
**Preliminary Assessment Report
Whatcom County Central Shop
Bellingham, Washington**

Contract: 68-W6-0008
Technical Direction Document No. 98-10-0001
May 1999

Region 10

START

Superfund Technical Assessment and Response Team

Prepared By:
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Prepared For:
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DRAFT
PRELIMINARY ASSESSMENT
WHATCOM COUNTY CENTRAL SHOP
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**PRELIMINARY ASSESSMENT
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LIST OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
bgs	below ground surface
BTEX	benzene, ethylbenzene, toluene, and xylene
cfs	cubic feet per second
Ecology	Washington State Department of Ecology
E & E	Ecology and Environment, Inc.
EPA	United States Environmental Protection Agency
mg/kg	milligram per kilogram
MTCA	Model Toxics Control Act
NWI	National Wetland Inventory
PA	Preliminary Assessment
PAH	polycyclic aromatic hydrocarbon
SVOC	Semivolatile Organic Compound
START	Superfund Technical Assessment and Response Team
TDD	Technical Direction Document
TPH	Total Petroleum Hydrocarbon
USCB	United States Census Bureau
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	Volatile Organic Compound
WDC	Washington Department of Conservation
WDFW	Washington Department of Fish and Wildlife
WRCC	Western Regional Climatic Center

1. INTRODUCTION

Ecology and Environment, Inc., (E & E) was tasked by the United States Environmental Protection Agency (EPA) to provide technical support for completion of a Preliminary Assessment (PA) at the Whatcom County Central Shop in Bellingham, Washington. E & E completed PA activities under Technical Direction Document No. 98-10-0001, issued under EPA Region 10 Superfund Technical Assessment and Response Team (START) Contract Number 68-W6-0008. The specific goals for the Whatcom County Central Shop identified by EPA are:

- Determine the potential threat to public health or the environment posed by the site;
- Determine the potential for a release of hazardous constituents into the environment; and
- Determine the site's potential for placement on the National Priorities List.

Completion of the PA included reviewing existing site information, collecting receptor information within the site's range of influence, determining regional characteristics, and conducting a site visit. **Section 2** discusses background site information, **Section 3** discusses migration/exposure pathways and potential receptors (targets), and **Section 4** lists pertinent references.

2. SITE BACKGROUND

2.1 SITE LOCATION

Site Name: Whatcom County Central Shop

CERCLIS ID No.: WASFN1002082

Location: 901 West Smith Road
Bellingham, Washington 98226

Latitude: 48° 49' 58" North
Longitude: 122° 32' 10" West

Legal Description: Section 34, Township 39 North, Range 2 East

Site Owner: Whatcom County Public Works Department
Road Division Operations and Maintenance
901 West Smith Road
Bellingham, Washington 98226-9610

Site Operator: Whatcom County Public Works Department
Road Division Operations and Maintenance
901 West Smith Road
Bellingham, Washington 98226-9610

Site Contact: Richard Prieve, Superintendent
901 West Smith Road
Bellingham, Washington 98226-9610
(360) 676-6759
(360) 380-8111

2.2 SITE DESCRIPTION

The Whatcom County Central Shop is the main base for activities associated with road maintenance in Whatcom County. The site is located immediately east of the intersection of West Smith Road and Northwest Road in the north part of Bellingham, Washington (Figure 2-1). The Central Shop facilities occupy an area of approximately 11 acres. Whatcom County facilities have occupied the site since 1980. Prior to 1980, the land was used for farming (Prieve 1999).

The site consists of an office building, two storage buildings, a truck shed, a maintenance/storage shed, a fenced compound, fuel pumps, and rock bunkers used to store raw materials for road maintenance

(Figure 2-2). The Northwest Annex includes an old barn and areas used by the county for storing various types of equipment and surplus materials (Figure 2-2).

2.3 SITE OPERATIONS AND WASTE CHARACTERISTICS

The site is the main base of operations for Whatcom County's road maintenance activities. The facility includes several buildings which house an office, vehicle storage and maintenance areas, and equipment storage areas. The facility is also used for fueling county vehicles and stockpiling raw materials associated with road maintenance (i.e., gravel, sand, rip rap).

In April 1998, Whatcom County Public Works staff conducted a routine inventory check at the Central Shop and determined that empty and partially full 55-gallon drums located at the facility were potentially endangering worker health and groundwater quality. Accordingly, Whatcom County contracted Safety Kleen Corporation to sample and profile the drum contents, and remove and dispose of all empty and partially full drums present at the site (Whatcom County 1998a). The drums were located in two staging/storage areas, the open compound at the south side of the facility and the area adjacent to the old barn at the Northwest Annex. Approximately 22 drums of waste were removed from the site by Safety Kleen on April 24, 1998. Manifests generated from the drum profile samples indicate the partially full drums contained waste paints, waste fuels and solvents, tar, and alkaline detergent. The wastes were transported to Safety Kleen's disposal facility in Smithfield, Kentucky (Whatcom County 1998b).

Empty and partially full drums of hazardous materials accumulated on site from the facility's normal maintenance activities and from discoveries in the Whatcom County rights-of-way. It has been reported that Whatcom County staff may also have deposited privately generated hazardous materials at the site (Ecology 1998). Currently, Whatcom County has developed a program to eliminate the accumulation of empty drums at the site and properly manage and dispose of wastes generated on site (Prieve 1999). The plan for this management procedure has been provided to Ecology.

In July 1998, an employee of the facility contacted a member of the Whatcom County council regarding the presence of hazardous materials at the site. The complaint raised concerns about residual contamination resulting from the storage of drummed wastes and from liquid material spills during routine operations at the site. Subsequently, the county council member notified the Whatcom County Central Shop foreman, the Washington State Department of Ecology (Ecology), and EPA regarding the complaint (Whatcom County 1998b; Whatcom County 1998c). The complaint raised concern about four specific areas at the site:

- The "hot box" tool maintenance area within the northeast truck shed;

- A former paint spill and the former drum accumulation area within the open compound at the south side of the facility;
- An area behind the rock storage bunkers which allegedly had been used for disposal of containers of unknown materials; and
- The former drum accumulation area on the east side of the old barn, located at the Northwest Annex of the main facility.

2.4 PREVIOUS INVESTIGATIONS

Whatcom County conducted an investigation of the four areas identified above (Section 2.3). The investigation was performed by EMCON on August 11, 1998, with oversight by Ecology and the Whatcom County Health Department (Ecology 1998). The investigation included the following activities:

- At the “hot box” area, one surface soil sample and two subsurface soil samples (2 and 3 feet below ground surface [bgs]) were collected. These samples were analyzed for Ecology methods WTPH-G (gasoline), WTPH-D (diesel), WTPH-O (oil), and benzene, ethylbenzene, toluene, and xylenes (BTEX) by EPA Method 8021B.
- At the open compound, three subsurface soil samples were collected, including one from 2 inches bgs, and two from depths of 6-9 inches bgs at different locations in the drum storage area. These samples were subsequently composited into a single sample at the laboratory and analyzed for WTPH-G, WTPH-D, WTPH-O, BTEX by EPA Method 8021B; volatile organic compounds (VOCs) by EPA Method 8260B; semi-volatile organic compounds (SVOCs) by EPA Method 8270; and for priority pollutant metals by EPA Methods 6010/7471A. At the former paint spill location, one subsurface soil sample was collected from a depth of 14 inches BGS and was analyzed for VOCs by EPA method 8260B and for priority pollutant metals by EPA Methods 6010/7471A.
- At the area behind the rock storage bunkers, a visual reconnaissance of potential waste disposal or previous storage was conducted by EMCON and Ecology. No soil staining or evidence of waste burial was found. Consequently, no sampling was performed in this area.
- At the drum accumulation area near the old barn, one surface soil sample and one subsurface soil sample (depth of 6 inches BGS) were collected. The samples were analyzed for WTPH-D and WTPH-O.

Results of the sampling are presented in Table 2-1. The results indicate that several areas sampled contained soil contaminant concentrations above Washington Model Toxics Control Act (MTCA) Level A soil cleanup levels. Specifically, WTPH-D and WTPH-O concentrations in surface soil at the “hot box” area and in surface and subsurface soil at the old barn drum storage area exceeded the cleanup levels. None of the detected priority pollutant metals concentrations exceeded the MTCA Level A cleanup levels. BTEX, VOCs, and SVOCs were not detected in any of the samples (EMCON 1998).

Based on these results, Whatcom County initiated soil excavation and cleanup confirmation sampling activities at the “hot box” area and the former drum accumulation area at the old barn. The cleanup activities were performed by EMCON on October 22 and November 3, 1998. At the “hot box” area, approximately 10 cubic yards of petroleum-contaminated soil were excavated. The excavation depth was 3.5 feet, and groundwater was not encountered at this depth. Cleanup confirmation sample results indicated that TPH-D and TPH-O soil concentrations in the excavation side walls and bottom were below MTCA cleanup levels. The excavated soil was transported to CSR Associated in Everett, Washington, for treatment and disposal (EMCON 1999).

At the former drum accumulation area near the old barn, approximately 4 cubic yards of petroleum-contaminated soil were excavated. The excavation depth was 2 feet, and groundwater was not encountered at this depth. Cleanup confirmation sample results indicated that TPH-D and TPH-O concentrations in the western portion of the excavation were still above MTCA Level A cleanup levels. This location was excavated again, and an additional 2 cubic yards of soil were removed. One cleanup confirmation sample was collected from this additional excavation area. Following this removal and sampling, the excavation was backfilled with clean imported fill. The excavated soil was transported to CSR Associated in Everett, Washington, for treatment and disposal (EMCON 1999).

TPH-D and TPH-O concentrations still exceeded the MTCA Level A cleanup levels in the final cleanup confirmation sample from the excavation at the old barn drum accumulation area. Accordingly, EMCON performed a risk evaluation of the remaining contaminant concentrations in the soil using Ecology’s interim TPH Policy Method. The evaluation modeled potential health risks associated with the residual contamination to humans via direct contact and ingestion and the potential for residual hydrocarbons to impact groundwater. The results of the risk evaluation indicated that soil remaining in the backfilled excavation area does not pose unacceptable risks to human health or groundwater quality (EMCON 1999).

2.5 START SITE VISIT

START conducted a site visit at the Whatcom County Central Shop on January 8, 1999 (E & E 1999). START was accompanied by David Misko of Ecology on the visit. The visit included a meeting with Whatcom County Public Works staff to discuss the history of waste removals and soil investigations at the site and an exchange of recent reports prepared by EMCON. Following the meeting, START conducted a site walk-over. Photographic documentation of the site walk-over is provided in [Appendix A](#).

The facility surface is mostly paved and is flat. Several gravel covered areas on the west and south sides of the site exist. A chain link fence surrounds the entire facility, and the entrance gate is locked

during non-business hours. Surrounding land use includes low-density housing, open fields, and a rifle range to the east and south; county ballfields to the west; and low-density housing to the north. Runoff from the site enters ditches on the east and west sides of the site and flows south in these ditches several hundred feet to an intermittent fork of Silver Creek (Figure 2-2).

At the “hot box” area, the excavation area was observed (Photographs 1 and 2). The excavation area is covered with gravel. Diesel fuel, used for cleaning equipment in this area, is temporarily stored in a labeled 55-gallon drum. The drum is removed and disposed of by Safety Kleen when full. No soil staining was observed in this area.

At the fenced compound at the south side of the facility, the former paint spill location and the former drum accumulation excavation area were observed (Photographs 3 and 4). No soil staining was observed in either location, and the ground surface is clean gravel.

At the rock bunker area, the alleged drum storage/disposal area was observed (Photographs 5 and 6). No soil staining was observed in this area, and no indication of historical excavations is evident. START walked the west boundary of the facility to check for the presence of oil or other potential contaminants seeping into the drainage ditch adjacent to the rock bunkers. No evidence of contamination in the ditch was observed.

At the former drum accumulation area at the old barn, the excavation area was observed (Photographs 7 and 8). No soil staining was observed. The ground surface in this area is soil, and several small puddles were present. Some surplus county-owned debris (old water tanks, metal debris) is stored in this area; however, none of the materials observed represent a source of hazardous substance contamination.

No other environmental concerns were observed at the Whatcom County Central Shop by START during the site visit.

Table 2-1

**SUMMARY OF 1998 SAMPLING
WHATCOM COUNTY CENTRAL SHOP
BELLINGHAM, WASHINGTON**

Location:	Northeast Truck Shed Hot Box Area		South Compound Drum Storage	South Compound Paint Spill	Drum Storage at Old Barn		MTCA
Sample type: Depth:	Grab Surface	Grab 3 Feet	Depth Composite 2-9 Inches	Grab 14 Inches	Grab Surface	Grab 0.5 Feet	Level A Cleanup Level
Petroleum Hydrocarbons (mg/kg)							
WTPH-G	10.3	ND (5.0)	ND (5.0)	NA	ND (5.0)	ND (5.0)	100
WTPH-D	18,500	23.7	ND (10)	NA	31,500	3,820	200
WTPH-O	2,520	ND (25)	ND (25)	NA	42,200	5,890	2,000
BTEX (mg/kg)							
Benzene	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	0.02
Toluene	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	0.2
Ethylbenzene	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	5
Xylenes	ND (0.10)	ND (0.10)	ND (0.10)	NA	ND (0.10)	ND (0.10)	80
VOCs (mg/kg)	NA	NA	ND (0.10-2.0)	ND (0.10-2.0)	NA	NA	
PAHs (mg/kg)	NA	NA	ND (0.10-5.0)	NA	NA	NA	
Priority Pollutant Metals (mg/kg)							
Antimony	NA	NA	ND (0.50)	ND (0.50)	NA	NA	
Arsenic	NA	NA	2.27	2.18	NA	NA	20
Beryllium	NA	NA	ND (0.50)	ND (0.50)	NA	NA	
Cadmium	NA	NA	ND (0.50)	ND (0.50)	NA	NA	
Chromium	NA	NA	12.8	7.36	NA	NA	100
Copper	NA	NA	17.2	15.4	NA	NA	600
Lead	NA	NA	2.23	2.41	NA	NA	250
Nickel	NA	NA	21	8.72	NA	NA	
Selenium	NA	NA	ND (0.50)	ND (0.50)	NA	NA	
Silver	NA	NA	ND (0.50)	ND (0.50)	NA	NA	
Thallium	NA	NA	ND (0.50)	ND (0.50)	NA	NA	
Zinc	NA	NA	23.7	22.1	NA	NA	6,000
Mercury	NA	NA	ND (0.10)	ND (0.10)	NA	NA	

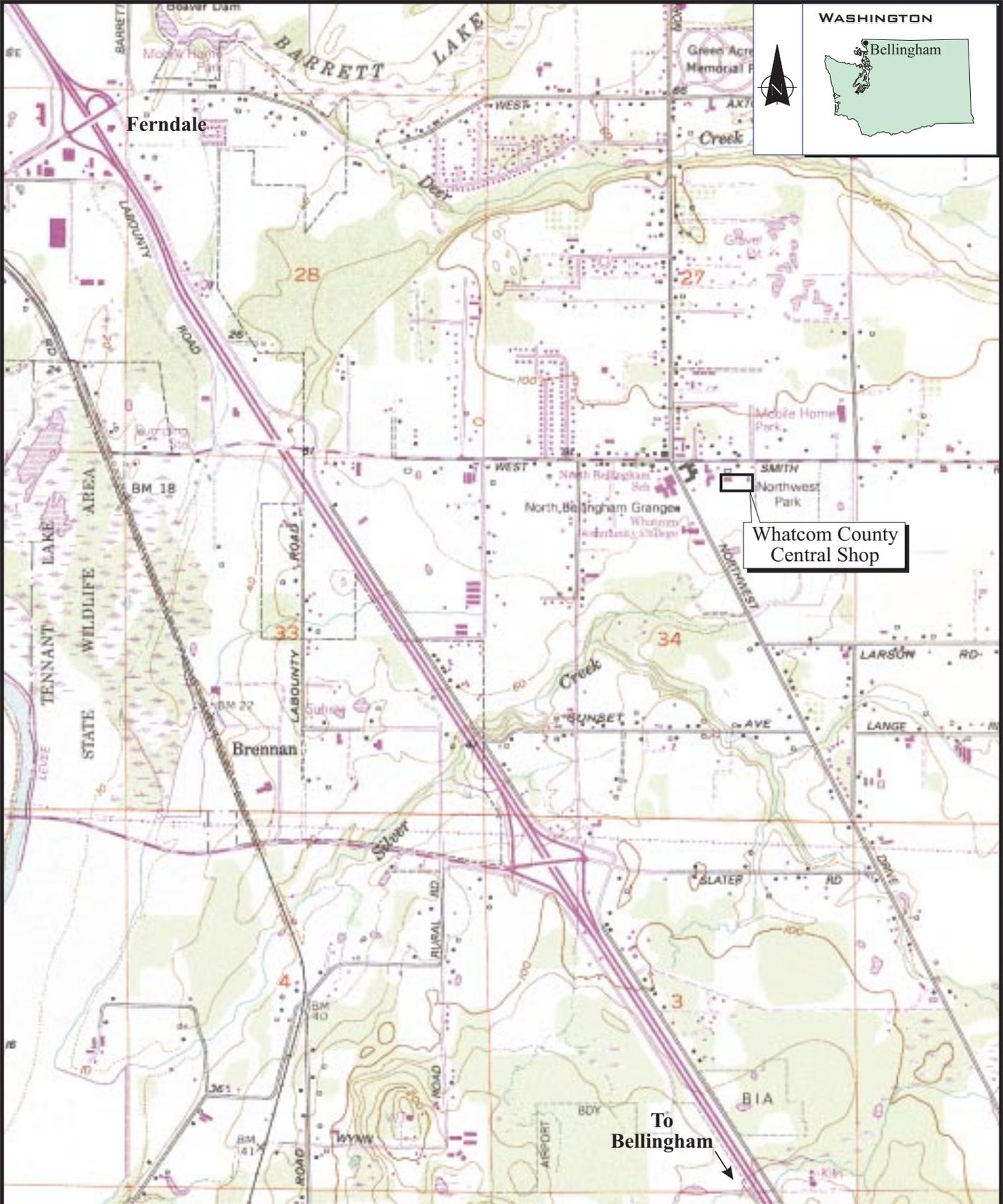
2-6

Source: EMCON 1998.

Key:

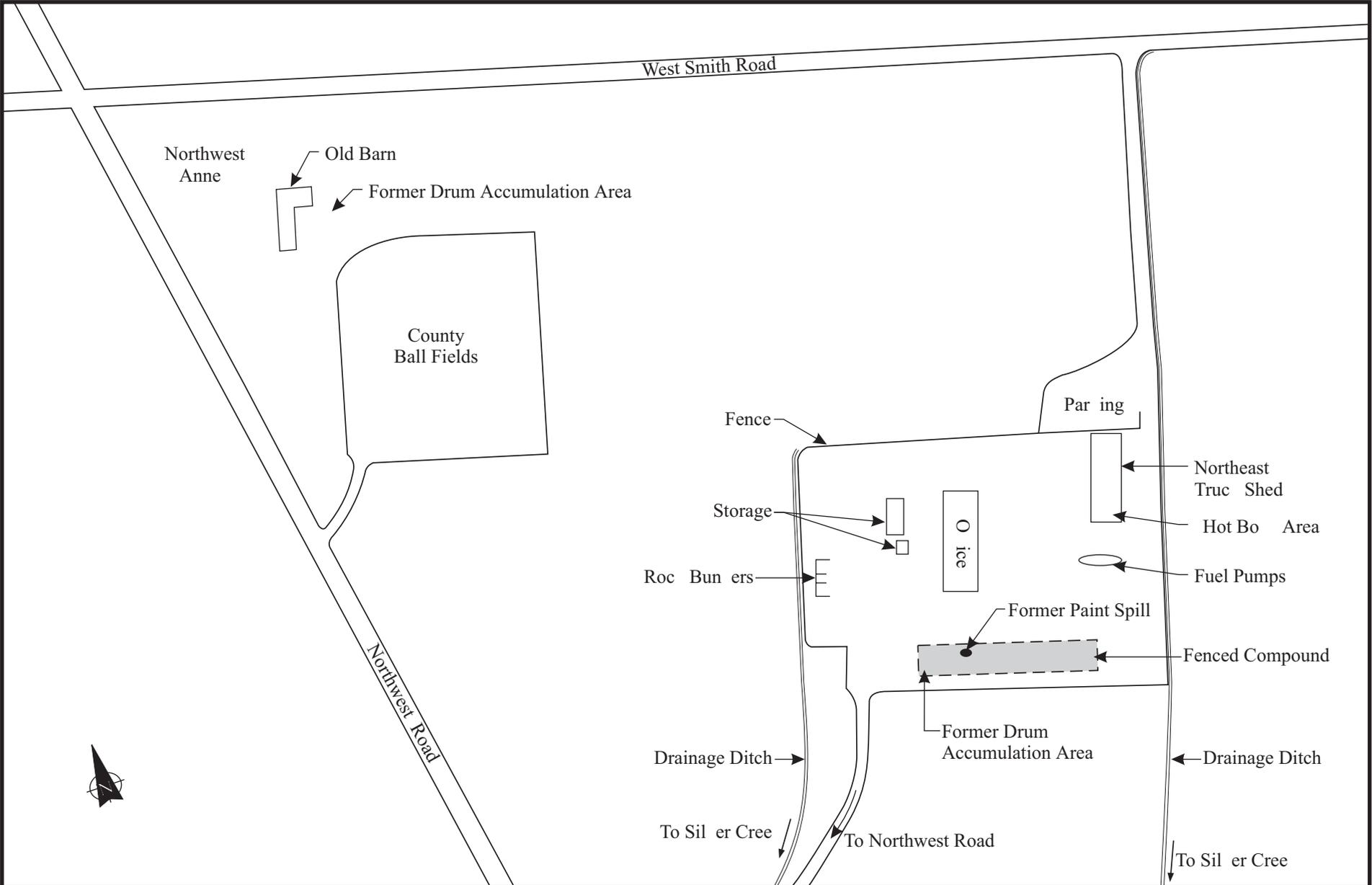
ND = Analyte not detected at detection limit listed.
NA = Analysis not performed.

VOCs = Volatile Organic Compounds.
PAHs = Polycyclic Aromatic Hydrocarbons.



Whatcom County
Central Shop

To
Bellingham



3. MIGRATION/EXPOSURE PATHWAYS AND TARGETS

The following sections describe migration/exposure pathways and potential targets within the site's range of influence ([Figure 3-1](#)).

3.1 GROUNDWATER MIGRATION PATHWAY

The Whatcom County Central Shop is located in the Nooksack River floodplain. The site is underlain by recessional outwash deposits from the Vashon glaciation period. These outwash deposits consist of poorly sorted clays, silts, sands, and gravels. Unconfined groundwater occurs at relatively shallow depths and, in the site area, is within 10 feet of the ground surface. Groundwater flow in the site area is toward the west and northwest (WDC 1960).

All of the wells near the site are completed in the Vashon outwash deposits and draw groundwater from the unconfined water table aquifer (Ecology 1999a). In general, the wells in the site vicinity range in depth from 20 to 530 feet bgs. A total of 575 private wells exist within 4 miles of the site. These wells include 552 private domestic wells, 18 irrigation wells, and 5 industrial wells (Ecology 1999a). An estimated total of 1,474 persons are served by the private domestic wells based on the average number of occupants per house (2.67) in Whatcom County (USCB 1999).

A total of 42 public and municipal wells are located within 4 miles of the site. These include wells that serve several water associations, mobile home parks, and the city of Ferndale municipal supply system. An estimated total of 8,980 persons are served by the public and municipal wells within 4 miles of the site (EPA 1999).

[Table 3-1](#) summarizes the groundwater population within 4 miles of the site.

3.2 SURFACE WATER MIGRATION PATHWAY

No permanent surface water flow routes occur on the Central Shop property; however, the east and west sides of the site are drained by shallow ditches. Storm sewers exist in paved portions of the site. Any uncaptured runoff from the site enters the drainage ditches on the east and west boundaries of the Central Shop perimeter ([Figure 2-2](#)). These drainage ditches flow approximately 200 feet south and empty into a fork of Silver Creek, which is designated intermittent on United States Geological Survey (USGS) topographic maps (USGS 1994). The intermittent fork of the creek flows approximately 2,000 feet (0.4

mile) southwest to the main fork of Silver Creek. The main fork of Silver Creek flows southwest for 3.8 miles to the Nooksack River delta. The creek enters the easternmost fork of the Nooksack River delta, which flows approximately 4,000 feet (0.75 mile) to Bellingham Bay, a marine embayment of the Strait of Georgia. The mean flow rate of the Nooksack River is 4,450 cubic feet per second (cfs; USGS 1999). No flow gauging stations exist on Silver Creek; however, the creek is estimated to have mean flows in the range of 10 to 50 cfs based on minimum streamflow rates reported by the State of Washington (WDC 1960).

The 2-year 24-hour rainfall average for the site area is 2 inches (Miller et al. 1973). Based on flood frequency and magnitude information reported by the State of Washington, the site area is estimated to be within the 100-year floodplain (WDC 1960).

A total of 13 registered surface water rights exist on Silver Creek downstream of the Whatcom County Central Shop. No registered surface water rights exist on the Nooksack River downstream of the site. The Silver Creek water rights include seven that are used for domestic supply purposes, and six are used for irrigation and/or stock watering. The nearest water withdrawal point to the site is located approximately 0.5 miles southwest and downstream of the site (Ecology 1999b). The estimated population served by the domestic intakes is 18 persons (USCB 1999).

Silver Creek is a designated state priority anadromous fish migration area. Species present in Silver Creek include chum salmon, coho salmon, and winter steelhead. The Nooksack River is also an anadromous fish migration area, with chinook salmon, coho salmon, sockeye salmon, chum salmon, sea-run cutthroat, and steelhead present in the river (WDFW 1999a). Bellingham Bay is used for sport fishing. During May 1998, the Washington Department of Fish and Wildlife (WDFW) reported two lingcod and eleven rockfish were harvested from the bay near Glenn Street in Bellingham. The weights of harvested fish are not provided in this report (WDFW 1999b).

Wetlands exist along Silver Creek and the Nooksack River downstream of the site (NWI 1987). Palustrine Emergent and Palustrine Forested wetlands border the intermittent portion of Silver Creek, starting at a location approximately 1,000 feet south of the site. Approximately 1,500 linear feet of the creek are bordered by wetlands along this portion of the surface water pathway. Palustrine Forested and Palustrine Emergent wetlands exist along the entire length of the perennial portion of Silver Creek downstream of the site. Approximately 18,500 linear feet (3.5 miles) of the creek are bordered by wetlands along this portion of the surface water pathway. Palustrine Forested wetlands border the Nooksack River from its confluence with Silver Creek to its mouth in Bellingham Bay. Approximately 7,000 linear feet (1.3 miles) of the Nooksack River are bordered by these wetlands. No wetlands conforming to the

definition of wetland in 40 CFR 230.2 are located adjacent to Bellingham Bay within 15 miles of the site.

Table 3-2 summarizes the wetlands along the surface water migration pathway downstream of the site.

No threatened or endangered species are known to utilize habitat along the surface water pathway within 15 miles downstream of the site (WDFW 1999a).

3.3 SOIL EXPOSURE PATHWAY

Based on documentation of the 1998 removal actions at the site and observations made during the START site visit, no surficial contamination presently exists at the site. The main complex of the site is surrounded by a fence with locking gates. The fence has an electronic entry system. The Northwest Annex area, which includes the former drum accumulation area at the old barn, is fenced and the gates are locked during nonbusiness hours (E & E 1999). Twenty-five county employees work at the site (Prieve 1999). No residential structures exist on site. No private residences, schools, or day-care facilities exist within 200 feet of areas where contamination was previously documented at the site (EMCON 1998; E & E 1999). The nearest residence to the site is located approximately 1,000 feet to the north (E & E 1999). However, the North Bellingham school is located approximately 0.2 miles to the southwest of the former drum accumulation area at the old barn (USGS 1994). The number of residents in the site vicinity is summarized in **Table 3-3**.

3.4 AIR MIGRATION PATHWAY

Air releases from the site are not anticipated to be a significant mechanism for contaminant migration or human exposure. All areas known to be contaminated have been remediated and covered with clean fill or gravel. Additionally, the most significant concentrations found at the site in 1998 were contaminants with relatively low volatility (e.g., diesel- and oil-range hydrocarbons). The net annual precipitation in the site area is 35.99 inches (WRCC 1999).

Approximately 16,589 persons live within 4 miles of the site. The Bald eagle, a federally listed endangered species, has been observed nesting within 4 miles of the site (WDFW 1999a). A total of approximately 2,891 acres of wetlands exist within 4 miles of the site. The majority of these wetlands are Palustrine Emergent and Palustrine Forested wetlands (EPA 1999; NWI 1987). **Table 3-3** summarizes the resident population and wetland acreage within 4 miles of the site.

Table 3-1			
GROUNDWATER POPULATION SUMMARY WHATCOM COUNTY CENTRAL SHOP BELLINGHAM, WASHINGTON			
Distance (Miles)	Number of Domestic Wells	Number of Public/ Municipal Wells	Population Served
On a source	0	0	0
0 - ¼	9	0	25
¼ - ½	27	3	938
½ - 1	85	7	593
1 - 2	84	6	660
2 - 3	86	5	858
3 - 4	261	21	7379
Total	552	42	10,453

Source: EPA 1999; Ecology 1999a

Table 3-2			
WETLAND STREAM FRONTAGE SUMMARY WHATCOM COUNTY CENTRAL SHOP BELLINGHAM, WASHINGTON			
Stream Segment	Type of Wetlands Present	Linear Stream Distance	Total Wetland Frontage
Silver Creek; Intermittent Portion	Palustrine Emergent Palustrine Forested	1,500 feet	3,000 feet
Silver Creek; Perennial Portion	Palustrine Emergent Palustrine Forested	18,500 feet	37,000 feet
Nooksack River	Palustrine Forested	7,000 feet	14,000 feet
TOTAL			54,000 feet (10.2 miles)

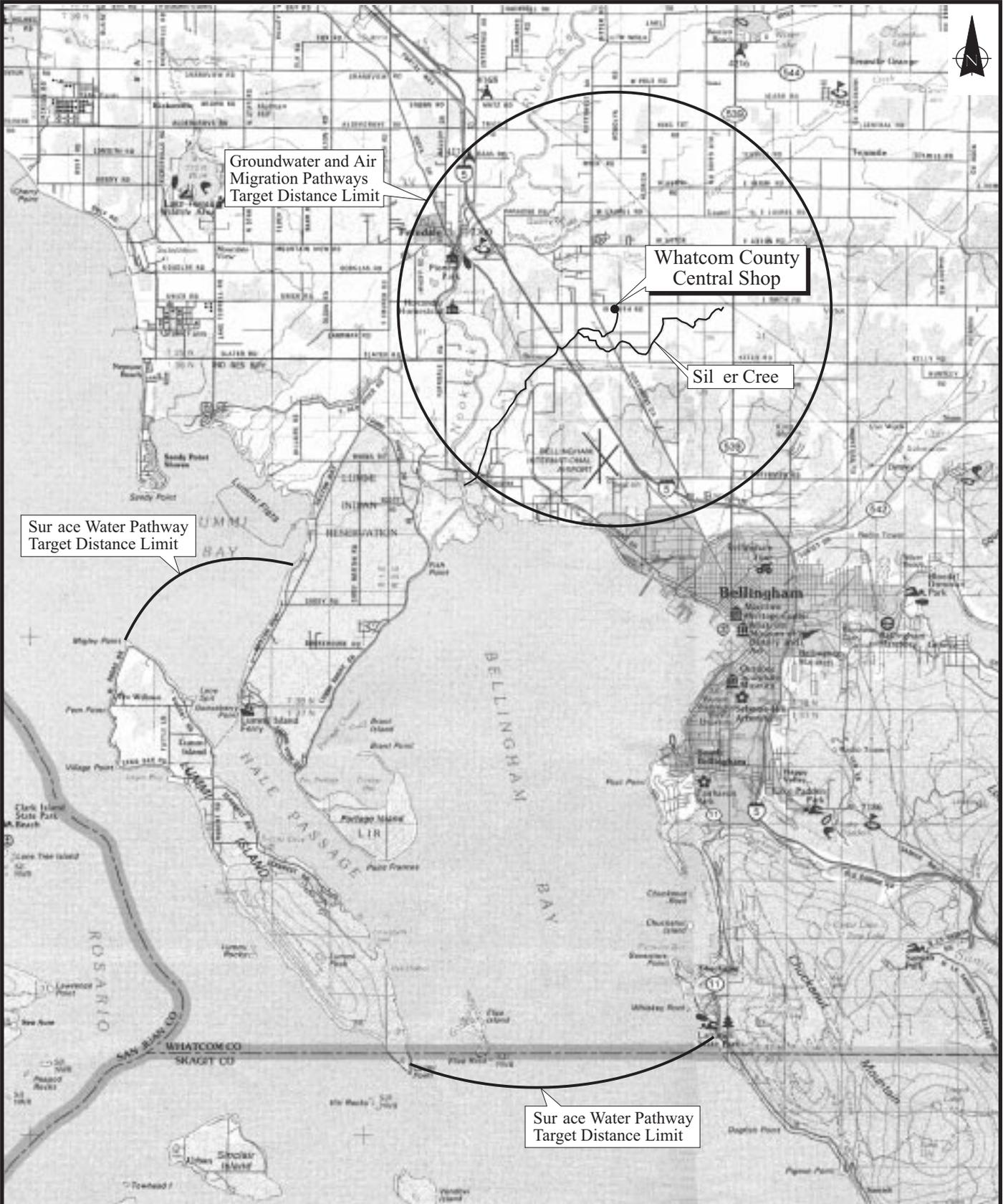
Source: NWI 1987

Table 3-3

**SUMMARY OF POPULATION AND WETLAND ACREAGE
WHATCOM COUNTY CENTRAL SHOP
BELLINGHAM, WASHINGTON**

Distance (Miles)	Residents	Wetland Acreage
On a source	0	0
0 - ¼	65	9.2
¼ - ½	244	23.9
½ - 1	1,001	75.4
1 - 2	2,300	943.7
2 - 3	3,038	780
3 - 4	9,941	1,059.3
Total	16,589	2,891.6

Source: EPA 1999



4. REFERENCES

- Ecology and Environment, Inc. (E & E) 1999, site observations, field notes, and photographic documentation collected during site visit, January 8, 1999.
- EMCON 1998, Analytical data reports for August 11, 1998 sampling conducted at Whatcom County Maintenance Shop, submitted to David Misko, Washington Department of Ecology, August 14, 1998.
- EMCON 1999, letter to Richard Prieve, Whatcom County Public Works, regarding soil removal and sampling at Whatcom County Maintenance Shop, Bellingham, Washington, January 7, 1999.
- Miller, J. F., R. H. Frederick, and R. J. Tracey 1973, Precipitation Frequency Atlas of the Western United States, Volume IX-Washington.
- National Wetlands Inventory (NWI) 1987, wetland maps for Ferndale and Bellingham North quadrangles, Washington.
- Prieve, Richard, Whatcom County Public Works, letter to Ecology and Environment, Inc., January 20, 1999.
- United States Census Bureau (USCB) 1999, census data for Whatcom County, Washington, accessed from internet: <http://venus.census.gov/>
- United States Environmental Protection Agency (EPA) 1999, Geographic Information Query System (Version 97.1.8) printout and digital map, accessed via internet: <http://www.epa.gov/r10earth/>
- United States Geological Survey (USGS) 1994, topographic maps: Ferndale, Bellingham North, Bertrand Creek quadrangles, Washington.
- _____, 1999, historical flow data for Nooksack River, accessed via internet: <http://waterdata.usgs.gov/>
- Washington Department of Conservation (WDC) 1960, Water Resources of the Nooksack River Basin and Certain Adjacent Streams, Water Supply Bulletin No. 12.
- Washington Department of Ecology (Ecology) 1998, letter to Richard Prieve, Whatcom County Public Works Department, from David Misko, Compliance Assistance Specialist, September 1, 1998.
- _____, 1999a, water well logs for north Bellingham area, Bellevue, Washington.
- _____, 1999b, water rights tracking system printout for Whatcom County, Washington.
- Washington Department of Fish and Wildlife (WDFW) 1999a, printout and map of sensitive species and habitats for north Bellingham area, Olympia, Washington.
- _____, 1999b, Fish Harvest data for Bellingham Bay, Washington, accessed via internet: <http://www.dfw/>
- Western Region Climatic Center (WRCC) 1999, Period of Record Monthly Climate Summary, accessed via internet: <http://www.wrcc.dri.edu/cgi-bin/>

Whatcom County 1998a, Memorandum to Jeffrey M. Monson, Public Works Director, from Mary Scrimsher, E.R. & R. Manager, Emergency Unidentified Material Disposal, May 26, 1998.

_____, 1998b, Letter to Regional Administrator, United States Environmental Protection Agency, from Barbara Brenner, County Council Member, September 3, 1998.

_____, 1998c, Memorandum to Pete Kremen, County Executive, from Barbara Brenner, County Council Member, Improper Storage and Alleged Illegal Dumping of Extremely Hazardous Waste by Whatcom County in a Residential Area, August 5, 1998.

APPENDIX A
PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPH IDENTIFICATION SHEET

Camera Type: Olympus

TDD #: 98-10-0001

Lens Serial #

Site Name: Whatcom County Central Shop

Photo No.	Dir.	Date	Time	By	Description
1	W	1/8/99	1300	WMR	"Hot Box" excavation area.
2	E	1/8/99	1300	WMR	Waste diesel storage drum at "hot box" area.
3	N	1/8/99	1310	WMR	Former paint spill area.
4	NW	1/8/99	1310	WMR	Former drum accumulation area at fenced compound.
5	S	1/8/99	1330	WMR	Alleged drum/waste burial area behind rock bunkers.
6	SW	1/8/99	1330	WMR	Alleged drum/waste burial area behind rock bunkers.
7	NE	1/8/99	1355	WMR	Former drum accumulation area near old barn at Northwest Annex.
8	S	1/8/99	1355	WMR	Former drum accumulation are near old barn; ballfields in background of photo.



