory for chemical analysis.
- 4) As the areas became accessible during facility decommissioning and upgrading, Storey excavated petroleum-impacted soil from impacted soil source areas identified in the two phases of test pit sampling. GEI collected soil samples from the source removal areas for field screening and follow-up chemical analysis. This sampling was intended to direct the source area removals and to test the soils remaining following the removals.

The following summarizes the results of these investigations.

Soil Samples - Results of the test pit sampling indicated that soils in the vicinity of the ASTs, USTs, and pump islands contained concentrations of petroleum hydrocarbons in excess of the MTCA Method A cleanup levels.

Representative samples of the affected soils were also analyzed for volatiles, semivolatiles and metals. The results of these tests confirmed that the soils are within MTCA-acceptable limits for these contaminants with the exception of one sample, which contained 310 mg/kg for lead — slightly above the MTCA Method A limit of 250 mg/kg in soils.

Water Samples - GEI monitored the installation of four groundwater wells at the site — one upgradient and three downgradient wells. Laboratory

analysis of soil samples collected from the monitoring well borings resulted in no-detectable petroleum compounds in the soil.

Water from each of the wells was sampled on January 15 1998, June 4, 1998 and September 16, 1999. Laboratory analysis of these samples confirmed petroleum hydrocarbons were within MTCA Method A Cleanup Standards in all of the wells for all sampling events — with the exception of monitoring well MW-2, which contained gasoline-range petroleum compounds in excess of MTCA Method A in the water sample collected on June 4, 1999. This well is situated in the northeast corner of the property — downgradient of the previous location of the ASTs. This single exceedence in this well may be a result of high water table migrating through the affected source area soils. The presence of floating product was not observed in the groundwater monitoring wells.

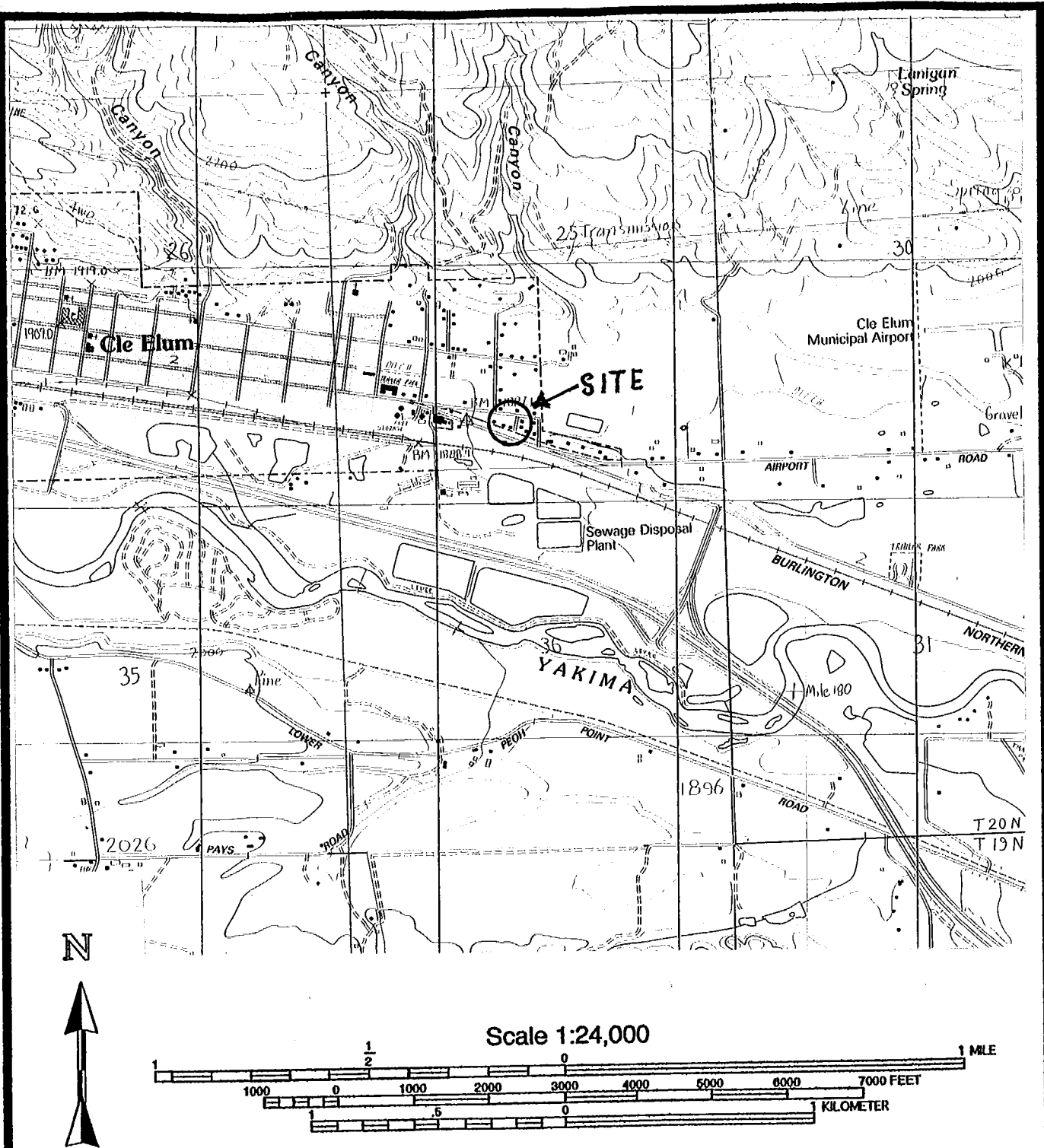
Younger Creek Water and Sediment Samples – Sediment samples were collected from the drainage ditch located along the southeastern portion of the property (Younger Creek) on January 15 and June 4, 1998. Petroleum hydrocarbon concentrations were slightly above the MTCA-Action limit in the January samples and not detectable in the June samples. Petroleum hydrocarbons were not detectable in the water samples collected from the drainage.

Source Removals (Interim Remedial Action) - An interim remedial action was conducted at the Storey site in September of 1999. This action consisted of the removal of approximately 600 cubic yards of petroleum-impacted soils, following the removal of the pre-existing ASTs, USTs, and fuel pump islands.

Impacted soil was removed from these source areas until: 1) remaining petroleum concentrations in the soil were within Ecology's Method A Cleanup Levels for residential soil; or 2) continued excavation may have jeopardized the structural integrity of the concrete secondary containment housing the ASTs. The excavated soil is currently stockpiled on-site in a lined, secure stockpile area awaiting remediation. Remaining petroleum hydrocarbon concentrations remaining belowground at the site are summarized as follows:

- 1) Source area clearance samples have confirmed that petroleum concentrations in soil are less than the MTCA Method A Cleanup Level in the upper eight feet of the ground surface, with one exception — 1,900 mg/kg diesel-range petroleum hydrocarbons at six feet below the ground surface (bgs) beneath the previous location of the Station office
- 2) Diesel-range petroleum hydrocarbons are confirmed in soil — up to 8,100 mg/kg at depths greater than eight feet bgs (approximately 20 feet west of the previous location of the Station office building)
- 3) Gasoline-range petroleum hydrocarbons in the soil are less than the MTCA Method A Cleanup Level in all areas tested, with one exception — 480 mg/kg at 9.5 feet bgs beneath the previous location of the facilities AST pumps; and

- 4) Petroleum hydrocarbon concentrations are within MTCA Method A limits in the area of the previous fueling island locations at depths less than 9.5 feet bgs; however, diesel-range petroleum hydrocarbon are present at depths greater than 9.5 feet bgs at concentrations up to 2,800 mg/kg. NOTE: groundwater table at the time of source removals excavation in this area was approximately 8.5 feet bgs.



Contour Interval = 40 feet

FIGURE 1-1 — SITE LOCATION MAP
 Storey Service Station Site, Cle Elum, Washington
 Source: USGS Cle Elum, 7.5' Quadrangle, 1984
 April 2000, Project #20008



2.0 ENVIRONMENTAL REMEDIATION

2.1 REMEDIATION GOALS AND OBJECTIVES

Petroleum-affected soil and groundwater is present at the site and, according to current WDOE regulatory guidance, requires remedial action or additional environmental investigation studies to defend "No Further Action" at the site. The objectives of this work plan are to describe the procedures and protocols to be followed during this remedial activity.

A Final Cleanup Action Report will be submitted to the WDOE within 30 days following the successful on-site remediation of petroleum-impacted soils currently stockpiled on-site.

2.1.1 Regulatory Framework

Remediation of the soil and/or groundwater impacted by petroleum products in Washington State is regulated by the Model Toxics Control Act (MTCA, WAC 173-340). Generally, remediation of such sites is performed following the voluntary independent provisions of MTCA.

This report follows the WDOE Remedial Investigation and Feasibility Study provisions of WAC 173-340-350 to collect, develop, and evaluate the selection of a cleanup action (if remedial action is necessary) under WAC 173-340-360 (MTCA). In addition to the sampling requirements specified in the above-referenced WDOE guidance documents, all samples were collected in general accordance with the EPA document SW-846, (Test Methods for Evaluating Solid Waste -Physical/Chemical Methods).

GEI will collect soil and water samples for chemical analyses from the site. These tests will follow WDOE guidance contained in the Guidance for Remediation of Petroleum Contaminated Soils (WDOE Publication 91-30, revised April 1994).

2.2 CLEANUP LEVELS

Either MTCA Method A or Method B could be acceptable for the site. Given the relative routine nature of the contamination found at the Storey site and the limited number of hazardous substances, the Method A cleanup level appears to be the most appropriate for this site.

The WDOE has developed a guidance document for cleanup levels in soils and groundwater for petroleum compounds. The appropriate levels at the Storey site were determined by utilizing the information available and considering the current land use in the vicinity of the site. These cleanup levels were established for the protection of public health and the environment in accordance with WAC 173-340. Therefore, the MTCA Method A (Residential) Cleanup Levels for soil and groundwater have been selected as the appropriate levels for the Storey property.

The site is relatively simple in that the primary contaminants of concern are all petroleum compounds. Those compounds are still present belowground in soil downgradient of the petroleum-impacted source areas. These compounds may also be present in groundwater downgradient from the source areas. These compounds include benzene, toluene, ethyl benzene, and xylene (BTEX), along with general gasoline-, diesel- and oil-range hydrocarbons.

2.2.1 *Soil Cleanup Target Levels*

The MTCA Method A soil cleanup levels are 0.5, 40.0, 20.0, and 20.0 mg/kg for benzene, toluene, ethylbenzene, and xylene. The soil cleanup levels for gasoline-range hydrocarbons are 100 mg/kg, and diesel- and oil-range petroleum hydrocarbons are 200 mg/kg.

2.2.2 *Water Cleanup Target Levels*

The Method A cleanup levels for benzene, toluene, ethyl benzene, and xylene in groundwater are 5, 40, 30, and 20 µg/L, respectively. The cleanup level for petroleum hydrocarbons in water are 1000 µg/L.

The remedial action activities outlined in this CAP include the following scope of work:

- 1) On-site bioremediation of approximately 600 cubic yards of petroleum-impacted soil in a secure, lined treatment cell
- 2) Groundwater quality monitoring of four on-site groundwater wells
- 3) Restrictive Covenants/Deed Restrictions; and
- 4) A Final Cleanup Action Report will be submitted to the WDOE within 30 days following the successful on-site remediation of petroleum-impacted soils currently stockpiled on-site.

3.1**ON-SITE BIOREMEDIATION OF STOCKPILED SOILS**

The proposed location of the on-site bioremediation cell is located as shown in Figure 3-1 — Site Plan Map. The contaminated materials will be excavated from the temporary stockpile area and placed into the cell as it is being constructed. This CAP describes specific design criteria, which are discussed under the following headings.

- Facility Design
- Facility Drawings
- Nutrient Description
- Nutrient Application Rates
- Wastewater Discharge
- Cultured Bacteria
- Rate of Bioremediation
- Monitoring Plan
- Air Contamination

The operation of the biotreatment cell is expected to be completed within one year of its initial startup. For clarity and ease of discussion, the design criteria will follow in the order listed above.

3.1.1***Facility Design***

As discussed above, the biotreatment cell will be constructed in the same location as the impacted soil is currently stockpiled as shown in Figure 3-1 — Site Plan Map. It will consist of one 50 feet wide by 150 feet long bermed and lined cell. The 600 cubic yards of impacted soil will be approximately two-foot thick in the pad.

This treatment pad will be lined with 10-mil high-density polyethylene (HDPE) liner. The specifications of the liner were compared against the requirements for the liner at similar hydrocarbon contaminated projects with the site-specific environmental conditions in mind (i.e. harsh winter conditions) and the nature of the contaminants to ensure the competence of the material. This design has been made with the best possible care regarding site specific conditions.

The pad will be graded with an approximate one degree slope towards the west to allow leachate liquid to drain to a low point in the cell to be pumped back onto the pad as necessary to prevent flooding of the leachate onto the adjacent soils. The evapotranspiration rate is expected to have a net loss relating to the water/leachate added to the pads, resulting in no leachate/water releases out of the pad.

3.1.2 *Nutrient Description*

This plan has been conceived using guidance documents involving application proportions of elements (Bradford and Krishnamoorthy, Jacobs Engineering Group, Feb. 1991), and application rates and alternative nutrient choices (John Hains - Microbiologist, EPA). The Toxicity of the nutrient additives is described for each compound below.

The nutrients added to the soil piles during the remediation will be as follows:

Ammonium Nitrate - The EPA lists the criterion for ammonium nitrate at 10 mg/liter for domestic water supply. It is not listed as a priority pollutant. During this operation the ammonium nitrate will not come in contact with any source of domestic water so it can be reasonable stated that the toxicity of ammonium nitrate would not be a factor of concern.

Phosphorus - Phosphorus is listed as a non-priority pollutant, although it is listed in the criteria for water quality (EPA), as toxic in marine waters at levels of 0.10 micrograms/liter for elemental phosphorus. The phosphorus applied to the remediation piles will not be as elemental phosphorus but as a phosphate compound. Also the small quantity applied and the distance from direct contact with marine waters should make this a non-concern element.

Approximately 500 lbs. of nutrients with a will be applied to the soil the first year of the remediation program. The amount of nutrients added may increase if needed. Samples will be collected, approximately every month, to test whether nutrient or microbe addition is necessary to enhance results. (Note: The amount of nutrients needed to bioremediate the soil has been calculated using the formula $X \text{ lbs. nutrient} = .05 \times \text{concentration of contaminated soil}$, this calculation procedure has been suggested by Al Venosa of the EPA's Risk Reduction Laboratory)

Operating Temperature - The operating temperatures of the soil will depend solely on the ambient air temperature at the project site. Since the site is located in the central portion of Washington State, the temperature can range from 90 to -10 degrees Fahrenheit.

Operating pH - During this operation of the cell, the pH of the soil will be monitored to ensure that it remains near neutral. If the pH in the pad changes to an undesirable level, then a neutralizing agent will be added to bring it back to near normal range ($6.0 < \text{pH} < 8.0$).

Nutrient Tilling Rate - The nutrient-tilling rate at the site will consist of

turning of the soil at a rate of approximately once every four weeks.

3.1.3 *Nutrient Application Rates*

Samples will be collected, approximately every month to test whether nutrient or microbe addition is necessary to enhance results.

3.1.4 *Wastewater Discharge*

There will be no wastewater generated or disposed of at the site. All water removed from the pit will be added to the piles and re-circulated through the system until all of the water evaporates.

3.1.5 *Cultured Bacteria*

The basic principle of bioremediation is to exploit the ability of microorganisms to catabolize a wide range of organic substrates. When successful, bioremediation results in the conversion of a toxic chemical to nontoxic materials. The microorganisms use the organic contaminants as a source to support their growth and when the contamination is gone, so is their food source.

GEI will apply genetically cultured microorganisms, purchased from Osprey Biotechnics (Sarasota, Florida) to biodegrade the contaminants on-site. The selected type of microorganisms has been specifically engineered to degrade the targeted petroleum compounds. Specifically, one magnum of Series 1 Magnum Multiplier engineered to break down the petroleum compounds will be added to the stockpile. Also, 25 pounds of commercial grade ammonium nitrate (50%) will be added to enhance the biodegradation (electron receptor).

Prior to beginning (and during) the actual remediation, additional samples may be taken to be analyzed to ensure that there is in fact a large enough bacterial population to complete the remediation. If however, there is found to be an insufficient quantity of bacteria, then a plan will be formulated to add additional microbes to the site.

3.1.6 *Rate of Biodegradation*

The estimated rate of biodegradation to bring the soil to a level below the state-imposed action should proceed at a rate allowing completion of the project within four months after the starting date. This time estimate is based on one complete summer season to provide for a hospitable environment for the remediation to occur. In this time the level of hydrocarbon contamination in the soil should drop from an average level of approximately 400 mg/kg diesel-range and 20 mg/kg gasoline-range petroleum hydrocarbons down to a level below the state-imposed MTCA Method A Cleanup Levels in soil.

3.1.7 *Cell Monitoring Plan*

A site-monitoring plan has been developed which will detect any leaks in

the cell. The plan is as follows:

The cell will be visually inspected for leaks (flooding) from the pad to the adjacent soils. This will be effective due to the fact that the gradient of the cell area will slope towards the west to a low point allowing any runoff of contaminated water to be detected from samples taken in these areas.

Also, soil samples will be taken from the soil beneath and adjacent to the pad (following pad decommissioning) to confirm that leaks from the pad have not adversely impacted the underlying soils.

3.1.8

Air Contamination

The majority of the impacted soil is impacted by diesel-range petroleum hydrocarbons. As stated earlier, GEI estimates that the average concentration of petroleum compounds in the stockpiled soils are as follows: diesel-and/or oil-range hydrocarbons = 400 mg/kg; and gasoline-range hydrocarbons = 20 mg/kg.

Due to the low average concentrations of gasoline-range compounds in the stockpiled soils, the only emissions of concern in "uncombusted hydrocarbons" are Benzene in the diesel-range. For air quality calculations, the average concentration of Benzene in diesel is approximately one-tenth of one percent (0.10% Benzene). Using this information, it was calculated that the average Benzene emission from the soil would be 0.4 parts per million (ppm or mg/kg). The national exposure limit for benzene is 10 ppm (NIOSH Guide to Chemical Hazards).

GEI will monitor the worker breather zone and pad perimeter, using a Photovac Photoionization Detector (PID) and Draeger tubes (if necessary) to ensure that excessive concentrations of volatile petroleum compounds are not released during pad construction and till of the materials.

3.2

GROUNDWATER QUALITY MONITORING

Storey proposes to incorporate groundwater performance monitoring of the four-groundwater monitor wells on-site. The water sampling and analysis is intended to confirm that human health and the environment are adequately protected from potentially harmful petroleum compounds in the water as required by WAC 173-340-410.

The wells were installed by GEI during the Site RI/FS to investigate for the presence of impacted groundwater in one well located upgradient of the known on-site contamination and three wells located downgradient of confirmed on-site contamination near the property line. The property line is considered to be the site's Point of Compliance.

Storey intends to direct GEI to collect water samples from the wells quarterly for a minimum of one year (four quarterly sampling events) and semi-annually for a minimum of one year. The rationale for sampling at these

time intervals are to be able to compare results of low water table (January) with high water table (June). Chemical analysis on groundwater samples will include WDOE Method WTPH-Gasoline/BTEX and lead, WTPH-Diesel, and WTPH-Other.

At the completion of these two years of groundwater testing and provided that these results confirm that the groundwater is within the MTCA-allowable limits in water, Storey may request to the WDOE that continued groundwater monitor well sampling be suspended in these wells.

3.3

INSTITUTIONAL CONTROLS/DEED RESTRICTIONS

Since petroleum compounds are present in the subsurface soils above the currently-allowable MTCA Method A cleanup levels, institutional controls and/or restrictive covenants (deed restrictions) are required to assure the continued protection of human health and the environment (WAC 173-340-440). Institutional controls have been incorporated into the design of the Storey facility upgrades by capping the residual petroleum-impacted subsurface soil with asphalt (*see Storey RI/FS, GEI, April 2000*).

Storey proposes to execute a restrictive covenant on the property with the register of deeds for Kittitas County. The intent of this deed restriction is to prohibit future invasive activities in the areas of impacted soil, which may result in the release of the contaminant to the environment. Storey will be required to notify the WDOE prior to the conveyance of any ownership interest in the site to anyone not currently considered being "potentially liable person" at the site. Storey will restrict leases to uses and activities consistent with this restrictive covenant and notify all lessees of the restrictions on the use of the property.

Within 60 days of Ecology's approval of the Final Cleanup Action Report (*see Section 3.4 — Final Cleanup Action Report*), Storey shall execute and record a Restrictive Covenant on the property (*a "Draft" Restrictive Covenant is attached in Appendix A*) with the Kittitas County Assessor, or other appropriate County entity. After the execution of the Restrictive Covenant, Storey shall forward a signed copy of the recorded Restrictive Covenant to Ecology for its records.

If the residual petroleum compounds remaining in the subsurface soils are subsequently reduced such that MTCA allowable levels are met without a conditional point of compliance, then Storey may request to the WDOE that the restrictive covenants be eliminated.

3.4

FINAL CLEANUP ACTION REPORT

A Final Cleanup Action Report will be submitted to the Washington Department of Ecology ("WDOE" or "Ecology") within 30 days following the successful on-site remediation of petroleum-impacted soils currently stockpiled on-site.

SAMPLING AND ANALYTICAL PROCEDURES

The objective of the sampling program will be to characterize petroleum concentrations in the treatment cell soils and groundwater samples collected from the four on-site monitor wells.

The sampling protocols and procedures will follow appropriate State and federal guidance documents, primarily EPA SW-846 and Washington State guidance documents.

Handling, storage, and shipment - All of the samples will be properly labeled, stored in a chilled container, and hand-delivered to a local Washington State-Certified laboratory, under proper chain-of-custody protocols. A field logbook will be used to document all of the field activities, problems encountered, and other relevant information regarding the sampling. The samples will be hand-delivered to On-Site Laboratory in Redmond, Washington for chemical analyses.

SOIL SAMPLING

Soil sampling will be the primary method of site contaminant characterization. The following sections describe the sampling rationale and procedures. Soil samples will be collected to investigate contaminant concentrations to determine whether additional remediation is necessary in the treatment cell. In order to confirm complete remediation of impacted soils, a sampling program will be implemented. This program will assure remedial completeness through systematic sampling of the affected areas both vertically and horizontally.

Soil samples will be collected in a grid fashion throughout the treatment cell. A minimum of seven soil samples will be collected from the grids within the cell as recommended by the WDOE — Guidance for Remediation of Petroleum Contaminated Soils (WDOE Toxics Cleanup Program, Revised November 1995).

These samples will be field-screened with an organic vapor analyzer/ photoionization detector (OVA-PID). Representative soil samples will be selected for analysis based on visible staining, odor and headspace screening of the excavated soils.

The soil will be placed into a stainless steel mixing bowl where it will be homogenized, field screened, and a representative portion of the soil will be transferred into a laboratory-supplied glass container.

The sampling equipment will be thoroughly decontaminated between sampling locations using a Liquinox wash solution followed by a distilled water rinse.

4.2 WATER SAMPLING

Water samples will be collected from the four existing on-site monitor wells. Well sampling procedures and laboratory analyses will strictly follow all appropriated State and federal guidance documents.

4.3 ANALYTICAL PROCEDURES

Washington Department of Ecology (Ecology or WDOE) and EPA methods will be followed during all stages of the sample collection, storage, shipment, and analyses. Chemical analyses will be performed on samples that field screening suggest are "clean" samples to document "no contamination" at the test areas. Chemical analyses on soil samples will include Ecology Method WTPH-gasoline range analysis on all samples submitted for chemical testing.

A Washington State-Certified laboratory for gasoline-range hydrocarbons with BTEX (EPA Method 8015 Modified/8021B) will analyze soil and water samples.

5.0

QUALITY ASSURANCE/QUALITY CONTROL

A Quality Assurance/Quality Control Program has been established to ensure that environmental monitoring data of known and acceptable quality are provided.

All field sampling and laboratory analysis will follow proper quality assurance procedures and will be conducted in accordance with EPA guidelines for field test methods (SW-846, Vol. II).

Ecology- and EPA-recommended Quality Assurance/Quality Control Procedures (QA/QC) field sampling, decontamination of equipment, and shipping and handling procedures will be followed throughout the field investigation. The analytical results will confirm that the sampling equipment was properly decontaminated and that no cross-contamination occurred between samples and laboratory results are within method-specified QA/QC limits.

5.1

QUALITY ASSURANCE OBJECTIVES

The quality assurance objectives for measurement data include precision, accuracy, representativeness, completeness and comparability. Definitions of the objectives can be found in Section 5 of the Guidance Document.

5.2

DATA QUALITY OBJECTIVES

The data quality objectives (DQOs) are expressed in level of intensity of data collection.

Petroleum Hydrocarbon Identification Analysis
Practical Quantitation Limit = 10 mg/kg
Accuracy = 70-130 % Recovery
Precision = 0-30 %RSD
Completeness = 95%
Method = IR

5.3

- QA/QC SAMPLES

In order to ensure the accuracy of analytical results and to comply with the QA/QC Program, QA/QC samples may be included in the sampling program. The following sections discuss the types of samples to be collected.

Rinsate Blanks - Rinsate blanks are samples of analyte-free, deionized water poured through decontaminated sampling equipment and appropriately packed and shipped for analysis with the other samples. For this program, rinsate blanks will be collected daily during each sampling event performed at the site.

Field Replicates (Duplicates) - Duplicate samples are samples collected as close to the original sample as possible across the same vertical interval. At least 5% of the samples will have companion replicate samples collected. These samples will be collected at the same depth and immediately adjacent to its companion duplicate.

Split Samples - A split sample is a single sample analyzed twice to check the reproducibility of laboratory results. At least 5% of the samples will be split and collected during the course of this program.

Travel Blanks - Travel blanks are samples of analyte-free, deionized water filled at the analytical laboratory that travel with the other sample containers to the field and back to the laboratory, but which remain unopened. This is done to track any potential sources of contamination introduced by means other than sampling. A travel blank will accompany each shipment to the laboratory.

FIELD DOCUMENTATION

This section describes the use of field logbooks, sample identification, and shipment. Example Chain-of-Custody forms are included.

The Field Operations Leader (FOL) will maintain a field logbook documenting all activity and samples during all phases of the investigation. The field logbook will include the following information for each sample:

- 1) Date
- 2) Time
- 3) Location
- 4) Sample identification number
- 5) How sample was collected
- 6) Comments.

The FOL will keep the site logbook. This will summarize the daily activities, visitors, and problems encountered. Any entries made in the logbook must be signed and dated by the individual. A telephone log will be kept to document any phone conversations that are project oriented. The person holding the conversation will make these entries. All forms (shipping, etc.) will be kept, as necessary, in a binder with the field personnel.

The logbooks shall be initiated at the start of the first on-site activity, and entries shall be made for every day that site activities occur. The logbooks will be weatherproof and bound with numbered pages.

Sample-tracking records include the sample labels and chain-of-custody seals to place over a container opening, and the Chain-of-Custody / Analysis Report forms. The samples taken must be traceable from the time the samples are collected until they or their derived data are used in the final report. In order to maintain and document sample possession, the following field custody procedures shall be implemented.

- 1) The FOL is personally responsible for the care and custody of the samples collected until they are properly transferred or dispatched to the laboratory.
- 2) Sample labels shall be completed for each sample using waterproof ink.
- 3) A Chain of Custody / Analysis Report form accompanies samples. The custody record shall be completed using waterproof ink. Drawing a line through, initialing and dating the change, then entering the correct information will make any corrections. Erasures or whiteouts are not permitted. When transferring possession of samples, the individuals relinquishing and receiving them shall sign, date, and note the time on

7.0

PROJECT REPORTING

GEI will prepare a written report documenting the results of this work. Analytical results for all samples collected from the cuttings and water samples will also be provided. After Storey review the reports and any comments are addressed by GEI, then GEI will provide final reports to the WDOE.

7.1

PROJECT ORGANIZATION

GEI's Project Manager responsible for the daily operations of the project is Gary Galloway. Mr. Galloway reports to Ms. Suzanne Storey, Storey's representative for this project.

7.2

SCHEDULE

If we start the field activities by June 2000, we should be completed with the successful biotreatment of the stockpiled soils by the end of September 2000.

The groundwater-monitoring program is expected to last for two years.

DRAFT

APPENDIX A

"DRAFT" RESTRICTIVE COVENANT

RESTRICTIVE COVENANT

Suzanne Storey, Marilyn Storey, and Joanne Storey Mankus
Storey Gas Station

This Declaration of Restrictive Covenant is made pursuant to RCW 70.105D.030(1)(f) and (g) WAC 173-340-440 by Suzanne Storey, Marilyn Storey, and Joanne Storey Mankus, its successors and assigns (hereafter "Storey"), and State of Washington Department of Ecology, its successors and assigns (hereafter "Ecology").

An independent remedial action (hereafter "Remedial Action") occurred at the property that is the subject of this Restrictive Covenant. The Remedial Action conducted at the property is described in the following documents — These documents are currently on file at the Ecology Central Regional Office in Yakima, Washington:

- *Remedial Investigation/ Feasibility Study at the Storey Gas Station Facility, 1310 East First Street, Cle Elum, Washington, Galloway Environmental, Inc., March 2000*
- *Cleanup Action Plan at the Storey Gas Station Facility, 1310 East First Street, Cle Elum, Washington, Galloway Environmental, Inc., May 2000*
- *Final Cleanup Action Report at the Storey Gas Station Facility, 1310 East First Street, Cle Elum, Washington, Galloway Environmental, Inc., October 2000 — to be completed following the successful remediation of petroleum-impacted soil currently stockpiled on-site.*

This Restrictive Covenant is required because the Remedial Action resulted in residual concentrations of gasoline- and diesel-range petroleum hydrocarbons which exceed the Model Toxics Control Act Method A Residential Cleanup Levels for soil established under WAC 173-340-740.

The undersigned, Suzanne Storey, Marilyn Storey, and Joanne Storey Mankus, are the fee owners of real property (hereafter "Property") in the County of Kittitas, State of Washington, that is subject to this Restrictive Covenant. The Property is legally described as follows:

- Situated in the SE1/4 of the SW1/4 of Section 25, Township 20 North, Range 15 East of the Willamette Meridian
- The Tax Account Numbers (Parcels) are 20-15-2552-0021-00 and 20-15-2552-0029-00

Suzanne Storey, Marilyn Storey, and Joanne Storey Mankus make the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereafter "Owner").

Section 1. Any activity on the Property that may result in the release or exposure to the environment of the contaminated soil that was contained as part of the Remedial Action, or create a new exposure pathway, is prohibited. Some examples of activities that are prohibited in the capped areas include: drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, piercing the surface with a rod, spike or similar item, bulldozing or earthwork.

Section 2. Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.

Section 3. Any activity on the Property that may result in the release or exposure to the environment of a hazardous substance that remains on the Property as part of the Remedial Action, or create a new exposure pathway, is prohibited without prior approval from Ecology.

Section 4. The Owner of the Property must give thirty-day (30) advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title,

easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.

Section 5. The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions on the use of the Property.

Section 6. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Restrictive Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Section 7. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the Property, and to inspect records that are related to the Remedial Action.

Section 8. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Restrictive Covenant shall no longer limit use of the Property or be of and further force or effect. However, such an instrument may be recorded only if Ecology, and after public notice and opportunity for comment, concurs.

Signed by:

Suzanne Storey

Date signed

Marilyn Storey

Date signed

Joanne Storey Mankus

Date signed