HISTORICAL STUDY REPORT

SUDBURY ROAD LANDFILL
WALLA WALLA, WASHINGTON

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Prepared by:

Schwyn Environmental Services

Sudbury Road Landfill
Historical Study Report

Walla Walla, Washington

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City of Walla Walla
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1.0 INTRODUCTION

This historical study report was prepared by Schwyn Environmental Services, LLC (Schwyn) on behalf of the City of Walla Walla, Washington (City) to describe the historical activities that have occurred at the Sudbury Road Landfill (SRL) from its inception in the mid-1970s into 2005. The historical study was conducted as an initial phase of the SRL remedial investigation, and is intended to provide the basis for evaluating the historical landfill operations and where potential contaminant source areas may be located. The study was conducted in general accordance with the Criteria for Municipal Solid Waste Landfills (chapter 173-351 WAC, Ecology 1993) and the Washington State Model Toxics Control Act (MTCA) regulations (chapter 173-340 WAC, Ecology 2001).

1.1 BACKGROUND

The SRL is a municipal solid waste (MSW) landfill operated by the City consistent with chapter 173-351 WAC. The City installed a groundwater monitoring system in 1976 and has monitored groundwater quality hydraulically upgradient and downgradient of the landfill since 1977. A number of monitoring system changes have occurred since inception, and in 2001 monitoring well MW-15 was installed. The groundwater quality of the MW-15 samples was distinct from other samples collected in the vicinity of the landfill. Numerous volatile organic compounds (VOCs) and inorganic constituents were detected at statistically elevated levels in groundwater samples collected from MW-15. An assessment monitoring program was initiated in September 2002, and the results suggested that some of the VOC and inorganic constituents detected in the MW-15 samples were indicators of landfill impact to groundwater. Subsequent steps required by the solid waste regulation are described in WAC 173-351-440(6), which states that, when constituents are detected above background levels and the groundwater protection standard, the owner must:

- (6)(a): Characterize chemical composition of the release, the contaminant fate and transport characteristics, and extent of contamination in all groundwater flow paths by installing additional monitoring wells, and

- (6)(d): Initiate an assessment, selection, and implementation of corrective measures as required by the MTCA.

The City has initiated a remedial investigation (RI) to address these requirements and to characterize the contamination for the purpose of developing and evaluating cleanup action alternatives. The historical study is the first step of that process.

1.2 GOALS AND OBJECTIVES

Information about the operations and disposal practices during the early stages of the landfill development and operation has been poorly documented. The objective of the historical study is to collect and assemble information about the landfill that can be used to focus the RI toward potential groundwater contamination source area(s). The following information was sought during the study:

- Waste disposal practices including when and where the solid waste was disposed,
- Waste disposal methods including how the wastes were deposited on the property (i.e., trench fill, over bank deposition, natural depression fill),
- Waste types accepted,
- Customer base, and
- Contaminant source information.

The study included personnel interviews; review of City files, records and historical site photographs; and research of available public records for the site and vicinity.

1.3 REPORT ORGANIZATION

This report is organized into the following sections:

- Section 2.0 - Historical Information Resources, provides a brief description of the methods used to collect the information.
- Section 3.0 - SRL Historical Information, compiles the information into a possible sequence of events that have occurred at the landfill.
- Section 4.0 – Use of Report, describes the reports intended uses and limitations.
- Section 5.0 - References, identifies the references cited throughout this historical study.

Appendices are provided at the end of the report to present select information collected during the study.

2.0 HISTORICAL INFORMATION RESOURCES

This section briefly summarizes the historical information collection process.

2.1 INFORMATION REVIEW

Schwyn reviewed a variety of resources to develop the history of the SRL and adjacent properties. The resources included:

- County and state landfill operation records,
- City landfill records,
- Aerial photographs,
- Walla Walla County Assessor records,
- Interviews with individuals knowledgeable of the site,
- Library resources, and
- U.S. Geological Survey (USGS), Department of Natural Resources (DNR), and Natural Resource Conservation Service (NRCS) information.

These sources are further described below.

2.1.1 WALLA WALLA COUNTY-CITY HEALTH DEPARTMENT

The Walla Walla County-City Health Department (WWCCHD) is the jurisdictional and permitting agency for solid waste landfills located in Walla Walla County. The WWCCHD maintains permit applications and approvals, operation plans, and other records for the SRL. WWCCHD records were reviewed on March 24, 2005. Select information obtained from the SRL file review included:

- Preliminary SRL facility design plans from 1977,
- Engineering Report with Environmental Impact Statement and Application for Disposal Site Permit dated March 1977,
- Operation and closure plans from various years,
- Geohydrogeologic Study Report by Gullixson, dated May 1989, and
- Well driller reports for City and private wells located in the vicinity of the SRL.

2.1.2 WASHINGTON STATE DEPARTMENT OF ECOLOGY

The Washington State Department of Ecology (Ecology) works closely with the WWCCHD and is the solid waste regulatory authority. Ecology files were reviewed on March 17 and 18, 2005. Select information from the SRL file included:

- Landfill solid waste permit applications from 1977, 1995/96, and 2001/2004 (included amended applications and application correspondence),
- Ecology inspection reports,
- Groundwater monitoring reports and data from 1977 through 2004,
- Groundwater contamination correspondence, data, statistical calculations, and Ecology opinions,
- City notification letters submitted to Ecology regarding VOCs detections in upgradient monitoring wells (beginning in 1993),
- 1995 Hydrogeologic Report,
- Household Hazardous Waste Facility Permit applications and correspondence,
- Toxic Cleanup Program records for the Washington State Penitentiary, and
- Drillers well log information for wells in the vicinity of the landfill.

2.1.3 CITY OF WALLA WALLA

City of Walla Walla landfill, Public Works, and Geographic Information System (GIS) department information regarding the SRL, sprayfarm, and Tausick Way Landfill were accessed during the study. Select information from the SRL file included:

- Landfill solid waste permit applications,
- Landfill facility plans and specifications,
- Orthographic and land survey data, and
- Land parcel information.

2.1.4 WALLA WALLA COUNTY ASSESSOR

Landfill and sprayfield parcel information was collected from the Walla Walla County Assessor to determine when the properties were purchased.

2.1.5 AERIAL PHOTOGRAPHS

Aerial photographs for the period between 1975 through 2004 were sought through the following agencies:

- U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) Aerial Photography Field Office in Salt Lake City Utah,
- USDA Walla Walla field office,
- U.S. Army Corps of Engineers (USACE), Walla Walla District Office,
- Washington State Department of Transportation (WSDOT),
- City of Walla Walla GIS Department,
- Bergman Photographic Services, of Portland Oregon,
- Walker & Associates, of Seattle Washington,
- Shaw, Inc.,
- Walla Walla Public Library, and
- Local photographic service companies.

Photographic records were not obtained from all of the agencies contacted.

2.1.6 WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

WSDOT is evaluating the realignment of Highway 12 which may cross the southern side of the City property. Boring log data were obtained from WSDOT for three borings located along the proposed right-of-way.

2.1.7 INTERVIEWS

Interviews with former and current site workers were conducted to provide a better understanding of the site disposal history, including waste types, waste disposal locations and practices, and to gather leads on other historical information that may be available, such as photographs and former disposal records. Interviews were conducted with the following individuals:

- Mr. Al Prouty, former Landfill Supervisor 1985 to 1997,
- Mr. Dennis Rakestraw, Landfill Supervisor 1997 to present,

- Mr. Bob Smith landfill equipment operator 1985 to present, and
- Mr. Jay Yonkers, Hazardous Waste Facility operations.

2.1.8 LIBRARIES

Geologic and news reports were reviewed at the Walla Walla County Library and the Whitman College Penrose Library.

2.1.9 GEOLOGIC AND SOILS INFORMATION

U.S. Geological Survey (USGS), Department of Natural Resources (DNR), and Natural Resource Conservation Service (NRCS) publications were reviewed to update the existing geologic, soils and regional groundwater information.

2.2 INFORMATION SUMMARY

A summary of the interviews and select information reviewed from the noted sources are provided in the report appendices. The information summary by no means includes all permits, reports, letters, correspondence, or engineering information that was reviewed during the Historical Study. The summarized information were considered pertinent to the assembly of the historical time line of the SRL development provided in the following section and were provided as a convenience for future reference.

3.0 SRL HISTORICAL INFORMATION

3.1 SITE DESCRIPTION

The SRL is a municipal solid waste landfill located approximately 2 miles west of the Walla Walla business district in the north one-half of Section 22, Township 7 North, Range 35 East, Willamette Meridian, in Walla Walla County, Washington (Figure 1). The landfill is located on the western side of a large City-owned property used for spray application of food processing waste water (discontinued in April 2004) and application of waste water treatment plant sludge (Figure 2). The total waste management property consists of 967.17 acres. Approximately 125 acres of the property is used for landfill operations. Operation plans indicate that the landfill area may cover a much larger area in the future.

Pacific Power and Light (PP&L) owns a north-south trending strip of land that cuts across the eastern side of the waste management property (approximately 6,000 ft east of the landfill area). Large transmission lines extend over the PP&L land. The waste management property is further dissected by a Burlington Northern Santa Fe Railroad Company (BNSF) railroad right-of-way that roughly cuts the property into north and south halves. The 100 ft wide right-of-way was part of BNSF's Attalia to Walla Walla rail line and forms the northern boundary of the landfill area. The railroad tracks were removed circa 1988 and the right-of-way functions as a road across the property. The City expressed the desire to purchase the BNSF right of way in 1983 and again in 1988 without success.

Dry wheat farming is conducted on large expanses of land to the north and west of the site. The Washington State Penitentiary is located immediately east of the City property. Rural housing developments are located between the southern property boundary and State Highway 12.

3.2 SITE DEVELOPMENT

3.2.1 PRIOR USES

City records state that the previous owners of the site used a deep well for center pivot irrigation (City 1988a). Other portions of the property were apparently dry land farmed until they were purchased by the City and irrigated with food processing water.

3.2.2 PROPERTY ACQUISITION

In 1970 the City proposed to "develop a spray irrigation farm for disposal of industrial waste water from the canning plants, provide land on which to dispose of future domestic waste and to make

needed improvement and changes to the sewage treatment facilities" (City 1974). City and County Assessor records indicate that land, with an existing well and irrigation system, was purchased for $525,000, on November 9, 1970. Approximately, $125,000 of the payment was taken from the Sanitation Fund with the intent that some of the land would be used as a landfill site. A small 9-acre, triangular, parcel located at the northeast corner of the landfill site was subsequently transferred to the City on September 19, 1973.

Based on County Assessor records the wholly owned City parcels total 967.17 acres; however, the site is commonly referenced in documents as the 1,100 or 1,040 acre waste management property. When the 80-acre PP&L strip of land and the 35-acre BNSF railroad right-of-way are considered, the parcels within the site boundary incorporate approximately 1,080 acres, which likely account for the acreage generalizations used in the historical site literature. The County Assessor parcel information is provided in Appendix A.

3.2.3 SPRAYFARM DEVELOPMENT

In March 1971 the City entered into agreements with General Foods and Rogers Walla Walla for the development of the sprayfarm and lease of 600 acres of land for the agronomic application of food processing wastewater (City 1974). Construction of a transmission pipeline and irrigation system for the sprayfarm began shortly thereafter. Through the years the sprayfarm lease and operations have been transferred between several food processing companies. Under the lease agreements, the food processors were responsible to Ecology and the U.S. Environmental Protection Agency (EPA) for the National Pollution Discharge Elimination System (NPDES) and subsequent State Waste Discharge Permits. In April 2004, Seneca Foods, Inc., canceled the lease with the City and terminated the State Waste Discharge permit with Ecology.

3.2.4 BIOSOLIDS APPLICATION

Portions of the sprayfarm and the northwestern 200 acres of the waste management property have also been used for the agronomic application of biosolids. The biosolids are periodically removed from the anaerobic digester located at the City wastewater treatment facility and spread or injected into the topsoil at agronomic rates as a soil amendment. Wells 4 and 5 were installed and monitored to assess potential impact of the biosolids on groundwater quality.

3.2.5 LANDFILL DEVELOPMENT AND PERMITTING

The City used the Tausick Way Landfill (TWL) for solid waste disposal from the late 1930's until 1978. The TWL covers about 78 acres of land located west of Tausick Way, south of East Isaacs Avenue, and north of Mill Creek within the eastern Walla Walla City limits. Circa 1970, Washington State passed an air quality act which prohibited burning of solid waste. The TWL landfill rapidly began filling when the burning ceased (City records). By the mid-1970s the TWL was nearing capacity and in March 1976 the WWCCHD would not issue a "Conforming Permit" for the TWL due to the limited area remaining in the TWL. Instead the WWCCHD issued a "Nonconforming Permit" for the TWL with an expiration date of March 3, 1976 (WWCCHD 1976).

Records indicate that planning for the SRL began in earnest during the middle of 1976 and continued through 1977. The proposed new landfill was located on the western edge of the City's waste management property, north of Sudbury Road. The proposed parcel consisted of finger of upland property bounded on the east and south by an intermittent drainage, on the north by the BNSF railroad line that cut through a shallow draw, and on the west by rolling hills.

In 1976, the City Engineering Department prepared preliminary design plans for the SRL. The plans called for a road into the property extending north from Sudbury Road, and construction of a scale house and equipment building in the low valley of the intermittent drainage on the south side of the proposed landfill site. Three monitoring wells, now know as MW-1a, MW-2, and MW-3a were installed in late 1976, and background groundwater samples were collected on a monthly program from August 1977 through June 1978. On February 28, 1977, the Walla Walla Regional Planning Board of Adjustment granted a Conditional Use Permit to operate the SRL on the property which was zoned for agriculture (Walla Walla Regional Planning 1997). In March 1977, the City submitted an Engineers Report with an Environmental Impact Statement, Department of Ecology Application for Disposal Site Permit, and General Plan of Operation to the WWCCHD (City 1977). Ecology and the WWCCHD commented on the application during subsequent months and the "Conforming Permit" for the SRL was issued on June 27, 1997 by Mr. Eaton of the WWCCHD (WWCCHD 1977b). However, solid waste disposal was not initiated immediately at the SRL and the WWCCHD issued several extensions of the Nonconforming Permit for the TWL that extended until July 1, 1978. On July 10, 1978 the "New City Landfill on Sudbury Road" was opened to the public (Walla Walla Union 1978). Limited use of the TWL continued until August 1979 and final cover was placed over the TWL in 1987 and 1988 (WWCCHD and City files). The initial permit application and correspondence are provided in Appendix B.

In 1978, facilities at the SRL consisted of a paved road extending from Sudbury Road to the scale house and equipment building located at the base of the southern draw. Well #2 (MW-2) was installed on the hill northwest of the equipment building and supplied water to the equipment building and scale

house. The entrance road, equipment building, and Well #2 were still in use during 2005; however, the scale house was removed in 2002. Water from Well #2 was initially used as a drinking water source, but is now only used for non-potable water supply.

3.3 WASTE DISPOSAL PROCESS

Municipal solid waste, asbestos waste, and medical waste have been placed on the landfill site. Hazardous wastes have not been accepted at the facility. MSW has been placed in four separate areas, commonly referred to as Areas 1, 2, 5, and 6. Expansion into a new MSW disposal area, Area 7, is planned for 2006. Asbestos waste has been disposed of in two separate cells. A single medical waste cell has been used. The approximate refuse disposal areas are shown on Figure 3. Descriptions of the filling processes are provided below. Copies of historical photographs depicting the filling sequence are presented in Appendix C.

3.3.1 AREA 1

The Engineers Report, dated March 1977, states that "disposal of the refuse would start at the toe of the south slope of the landfill site then proceed up the slope to the edge of the plateau. After the south slope has been utilized, refuse would be disposed at the north slope in a similar sequence. Trenches would be excavated as needed perpendicular to the side slopes, generally following the final contour lines." Records indicate that this process was followed for the most part.

Waste was first placed in Area 1, located on the southeast face of the landfill area, starting in 1978 and continued off and on until about 1980 [1988 Operating Plan (City 1988b) and photographic review]. Review of photographs and preliminary design plans indicate that up to three trenches were excavated parallel with the curvature of the hillside. The plans called for the trenches to be excavated 10 feet (ft) deep and 30 ft wide, with a bottom slope of 0.01 and side slope of 0.15. The 1988 Operation Plan states that the waste was placed with no compaction equipment on hand.

An aerial photograph taken in August 1979 (Figure C-2, Appendix C) indicates waste disposal was active in Area 1 at that time. Uncovered waste can be observed due north of the entrance road, approximately 100 ft northeast of the equipment building. It appears that a second or third trench north is being worked in the photograph. Soil removal or disturbance is occurring to the east near present Area 7, west of the equipment building, and in Area 5. Scrape metal (based on D. Rakestraw account) is present near MW-1. A soil stockpile, which is still present today, is visible on the south side of the drainage.

In 2005, an excavation through the western end of Area 1 was conducted during the development of Area 7. The excavation indicated that the waste trenches in Area 1 are about 10 thick and that a

substantial volume of soil was used for cover during the fill process resulting in minimal amount of actual MSW volume.

3.3.2 AREA 2

Area 2 is located west of the equipment building. Reports of Area 2 disposal practices are limited. According to Mr. Prouty (Appendix D), the landfill supervisor from 1985 into 1997, waste in Area 2 was used for temporary disposal while the first trench in Area 5 was excavated. Mr. Prouty thought the waste was placed in a shallow gully and on the native surface without trenching. An aerial photograph taken in July 1979 indicates that minor trenching may have occurred west of the equipment building; however, deliberate trenches do not appear to have been excavated for Area 2. The limits of Area 2 were vague until a test pit program was conducted on May 24, 2005 by Schwyn.

Based on the findings of the test pit program, the approximate limits of Area 2 are shown on Figure 3. MSW observed in the test pits ranged from several inches to 4 ft thick, and was covered with 2 to 4 ft of silty soil.

3.3.3 AREA 5

Areas 5 is located at the northwest corner of the landfill parcel. This area was actually the third area to be filled, but is commonly referred to as Area 5. The waste in Area 5 exists approximately 50 to 300 feet east of the western property line, extends north to the base of a draw that separates the landfill from the BNSF right-of-way, and is bounded on the east by Area 6 and on the south by the central plateau. The draw along the northern edge routes stormwater west around the landfill and was part of the original natural drainage. Based on an early topographic map for the landfill area (dated June 2, 1979), the natural surface elevation of the draw area was about 790 ft above mean sea level (MSL) and sloped upward to the south to an elevation of approximately 830 ft MSL.

Many conflicting dates of use for Area 5 are found in the records. Photographic evidence (Figure C-2, Appendix C) indicates that excavation at the north side of Area 5, along the draw, was occurring in August 1979. In December 1978 landfill personnel discovered bones from an extinct form of bison during trenching at the landfill. The bones were discovered at a depth of 14 feet from surface in slack water sediments approximately 13,000 years of age (City file, undated). It is presumed that this excavation was in Area 5, thereby pushing the possible date of use back to late 1978. An aerial photograph from September 1990 shows that waste was still being placed on the south side of Area 5 at that time, but the area appears to be near capacity and the first trench of Area 6 has been excavated. Based on this information Area 5 was active from as early as 1978 through 1990.

Available resources suggest that Area 5 consists of four trenches (Trenches 5a, 5b, 5c, and 5d). Each trench extends approximately 950 to 1100 ft east-west. The four trenches were excavated side by side and extend about 450 ft south of the draw. Waste was first placed at the northern base of the hill along the draw. Trench profile drawings prepared for the 1980 Sanitary Landfill Permit indicate Trench 5a may have started as an excavation parallel and within the draw and that the depth of the trench was planned to be about 17 ft (City 1980; see Appendix B). As the trench was filled, another trench would be excavated on the adjacent hillside (south side of trench) and the soils from the second trench would be used for cover of the active cell. By this method the trenches would stair step up the hillside to the south.

Mr. Prouty stated that when he became the landfill supervisor in May 1985 that Trench 5b was approximately two-thirds full. Reports indicate that Trenches 5c and 5d were operated from 1986 through 1989. A dual-purpose lysimeter/gas vent was installed against the northern wall of Trench 5d. Mr. Prouty installed the gas vent and lysimeter and stated that the pipe was set on the trench bottom and provides an accurate measure of the bottom elevation of the trench. Historic literature, hand notes, and verification measurements collected by Mr. Rakestraw, landfill supervisor, in 2005 indicate that the bottom elevation of the gas vent and presumably the corresponding bottom elevation of these two trenches is about 777 ft MSL. A bottom elevation of 777 ft MSL would provide approximately 20 ft of separation between the MSW and groundwater in Trenches 5c and 5d.

Mr. Prouty stated that in 1985 minimal soil cover (less than 1 ft) had been placed over the waste in Trenches 5a and 5b, so he placed a 5 to 8 ft thick soil cover over the waste during 1985 and 1986. Temporary soil cover was placed over Trenches 5c and 5d during 1988 and 1989 (1988 Operating Plan). Final cover material was placed over Trenches 5c and 5d during 1994 consistent with the WAC 173-304-407 general closure and post closure requirements.

Mr. Prouty hand measured the trench locations in March 1986 and set stakes at the corners of each trench. The trench corners and boundaries were presented in the 1988 SRL Utilization Plan (Dahl, 1987); however, the boundaries do not correspond with the surface morphology of the fill area today and MSW has been verified outside the drawn trench boundaries. Additionally, a test pit program was conducted by the City and Schwyn in 2005 to determine where the edges of the trenches were located and the findings did not correspond with the survey either. The partially verified outer boundaries of MSW in Area 5 are shown on Figure 3.

Unverified reports suggest that sections of Trench 5a and possibly Trench 5b may have been excavated below the water table. Comments in the 1988 Operations Plan state “some report trench excavation uncontrolled” (City 1988b). Based on the planned profile estimate that the trenches were to be excavated 17 ft below the level of the draw. If excavated as designed, the bottom of Trench 5a would be about 773 ft MSL. This corresponds with comments on Sheet 3 of the 1988 Operations Plan; “770.00:

estimated low point of old trenches (pre 1979)" (City 1988b). However, Mr. Prouty recollected that the Trench 5a and 5b were being excavated 25 to 30 ft below the surface level of the draw and were being filled with uncompacted waste. He stated that when he took over Trench 5b was approximately 2/3 full and that he placed soil fill back into the trench to bring the bottom up approximately level with the draw. Based on Mr. Prouty's estimate that the trenches were excavated 25 to 30 ft below the level of the draw, the bottom of these trenches could be as low as 760 ft MSL. The groundwater elevation in MW-15, located at the northwest corner of the landfill site has measured as high as 756 ft MSL during the limited period of monitoring. Based on this information, there is potential that the bottom of these trenches and waste placement could be within 4 ft of the water table. A four foot separation between the groundwater and waste was consistent with the separation guideline established in the WAC 173-301 regulation effective at that time. Unfortunately, a four foot separation would have required that the trench excavation cut through most, if not all, of the Touchet Silt that provides the low permeability layer between the landfill bottom and the underlying aquifer.

3.3.4 AREA 6

Area 6 is north-centrally located on the landfill parcel, adjacent to the eastern side of Area 5. Excavation of Area 6 began in late 1987 and deposition of MSW into the waste cell began as early as 1988. Area 6 was initially permitted and operated consistent with chapter 173-304 WAC regulations. In September 1993, a WAC 173-351 Transition Permit was issued for Area 6 operation. In July 1997 use of Area 6 was granted a Full Permit for operation as an arid landfill in accordance with WAC 173-351 (WWCCHD 1998).

Area 6 consists of three trenches extending roughly 1,400 ft north-south and 450 to 600 ft east-west. The northwestern half of the area abuts Area 5 and the southeast corner touches Area 1. The future extent of Area 7 will be constructed to abut the eastern side of the area. The northern edge of Area 6 is bounded by the draw and BNSF right-of-way. Based on an early topographic map for the landfill area (dated June 2, 1979), the natural surface elevation of Area 6 ranged from approximately 810 ft MSL at the northern end to a high point of about 835 ft MSL.

The Area 6 trenches are designated from west to east; Trench 6a, 6, and 6b. Trench 6a (west side) was excavated during the fall of 1987 and much of the soil was transported to the TWL and used as a soil cover for the TWL closure. Design and construction information indicates that Trench 6a is approximately 700 long (north-south) by 140 ft wide, and has near vertical side walls of varying height up to approximately 35 feet. The trench floor is graded with a slope of one percent, with a bottom elevation of 792 ft MSL at the north end and 803 ft MSL at the south end (City file).

Trench 6 is separated from Trench 6a with a soil berm on its west side, and is connected directly with Trench 6b on the east side. Trenches 6 and 6b together measure approximately 1,350 long by 220 ft wide. The trench floor elevation is 806 ft MSL at the north end and slopes up to the south with a two percent grade (EMCON 1996).

The cell bottom is composed of compacted native silt without leachate collection. Six lysimeters were installed during the cell construction. Fluids were not detected in the lysimeters until 2005, during which a small volume (several gallons) of fluid was discharged and sampled from one of the six lysimeter ports.

In 2001 the City submitted a vertical expansion permit application to the WWCCHD for Area 6. The application proposed upward expansion over the three trenches to a projected top elevation of 884 ft MSL, with an estimated volume of 821,430 mega grams of waste. The expansion permit was approved by the WWCCHD, and Area 6 reached its permitted maximum elevation in 2005. Waste disposal will be transitioned into Area 7 during 2006. Limited additional waste may be placed in Area 6 until 2008, when the cell is scheduled for final closure in accordance with the WAC 173-351 permit. The closure will include an engineered soil or geomembrane cover system (type yet to be determined based on a soil cover pilot test) and a landfill gas extraction system.

3.3.5 AREA 7

Preliminary designs for lateral expansion into Area 7 began in 1995. The City started excavating soil from the proposed area in 1996, using the excavated material for daily cover in Area 6. The City submitted a solid waste permit application to the WWCCHD, with a request for lateral expansion into Area 7 as an un-lined landfill in September 2001. The lateral expansion permit was denied pending the results of the assessment groundwater monitoring program that had just started due to contamination detected in monitoring well MW-15.

In November 2004, with revisions in May 2005, the City submitted "The Solid Waste Permit Application for Lateral Expansion" (Shaw 2005a) to the WWCCHD. The amended permit application proposed included a composite bottom liner, leachate collection, and active landfill gas collection and control. Agency approval of the amended permit was received by the City and construction of Area 7 began in July 2005. Waste disposal into the cell is expected to begin in 2006, though construction was completed during the fall of 2005.

Area 7 is 17.3 acres and authorized to accept approximately 1,592,000 cubic yards of waste (WWCCHD 2005). The capacity of Area 7 was designed so that the total landfill capacity (MSW in all areas) is less than 2.5 million mega grams to comply with the New Source Performance Standards and Title V Clean Air Act. Area 7 has a composite bottom liner designed to meet performance standards

under arid landfill design criteria (WAC 173-352-200), and leachate collection system consistent with WAC 173-351 standards. The bottom elevation of Area 7 is designed to range from 789 to 797 ft MSL (Shaw 2005b).

3.3.6 ASBESTOS WASTE AREAS (AREA 4)

WWCCHD correspondence to the City dated July 24, 1985 (WWCCHD 1985b), indicated that the City had "been allowing the disposal of asbestos in the landfill under certain specific conditions for the past several years". The correspondence goes on to state that WWCCHD strongly recommends that the City adopt the new EPA Asbestos Waste Management Guidance (EPA 1985) before accepting more asbestos for disposal in the landfill.

The City adopted the asbestos management guidance and two asbestos waste cells were subsequently excavated at the SRL. The oldest cell (Area 4a) is located between the western property line and Area 5, at the northwest corner of the landfill property (Figure 3). Mr. Prouty stated (2005 correspondence) that the first asbestos disposal cell consisted of several trenches excavated approximately 12 ft deep (bottom approximately level with the gully at 790 ft MSL). The west edge of the cell was cut 8 to 10 feet east of the fence so that a vehicle could get by. Area 4a was small and filled very quickly due to the amount of asbestos projects being conducted at that time. Mr. Prouty recalls that the cell was filled and covered by the end of 1985. Area 4a was closed along with Area 5 consistent with the chapter 173-304 WAC closure requirements.

The second asbestos trench (Area 4) located at the southwest corner of the landfill area was cut much bigger to accommodate the quantity of material coming in. The "Asbestos Waste Area" was operated from 1985 into 2004 in accordance with the solid waste landfill general facility permit.

The asbestos waste trench extended approximately 860 ft north-south, and was cut approximately 40 ft from the western property line. The trench was about 40 ft wide at its base, with nearly vertical sidewalls about 40 ft high. The trench was sloped to the south and records indicate that the deepest point of the trench was 787.27 ft MSL. Mr. Rakestraw indicated that approximately 3 lifts of asbestos were placed in the trench before its closure. Standard operating procedure was to cover the waste within 24 hours of disposal. "Extreme care was taken to not rupture any of the protective coating of the asbestos wrappings" (1988 Operations Plan). The Asbestos Waste Area was closed in 2004, consistent with the WAC 173-304 closure and post-closure criteria for limited purpose landfills.

3.3.7 MEDICAL WASTE CELL (AREA 3)

Records indicate that before 1992 medical wastes generated by local medical facilities were either incinerated by the generator or transported out of the Walla Walla area for disposal. City Council documents indicate that the SRL began accepting medical wastes on a three-month trial basis on December 31, 1991 (City file). In March 1992 the City Council approved the continued collection and handling of medical waste at the SRL. Medical wastes were accepted at the SRL until 2004 when the trench was closed in accordance with the WAC 173-304 closure and post-closure requirements for limited purpose landfills.

During operation, the medical wastes were placed in a trench that ran parallel to the east side of the Asbestos Waste Area and was separated by a high soil berm. The trench measured approximately 880 ft long by 80 ft wide at its base. The deepest point of the trench was 785 ft MSL (EMCON 1996).

Several site maps show an area labeled "Existing Covered Medical Waste" located to the east of the Medical Waste Trench. During closure of the asbestos and medical waste areas in 2004 soil was removed from the area and medical waste was not encountered. Based on these soil excavations, file documents, and aerial photographs reviewed during this study, Schwyn believes that the maps were labeled improperly.

3.4 REGULATORY CRITERIA

Development and permitting of the SRL began in 1976. Permit applications and design standards appear to have been prepared in accordance with the Washington State Department of Ecology Regulation Relating to Minimum Functional Standards for Solid Waste Handling, chapter 173-301 WAC (Ecology 1972). Chapter 173-301 WAC was the first Washington state solid waste regulation. It became effective in 1972 to establish solid waste handling criteria to properly locate, construct, operate, and maintain solid waste facilities. The regulation required pollution control measures be provided including surface water management, plan submittal for groundwater pollution control, air pollution and dust control (as needed), prohibition of open burning, noise control, and that the disposal site be maintained in a reasonable clean and sanitary condition. Leachate control was required at landfills where average annual precipitation was 25 inches or more, and therefore did not apply at the SRL which normally records less than 12 inches per year. Waste separation from the groundwater level was to be determined on a case by case basis, but was generally not to be less than four feet. Landfill closure required the placement of a minimum two feet thick soil layer over the waste.

The City performed the following actions to facilitate the permitting of the new landfill in accordance with the WAC 173-301 regulation:

- Submitted sanitary landfill design plans, including topographic and vicinity maps, road, entrance, and equipment building design, typical fill sequence cross-sections (City, September 23, 1976 with updated information dated July 27, 1977),

- Installed and collected groundwater levels from MW-1a, MW-2, and MW-3a in November and December 1976,

- Obtained Conditional Use Permits to operate the SRL from the Walla Walla Regional Planning Board of Adjustment (February 28, 1977),

- Submitted an Engineers Report for the "Walla Walla Sanitary Landfill" including Environmental Impact Statement (SEPA), Department of Ecology Application for Disposal Site Permit, and General Plan of Operation to the WWCCHD (March 18, 1977), and

- Collected and analyzed groundwater samples each month from September 1977 through June 1978, and submitted to the results to the WWCCHD and Ecology.

On June 27, 1977 the WWCCHD issued a Conforming Permit for the SRL (WWCCHD 1977b). Conforming permits were issued annually thereafter by the WWCCHD until the regulation was superseded by chapter 173-304 WAC in 1985. Area 1, Area 2, and Area 5 Trenches 5a and 5b were operated during the effective period of chapter 173-301 WAC.

The Minimum Functional Standards For Solid Waste Handling, chapter 173-304 WAC was filed on October 28, 1985 (Ecology 1988b), and the City conducted operational changes and prepared documents to comply with the new regulation. The City performed the following actions to facilitate the WAC 173-304 permitting:

- Prepared the SRL Utilization Plan that outlined the operation and sequence of landfill disposal for the SRL 70 years into the future; (Dahl 1987),

- Prepared SRL Operating Plan (City 1988b)

- Submitted a Class II Variance Application regarding trench liner and cover needs, arid design, closure planning, and financial assurance (dated October 6, 1988),

- Prepared a Geohydrology Study Report (Gullixson 1989), and

- Prepared a Closure Plan for Area 5, Trenches 5c and 5d (City 1992).

The Asbestos and Medical Waste disposal trenches were operated as limited purpose landfills in accordance with chapter 173-304 WAC into 2004. The Solid Waste Handling Standards, chapter 173-350 WAC replaced chapter 173-304 WAC and became effective on February 10, 2003. The City determined that it would not be economical to upgrade the Asbestos and Medical Waste Areas to meet the new standards, and therefore, these two areas were closed in 2004 consistent with chapter 173-304 WAC closure standards.

Area 5 trenches 5c and 5d, and Area 6 operated from 1985 into 1993 consistent with chapter 173-304 WAC until chapter 173-351 WAC, Criteria For Municipal Solid Waste landfills, became effective (effective date November 27, 1993; Ecology 1993). Area 5 was closed consistent with chapter 173-304 WAC closure and post closure requirements. Operation of Area 6 was transitioned into the new operating standards of chapter 173-351 WAC.

Chapter 173-351 WAC was enacted by Washington State in response to the U.S. EPA published Solid Waste Disposal Facility Criteria for Municipal Solid Waste Landfills (40 CFR Part 259) as required by Subtitle D of the Resource Conservation and Recovery Act. The required documentation, reporting, engineering plans, and supporting information of the regulation were substantial including the demonstration of compliance with the following:

- State Environmental Protection Act (SEPA; chapter 197-11 WAC),
- Location restrictions,
- Operating criteria,
- Engineering design criteria,
- Performance standards for groundwater monitoring system designs,
- Groundwater detection monitoring,
- Statistical analysis of groundwater data,
- Hydrogeologic assessment,
- Closure and post-closure plans, and
- Financial assurance criteria.

The City advertised and selected a solid waste engineering consultant (EMCON, Inc) to compile the information and prepare the permit application. Due to the complexity and extensive requirements of the new regulation, the State provided a transition period for operators to close or meet compliance requirements. On September 27, 1993 the WWCCHD issued a Solid Waste Transition Permit for the facility. To comply with the regulatory requirements, the following actions were taken during the transition period:

- Conducted an evaluation of the existing groundwater monitoring system, and installed new monitoring wells MW-11 and MW-12,
- Initiated a detection monitoring program, collected groundwater samples, established background conditions, and statistically evaluated downgradient groundwater quality with respect to the background conditions,

- Conducted a hydrogeologic investigation and submitted the Hydrogeologic Report to the WWCCHD (EMCON 1995),

- Proposed and completed three draft arid landfill design permit applications for Area 6 and proposed lateral expansion Area 7 (January, March, and November 1995), and

- Submitted a Final Solid Waste Permit Application to the WWCCHD (EMCON 1996).

On July 14, 1997, the WWCCHD issued a WAC 173-351 Full Permit for Municipal Solid Waste Landfilling in Area 6 (WWCCHD 1997). The permit has been re-issued annually through 2005. Several applications to modify the permit (1997, 2000, 2002, and 2004) have been submitted to the WWCCHD. Approved permit modifications have included the vertical expansion of Area 6 and changes to the groundwater monitoring system. The lateral expansion into Area 7 was issued a WAC 173-351 Municipal Solid Waste Landfilling Permit in September 2005.

3.5 WASTE COMPOSITION

Over 95 percent of the waste disposed at the SRL is mixed MSW transported to the site by commercial and public garbage disposal service contractors from the City, and Walla Walla and Columbia Counties. Permitted waste disposal at the SRL has been limited to MSW, asbestos, and medical wastes. The SRL has also provided special areas for animal carcass disposal. Hazardous materials, with exception of triple rinsed pesticide containers have never been allowed into the landfill. Review of correspondence between the WWCCHD, Ecology, and City indicate that the SRL has been operated in accordance with permit conditions.

Appliances "white goods" have historically been set aside for salvage and recycling. The appliances are stored (normally in the vicinity of Area 2) and retrieved by a salvage operation. When market conditions were not economical for recycling, or the appliances were not retrieved by the salvage operation within a reasonable time period the appliances were disposed of in the active disposal area in use at that time (verbal reports).

Extensive City records indicate that measures to prevent disposal of hazardous materials in the landfill were initiated during the early years of operation. Correspondence from Ecology and WWCCHD as early as February 8, 1979, recommended that landfill operators screen loads to keep hazardous waste out of the landfill. Shortly thereafter, the City requested information about hazardous waste disposal practices from the WWCCHD for incorporation into the landfill policy and procedure manual. The City posted notice at the scale house in 1980 regarding disposal of extremely dangerous wastes (City file).

The records report the discovery of several patron attempts to dispose of small quantities of hazardous waste in the landfill indicating that the landfill operators diligently tried to keep the materials

out of the landfill. Mr. Prouty stated in 2005 that he was not aware of any large quantities of non-permitted materials being disposed of in the landfill, but did remove unacceptable materials from the disposal area occasionally. Mr. Prouty also stated that he never allowed or observed disposal of large quantities of hazardous waste, such as 55-gallon drums. He indicated that the general practice was to only allow disposal of empty rinsed drums.

On June 3, 1986, the Dangerous Waste Regulation (chapter 173-303 WAC) formerly prohibited the disposal of certain hazardous wastes in MSW landfills. In 1993, the City constructed a Household Hazardous Waste Facility (HHWF) to accept, recycle, and/or appropriately dispose of hazardous waste from non-commercial persons. The HHWF facility remains in operation in 2006 and continues to divert disposal of hazardous materials from the landfill.

3.6 GROUNDWATER MONITORING

3.6.1 MONITORING WELL INSTALLATIONS

The City installed monitoring wells MW-1a, Well #2 (also referred to as MW-2), and MW-3a in November and December 1976, with approval from the WWCCHD and Ecology. These monitoring wells were installed to monitor shallow groundwater downgradient of the landfill and provide background groundwater quality information. Well #2 was installed to greater depth for additional use as the landfill potable water supply well. However, in 1984 or 1985 landfill personnel reported nausea and ill effects possibly from drinking water from Well #2. Thereafter, the staff quit using Well #2 as a potable water source and began using bottled water.

Since 1976, numerous additional wells have been installed on the City property to monitor upgradient and downgradient water quality beneath the landfill, sprayfarm, and sludge application areas. One pre-existing well (the Garver well) has also been used for agricultural irrigation supply. A summary of water well reports, installation dates, well uses, casing size, screen intervals and other information are provided in Appendix E.

Wells historically used to monitor groundwater quality beneath the landfill have included, MW-1a, MW-3a, MW-1, MW-2, MW-3, MW-5, MW-6, MW-11, MW-12, MW-14, MW-15, and MW-16. MW-1a and MW-3a either went dry or had poor surface seals. These two wells were abandoned in 1986 and replaced with MW-1 and MW-3. Monitoring wells MW-1 and MW-3 had screens installed deep into the underlying aquifer and were replaced with MW-14 and MW-15 in 1999 and 2001 to better monitor the top of the first encountered water bearing zone. Monitoring well MW-5 was originally installed to monitor the sprayfield and biosolids application areas, but has historically been used as an upgradient groundwater quality well for the landfill. The location of MW-5 can be difficult to

access during wet periods and the growing season without damaging the surrounding crops, and therefore, is no longer monitored as a landfill permit requirement. Monitoring wells MW-11 and MW-12 were installed in 1995 as part of the chapter 173-351 hydrogeologic study and were incorporated into the approved monitoring program in 1995. MW-12 has historically produced low quantities of water. In December 2005 the water table at MW-12 had dropped below the screen section and water samples could not be obtained. Monitoring well MW-16 was installed in 2005 as part of the Area 5 remedial investigation. The locations of the wells are shown on Figure 2.

The permitted groundwater monitoring system in 2005 consisted of three downgradient monitoring wells (MW-11, MW-14, and MW-15) and one upgradient monitoring well (MW-12). Upgradient well MW-5 may be included in the quarterly evaluations when the well is accessible for sample collection, primarily as a method of monitoring VOCs in the upgradient groundwater.

3.6.2 GROUNDWATER MONITORING PROGRAM

Depth-to-water monitoring began immediately after the installation of MW-1a, Well #2, and MW-3a, so that the landfill cell bottom elevation could be designed to be above the water table. Collection of groundwater samples began the following year in August 1977 and continued on a monthly sampling frequency through July 1978. The sampling program was conducted at the request of Ecology to establish "baseline" groundwater quality before the landfill began operation. The groundwater samples were analyzed for pH, biological oxygen demand (BOD), chemical oxygen demand (COD), chlorides, iron, total dissolved solids (TDS), total alkalinity, and total coliform (WWCCHD file).

Groundwater monitoring has been conducted on a quarterly schedule since the landfill was opened in July 1978. The analytical parameters have been modified through time to address changes in the groundwater monitoring regulatory requirements. Since September 1994 the landfill monitoring well samples have been analyzed for Appendix I and II detection monitoring constituents, per WAC 173-351-990. Numerous additional analyses were performed in 2002 and 2003 as part of an assessment monitoring program conducted to evaluate statistically significant detections of VOCs in downgradient well MW-15. Dichlorodifluoromethane was added to the analytical suite as a result of the assessment monitoring program.

In accordance with the 2005 operating permit, monitoring wells MW-11, MW-12, MW-14, and MW-15 are sampled each quarter, four times per year. The groundwater samples are normally collected by City personnel, utilizing dedicated groundwater sampling pumps. The groundwater samples are analyzed for Appendix I and II detection monitoring constituents, per WAC 173-351-990, plus dichlorodifluoromethane, by an accredited laboratory in accordance with chapter 173-50 WAC.

3.6.3 GROUNDWATER QUALITY STUDIES

3.6.3.1 Inorganic Constituent Studies

Sampling and analysis of inorganic constituents began in August 1977. These baseline data and other select groundwater quality information and correspondence are provided in Appendix F.

In 1980 and 1981 the WWCCHD and Ecology, respectively, noted concern about rising iron and COD levels in the landfill monitoring wells. The 1980 Landfill Permit indicated that the EPA was going to require that groundwater underlying landfills be tested for the same inorganic chemicals as drinking water, and that Ecology would be evaluating the landfill in the future using the additional groundwater analysis. In 1982, agency correspondence noted a small increase in the chloride concentrations in the three landfill wells. The 1985 Landfill Permit (WWCCHD 1985a) states that chloride and conductivity levels continue to rise. In a letter to the City dated February 18, 1985 the WWCCHD amended the groundwater monitoring program as follows:

> "The chloride and conductivity levels continued to increase during 1984. Also, the October 1984 sampling showed a sharp increase in iron concentrations. An increase in these parameters often indicates leachate contamination of the ground water. Based on this premise, a more intensive ground water monitoring program is needed. We are proposing that the two sludge utilization site monitoring wells [MW-4 and MW-5 installed in August and September 1983] be sampled at the same time and [be] tested for the same parameters as the three landfill wells. All five wells should be tested quarterly for: NO3, Conductivity, Total Colliform, PH, BOD, Chlorides, FE, TDS, Alkalinity, and COD." (WWCCHD 1985a)

In a draft internal groundwater monitoring status report (City 1988a), the City discussed the groundwater impacts and focuses on sprayfarm operations as a potential source of impact to groundwater. The status report states that the sprayfarm lease changed hands in 1978 to D&K Frozen Foods, Inc., (D&K), and that D&K had changed the operation of the sprayfarm significantly, potentially causing the groundwater impacts discussed above. Apparently D&K began discharging wastewater on the site nearly year-round, even when the ground was saturated or frozen. Additionally, flow metering may have lapsed resulting in over application of waste water. The City recorded that these and other sprayfarm operations may have impacted the aquifer and that the food processor was under scrutiny by Ecology.

In 1986 monitoring wells MW-1a and MW-3a were abandoned. MW-1a had been dry for some time and was non-functional, and it was suspected that MW-3a had an insufficient surface seal. These two wells were therefore replaced with MW-1 and MW-3. Monitoring wells MW-6 and MW-7 were also installed during the drilling program. In early 1988 Flora Goldstein of Ecology used groundwater data

from these new wells to perform a statistical evaluation of the upgradient and downgradient groundwater quality beneath the landfill. Parameters used in the statistical analysis included chloride, conductivity, and iron. Well MW-7 was used as the upgradient well and MW-1 and MW-3 were used as downgradient wells. In a letter to the WWCHD dated June 9, 1988, Flora Goldstein indicted that "the statistical analysis indicates there is no significant differences in chloride and iron concentrations and conductivity from the upgradient and downgradient wells" (Ecology 1988a). Little discussion of inorganic impacts to groundwater was noted in the record after the letter was presented to the WWCCHD.

3.6.3.2 Volatile Organic Constituent Studies

Groundwater samples were first collected from monitoring wells MW-1, MW-2, MW-3, MW-6, and MW-7 for VOC analysis in February 1987. The analyses did not indicate the presence of VOCs in any of the samples. However, on March 30, 1993, the City collected additional samples for VOC analysis and the laboratory results indicated the presence of tetrachloroethene (PCE) in samples collected from MW-5 and MW-9. Confirmation samples collected in April 1993 verified the presence of PCE in groundwater and also indicated the presence of trichloroethene (TCE). The City reported the detection of VOCs in the upgradient monitoring wells to Ecology in a letter dated May 4, 1993 (City 1993).

Groundwater monitoring data collected since 1993 have indicated the presence of groundwater contamination (primarily VOCs) in samples collected from monitoring wells located upgradient and downgradient of the sprayfarm and landfill areas. These data suggest the presence of area-wide contamination with a source located upgradient of the City property.

In 2001, VOC contamination was detected in downgradient monitoring well MW-15. The VOC constituent types and concentrations ("the fingerprint") present in the MW-15 appear different from the previously detected VOC contamination, though several of the constituents are common. The characteristics of the area-wide and localized MW-15 contamination are described in the following sections.

Area Wide Contamination

Groundwater monitoring data from the SRL indicate that a number of VOCs [including TCE, PCE, trichlorofluoromethane, 1,1,1-trichloroethane, and chloroform] are present in upgradient wells on the eastern property boundary (over 1.4 miles east, and upgradient, of the waste disposal area). The upgradient concentrations of PCE (up to 7.1 µg/l) and TCE (up to 4.0 µg/l) have routinely exceeded the Washington State Groundwater Standards (chapter 173-200 WAC) and MTCA cleanup levels. Similar and slightly lower VOC concentrations have regularly been detected in the downgradient monitoring wells (MW-1, MW-3, MW-11, and MW-14) and the Small and Camp domestic water supply wells. The

Small and Camp wells are located approximately 4,000 ft southwest and 2,800 ft northwest of the landfill, respectively. These groundwater data have been reported regularly to the WWCCHD and the Ecology since 1993.

Data from monitoring wells located on the eastern property boundary (MW-7 and MW-9) and other wells located hydraulically upgradient of the landfill (MW-4, MW-5, and MW-8), indicate that an off-site source or sources of VOCs exists. In 1999 Ecology, under cooperative agreement with the U.S. EPA, conducted a study to evaluate potential sources of the contamination, and published a Contaminant Source Identification/Assessment Report (CSI/A; Ecology 1999). The CSI/A indicated that the relatively high contaminant concentrations observed both up- and downgradient of the landfill, and the persistence of the concentrations with time, implied that a large continuous VOC source is present. Ecology identified the Washington State Penitentiary, which lies just east (and upgradient) of the site to be a potential source for the VOC contamination at the landfill, because similar VOCs have been used and potentially disposed of on the penitentiary property. Considering the distance between the penitentiary property and the Small well, the area-wide VOC contaminant plume may extend more than 3 miles west of the penitentiary property.

Localized Landfill Contamination

In July 2001, monitoring well MW-15 was installed in the northwest corner of the landfill to replace MW-3. The screen section of MW-15 is located at the top of the first encountered aquifer. The groundwater quality of the MW-15 samples has been distinct from other samples collected in the vicinity of the landfill. VOCs (including TCE, PCE, trichlorofluoromethane, dichlorodifluoromethane, vinyl chloride, chloroethane, 1,1-dichloroethane, and cis-1,2-dichloroethane) and inorganic constituents [including calcium, sodium, bicarbonate, chloride, alkalinity, and total dissolved solids (TDS)] have been detected at statistically significant levels above background. The fingerprint of these contaminants is distinctly different from the contaminants detected area wide. Additionally, the geochemistry of the samples from MW-15 differs from the groundwater geochemistry in the other monitoring wells. An assessment monitoring program was initiated in 2001 and the results were presented in the Annual 2002 Groundwater Monitoring Report (Landau 2003). Only one additional constituent, dichlorodifluoromethane, was identified during the assessment monitoring program; however, the 2002 Annual Report indicates that several of the previously detected constituents in MW-15 were most likely indicators of landfill impact to groundwater. This historical study was conducted as part of the remedial investigation to address the impact of the contamination in MW-15.

3.7 TIME LINE SUMMARY

A summary of select historical information collected during this study is presented in Appendix G. The time line covers key site information from 1967 through December 2005. Additional correspondence, permits, and general information are available in the City, WWCCHD, and Ecology files.

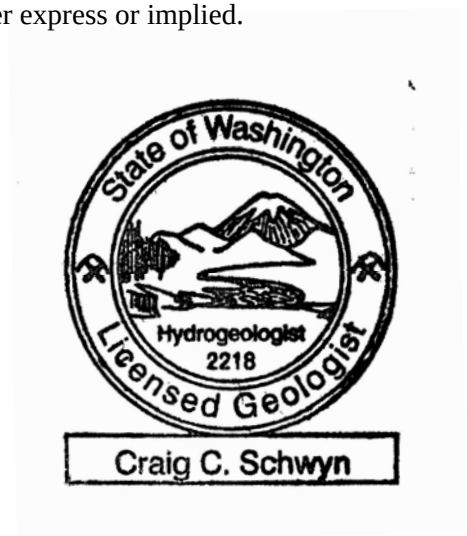
4.0 USE OF THIS REPORT

This Historical Study Report has been prepared for the exclusive use of the City of Walla Walla for specific application to the SRL. The reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Schwyn, shall be at the user's sole risk. Schwyn warrants that within the limitations of scope, schedule, and budget, the services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. Schwyn makes no other warranty, either express or implied.

SCHWYN ENVIRONMENTAL SERVICES, LLC.

By:

Craig C. Schwyn, L.G.
Principal



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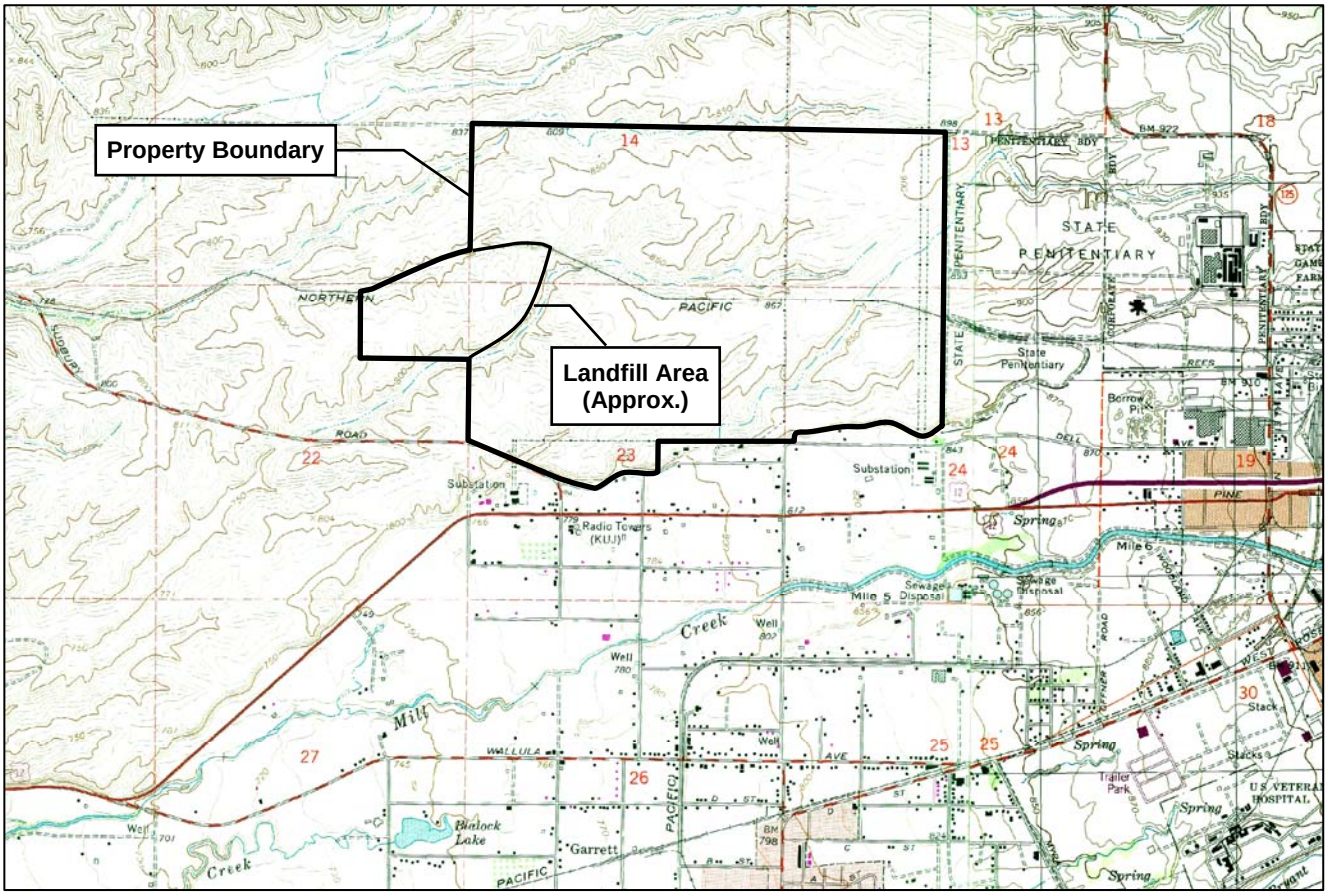

Source: USGS 7.5' Topographic Quad, Walla Walla, WA-OR, 1998, &
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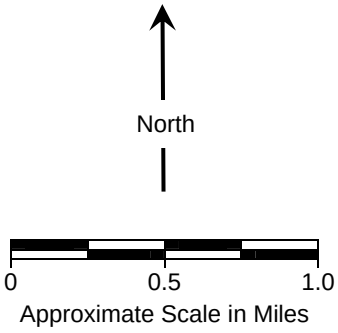
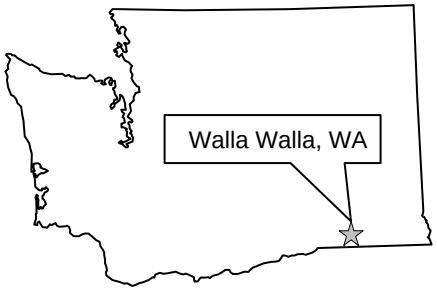


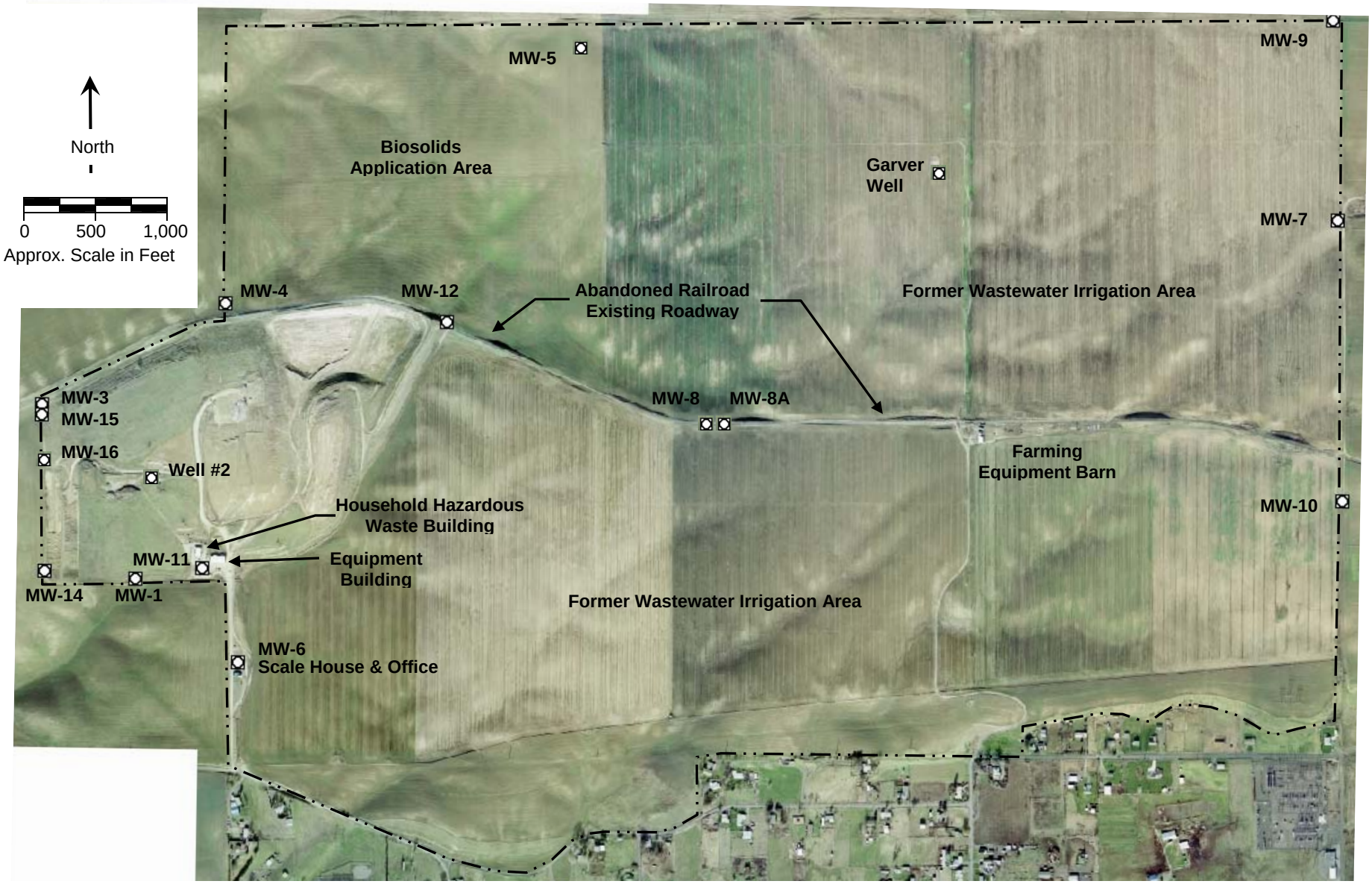


Schwyn Environmental Services

Sudbury Road Landfill
Walla Walla, Washington

Site Location

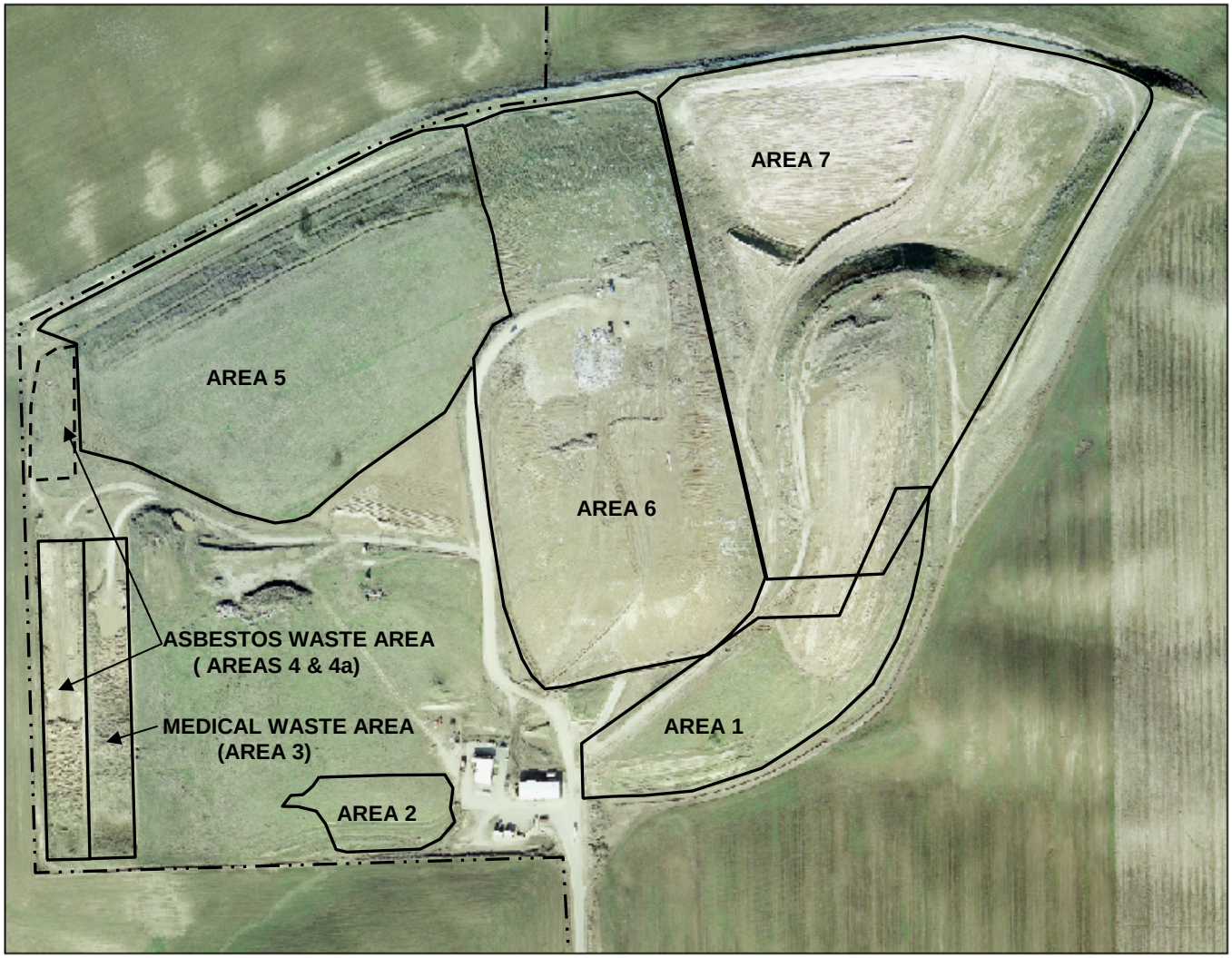
Figure
1



Source: City of Walla Walla, March 10, 2003 Aerial Photograph.

Schwyn Environmental Services

Sudbury Road Landfill Walla Walla, Washington	**Waste Management Property Plan**	Figure 2



North

0 430 860

Approximate Scale in Feet

Source: Walla Walla City GIS Department, March 10, 2003 Aerial Photograph.

Schwyn Environmental Services

Sudbury Road Landfill
Walla Walla, Washington

Landfill Area Plan

Figure 3

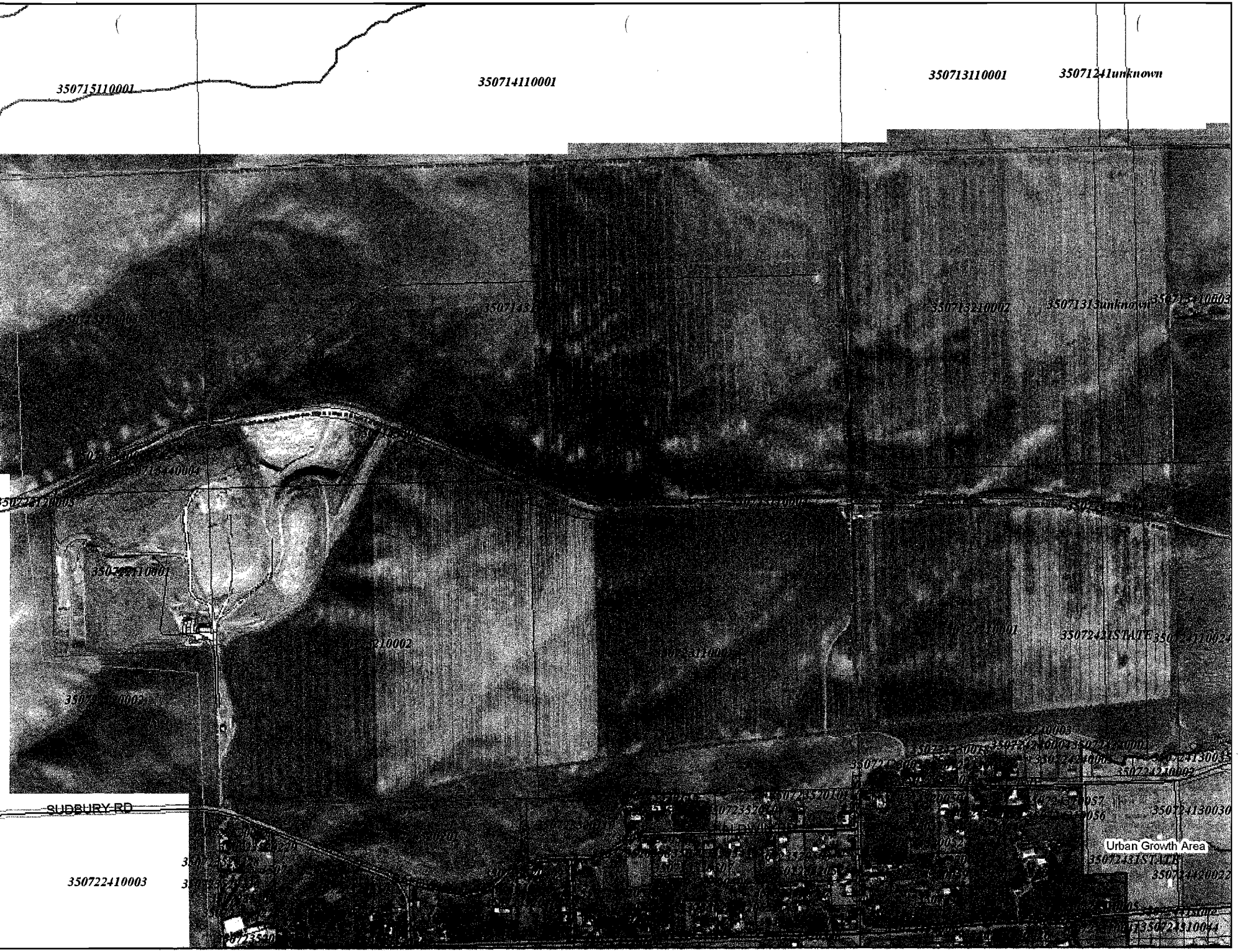
APPENDIX A

County Assessor Parcel Information

Table A-1
Parcel Information
City of Walla Walla Waste Management Property

Parcel No.	Purchase Date	Acreage	Description
350715440004	9/19/1973	9.09	NW Active landfill area
350722110001	11/9/1970	40.00	SW Active landfill area
350723210002	11/9/1970	159.90	SE Active landfill area and sprayfarm
350714310002	11/9/1970	313.56	NE Active landfill area and sprayfarm
350713210002	11/9/1970	139.11	NE sprayfarm
350724210001	11/9/1970	121.85	SE sprayfarm
350723110001	11/9/1970	147.97	South-central sprayfarm
350723520110	11/9/1970	9.08	South parcel north of Baldwin Rd.
350723520201	11/9/1970	26.59	South parcel north of Baldwin Rd.
	Total Acreage	**967.15**	

Information collected from Walla Walla County Assessor reports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SUDBURY RD
350722410003
Urban Growth Area

Date Created	*** WALLA WALLA COUNTY ASSESSOR'S OFFICE ***	Last Update
09/24/2002	*** ASSESSMENT RECORD ***	01/27/2005

Parcel # : 350715440004
Owners ID # : 2762 1 of 1

Cadastral # :
DOR Codes : 81

WALLA WALLA CITY OF

PO BOX 478
WALLA WALLA WA 99362-

	Market	Assessed
Improvements		
Land	4,000	
Perm Crop		
Total Value	4,000	

Map # : 0735-15-44-000000-000-00004 Deeded Acres : 9.09
Situs :
Legal Desc : 15-7-35 SE1/4SE1/4 LY S OF NP RY

Frozen Value :		Neighborhood :	2201	Prev Impr :	
Exempt Code :		Appraisal Zone:	2	Prev Land :	4,000
Exempt Amount:		New Const :	0	Prev Perm Crop:	
Taxable Value:		Property Class:	40	Prev Total :	4,000
Tax District :	1	Appraisal Type:	EXEMPT	Prev Taxable :	

Misc Assessments

GWMA Dist :	1
Flood Dist:	
Weed Dist :	
Pest Cntrl:	

Timber

Value :	0
DNR Ac :	

Land Use

Dry Ac :	9.090
Irrg Ac :	0.000
Other Ac :	0.000
Site Ac :	0.000
Timber Ac :	0.000
Total Ac :	9.090
Pest Cntrl:	

OSP Date :	
Parent ID # :	
Last Appeal :	
Appeal Status:	
Record Status :	1 ACTIVE
Review Status :	

Number	Date Opened	Last Visit	Date Closed	Permit Description	Amount

Book & Page	Grantor	Sale Date	Sale Price	Cnt	Code
9053-2159		09/19/1973	3,000		Yes

Primary Owner : WALLA WALLA CITY OF 2762 100% 1 Of : 1
Primary Situs : 1 Of : 1

Code	Type	Year	User ID	Change Date	Value Change	Tax Change

Year	District	Statement #	Source	Assessed	Taxable	Billed Tax
2005	1	2005-350715440004	REAL			0.00
2004	1	2004-350715440004	REAL			0.00
2003	1	2003-350715440004	REAL	6,500		0.00
2002	1	2002-350715440004RP	REAL	6,500		

Date Created	*** WALLA WALLA COUNTY ASSESSOR'S OFFICE ***	Last Update
09/24/2002	*** ASSESSMENT RECORD ***	01/27/2005

Parcel # : 350722110001
Owners ID # : 2762 1 of 1

Cadastral # :
DOR Codes : 81

WALLA WALLA CITY OF

PO BOX 478
WALLA WALLA WA 99362-

	Market	Assessed
Improvements		
Land	92,000	
Perm Crop		
Total Value	92,000	

Map # : 0735-22-11-000000-000-00001
Situs :
Legal Desc : 22-7-35 NE1/4NE1/4

Deeded Acres : 40.00

Frozen Value :		Neighborhood :	3201	Prev Impr :	
Exempt Code :		Appraisal Zone:	3	Prev Land :	92,000
Exempt Amount:		New Const :	0	Prev Perm Crop:	
Taxable Value:		Property Class:	40	Prev Total :	92,000
Tax District :	311	Appraisal Type:	EXEMPT	Prev Taxable :	

Misc Assessments
GWMA Dist :
Flood Dist:
Weed Dist : 1
Pest Cntrl:

Timber
Value : 0
DNR Ac :

Land Use
Dry Ac : 0.000
Irrg Ac : 40.000
Other Ac : 0.000
Site Ac : 0.000
Timber Ac : 0.000
Total Ac : 40.000
Pest Cntrl:

OSP Date :
Parent ID # :
Last Appeal :
Appeal Status:

Record Status : 1 ACTIVE
Review Status :

Number	Date Opened	Last Visit	Date Closed	Permit Description	Amount

Book & Page	Grantor	Sale Date	Sale Price	Cnt	Code
3380-511003		11/09/1970	0		

Primary Owner : WALLA WALLA CITY OF 2762 100% 1 Of : 1
Primary Situs : 1 Of : 1

Code	Type	Year	User ID	Change Date	Value Change	Tax Change

Year	District	Statement #	Source	Assessed	Taxable	Billed Tax
2005	311	2005-350722110001	REAL			0.00
2004	311	2004-350722110001	REAL	21,600		0.00
2003	311	2003-350722110001	REAL	21,600		0.00
2002	311	2002-350722110001RP	REAL	21,600		

Date Created	*** WALLA WALLA COUNTY ASSESSOR'S OFFICE ***	Last Update
09/24/2002	*** ASSESSMENT RECORD ***	01/27/2005

Parcel # : 350723210002
Owners ID # : 2762 1 of 1

Cadastral # :
DOR Codes : 81

WALLA WALLA CITY OF

PO BOX 478
WALLA WALLA WA 99362-

	Market	Assessed
Improvements		
Land	312,100	
Perm Crop		
Total Value	312,100	

Map # : 0735-23-21-000000-000-00002 Deeded Acres : 159.90
Situs :
Legal Desc : 23-7-35 NW1/4 LESS NP RY

Frozen Value :		Neighborhood :	2201	Prev Impr :	
Exempt Code :		Appraisal Zone:	2	Prev Land :	312,100
Exempt Amount:		New Const :	0	Prev Perm Crop:	
Taxable Value:		Property Class:	40	Prev Total :	312,100
Tax District :	2	Appraisal Type:	EXEMPT	Prev Taxable :	

Misc Assessments
GWMA Dist :
Flood Dist:
Weed Dist :
Pest Cntrl:

Timber
Value : 0
DNR Ac :

Land Use

Dry Ac :	32.000	OSP Date :	
Irrg Ac :	127.900	Parent ID # :	
Other Ac :	0.000	Last Appeal :	
Site Ac :	0.000	Appeal Status:	
Timber Ac :	0.000		
Total Ac :	159.900	Record Status :	1 ACTIVE
Pest Cntrl:		Review Status :	

Number	Date Opened	Last Visit	Date Closed	Permit Description	Amount

Book & Page	Grantor	Sale Date	Sale Price	Cnt	Code
3380-511003		11/09/1970	0		

Primary Owner : WALLA WALLA CITY OF 2762 100% 1 Of : 1
Primary Situs : 1 Of : 1

Code	Type	Year	User ID	Change Date	Value Change	Tax Change

Year	District	Statement #	Source	Assessed	Taxable	Billed Tax
2005	2	2005-350723210002	REAL			0.00
2004	2	2004-350723210002	REAL			0.00
2003	2	2003-350723210002	REAL	177,100		0.00
2002	2	2002-350723210002RP	REAL	177,100		

Bill Vollendorff
Assessor

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350714310002
Map Number:	0735-14-31-000000-000-00002
Situs:	
Legal:	14-7-35 S1/2 LESS NP RY~

Ownership Information

Current Owner:	WALLA WALLA CITY OF
Address:	PO BOX 478
City, State:	WALLA WALLA WA
Zipcode:	99362-

Assessment Data

Tax District:	5
Open Space:	
Open Space Date:	
Senior Exemption:	
Deeded Acres:	313.56
Last Revaluation for Tax Year:	

Market Value

Land:	721,200
Imp:	0
Perm Crop:	0
Total:	721,200

Taxable Value

Land:	0
Imp:	0
Perm Crop:	0
Total:	0

Sales History

Date	Book & Page	# Parcels	Grantor	Grantee	Price
11-09-1970	3385-110044	1			221,000

Building Permits

NO ACTIVE PERMITS!

5 Year Valuation Information

Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	WALLA WALLA CITY OF	0	0	0	0		0	View Taxes
2004	WALLA WALLA CITY OF	0	0	0	0		0	View Taxes
2003	WALLA WALLA CITY OF	224,200	0	0	224,200		0	View Taxes
2002	WALLA WALLA CITY OF	224,200	0		224,200			View Taxes

Bill Vollendorff
Assessor

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350713210002
Map Number:	0735-13-21-000000-000-00002
Situs:	
Legal:	13-7-35 SW1/4 LESS TAX 22 OF 24-7-35~

Ownership Information

Current Owner:	WALLA WALLA CITY OF
Address:	PO BOX 478
City, State:	WALLA WALLA WA
Zipcode:	99362-

Assessment Data

Tax District:	5
Open Space:	
Open Space Date:	
Senior Exemption:	
Deeded Acres:	139.11
Last Revaluation for Tax Year:	

Market Value

Land:	320,000
Imp:	0
Perm Crop:	0
Total:	320,000

Taxable Value

Land:	0
Imp:	0
Perm Crop:	0
Total:	0

Sales History

Date	Book & Page	# Parcels	Grantor	Grantee	Price
11-09-1970	3380-051004	1			221,000

Building Permits

NO ACTIVE PERMITS!

5 Year Valuation Information

Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	WALLA WALLA CITY OF	0	0	0	0		0	View Taxes
2004	WALLA WALLA CITY OF	0	0	0	0		0	View Taxes
2003	WALLA WALLA CITY OF	69,600	0	0	69,600		0	View Taxes
2002	WALLA WALLA CITY OF	69,600	0		69,600			View Taxes

Bill Vollendorff
Assessor

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350724210001
Map Number:	0735-24-21-000000-000-00001
Situs:	
Legal:	24-7-35 N1/2NW1/4 LESS TAX 22; TAX 4 LESS NP RY LESS TAX 22~

Ownership Information

Current Owner:	WALLA WALLA CITY OF
Address:	PO BOX 478
City, State:	WALLA WALLA WA
Zipcode:	99362-

Assessment Data

Tax District:	5
Open Space:	
Open Space Date:	
Senior Exemption:	
Deeded Acres:	121.85
Last Revaluation for Tax Year:	

Market Value

Land:	304,700
Imp:	0
Perm Crop:	0
Total:	304,700

Taxable Value

Land:	0
Imp:	0
Perm Crop:	0
Total:	0

Sales History

Date	Book & Page	# Parcels	Grantor	Grantee	Price
11-09-1970	3385-110000	1			221,000

Building Permits

NO ACTIVE PERMITS!

5 Year Valuation Information

Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	WALLA WALLA CITY OF	0	0	0	0		0	View Taxes
2004	WALLA WALLA CITY OF	87,100	0	0	87,100		0	View Taxes
2003	WALLA WALLA CITY OF	87,100	0	0	87,100		0	View Taxes
2002	WALLA WALLA CITY OF	87,100	0		87,100			View Taxes

Date Created	*** WALLA WALLA COUNTY ASSESSOR'S OFFICE ***	Last Update
09/24/2002	*** ASSESSMENT RECORD ***	01/27/2005

Parcel # : 350723110001
Owners ID # : 2762 1 of 1

Cadastral # :
DOR Codes : 81

WALLA WALLA CITY OF

PO BOX 478
WALLA WALLA WA 99362-

	Market	Assessed
Improvements		
Land	340,300	
Perm Crop		
Total Value	340,300	

Map # : 0735-23-11-000000-000-00001
Situs :
Legal Desc : 23-7-35 NE1/4 LESS NP RY

Deeded Acres : 147.97

Frozen Value	:	Neighborhood	: 2201	Prev Impr	:
Exempt Code	:	Appraisal Zone	: 2	Prev Land	: 340,300
Exempt Amount	:	New Const	: 0	Prev Perm Crop	:
Taxable Value	:	Property Class	: 40	Prev Total	: 340,300
Tax District	: 2	Appraisal Type	: EXEMPT	Prev Taxable	:

Misc Assessments
GWMA Dist :
Flood Dist:
Weed Dist :
Pest Cntrl:

Timber
Value : 0
DNR Ac :

Land Use
Dry Ac : 0.000
Irrg Ac : 147.970
Other Ac : 0.000
Site Ac : 0.000
Timber Ac : 0.000
Total Ac : 147.970
Pest Cntrl:

OSP Date :
Parent ID # :
Last Appeal :
Appeal Status:

Record Status : 1 ACTIVE
Review Status :

Number	Date Opened	Last Visit	Date Closed	Permit Description	Amount

Book & Page	Grantor	Sale Date	Sale Price	Cnt	Code
3380-511003		11/09/1970	0		

Primary Owner : WALLA WALLA CITY OF 2762 100% 1 Of : 1
Primary Situs : 1 Of : 1

Code	Type	Year	User ID	Change Date	Value Change	Tax Change

Year	District	Statement #	Source	Assessed	Taxable	Billed Tax
2005	2	2005-350723110001	REAL			0.00
2004	2	2004-350723110001	REAL			0.00
2003	2	2003-350723110001	REAL	185,000		0.00
2002	2	2002-350723110001RP	REAL	185,000		

Bill Vollendorff
Assessor

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350723520110
Map Number:	0735-23-52-blaorh-000-00110
Situs:	
Legal:	BLALOCK ORCHARDS LOTS 10 THRU 13 BLK 1 PLUS VAC STRIP~

Ownership Information

Current Owner:	WALLA WALLA CITY OF
Address:	PO BOX 478
City, State:	WALLA WALLA WA
Zipcode:	99362-

Assessment Data

Tax District:	311
Open Space:	
Open Space Date:	
Senior Exemption:	
Deeded Acres:	9.08
Last Revaluation for Tax Year:	

Market Value

Land:	36,300
Imp:	0
Perm Crop:	0
Total:	36,300

Taxable Value

Land:	0
Imp:	0
Perm Crop:	0
Total:	0

Sales History

Date	Book & Page	# Parcels	Grantor	Grantee	Price
11-09-1970	3380-511003	5			

Building Permits

NO ACTIVE PERMITS!

5 Year Valuation Information

Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	WALLA WALLA CITY OF	0	0	0	0		0	View Taxes
2004	WALLA WALLA CITY OF	68,100	0	0	68,100		0	View Taxes
2003	WALLA WALLA CITY OF	68,100	0	0	68,100		0	View Taxes
2002	WALLA WALLA CITY OF	68,100	0		68,100			View Taxes

Bill Vollendorff
Assessor

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350723520201
Map Number:	0735-23-52-blaorh-000-00201
Situs:	
Legal:	BLALOCK ORCHARDS LOTS 1 THRU 4 BLK 2 PLUS VAC STRIP; LOT 1 BLK 2~

Ownership Information

Current Owner:	WALLA WALLA CITY OF
Address:	PO BOX 478
City, State:	WALLA WALLA WA
Zipcode:	99362-

Assessment Data

Tax District:	2
Open Space:	
Open Space Date:	
Senior Exemption:	
Deeded Acres:	26.59
Last Revaluation for Tax Year:	

Market Value

Land:	114,200
Imp:	0
Perm Crop:	0
Total:	114,200

Taxable Value

Land:	0
Imp:	0
Perm Crop:	0
Total:	0

Sales History

Date	Book & Page	# Parcels	Grantor	Grantee	Price
11-09-1970	3380-511003	5			

Building Permits

NO ACTIVE PERMITS!

5 Year Valuation Information

Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	WALLA WALLA CITY OF	0	0	0	0		0	View Taxes
2004	WALLA WALLA CITY OF	0	0	0	0		0	View Taxes
2003	WALLA WALLA CITY OF	66,500	0	0	66,500		0	View Taxes
2002	WALLA WALLA CITY OF	66,500	0		66,500			View Taxes

Bill Vollendorff
Assessor

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350714330003
Map Number:	0735-14-33-000000-000-00003
Situs:	
Legal:	14-7-35 ABANDONED RR WITHIN S1/2SW1/4~

Ownership Information

Current Owner:	BNSF RAILWAY COMPANY
	PROP TAX DEPT
Address:	PO BOX 961089
City, State:	FORT WORTH TX
Zipcode:	76161-

Assessment Data

Tax District:	311
Open Space:	
Open Space Date:	
Senior Exemption:	
Deeded Acres:	6.44
Last Revaluation for Tax Year:	

Market Value

Land:	2,800
Imp:	0
Perm Crop:	0
Total:	2,800

Taxable Value

Land:	2,800
Imp:	0
Perm Crop:	0
Total:	2,800

Sales History

NO SALES HISTORY RECORDS FOUND!

Building Permits

NO ACTIVE PERMITS!

5 Year Valuation Information

Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	BURLINGTON NORTHERN RAILROAD	2,800	0	0	2,800		2,800	View Taxes
2004	BURLINGTON NORTHERN RAILROAD	1,000	0	0	1,000		1,000	View Taxes
2003	BURLINGTON NORTHERN RAILROAD	1,000	0	0	1,000		1,000	View Taxes

Bill Vollendorff
Assessor

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350723110004
Map Number:	0735-23-11-000000-000-00004
Situs:	
Legal:	23-7-35 ABANDONED RR WITHIN N1/2NE1/4~

Ownership Information

Current Owner:	BNSF RAILWAY COMPANY
	PROP TAX DEPT
Address:	PO BOX 961089
City, State:	FORT WORTH TX
Zipcode:	76161-

Assessment Data

Tax District:	311
Open Space:	
Open Space Date:	
Senior Exemption:	
Deeded Acres:	12.41
Last Revaluation for Tax Year:	

Market Value

Land:	7,000
Imp:	0
Perm Crop:	0
Total:	7,000

Taxable Value

Land:	7,000
Imp:	0
Perm Crop:	0
Total:	7,000

Sales History

NO SALES HISTORY RECORDS FOUND!

Building Permits

NO ACTIVE PERMITS!

5 Year Valuation Information

Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	BURLINGTON NORTHERN RAILROAD	7,000	0	0	7,000		7,000	View Taxes
2004	BURLINGTON NORTHERN RAILROAD	6,700	0	0	6,700		6,700	View Taxes
2003	BURLINGTON NORTHERN RAILROAD	6,700	0	0	6,700		6,700	View Taxes

Bill Vollendorff
Assessor

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350715330005
Map Number:	0735-15-33-000000-000-00005
Situs:	
Legal:	15-7-35 ABANDONED RR WITHIN S1/2S1/2~

Ownership Information

Current Owner:	BNSF RAILWAY COMPANY
	PROP TAX DEPT
Address:	PO BOX 961089
City, State:	FORT WORTH TX
Zipcode:	76161-

Assessment Data

Tax District:	100
Open Space:	
Open Space Date:	
Senior Exemption:	
Deeded Acres:	8.84
Last Revaluation for Tax Year:	

Market Value

Land:	3,900
Imp:	0
Perm Crop:	0
Total:	3,900

Taxable Value

Land:	3,900
Imp:	0
Perm Crop:	0
Total:	3,900

Sales History

NO SALES HISTORY RECORDS FOUND!

Building Permits

NO ACTIVE PERMITS!

5 Year Valuation Information

Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	BURLINGTON NORTHERN RAILROAD	3,900	0	0	3,900		3,900	View Taxes
2004	BURLINGTON NORTHERN RAILROAD	3,900	0	0	3,900		3,900	View Taxes
2003	BURLINGTON NORTHERN RAILROAD	1,300	0	0	1,300		1,300	View Taxes

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Bill Vollendorff
Assessor

Parcels west of Landfill

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350722120002
Map Number:	0735-22-12-000000-000-00002
Situs:	
Legal:	22-7-35 NW1/4NE1/4 LESS NP RY; S1/2NE1/4 LESS RD; W1/2 LESS NP RY &~RD~

Ownership Information

Current Owner:	SCHAFER, DORIS M LIVING TRUST
Address:	213 VIA BALLENA
City, State:	SAN CLEMENTE CA
Zipcode:	92672-

Assessment Data

Tax District:	311
Open Space:	YES
Open Space Date:	
Senior Exemption:	
Deeded Acres:	427.54
Last Revaluation for Tax Year:	

Market Value

Land:	235,800
Imp:	0
Perm Crop:	0
Total:	235,800

Taxable Value

Land:	123,800
Imp:	0
Perm Crop:	0
Total:	123,800

Sales History

Date	Book & Page	# Parcels	Grantor	Grantee	Price
11-05-1971	1899-103282	3			

Building Permits

NO ACTIVE PERMITS!

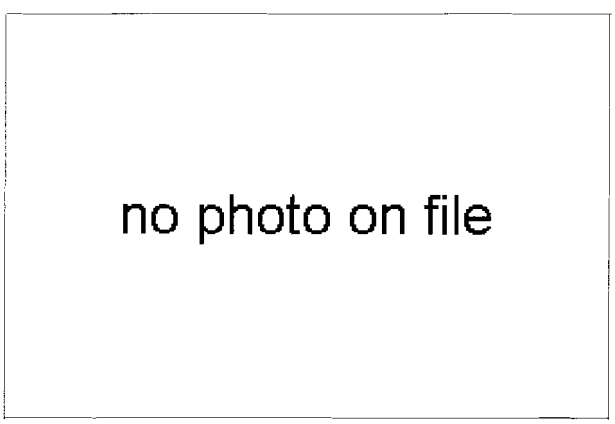
5 Year Valuation Information

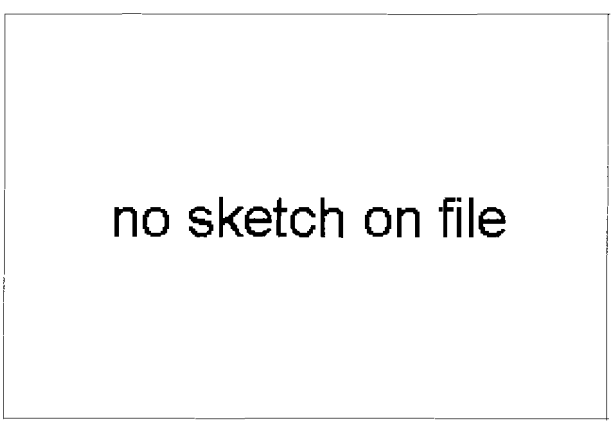
Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	SCHAFER, DORIS M LIVING TRUST	123,800	0	0	123,800		123,800	View Taxes
2004	SCHAFER, DORIS M LIVING TRUST	120,400	0	0	120,400		120,400	View Taxes

2003	SCHAFER, DORIS M LIVING TRUST	120,400	0	0	120,400	120,400	View Taxes
2002	SCHAFER, DORIS M LIVING TRUST	226,900	0		226,900		View Taxes

Parcel Comments

Number	Comment
1	RUTH WILLIAMS HAD 38% INT.SHE PASSED AWAY 03/02, HER INT WENT TO~GERALD, DONALD & KEITH SCHAFER,THEY SLD IT TO DORIS SCHAFER 07/02~





Filedate: 4/21/2005 7:01:49 AM

TerraScan Inc.

Bill Vollendorff
Assessor

Walla Walla County Assessor

315 W Main Street
Walla Walla, WA 99362
Phone: (509) 527-3216

Property Summary (Appraisal Details)

Parcel Information

Parcel Number:	350722120005
Map Number:	0735-22-12-000000-000-00005
Situs:	
Legal:	22-7-35 ABANDONED RR WITHIN N1/2N1/2~

Ownership Information

Current Owner:	SCHAFER, DORIS M LIVING TRUST
Address:	213 VIA BALLENA
City, State:	SAN CLEMENTE CA
Zipcode:	92672-

Assessment Data

Tax District:	311
Open Space:	
Open Space Date:	
Senior Exemption:	
Deeded Acres:	3.9
Last Revaluation for Tax Year:	

Market Value

Land:	2,200
Imp:	0
Perm Crop:	0
Total:	2,200

Taxable Value

Land:	2,200
Imp:	0
Perm Crop:	0
Total:	2,200

Sales History

Date	Book & Page	# Parcels	Grantor	Grantee	Price
09-11-1997	2569-708648	1			2,500

Building Permits

NO ACTIVE PERMITS!

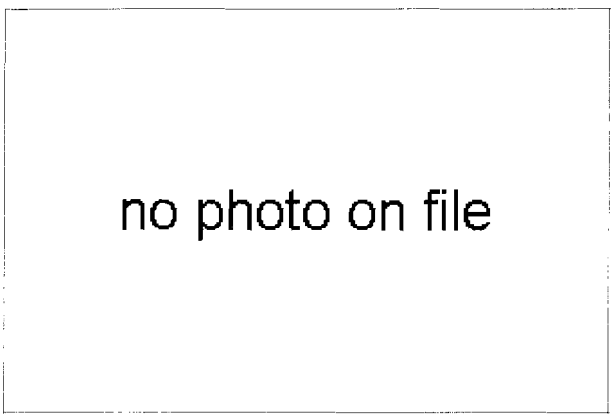
5 Year Valuation Information

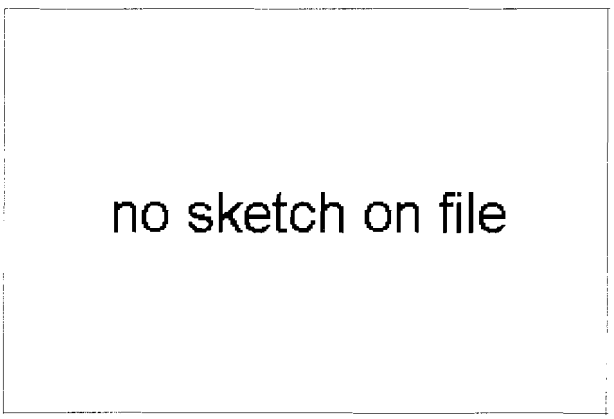
Year	Billed Owner	Land	Impr.	PermCrop Value	Total	Exempt	Taxable	Taxes
2005	SCHAFER, DORIS M LIVING TRUST	2,200	0	0	2,200		2,200	View Taxes
2004	SCHAFER, DORIS M LIVING TRUST	2,100	0	0	2,100		2,100	View Taxes
2003	SCHAFER, DORIS M LIVING TRUST	2,100	0	0	2,100		2,100	View Taxes

2002	SCHAFER, DORIS M LIVING TRUST	2,100	0	2,100	View Taxes

Parcel Comments

Number	Comment
1	RUTH WILLIAMS HAD A LIFE EST FOR 38%, SHE PASSED AWAY 03/02 & HER~INT WENT TO GERALD,DONALD & KEITH SCHAFER.THEY SLD IT TO DORIS~SCHAFER 07/02 MAKING HER 100% OWNER.~
2	SALE INCLUDES PROPERTY IN SEC 21 AND STATE ASSESSED PROPERTY...





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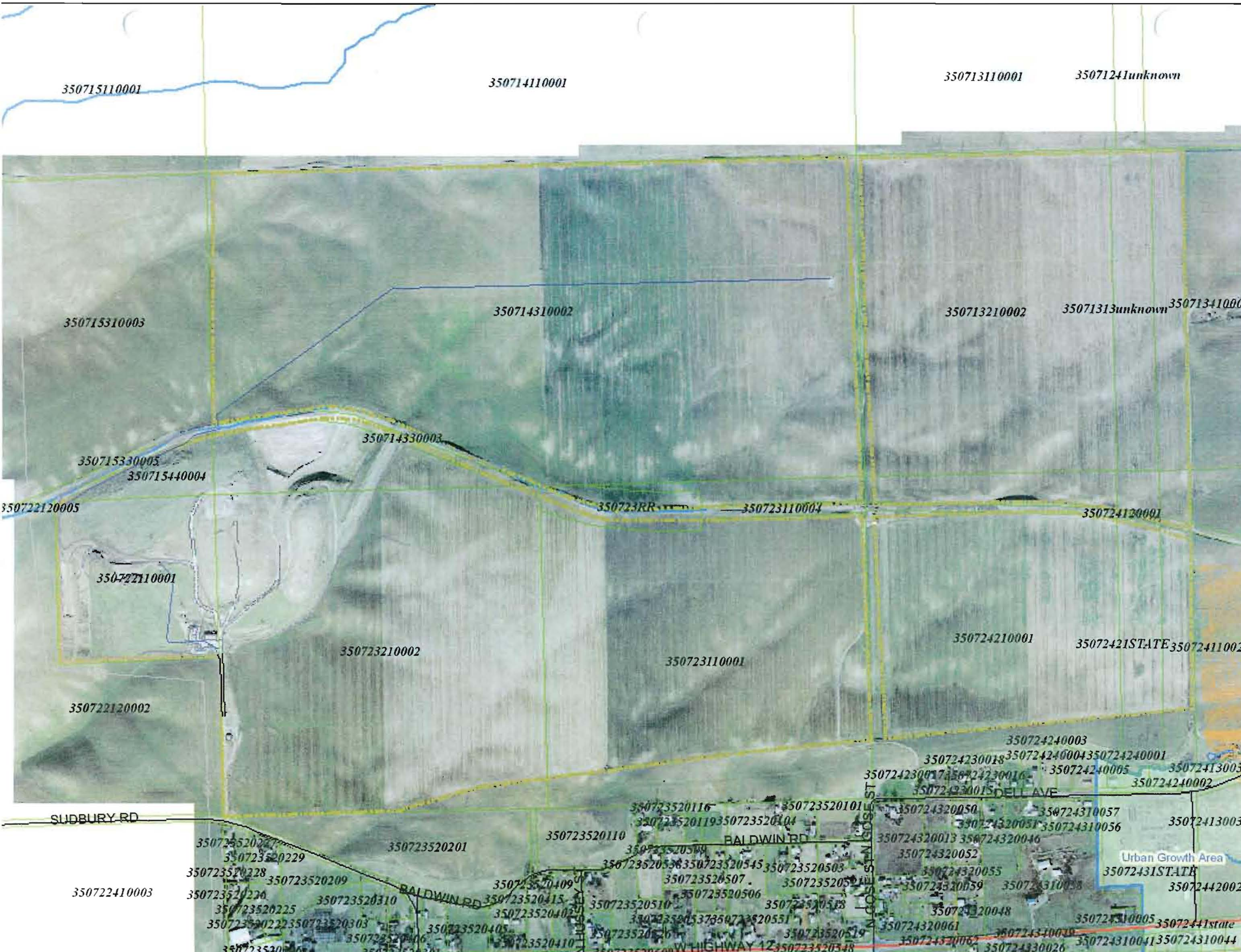

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DELL AVE
SUDBURY RD
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350723520110
BALDWIN RD
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350724320052
Urban Growth Area
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350723520507
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BALDWIN RD
350723520409
350723520415
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350724310005
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W HIGHWAY 12
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APPENDIX B

Correspondence by Date

CONTENTS

Schwyn Environmental Services

Electronic copy of appendix not presented in its entirety
See original Historical Study Report for additional appendix contents

APPENDIX B

Correspondence by Date

Schuyn Environmental Services

June 25, 1974

TO: CITY COUNCIL MEMBERS

FROM: LARRY L. SMITH, CITY MANAGER

SUBJECT: CITY OF WALLA WALLA - SPRAY IRRIGATION FARM

In 1970 the City proposed to develop a spray irrigation farm for disposal of industrial waste from the canning plants, provide land on which to dispose of future domestic waste and to make needed improvements and changes in the sewage treatment plant facilities.

In 1970 we purchased 1,040 acres of land west of the Penitentiary to be used as a spray irrigation farm. The cost was $525,000 which included the land, a well and the existing irrigation system. $125,000 of the payment was taken from the Sanitation Fund with the intent that in a future date some of the land to be used as a landfill site. The 1970 crops belonged to the owner and the City received no revenue during the year 1970.

In March 1971 the City entered into agreements with General Foods and Rogers Walla Walla with reference to the existing industrial treatment plant; bond costs for development of the spray irrigation farm; operation costs for the spray irrigation farm. The City agreed to take over the bond payments which they were making on the 1971 improvement and this facility could then be used by the City in up-grading the domestic treatment. It was determined that $804,000 of the $1,6000,000 in bonds which were issued would be an obligation of the two companies. The companies would pay to the City 6% of the cost of 600 acrea as an annual land rental fee. In addition, the companies would assume the cost of operation the spray irrigation farm along with the necessary pump stations as it related to the 600 acres. The City in turn agreed that the revenue realized from the sale of crops on the 600 acres would be applied to the operation and reduction of bond payments.

The total Capital Capital Expenditures for construction and land costs have been $2,433,619. The processors assumed $804,000 of this The Fedral Government approved payment for them of $621,452. And the State of Washington approved State payments of $282.478. This resulted in City cost of $698,259. The unspent payments have been used to make bond payments for the City of Walla Walla shares.

Spray Irrigation Farm
City of Walla Walla

June 25, 1974

In 1971 the City spent $5,584.61 and received income of 23,642.05. In 1972 the City spent 15,521.62 and received income in the amount of 21,705.03. For 1973 the City had expenditures of 36,005.83 and income in the amount of 17,943.16. Copies of this income and expenditure transaction are attached.

Examination of the crop tables for 1973 and 1974 will show that the City spent most of its monies preparing the land for the seeding of alfalfa. 1974 is really the first year that we have had a full crop from the alfalfa fields.

We have completed our first seeding and on the North farm which is the area north of the railroad, we have cropped 7800 bales of first quality hay. And on the south farm which is the area south of the railroad we have cropped approximately 16000 bales of 2nd and 3rd quality hay. The reason for this is in the south we have a excessive problem with gophers. And it is our intentition to do additional work on this in the fall.

It will be necessary for the City to develop a crop rotation plan in which 1/6 or 1/7 of the land is rotated each year.

I hope that this report has brought the covered material up to date with the spary irrigation farm and it is our intent to give regular reports to Council as we develop regular programs for the operations.

March 3, 1976

Mr. Larry L. Smith
Walla Walla City Manager
City Hall
Walla Walla, Washington 99362

re: City of Walla Walla's
Sanitary Landfill

Dear Mr. Smith:

In a letter sent to this office on February 24, 1976 by Mr. Claude L. Sappington, Washington State Department of Ecology, it was recommended that because of the limited area remaining in the existing landfill, coupled with the apparent leachate problem, a conformance site permit should not be issued.

Therefore, in accordance with W.A.C. 70.95.170, this letter serves as a nonconforming site permit which will expire on March 1, 1977.

Please feel free to contact us if you have any questions.

Very truly yours,

David W. Eaton, R.S.
Director of
Environmental Health

DWE:as

Enclosure: 1

cc. Claude Sappington

Walla Walla County-City Health Department

320 WILLOW
TELEPHONE 525-5730
WALLA WALLA, WASHINGTON 99362

February 7, 1977

Mr. Vern Tompkins
Director of Sanitation
City of Walla Walla
City Hall
Walla Walla, Washington 99362

Re: Bacteriological and chemical testing of monitoring wells for the existing and proposed landfills.

Dear Mr. Tompkins:

During a telephone conversation with Mr. Claude Sappington on February 4, 1977, he outlined the following testing schedule for bacteriological and chemical analyses of the monitoring wells serving the existing and proposed landfill sites:

FOR THE EXISTING LANDFILL SITE: Continue the present chemical and bacteriolgical tests each month until August 1, 1977.

FOR THE PROPOSED SITE PRIOR TO USE: So that base line data can be accumulated before use of the new landfill site, analysis of samples should begin at least four (4) months in advance.

Chemical Analysis (one test from each well/month)

-PH, BOD, COD, Chlorides, Iron, Total Dissolved Solids, Total Alkalinity.

Bacteriological Analysis (one test from each well/month)

-Total Coliform - MPN

After use of the new landfill begins, the above aforementioned analyses can be reduced to once every three (3) months until further notified.

The County-City Health Department will continue to provide bacteriological testing for total coliform at no charge.

If you have any questions, please feel free to contact us.

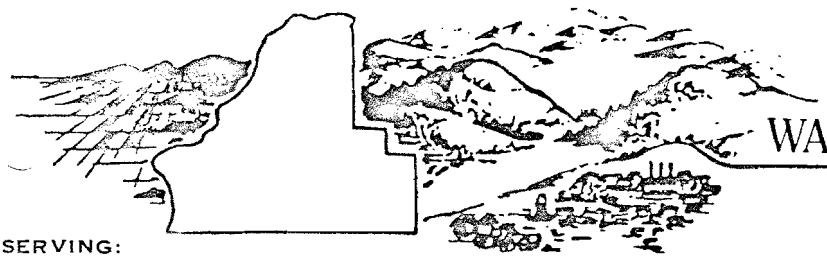
Very truly yours,

David W. Eaton

David W. Eaton, R.S.
Director of Environmental Health

DWE:as

cc: Mr. Claude Sappington
Mr. Norm Skiles



SERVING:
WALLA WALLA • WAITSBURG • PRESCOTT • COLLEGE PLACE
CITY & COUNTY

WALLA WALLA REGIONAL PLANNING

P. O. BOX 478 - WALLA WALLA, WASHINGTON 99362
CITY HALL - TELEPHONE (509) 525-1720, EXT. 65

March 2, 1977

Verne Tompkins
City of Walla Walla
City Hall
P. O. Box 478
Walla Walla, Wash. 99362

Dear Mr. Tompkins:

At the regular meeting of the City of Walla Walla Board of Adjustment held on February 28, 1977, your request for a Conditional Use Permit to construct and operate a sanitary landfill located north of Sudbury Road approximately two miles west of Walla Walla was approved.

Enclosed for your records is a copy of the Statement of Findings of the Board of Adjustment.

Sincerely yours,

Carver D. Van Hemert
Director of Planning

CDVH:bh

Enclosure

cc: Norm Skiles, City Engineer
Les Hall, City Building Inspector
Larry Smith, City Manager
Dave Eaton, County Sanitarian

CITY OF WALLA WALLA BOARD OF ADJUSTMENT

Record of Finding of Fact in all Cases

NATURE OF CASE:

Request by the City of Walla Walla for a Conditional Use Permit to construct and operate a sanitary landfill located north of Sudbury Road approximately two miles west of Walla Walla.

DATA

DATE THIS APPLICATION FILED: February 8, 1977

NOTICE OF HEARING: February 14, 1977

DATE OF HEARING: February 28, 1977

NOTICES POSTED: February 18, 1977

DECISION

Proposal (Petition) RECOMMENDED
NOTXRECOMMENDEDX By the Board of Adjustment

For the following reasons:
Lucia Stuart moved that the Board recommend approval of the Conditional Use Permit to construct and operate a sanitary landfill to be located north of Sudbury Road approximately two miles west of Walla Walla. Seconded by Bernard Stevenson. VOTE: Yes - Locati, Cortinas, Stevenson, Stuart, Goetz. No - None. Carried unanimously.

DATE OF ACTION: February 28, 1977

Secretary, Board of Adjustment

CITY OF WALLA WALLA

BOX 478

WALLA WALLA, WA. 99362

Office of *City Engineer*

March 18, 1977

Mr. Dave Eaton
County-City Health Department
304 North 2nd Avenue
Walla Walla, Washington 99362

Subject: New City of Walla Walla Sanitary Landfill

Dear Dave:

Enclosed are four copies of the Engineering Report on the new City of Walla Walla sanitary landfill which you have requested.

Sincerely,

Norman L. Skiles

Norman L. Skiles, P.E.
City Engineer

FRB/br
Enclosures

CITY OF WALLA WALLA

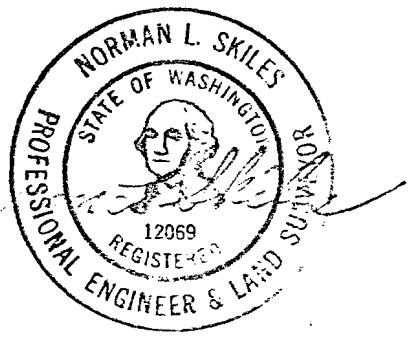
DEPARTMENT OF CITY ENGINEER

STATE OF WASHINGTON

ENGINEERING REPORT

CITY OF WALLA WALLA

SANITARY LANDFILL



March, 1977

ENGINEER'S REPORT

Walla Walla City Sanitary Landfill

The proposed landfill site is presently owned and has been annexed by the City of Walla Walla. The site is contiguous to the City's Industrial Waste Spray Irrigation Farm.

Zoning of the landfill site and adjacent area is for agriculture. A conditional use permit to operate the landfill has been granted by the Walla Walla Regional Planning Board of Adjustment. The Board of Adjustment granted this permit at their February 28, 1977 meeting.

The daily waste quantities are expected to increase as the service area increases. The present estimated daily waste quantity is 4 pounds per capita. The future service area is anticipated to be all of Walla Walla County excluding the Burbank area. The estimated average daily weight would be 80 tons. The estimated maximum daily weight would be 110 tons.

Daily customer traffic is expected to be different at the new landfill site. At the existing site an average of 84 residential cars are delivering wastes daily. It is anticipated that the number of cars per day would drop at the new landfill site due to the longer distance to the new site from the population center. As the service area extends further into Walla Walla County the use of larger transfer vehicles is expected to increase. Transfer stations have already been constructed in some of the communities in Walla Walla County. The number of municipal collection vehicles (6), private collection vehicles (2), and commercial industrial trucks (2), wouldn't vary noticeably between the existing site and the new site.

The soil and geological characteristics of the site are common to the Southeastern Washington area. The landfill site is a rolling hill about 50 feet higher than the lowest valley on the site. The site is presently used for

wheat farming. Walla Walla silt loam extends from 35 to 80 feet in depth and would be used as cover material. Due to the fine graded characteristics the on-site soil would be excellent cover material. A basalt strata underlies the Walla Walla Valley. The top of the basalt layer is at about 450 feet or 350 feet below the ground surface at the site location. The extent of weathering of the basalt formation is unknown.

Ground water at the site was located by drilling three monitoring wells. Depth to the ground water table in December was 27 to 75 feet or at an elevation of 757 feet above mean sea level. It is unknown at this time what the seasonal variation in the depth of the ground water table is at the site. The ground water movement is in the southwest direction and is relatively slow. At this time there is no known discharge point of ground water to surface water in the vicinity of the landfill.

There is no standing surface water or running surface water in the landfill vicinity. Only during high intensity, long duration rain storms would any storm water be present on the surface. Rainfall averages about 15.5 inches per year. The peak rainfall has been 0.6 inches for a one hour duration of a five year storm. With the lack of surface water and low amount of rainfall, leachate and gas production would be minimal at the site. Leachate penetration would be further hampered by the impervious nature of the fine graded soil present there.

Since the landfill site is located on a hill and no running surface water is present, there is no upstream watershed or any chance of flooding.

Wind at the site is predominately from the south and southwest. The average wind speed varies from 6 to 10 miles per hour.

Improvements would have to be made to the site prior to use. Major items of improvement are the access road, equipment shed, personnel-scale building, fencing, water supply, trenching, and electricity and telephone services. The approximate cost of these improvements is about $200,000.00 dollars.

An all weather oiled road 22 feet wide and approximately 1,400 feet long will be constructed from Sudbury Road to the actual landfill site. The road construction will include the electrical power and telephone lines, entrance gates and fencing. Gravel roads on the landfill site would be constructed as the site develops. As wet weather occurs the access roads in the refuse trenches will have a gravel surface which would be removed as the trench is filled. Also during the site preparation stage the employee facilities and equipment shed would be constructed. The toilet, wash basin and shower are going to be included in the personnel and scale building. The facilities would be serviced by telephone and electricity. The metal enclosed equipment shed would be constructed large enough to protect the landfill equipment. Disposal of refuse would start at the toe of the south slope of the landfill site then proceed up the slope to the edge of the plateau. After the south slope has been utilized, refuse would be deposited at the north slope in a similar sequence. Trenches would be excavated as needed perpendicular to the side slopes, generally following the final contour lines. Traffic control and designation of the unloading area would be accomplished by standard MUTCD traffic control devises and operating personnel.

Trench excavation would be done as the adjacent downhill trench is filled. The trench disposal method would be used in all cases except where the area method is required in the deeper valleys. Excavation cuts would be approximately eight to sixteen feet deep. The trench bottom would be graded transversely and longitudinally 5% and 1%, respectively, to provide drainage from surface runoff.

Gas production in the finished landfill is anticipated to be minimal due to the dry climate. Observations at other landfills in Eastern Washington and the existing facility at Walla Walla have shown little gas production.

Refuse cells would be approximately 30 x 12 x 16 feet with a 30 foot working

face. The final four foot cover would not be sloped any steeper than a five horizontal to one vertical slope. Cover material would be excavated and dumped by a self-loading earthmover with a mechanical compactor assisting the operation. Daily cover would be greater than six inches and the temporary cover greater than twelve inches. Blowing litter would be controlled by two fences. The first fence would be the existing portable fences used at the existing landfill. The second fence would be the permanent perimeter fence around the landfill site.

Dust would be controlled during the dry weather by application of water and in extreme cases calcium chloride.

Records of the water sampling from the three monitoring wells would be kept according to State and County Health Regulations. Additional records would be kept on daily truck weight, weekly labor, daily activities, operating costs, facility costs, and total cost with cost and revenue summaries.

No salvaging system is anticipated at this time. Scavenging by private citizens will be strictly prohibited.

Due to the remoteness of the landfill site, noise control would not be required or necessary.

Vector control would mainly be accomplished by the daily coverage of the refuse. When required in extreme cases, poisoning would be used for vector control.

The current and future use of the landfill site is dryland farming. The active disposal area would be kept to a minimum to control any erosion and to maximize the use of the remaining land for farming. As the use of the landfill progresses, land with the final four foot cover over the refuse would be returned to farming. Soil conservation practices such as contour discing will keep erosion to a minimum.

DEPARTMENT OF ECOLOGY

APPLICATION FOR DISPOSAL SITE PERMIT
PART I (All Sites)

Name of Site: Walla Walla City Landfill

Address: Spray Irrigation Farm
Walla Walla, WA 99362

Owner of Record: City of Walla Walla

Address: P.O. Box 478
Walla Walla, WA 99362

Application Date: ___ (Day) ___ (Month) ___ (Year)

1	2	3	4	5	6	7	8
	4	0	1	4	6		

Card — Solid State Form — Waste

Site Number: 9 10 = 34 (County); 11 12 13 = ___ (Serial)

Location: 14 15 16 17 18 19 20 = 2 2 0 7 3 S E (SEC / TWP / RANGE); E=0 W=1

Check Type of Site:

X	Sanitary Landfill	200
	Garbage Feeding Operation	210
	Transfer Station	220
	Incinerator	230
	Rural Container System	240
	Drop Box System	250
	Compost Plant	260
	Reclamation Site	270
	Processing Site	280
	Nonconforming	290

Site Acquisition

Box 21: 1

Select 1, 2, 3, or 4 from Below

Presently owned	1
Will purchase	2
Will lease	3
Will rent	4

Is this an existing site? Yes 1 / No 0 — 22: 0

PART II Governmental Approval

23 24 25 26 = ___ Community Code

Has a Permit Been Approved by: (Yes 1 / No 0)

A.

Municipality Walla Walla	27: 1	Department of Ecology	33: 1
Planning Commission	28: 1	Covers Waste Discharge Permit	34:
		Land Resources Planning	35:
Shorelines Management - County	29: N/A	Meets Minimum Standards	36:
		Flood Control Permit	37:
County Solid Waste Management Plan	30: 1	Shorelines Management	38:
		Hydrogeology	39:
Meets County Solid Waste Standards	31: 1	Department of Natural Resources Surface Mining	40: N/A
Department of Game/Fisheries Hydraulic Permit	32: N/A	Fire Control	41: 1
		Other	42: N/A

(Local Health Department Use Only)

Final Approval Date: 43 44 45 46 47 48 = ___ (Day) ___ (Month) ___ (Year)

1. Classification of Site Area *Agriculture (Conditional Use Permit)*

2. Enforcement Agency *Walla Walla Regional Planning*

3. Restrictions (If Any) *None*

4. Use of Adjacent Properties Within a Quarter Mile
(Check Appropriate Box)

	North	East	South	West
a. Residential				
b. Commercial				
c. Light Industrial				
d. Heavy Industrial				
e. Agricultural	X	X	X	X
f. Mixed				
g. None				

PART III Solid Waste Characteristics

A. Population Served *40,000*

B. Source or Type:

	Description (If necessary)	Present Volume (Tons)	Projected Volume (Ten Years) Tons
1. Garbage		*18,000*	*22,000*
2. Rubbish		--	
3. Ashes		--	
4. Bulky Wastes		--	
5. Abandoned vehicles		--	
6. Construction and demolition wastes		*9,000*	*12,000*
7. Industrial wastes		*6,000*	*9,000*
8. Hazardous waste		--	
9. Sewage treatment residues		--	
10. Street refuse		--	
11. Litter		--	
12. Agricultural waste		--	
13. Mining wastes		--	

C. Daily Waste Quantities

1. Estimated per capita daily waste quantities	4 lbs.
2. Maximum daily volume or weight	110 Tons
3. Average daily volume or weight	80 Tons

4. Additional comments *Weights are estimated for anticipated Landfill use for future Landfill.*

D. Daily Customer Traffic

	Number
1. Estimate number of transfer vehicles	See Note
2. Estimated number of municipal collection vehicles	6
3. Estimated number of private collection vehicles	2
4. Estimated commercial/industrial/special trucks	2
5. Estimated residential pickup trucks/station wagons daily	Included in No. 6
6. Estimated residential cars	84

7. Additional comments *transfer vehicles are not presently used but are anticipated for new Landfill.*

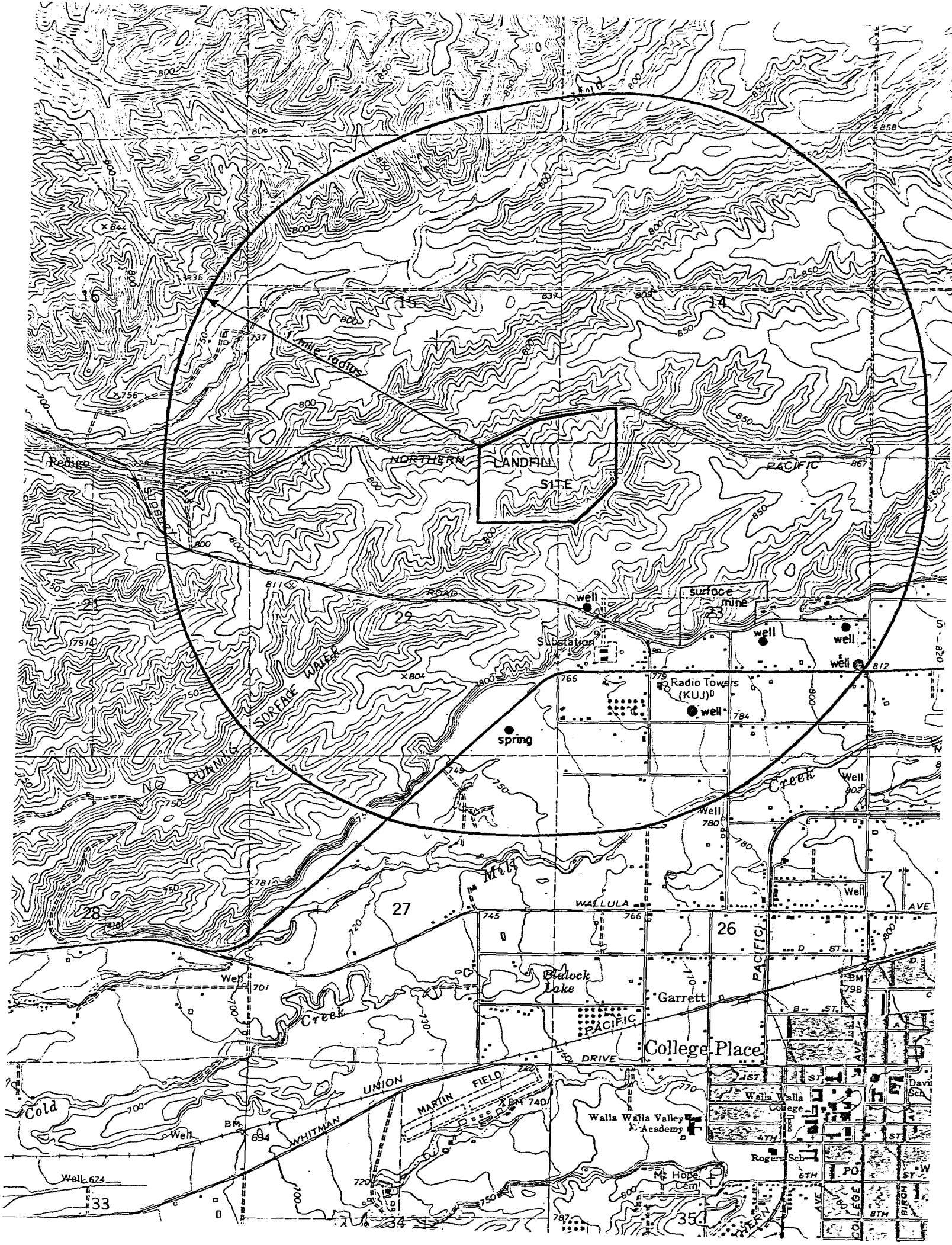
PART IV SOIL AND GEOLOGICAL CHARACTERISTICS (All Sites)

A. Location - Attach copy of USGS Topographical map to each copy of Application using 7.5 minute quadrangle map, if published.

1. Plot on topographical map the following on site or within one mile of outer perimeter of site:

	Checkoff
a. Wells, water	X
b. Springs	X
c. Swamps	X
d. Streams	X
e. Public Water Supplies	X
f. Other Bodies of Water	X
g. Underground or Surface Mines	X
h. Mining Spoil Piles	X
i. Irrigation Canals	X
j. Irrigation Pools	X
k. Mine Pools and Discharge Points	X
l. Gas and Oil Wells	X
m. Other (Specify)	X

2. Describe the Topographical Setting *Rolling hills without surface water, used principally for agriculture.*


1 mile radius
LANDFILL SITE
NORTHERN PACIFIC
Rediger
SUDBURY ROAD
surface mine
well
Substation
Radio Towers (KUJ)
spring
SURFACE WATER
NO RUNNING
Creek
Mill
WALLULA AVE
Garrett
Blalock Lake
College Place
PACIFIC DRIVE
UNION PACIFIC
MARTIN FIELD
WHITMAN
Cold
Walla Walla College
Walla Walla Valley Academy
Rogers Sch
Mt Hope Cem
16
15
14
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22
23
28
27
26
33
34
35

1. List all soil series and phases within site and approximate thickness.
   Walla Walla silt loam 35 - 80 feet thick
2. List all soil series and phases to be used as cover material.
   Walla Walla silt loam - Native on site material
3. A copy of soil map or references to site location and source of cover material on published soil survey must be included.

C. Ground Water Geology

1. Glacial Geology or

   a. Type(s) of Deposit(s) *Silt Loam*

   b. Texture of Deposit(s) *Fine graded material with 98% passing No. 200 sieve*

   c. Thickness of Deposit(s) *35 to 80 feet thick*

2. Bedrock

   a. Type(s) *Basalt*

   b. Depth to *450 MSC*

   c. Extent of Weathering *Unknown*

   d. Name and Age of Formation(s) *Unknown*

3. Ground Water

   a. Depth to ground water *27 - 75 feet elevation 757 MSL*

      (1) How determined *Well Construction*

      (2) Seasonal variation *Unknown*

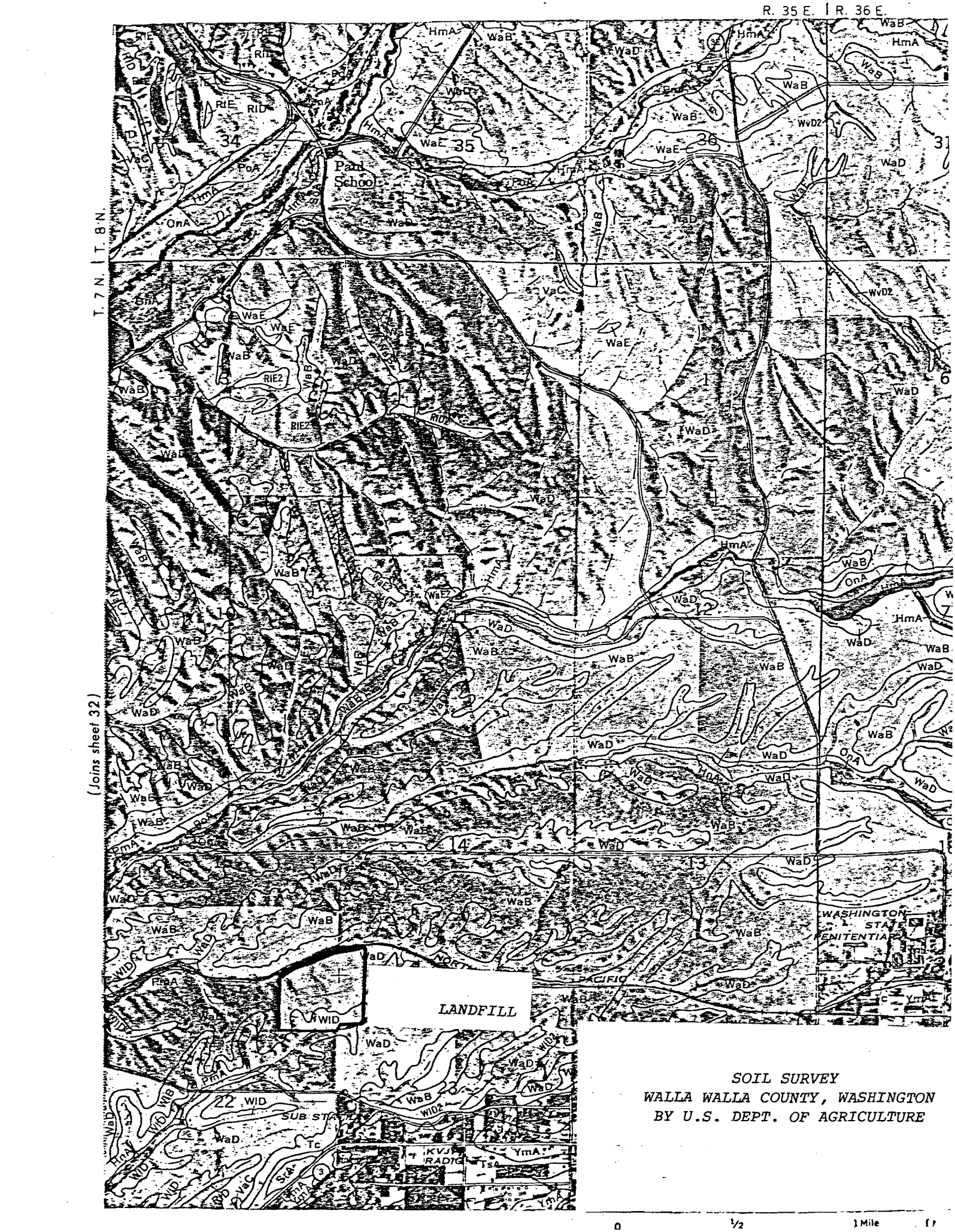
      (3) If depth to ground water cannot be determined, it is recommended that one boring or well near the highest elevation of the proposed site be drilled to a depth of 10 feet into the ground water or 10 feet into bedrock, whichever is deepest (maximum depth - 150 feet).

	Checkoff
(a) Locate well or boring on topographic map	X
(b) Provide complete log (description of well)	X
(c) Indicate method of drilling	X

   b. Direction(s) of Ground Water Movement ~~N/A~~ X

   c. Discharge of Ground Water (Indicate on topographical map) N/A

      (1) Distance and direction of discharge point(s) N/A
      (2) Name(s) of discharge point(s) (springs, streams, etc.) N/A
      (3) Area tributary to discharge point(s) N/A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R. 36 E.
T. 7 N.
T. 8 N.
(Joins sheet 32)
Paul School
LANDFILL
WASHINGTON STATE PENITENTIARY
SUB STA
KVJR RADIO
PACIFIC
NORTH
SOIL SURVEY
WALLA WALLA COUNTY, WASHINGTON
BY U.S. DEPT. OF AGRICULTURE
0
½
1 Mile

...partment of Ecology
...ond Copy — Owner's Copy
...rd Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. .....
Permit No. .....

(1) OWNER: Name Walla Walla City Land Fill Address .....

(2) LOCATION OF WELL: County Walla Walla — ¼ ¼ Sec. T. N., R. W.M.
...aring and distance from section or subdivision corner MONITOR WELL #1

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one).... #1
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 5 inches.
Drilled 65 ft. Depth of completed well 65 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 5 " Diam. from 0 ft. to 65 ft.
Threaded ☐ ..... " Diam. from ..... ft. to ..... ft.
PVC Welded ☒ ..... " Diam. from ..... ft. to ..... ft.

Perforations: Yes ☒ No ☐
Type of perforator used Machine
SIZE of perforations 1/2 in. by 3 in.
..... perforations from ..... ft. to ..... ft.
40 perforations from 25 ft. to 65 ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☐ No ☒
Manufacturer's Name .....
Type ..... Model No. .....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☒ No ☐ Size of gravel: 3/4 x 1 1/4
Gravel placed from 25 ft. to 65 ft.

Surface seal: Yes ☒ No ☐ To what depth? 25 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

(7) PUMP: Manufacturer's Name None
Type: ..... H.P. .....

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ..... ft.
Static level 27 ft. below top of well Date Nov 21-76
Artesian pressure Elv. 759 lbs. per square inch Date .....
Artesian water is controlled by .....
(Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? .....
Yield: ..... gal./min. with ..... ft. drawdown after ..... hrs.
" " "
" " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test .....
Bailer test 4 gal./min. with 3.5 ft. drawdown after 1/2 hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water 58 Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top soil & Brown clay	0	35
	786	751 Elv
Brown clay with Fine Sand Some water Elv 754	35	36
Clay - Brown Elv. 748	36	38
Gravel - Cement - Brown	38	49
	Elv	737
Clay - Brown	49	53
	Elv	733
Gravel - Cement - Brown	53	65
	Elv	721
W. W. Land Fill #1		

Work started Nov 15, 1976 Completed Nov 22, 1976

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. Mallatt
(Person, firm, or corporation) (Type or print)

Address RT # 2 Box 111 Milton Freewater Ore

[Signed] Lowell W Mallatt
(Well Driller)

License No. C-81 Date Dec. 16, 1976

(USE ADDITIONAL SHEETS IF NECESSARY)

Second Copy — Owner's Copy
Third Copy — Driller's Copy

STATE OF WASHINGTON

Permit No. .....

(1) OWNER: Name Walla Walla City Address .....

(2) LOCATION OF WELL: County ..... ¼ ..... ¼ Sec. ..... T. ..... N., R. ..... W.M.

Bearing and distance from section or subdivision corner MONITOR WELL #2

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☑ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) .... # 2
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☑ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 5 inches.
Drilled 155 ft. Depth of completed well 155 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 5 " Diam. from 0 ft. to 155 ft.
Threaded ☐ " Diam. from ..... ft. to ..... ft.
5" PVC Welded ☑ " Diam. from ..... ft. to ..... ft.

Perforations: Yes ☑ No ☐
Type of perforator used Machine
SIZE of perforations 1/2 in. by 3 in.
..... perforations from ..... ft. to ..... ft.
80 perforations from 80 ft. to 155 ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☐ No ☑
Manufacturer's Name .....
Type ..... Model No. .....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☐ Size of gravel: 3/4 X 1/4
Gravel placed from 30 ft. to 155 ft.

Surface seal: Yes ☑ No ☐ To what depth? 30 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

(7) PUMP: Manufacturer's Name None
Type: ..... H.P. .....

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 75 ft. below top of well Date Dec. 14-76
Artesian pressure ELV 757 lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☑ If yes, by whom? .....
Yield: ..... gal./min. with ..... ft. drawdown after ..... hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test .....
Bailer test 50 gal./min. with 30 ft. drawdown after 1 hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water 59 Was a chemical analysis made? Yes ☐ No ☑

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top soil & clay - Brown	0	57
	832	775
clay - Tan	57	79
	ELV	753
Gravel Cement - Brown	79	95
	ELV	737
clay - Brown	95	97
	ELV	735
Gravel Cement - Brown	97	106
	ELV	726
Gravel Med - Some water	106	115
	ELV	717
Gravel cement - Brown	115	120
	ELV	712
clay - Brown	120	122
	ELV	710
Gravel Cement - Brown	122	124
	ELV	708
clay - Brown	124	127
	ELV	705
Gravel water bearing	127	155
	ELV	677

2

Work started Dec 1, 19 76 Completed Dec 15, 1976

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. Mallatt
(Person, firm, or corporation) (Type or print)

Address R.T. # 2 Box 111 Milton Freewater

[Signed] Lowell W. Mallatt
(Well Driller)

License No. C-81 Date Dec. 16, 1976

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. .....
Permit No. .....

(1) OWNER: Name Walla Walla City Address .....

(2) LOCATION OF WELL: County Walla Walla — ¼ ¼ Sec. T. N., R. W.M.
Bearing and distance from section or subdivision corner MONITOR WELL #3

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☑ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☑ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 5 inches.
Drilled 85 ft. Depth of completed well 80 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 5 " Diam. from 0 ft. to 80 ft.
Threaded ☐ " Diam. from ft. to ft.
5# PVC Welded ☑ " Diam. from ft. to ft.

Perforations: Yes ☑ No ☐
Type of perforator used Machine
SIZE of perforations ½ in. by 3 in.
perforations from ft. to ft.
52 perforations from 25 ft. to 80 ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☑
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☑ No ☐ Size of gravel: ¾ - 1¼
Gravel placed from 25 ft. to 80 ft.

Surface seal: Yes ☑ No ☐ To what depth? 25 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name None
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 28 ft. below top of well Date Nov 21-76
Artesian pressure EW 756 lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☑ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 25 gal./min. with 40 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water 58 Was a chemical analysis made? Yes ☐ No ☑

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top Soil & Clay - Brown	0	20
782 EW 764		
Gravel in Brown Clay	20	21
	EW	763
Clay - Brown	21	29
	EW	755
Clay - Tan	29	34
	EW	750
Gravel Brown [illegible]	34	62
	EW	722
Clay - Brown	62	64
	EW	720
Gravel Some water 62'		
Caving 80-86	64	86
	EW	698
#3		

Work started Nov 14, 1976 Completed Nov 21, 1976

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. Mallatt
(Person, firm, or corporation) (Type or print)

Address Rt 2 Box 111 Milton Freewater Or

[Signed] Lowell W. Mallatt
(Well Driller)

License No. C-81 Date Dec. 16, 1976

(USE ADDITIONAL SHEETS IF NECESSARY)

d. Subsurface information (detailed information is needed on subsurface conditions for proper analysis of the site. This information on soils, geology and ground water may be determined from deep cuts, borings, and wells, backhoe pits, strip mines, quarries, natural outcrops, or road or railroad cuts). Describe location, detailed description and findings and locate on topographic map, logs.

Silt loam material found 35 to 80 feet with deeper alternating gravel layers. See attached well logs.

e. How was information determined? *Well construction*

4. Surface Water

a. Flooding hazard frequency is *0* times in _____ years.

b. Will there be a discharge of leachate to surface waters? Yes____ No *X*

c. Will leachate collection and treatment facilities be constructed? Yes____ No *X*

(1) If yes, have you applied for Waste Discharge Permit? Yes *N/A* No *N/A*

d. Size of watershed above landfill: _____ acres

e. Rainfall - Inches

(1) Annual value *15.50 inches*

(2) Peak 12 Hour value *2 inches - 5 year storm*

(3) Peak 1 hour value *0.6 inches*

5. Prevailing Winds. Furnish wind rose or the following predominate value:

a. Winter Direction *See Attached* Intensity_____

b. Spring Direction *Table* Intensity_____

c. Summer Direction_____ Intensity_____

d. Fall Direction_____ Intensity_____

Table 24c. WIND: Percentage Frequency by Directions, in Selected Speed Increments by Months

Walla Walla Airport

WASHINGTON

JANUARY

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.6	0.3	*							1.0	3.5
NNE	0.2	0.2	*							0.4	4.1
NE	1.1	0.7	*							1.8	3.6
ENE	0.4	0.5	*							0.9	4.3
E	2.6	2.5	0.2	*						5.4	4.1
ESE	1.2	0.8	0.1	*	*	*				2.2	4.3
SE	3.3	3.4	1.2	1.2	0.7	0.2				10.0	7.6
SSE	1.8	4.0	3.0	3.3	1.1	0.6	0.1	*		13.9	10.6
S	3.6	7.1	4.4	2.1	0.2					17.8	7.2
SSW	1.5	3.1	2.5	1.7	0.2	*	*			9.1	8.5
SW	2.5	2.5	1.8	2.1	0.4	0.1				9.2	8.4
WSW	0.8	0.6	0.4	0.4	0.2	*	*			2.6	8.7
W	1.7	1.5	0.4	0.3	*					4.0	5.2
WNW	0.5	0.4	0.1	*	*					1.1	5.2
NW	1.6	0.6	*	0.2						2.3	3.5
NNW	0.3	0.2	*	*						0.5	4.7
CALM	17.9									17.9	
TOTAL	41.8	28.5	14.6	11.2	2.9	0.9	0.1	*		100.0	6.1

FEBRUARY

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.6	0.6	0.1	*						1.3	4.3
NNE	0.1	0.3	*							0.4	4.7
NE	0.7	0.6	0.1							1.3	4.0
ENE	0.5	0.3	*							0.6	4.4
E	3.1	3.5	0.1							6.7	3.9
ESE	1.1	1.1	0.1	0.1		*				2.3	4.5
SE	2.9	3.6	0.7	1.0	0.3	0.1				8.6	6.4
SSE	1.5	3.8	2.6	2.1	0.9	0.1				11.1	9.4
S	3.2	6.5	4.5	2.2	0.3	0.1				16.7	7.7
SSW	1.1	3.3	3.4	2.7	0.5	0.1	*			11.2	9.9
SW	1.8	3.2	2.4	2.8	1.1	0.2				11.4	10.2
WSW	0.5	1.0	0.3	0.9	0.6	0.2				3.5	12.0
W	1.4	1.6	0.5	0.3	0.1	*				4.1	6.2
WNW	0.5	0.8	0.1	0.1	*					1.5	5.5
NW	0.9	0.9	0.2	0.1	*	*				2.2	5.3
NNW	0.3	0.3	0.1	0.1	*					0.7	5.9
CALM	16.3									16.3	
TOTAL	36.3	31.5	15.3	12.3	3.8	0.9	*			100.0	6.6

MARCH

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.5	0.8	0.6	0.2	*					2.1	6.2
NNE	0.2	0.3	0.1	0.1	*					0.6	8.4
NE	0.9	0.9	0.7	0.1						2.0	5.0
ENE	0.3	0.5	*							0.8	4.6
E	2.6	4.1	0.4	0.1	*					7.1	4.5
ESE	1.0	1.3	0.2	0.1	*					2.7	5.1
SE	2.3	4.1	1.3	1.2	0.2	*				9.2	7.0
SSE	1.3	3.9	2.0	1.7	0.2	*				9.4	8.4
S	2.9	6.0	5.1	2.6	0.1					16.5	7.8
SSW	1.1	3.4	3.7	2.5	0.2					11.0	9.2
SW	1.6	3.4	3.8	3.4	0.9	0.7	0.1			13.4	10.7
WSW	0.5	0.9	0.9	1.4	1.0	0.6	0.1	*		5.4	14.4
W	1.3	1.5	0.5	0.6	0.1	0.1	*			4.3	7.8
WNW	0.5	0.4	0.2	0.2	0.1	*				1.2	8.4
NW	1.0	1.1	0.2	0.1	*	*				2.5	5.0
NNW	0.2	0.4	0.1	0.1	0.1					0.9	8.0
CALM	10.1									10.1	
TOTAL	28.2	33.7	19.3	14.4	5.1	1.0	0.7	*		100.0	7.3

APRIL

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.6	1.1	0.4	0.2	*					2.2	6.2
NNE	0.2	0.5	0.3	0.1						1.1	7.4
NE	0.7	0.9	0.6	0.1						2.4	6.1
ENE	0.3	0.8	0.3	*						1.3	5.7
E	2.2	6.0	0.4	0.1						8.7	5.1
ESE	1.2	1.5	0.2							2.9	4.5
SE	2.5	3.3	0.5	0.5	0.1					6.7	5.4
SSE	0.8	3.5	1.6	1.1	0.2					7.2	8.1
S	1.8	5.6	5.8	3.4						16.6	7.9
SSW	0.5	3.0	3.6	1.7	0.1					9.0	9.0
SW	1.2	4.7	4.2	3.3	0.5	0.1				13.9	9.4
WSW	0.4	1.1	1.5	2.7	0.9	0.2	*			6.9	12.0
W	1.2	2.1	1.0	1.1	0.4	0.1				5.9	8.4
WNW	0.3	0.7	0.3	0.1	0.1					1.5	7.1
NW	1.0	1.3	0.5	0.1	*					2.9	5.6
NNW	0.3	0.6	0.1	0.1	*					1.1	6.1
CALM	9.5									9.5	
TOTAL	24.6	37.9	21.6	13.6	2.1	0.3	*			100.0	7.1

MAY

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.5	1.0	0.5	0.1						2.1	6.2
NNE	0.2	0.6	0.3	0.1						1.1	7.2
NE	0.7	1.4	0.5	0.1						2.7	5.8
ENE	0.3	0.7	0.1	*						1.1	5.2
E	2.4	7.6	0.9	0.1						10.9	5.1
ESE	1.0	1.4	0.2							2.6	4.5
SE	2.1	3.3	0.6	0.1						6.1	4.9
SSE	1.0	4.4	1.8	0.5	*					7.7	6.7
S	1.9	7.2	5.2	2.1	0.1					16.4	7.7
SSW	0.8	3.5	4.3	2.1	0.1					10.7	8.8
SW	1.5	4.8	4.3	2.8	0.4	*				13.7	8.9
WSW	0.6	1.6	1.2	1.3	0.5	*				5.1	10.2
W	1.3	2.0	1.0	0.4	0.2	*	*			5.0	7.1
WNW	0.4	0.8	0.2	0.1	0.1					1.6	6.0
NW	0.8	1.6	0.3	0.1	*					2.8	5.2
NNW	0.3	0.4	0.1	*						0.9	5.7
CALM	9.5									9.5	
TOTAL	25.3	42.1	21.4	9.9	1.2	0.1	*			100.0	6.5

JUNE

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.5	0.7	0.3	0.1	*	*				1.6	6.5
NNE	0.2	0.3	0.3	0.2						1.0	8.2
NE	0.5	1.2	0.4	0.1						2.2	5.9
ENE	0.2	0.7	0.4	*						1.3	6.5
E	1.5	5.9	1.1	*						8.6	5.4
ESE	0.7	1.7	0.2	*						2.6	4.9
SE	1.6	3.3	0.4	0.1		*				5.4	5.0
SSE	0.7	4.2	1.8	0.4						7.4	6.6
S	1.6	8.5	6.5	1.8	*					18.4	7.6
SSW	0.5	4.5	4.9	1.8	0.1					11.7	8.6
SW	1.2	5.5	5.4	2.7	0.3	*				15.1	8.7
WSW	0.4	2.0	2.3	2.5	0.5	0.1	*			8.0	11.0
W	0.9	2.1	1.2	0.9	0.1					5.2	8.0
WNW	0.2	0.5	0.2	0.1	*					1.0	6.6
NW	0.5	1.2	0.2	0.1	*					2.0	5.3
NNW	0.2	0.3	0.1	0.1	*					0.8	6.5
CALM	7.7									7.7	
TOTAL	19.3	43.0	25.7	10.8	1.1	0.1	*			100.0	7.0

JULY

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.4	0.9	0.4	*						1.8	5.0
NNE	0.1	0.4	0.3	0.2	*					0.9	9.6
NE	0.4	1.0	0.4	0.2	0.1					2.0	7.0
ENE	0.1	0.7	0.3	0.1						1.2	6.7
E	1.7	7.7	1.1	*						10.5	5.4
ESE	0.6	1.4	0.2	0.1						2.3	5.1
SE	1.7	2.0	0.2	0.1						4.1	4.5
SSE	1.1	3.9	0.8	0.2						6.0	5.7
S	2.0	8.3	4.3	1.2	*					15.8	6.9
SSW	0.8	3.7	3.9	1.0	*	*				9.4	8.1
SW	1.5	5.6	5.7	2.7	0.1					16.2	8.0
WSW	0.5	3.0	3.6	2.5	0.3	*				9.9	9.8
W	0.8	2.9	1.7	0.9	0.1	*				6.4	7.8
WNW	0.1	0.7	0.4	0.2	*					1.3	7.8
NW	0.6	1.2	0.1	*	*					2.5	6.1
NNW	0.2	0.4	0.2	*						0.8	5.9
CALM	7.6									7.6	
TOTAL	20.4	45.8	24.5	5.8	0.6	*				100.0	6.6

AUGUST

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.3	0.5	0.3	*						1.1	6.3
NNE	0.1	0.3	0.1	0.1	*					0.5	7.9
NE	0.3	0.7	0.2	*						1.1	5.5
ENE	0.1	0.5	0.1							0.8	5.5
E	2.5	8.1	0.6	*						11.2	5.0
ESE	0.7	1.1	0.1	*						2.1	4.8
SE	2.3	4.0	0.3	*						6.6	4.9
SSE	0.9	5.0	1.2	0.2	*					7.4	6.1
S	2.1	8.5	4.2	1.1						16.0	6.8
SSW	0.6	4.4	3.3	0.7						9.0	7.5
SW	1.7	6.9	5.1	1.9	0.1					15.7	6.7
WSW	0.5	2.9	2.7	2.0	0.3					8.4	9.4
W	1.2	3.7	1.9	0.8	0.1					7.7	7.5
WNW	0.2	0.9	0.3	0.1	*					1.5	6.4
NW	0.5	1.2	0.4	*						2.1	5.7
NNW	0.1	0.4	0.2	*						0.7	6.4
CALM	8.1									8.1	
TOTAL	22.2	49.1	21.1	7.1	0.5					100.0	6.2

SEPTEMBER

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.3	0.9	0.5	0.1	*					1.9	6.9
NNE	0.1	0.6	0.2	0.2		*				1.1	7.9
NE	0.4	0.8	0.3	*						1.5	5.7
ENE	0.1	0.8	0.3	*						1.3	6.1
E	5.1	10.9	0.8	0.1	*					16.1	4.8
ESE	1.0	1.6	0.1	*						2.8	4.5
SE	2.7	4.4	0.5	*	*					7.6	4.4
SSE	1.1	4.5	1.2	0.2						7.0	6.0
S	4.7	6.8	1.4	0.8	*					13.7	8.6
SSW	0.6	2.8	2.2	0.9	*					6.6	7.9
SW	1.5	4.8	2.8	1.1	0.2					11.1	7.9
WSW	0.6	2.1	1.4	1.7	0.3	*				5.1	9.4
W	1.1	2.9	1.1	0.6	0.1	*				5.9	7.0
WNW	0.2	0.8	0.5	0.7	*					1.5	7.0
NW	0.6	1.6	0.5	0.1	*					2.8	5.8
NNW	0.3	0.5	0.1	0.1						1.0	5.9
CALM	13.2									13.2	
TOTAL	30.5	41.0	15.3	6.4	0.8	0.1				100.0	5.6

OCTOBER

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.4	0.4	0.1	*						0.8	4.8
NNE	0.1	0.3	*							0.4	4.2
NE	0.4	0.5	0.1							1.0	4.5
ENE	0.3	0.5	0.1							0.8	4.6
E	4.8	8.7	0.4	*						13.9	4.3
ESE	1.6	1.7	0.1	*						3.5	4.0
SE	5.4	3.1	0.1	0.3	*	*	*			9.8	5.0
SSE	1.4	4.2	1.5	0.1	0.1	*				7.8	6.7
S	2.2	7.1	4.3	1.4	0.1					15.1	7.2
SSW	0.7	2.8	2.4	1.1	0.1					7.1	8.7
SW	1.7	3.5	2.5	1.7	0.3	0.1				9.1	8.3
WSW	0.5	1.5	0.8	0.8	0.5	*				4.1	9.8
W	1.3	2.3	0.6	0.3	0.1	*				4.7	6.1
WNW	0.2	0.4	0.1	0.1	*					0.8	5.8
NW	0.9	1.2	0.1							2.2	4.2
NNW	0.2	0.3	*	*						0.6	4.3
CALM	15.1									15.1	
TOTAL	38.1	40.4	13.6	6.5	1.2	0.1	*			100.0	5.2

NOVEMBER

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.6	0.7	0.1							1.4	4.2
NNE	0.3	0.2	*	*						0.5	4.5
NE	1.0	0.7	0.1							1.7	3.7
ENE	0.3	0.5	0.1							0.9	4.4
E	4.4	4.8	0.3			*				9.5	4.0
ESE	1.1	1.2	0.1	0.1	*					2.6	4.7
SE	3.6	4.2	1.0	0.9	0.4	0.1	0.1	*		10.2	6.5
SSE	1.4	4.5	1.6	1.7	0.5	0.3				10.0	8.1
S	2.7	6.3	3.4	1.7	0.1					14.4	7.2
SSW	1.2	2.5	2.0	1.4	0.1	*	*			7.2	8.3
SW	1.1	2.4	2.0	1.6	0.3	0.1	*			6.3	8.5
WSW	0.5	0.8	0.5	0.1	0.2	0.1	0.1			2.8	10.6
W	1.6	1.7	0.5	0.3	0.1	0.1	*			4.5	6.1
WNW	0.4	0.6	0.1	*	*	*				1.2	5.1
NW	0.9	0.5	0.1	*						1.6	4.3
NNW	0.3	0.2	*							0.5	3.9
CALM	23.1									23.1	
TOTAL	65.5	31.6	11.8	8.1	1.6	0.6	0.2	*		100.0	5.5

DECEMBER

HOURLY OBSERVATIONS OF WIND SPEED
MILES PER HOUR

DIR	1 TO 3	4 TO 7	8 TO 12	13 TO 18	19 TO 24	25 TO 31	32 TO 38	39 TO 46	OVER 46	TOTAL	AVE SPEED
N	0.5	0.4	0.1							1.2	4.1
NNE	0.2	0.2	*							0.4	4.1
NE	1.1	0.7	0.1							1.8	3.7
ENE	0.4	0.4	*							0.7	4.1
E	2.3	1.6	0.1							4.0	3.4
ESE	0.6	0.5	0.1	0.1						1.3	4.7
SE	2.4	3.4	0.8	1.0	0.3	0.1				8.1	7.0
SSE	1.4	4.2	2.8	3.4	1.3	0.4	*			13.4	10.6
S	2.7	7.5	4.4	3.1	0.4	*				18.1	7.9
SSW	1.1	3.4	3.3	2.3	0.3					10.4	9.1
SW	2.0	2.4	2.3	2.3	0.4	0.2	0.1	*		9.7	9.2
WSW	0.4	0.5	0.3	0.8	0.3	0.1	*	*		2.1	11.9
W	1.1	1.6	0.4	0.1	0.1	*				3.3	5.5
WNW	0.4	0.5	0.1	*	*					1.0	5.0
NW	1.2	0.7	0.1	*						2.1	4.0
NNW	0.2	0.3	*							0.5	4.8
CALM	21.3									21.3	
TOTAL	39.4	28.8	14.7	13.1	3.0	0.8	0.1	*		100.0	6.3

PART V DISPOSAL SITES DESIGN AND OPERATION

A. Detailed Plans and Maps of Disposal Site

Submit one copy of each set of plans with each set of application forms.

1. Property Line Map

   a. One map should indicate property lines of site, use of adjacent properties, all right of ways (fuel, power line, roads, etc.)

      (1) If right of way exist, Name of Owner *City of Walla Walla*

      (2) Does owner/operator own mineral rights? Yes *X* No ____

      (3) If not, name and address of owner of mineral rights. ____

2. Detailed topographic maps of the site should include the following. More than one map may be used to show the required information on site and within 1/4 mile perimeter of site.

		Checkoff
a.	Scale 1":400' or larger	*X*
b.	Five foot contour interval or less	*X*
c.	Location of access roads and roads on landfill	*X*
d.	Location of permanent fencing	*X*
e.	Location of weighing facilities/gate attendant	*X*
f.	Location of existing and proposed utilities (water, sewers, electricity, gas, telephone, etc.)	*X*
g.	Location of right of ways for power lines over 1kv	*X*
h.	Location of discharge point of ground water	*N/A*
i.	Location and identity of monitoring wells	*X*
j.	Location and identity of other wells	*N/A*
k.	Direction of ground water flow (indicate all directions found)	~~N/A~~ *X*
l.	Fire protection facilities if beyond 1/4 mile, show on general topo	*N/A*
m.	Leachate collection and treatment facilities	*N/A*
n.	Employee facilities	*X*
o.	Equipment storage and repair buildings	*X*
p.	Salvaging facilities	*N/A*
q.	Buffer zone, plantings, etc.	*N/A*
r.	Location and identity of springs	*N/A*
s.	Location and identity of swamps	*N/A*
t.	Location and identity of streams	*N/A*
u.	Location and identity of fire hydrants	*X*
v.	Location and identity of fire ponds	*N/A*
w.	Diversion ditches and water control structures	*X*
x.	Lifts	*X*
y.	Cover stock piles	*N/A*
z.	Other (Specify)____	

a.	Total thickness of each lift	X
b.	Working grade of each lift	X
c.	Slope and width of working face	X
d.	Approximate time interval between lifts	X
e.	Sequence of lifts and cover usage in fill area	X
f.	Final slope sequence	X
g.	Cover supply sources	X
h.	Drainage and water control devices	X
i.	Other (Specify)_____	

4. Plans for Finished Site (Check each item included)

		Checkoff
a.	Slope and contour	X
b.	Buildings	X
c.	Surface water management	X
d.	Road construction	X
e.	Revegetation procedure	X
f.	Final site maintenance	X
g.	Other (Specify)_____	

5. Leachate Collection and Treatment - Required Yes____ No X

a.	Location of collection and treatment facilities	N/A
b.	Cross sections and elevations of collection system	N/A
c.	Cross sections and elevations of treatment facilities	N/A
d.	Location of discharge points of treated leachate	N/A
e.	Comments	

6. Location of proposed ground water monitoring points

a.	Number	X
b.	Depth	X
c.	Log of boring or well	X
d.	Sampling method	X
e.	Sampling frequency	X
f.	Comments *Sampling would be done as to County Health Department and State Requirements.*	

B. General Plan of Operation. (Describe in addendum, check as completed.)

1.	Proposed landfill method	X	13.	Erosion Control	X
2.	Schedule of filling	X	14.	Traffic Control	X
3.	Site preparation	X	15.	Final cover	X
4.	Designation of unloading area	X	16.	Final slope	X
5.	Size of working face	X	17.	Revegetation procedure	X
6.	Cell construction	X	18.	Final site maintenance	X
7.	Compaction and cover practice	X	19.	Record system	X
8.	Blowing litter control	X	20.	Salvaging system	X
9.	Surface water management	X	21.	Noise control	X
10.	Dust control	X	22.	Employee facilities	X
11.	Gas venting provisions	X	23.	Vector control	X
12.	Road construction	X	24.	Other (specify)	

GENERAL PLAN OF OPERATION

SITE PREPARATION

Site preparation prior to the actual operation of the landfill would include road construction, initial trench excavation, employee facilities, perimeter fencing, monitoring wells, equipment shed, water system, and installation of power and telephone services. An all weather oiled 22 foot road will be constructed from Sudbury County Road 1,400 feet to the actual landfill site. The road construction would include the electrical power and telephone lines, entrance gates and fencing.

Gravel roads on the landfill site would be constructed as the site develops. As wet weather occurs the access roads in the refuse trenches will have a gravel surface which would be removed as the trench is filled.

Also during the site preparation stage the employee facilities and equipment shed would be constructed. The toilet, wash basin and shower are going to be included in the personnel and scale building. The facilities would be serviced by telephone and electricity. The equipment shed would be an enclosed metal constructed building large enough to protect the landfill equipment.

LANDFILL OPERATION

Disposal of refuse would start at the toe of the south slope of the landfill site then proceeding up the slope to the edge of the plateau. After the south slope has been utilized, refuse would be deposited at the north slope in a similar sequence as the south slope. Disposal of refuse on the plateau would be done last in the sequence. Trenches would be excavated as needed perpendicular to the side slopes, generally following the final contour lines. Traffic control and designation of unloading area would be accomplished by standard MUTCD traffic control devises and operating personnel.

Trench excavation would be done as the adjacent downhill trench is filled. The trench disposal method would be used in all cases except where the area method is required in the deeper valleys. Excavation cuts would be approximately eight to sixteen feet deep. The trench bottom would be graded transversely and longitudinally 5% and 1% respectively to provide drainage from surface runoff.

Gas production in the finished landfill is anticipated to be minimal. Observations at other landfills in Eastern Washington and the existing facility at Walla Walla have shown little gas production associated with Walla Walla's dry climate.

Refuse cells would be approximately 30 x 12 x 16 feet with a 30 foot working face. The final four foot cover would not be sloped any steeper than a five horizontal to one vertical slope. Cover material would be excavated and dumped by a self-loading earthmover with a compactor assisting the operation. Daily cover would be greater than six inches and the temporary cover greater than twelve inches. Blowing litter would be controlled by two fences. The first fence would be the existing portable fences used at the existing landfill. The second fence would be the permanent perimeter fence around the landfill site.

Dust would be controlled during the dry weather by application of water and in extreme cases calcium chloride.

Records of the water sampling from the three monitoring wells would be kept according to State and County Health Regulations. In addition records would be kept on daily truck weight, weekly labor, daily activities, operating costs, facility costs, total cost and cost and revenue summaries.

No salvaging system is anticipated at this time. Scavenging by private citizens would be strictly prohibited.

Due to the remoteness of the landfill site, noise control would not be required or necessary.

Vector control would mainly be accomplished by the daily coverage of the refuse. When required in extreme cases, poisoning would be used for vector control.

LAND REUSE

The current and future use of the landfill site is dryland farming. The active disposal area would be kept to a minimum to control any erosion and to maximize the use of the remaining land for farming. As the use of the landfill progresses, land with the final four foot cover over the refuse would be returned to farming. Soil conservation practices such as contour discing will keep erosion to a minimum.

PART VI OPERATIONAL SUPPORT

A. Equipment used in Operations

1. List Type, Manufacturer, Model Number, Age and Brief Description

Tractor Crawler	*To Be Purchased*
Compactor	*To Be Purchased*
Self-Loading Scraper	*To Be Purchased*

B. Access roads, bridges and tunnels: Roads (all weather access roads negotiable by loaded transfer and collection vehicles shall be available to the entry of the site. Minimum width for two-way traffic shall be twenty-two (22) feet, or for one-way (separate roads) a minimum width shall be twelve (12) feet. On heavily-traveled roads, an additional left hand turn storage lane and an additional acceleration lane may be required.)

1. Provide the following for access roads leading to site:
Road types: (1) Concrete; (2) Asphalt; (3) Gravel; (4) Dirt; (5) Other (Specify)_____

Route or Street Number	Load Limit Tons	Seasonal Restriction	Road Type
Sudbury Road	*20*	--	*2*
SR-12	*20*	--	*2*

2. Provide the following for roads on the site:

Width	Length	Road Type	Location
22'	*2000'*	*3*	*East Road*
22'	*1800'*	*3*	*West Road*

3. Bridges (Location, Height and Weight Restrictions - Include only those leading to site.)

Route or Street	Name	Location	Width	Height Restriction	Weight Restriction
	N/A				

4. Tunnels.

Route or Street	Name	Location	Width	Height
	N/A			

5. Other Restrictions (Curves, Overhanging Trees, Telephone Lines, Power Lines, etc.

Route or Street	Location	Alternate Route Yes	No	Description
	N/A			

C. Employee Facilities (WAC 248-62)

		Checkoff
1.	Shelter	X
2.	Drinking Water	X
3.	Toilet Facilities	X
4.	Lavatories	X
5.	Showers	X
6.	Sewage Disposal	~~N/A~~ X
7.	Screened	N/A
8.	Heat	X
9.	Lights	X
10.	Other (Explain)	

D. Control Program (Briefly describe program - be specific if chemicals or pesticides are to be used).

1. Rodent Control *Daily Refuse Cover*
2. Fly Control *Daily Refuse Cover*
3. Bird Control *Daily Refuse Cover*
4. Dust Control *Water Sprinkling and Calcium Chloride*
5. Odor Control *Daily Refuse Cover*
6. Noise Control ~~*Daily Refuse Cover*~~ Isolation ?
7. Other (Specify)

Fire control: July-Sept - Using spray irrigation on farm system
Sept to June - Well #2

ENVIRONMENTAL IMPACT STATEMENT

CITY OF WALLA WALLA

SANITARY LANDFILL

ENVIRONMENTAL IMPACT STATEMENT

1. INTRODUCTION:

This Environmental Impact Statement covers the total environmental impact of the construction, operation and maintenance of a sanitary landfill to serve the needs of the population of the County of Walla Walla, City of Walla Walla, and the City of College Place, in the State of Washington, for the disposal of all solid waste generated within these areas.

It is prepared according to the recommended general SEPA guidelines, as prepared by the Council on Environmental Policy and meet the requirements of the Washington Environment Policy Act of 1971 (Chapter 43.2 C, RCW).

The design of the landfill will be in conformance with the Washington State Solid Waste Management Act of 1970, the Washington State Department of Ecology Regulation Relating to Minimal Functional Standards for Solid Waste Handling and the Rules and Regulations of the City-ounty Health Department of City and County of Walla Walla. It also follows the guidelines set forth in the Comprehensive Solid Wast Management Plan for the County of Walla Walla, dated June, 1973.

2. DESCRIPTION OF PROPOSED PROJECT AND ACTION:

The City of Walla Walla will be required to close it's present landfill site in the immediate future because of the lack of space to continue operating there and open a new site located in the N.W. corner of a 1000 acre site owned by the City of Walla Walla and operated as a spray irrigation farm, 125 acres of which is not irrigated a portion of this to be used as a sanitary landfill. The site is presently being used as agricultural. The final use of the site will be for agricultural purposes.

The new site is located approximately 3 miles N.W. of the center of the City of Walla Walla. Access to the site is via State Hiway 12 to Sudbury Road, which is a two lane paved road surface to the main gate to the landfill. A paved road from the main gate to the actual landfill site is proposed. This road will cross the West boundary of the spray irrigation farm but will not effect that operation whatsoever. The construction of the road to be so constructed as to handle all loads up to 20 tons.

At the entrance to the landfill site the facilities will include an employees building equipt with lights, heat, water and telephone, scale with scale house, storage facilities for landfill equipment, sanitary facilities. There will be a turn-around provided and a sign indicating the landfill hours, name, instructions, restrictions and fee schedules. Water will be provided by a 1000 gallon capacity storage tank, with a pressurized pump, storage tank to be filled by a water truck.

There will be a gravel road from the end of the paved road into the actual landfill dumping provided for all weather operation.

The operation of the landfill will be done by at least two employees, one to be at the entrance, weighing refuse, collecting fees, directing users of the landfill to dumping areas. The other employee will be the equipment operator, operating the various pieces of equipment, excavating trenches, spreading refuse, compacting refuse, covering refuse with 6 inches of cover daily. A portable fence will be used to control the blowing of paper.

We will use the trench method and the modified trench method of disposal, waste will be dumped into trench or cut, spread and compacted, covered with 6 inches of dirt daily to form the basic cell structure. Excess material not used daily will be stockpiled for future use as a cover for the entire area upon completion of the cells. Each cell to be approximately 10 feet deep and 8 - 10 feet wide.

3. EXISTING CONDITIONS:

The existing site is East of the City and is located in commercial and industrial area, located across the Three Mile Road from the Walla Walla Community College and is rapidly being depleted. We are presently finding it necessary to haul cover for this operation from a location on the North side of Baldwin Road, West of the City some 12 miles round trip with a 10 cubic yard dump truck at a very high cost. The life of the landfill site can't be much longer than a year. We are presently operating on a non-conforming use landfill permit issued by the City-County Health Department.

The new proposed landfill site is presently zoned agricultural and is presently being farmed with a crop. Access presently is controlled by a barbed wire fence.

The area immediately surrounding the proposed site is agricultural and is being used to raise wheat. It is a rolling hills type topography. The proposed site is 1350 feet from Sudbury Road and 2000 feet from any residence or farm building. There is no sprinkler system involved in this area set aside for landfill purposes. There has been 125 acres set aside for this purpose, but at the rate of use of 1.25 acre feet per 1000 population per year, it is anticipated that this site will be useful for many years to come. The proposed landfill site is completely obscured from the nearest public roadway.

Soil conditions at the proposed new landfill site according to Unites States Department of Agriculture Soil Survey made for Walla Walla County indicates that the type of soil in the area ranges in type from silt loam, very fine sandy loam, very rocky very fine sandy loam with basalt substratum, basalt rock land, undulating to hilly, fine sand, active dune-land, volcanic ashland, quincy complex eroded, terrace escarpments, cobbly loam, cobbly silt loam, etc.

The survey indicates that all the soil in the area is well drained to excessively drained.

The climate is predominently dry. The summers are dry and rather hot, Winters are considerably cloudy with occassional freezing rain. Average annual rainfall is 15.50 inches. Prevailing winds are from the South.

ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

1. There will be some change in the soil conditions due to the specialized use of this area to bury solid waste. The soil will necessarily be excavated to a maximum of 10 feet, with the solid waste dumped into the trench, and compacted in 2 foot lifts with 6 inches of cover daily, creating a cell. The final cover to be a minimum of 5 feet. There will be some drainage in the topography, but this will be kept to a minimum. A temporary increase in soil erosion will be seen until the area used as a landfill will again be revegitated.

2. There should be no deterioration of the air quality and no creation of objectionable odors as there will be no burning allowed, also due to the fact that the waste will be compacted and covered daily.

3. This proposal could change the rate of absorption, drainage patterns or the rate of run off due to the disturbing of the crusting soil, changing of contours, etc. It also could cause some deterioration of ground water due to seepage of leachate or other substance into the ground especially during the wet seasons of the year. There will be provisions made to drain the area to alleviate the problem of leachate and water run off that could be detrimental to the adjacent areas.

4. There should be little or no adverse effect on the Flora and Fauna in the area.

5. This proposal will no doubt increase the existing noise level to the residents around the approach to the entrance to the landfill because of increase in travel to the area by City owned refuse collection trucks, equipment of the Walla Walla Disposal, as well as the private individual who will be hauling their own waste to the landfill site. There should be no increase in noise level from the equipment being used on the proposed landfill site as the actual operation will actually be some distance from the nearest residents or farm building.

6. No increase in light or glare as there will not be a night operation.

7. The proposal will result in alteration of the land use on a temporary basis due to the tyep of operation proposed. This land is agricultural land and will be returned to its original use upon completion of the landfill site. The continued use for agricultural purposes of that portion not being actually used for landfill use will be allowed as long as it doesn't effect the most economical operation of the landfill.

8. There is no adverse effect to the natural resources.

9. There is a limited possibility of an explosion due to the formation of methane gas caused by the combination of the garbage and water, if this seems a problem, steps will be taken to eliminate that risk through ventilation of the landfill.

10. This proposed action will not effect the population in any way.

11. There should be no adverse effect on housing.

12. The proposal will result in additional vehicular movement due to the use of the landfill by the public agencies as well as the private individual going to dispose of their waste, no additional parking is needed, no effect on existing highway systems and should not effect the circulation or movement of people, but could increase the traffic hazard to motor vehicles and pedestrians. Some traffic control will be required. The additional traffic will no doubt cause an additional maintenance problem on the county road surface.

13. Provisions will be made for fire control, dust control through the use of water. When conditions warrant the refuse will be sprinkled with water until the cover can be placed over the portion of waste dumped.

14. There will be no adverse effect on the use of public service. We are presently using this service and no increase will be necessary.

15. No increased use in existing energy will be required.

16. There will be a need for the additional use of telephones, electrical, water and septic tank system.

17. The effect on the human health will be beneficial rather than adverse, as it will greatly enhance the operation of our landfill. It will improve the environment, in the eastern portion of the City by eliminating the present landfill entirely. It will completely eliminate the possibility of rats caused by a poor landfill operation. There will be no odor problem. There should be no detrimental effect to the human health in the new proposed site.

18. There will be no adverse effect to the aesthetics of the environment in fact it should improve it. As it will eliminate a very unsightly land fill operation in the eastern part of the City, and place the operation in an area almost completely obscured from the nearest home and public highway. No structures will be constructed to obscure any view.

19. No adverse effect on the recreation.

20. No change will result in the historical and archeological environment.

ALTERNATIVES TO PROPOSED ACTION:

There is no alternative to this proposed action as the present landfill site is operating on a temporary landfill permit of a non-conforming use. The present site will not have available room for much longer than a year and there is no other land more suitable for this type of operation.

April 22, 1977

Mr. Larry Smith
Walla Walla City Manager
City Hall
Walla Walla, Washington 99362

RE: City of Walla Walla's Sanitary Landfill

Dear Mr. Smith:

I have been informed by Mr. Verne Tompkins that the City of Walla Walla will need an extension of the non-conforming site permit for the City's existing landfield. The previous permit was issued in March of 1976 and expired March 1977.

Therefore, in accordance with R. C. W. 70.95.170 this letter serves as a nonconforming site permit which will expire on December 31, 1977.

Hopefully, this will allow sufficient time for complete utilization of the existing landfill and development of the new site.

If you have any questions, please contact us.

Very truly yours,

David Eaton,R. S.
Environmental Health Specialist

CC: Mr. Claude Sappington

Mr. Norman Skiles

Mr. Vern Tompkins

June 8, 1977

State of Washington
Department of Ecology

Walla Walla City-County Health Dept.
320 Willow Street
Walla Walla, Washington 99362

ATTENTION: David Eaton, Director of Environmental Health

RE: City of Walla Walla Sanitary Landfill Permit Application

Dear Dave:

In accordance with the provisions of RCW 70.95.180 (2) our Department has reviewed the permit application and environmental impact statement for the proposed City of Walla Walla solid waste disposal site. I offer the following comments concerning the proposed application for your consideration.

1) On page 1, no site location is given. The legal description of the site should be included in the boxes marked section, township and range.

2) Page 7, section A-6. Sampling of the three (3) monitoring wells located on the site should begin as soon as possible before the landfill is placed in operation in order to establish baseline groundwater quality. The sampling frequency should be monthly until the landfill begins operation. Following start-up, a sampling frequency of once every three months will probably be adequate. The type of water quality analysis performed should be the same as the ones previously done at the existing city landfill.

3) Page 9, section C-1. The site plan indicates a septic tank sewage disposal system will be installed to serve the employee facilities. I assume this system will be installed according to health department regulations.

4) Page 10, section E-3. No information regarding the soil stockpile location and volume is given in either the site plan or the application. Information should be included as to the size, location and method of use of the stockpile material.

√5) Page 10, section F. This section was left blank. For completeness of the application, this section should be filled out.

√6) Page 11, section H. The City has indicated the items that they intend to include in their records system. For your information, the State Auditor's Office, our Department and Grant County have developed a Budgeting, Accounting, Reporting System for Solid Waste Management. Beginning January 1, 1978, the State Auditor will require this to be a mandatory reporting system for all cities and counties within the state.

In summary, it appears that the proposed landfill will not cause any significant environmental problems. Therefore, I recommend that the permit application for the proposed landfill be approved provided the above mentioned questions and comments are satisfactorily resolved.

If you have any questions or comments regarding this matter, please feel free to contact me.

Sincerely,

Claude W. Sappington

CLAUDE W. SAPPINGTON
District Supervisor
Environmental Quality Section

CWS:cac

cc: Vern Tompkins - City of Walla Walla
Avery Wells - DOE, Olympia

Walla Walla County-City Health Department

320 WILLOW
TELEPHONE 525-6730
WALLA WALLA, WASHINGTON 99362

June 27, 1977

Mr. Larry Smith
Walla Walla City Manager
City Hall
Walla Walla, Washington 99362

Re: Solid waste landfill permit - new site

Dear Mr. Smith:

In accordance with RCW 70.95 we have reviewed the permit application for the proposed City sanitary landfill.

The plans were also reviewed by Mr. Claude Sappington, Washington State Department of Ecology. His comments are in the enclosed letter dated June 8, 1977. Mr. Sappington recommended we approve the application provided certain questions were satisfactorily resolved. Subsequent meetings with Vern Tompkins and the city engineering staff have resolved these questions.

Therefore, this letter serves as a conforming site permit for the new sanitary landfill which will expire on Dec. 31,1977.

Renewal of the permit will then be necessary on an annual basis.

Very truly yours,

David W. Eaton

David W. Eaton, R.S.
Director of Environmental Health

DWE:as

C.C. Vern Tompkins, City Sanitation Department
Norm Skiles, City Engineer
Claude Sappington, Washington State Department of Ecology

Enclosures - 2

Walla Walla County-City Health Department

520 WILLOW
TELEPHONE 525-6730
WALLA WALLA, WASHINGTON 99362

January 9, 1978

Mr. Norm Skiles, City Engineer
City of Walla Walla
City Hall
Walla Walla, Washington 99362

Re: Landfill Site Permits for 1978

Dear Mr. Skiles

Enclosed please find two solid waste facility permit applications. The existing landfill will need an extension of the previous non-conforming site permit until July 1, 1978. The new proposed landfill site will be issued a conforming site permit until December 31, 1978.

These permits will be issued upon receipt of the completed applications.

Very truly yours,

David W. Eaton

David W. Eaton R.S.
Director of Environmental Health

CITY OF WALLA WALLA

BOX 478 WALLA WALLA, WA. 99362

Office of *City Engineer*

January 13, 1978

Mr. Dave Eaton
Walla Walla County-City Health Department
304 North 2nd Avenue
Walla Walla, Washington 99362

Subject: Landfill Site Permits for 1978

Dear Dave:

Attached are applications for the disposal site permits for the year 1978 for the new sanitary landfill site for the City of Walla Walla and the old landfill site for the City of Walla Walla. The permit for the new landfill site is to be issued until December 31, 1978.

An extension of the previous nonconforming site permit is requested until July 1 of 1978.

Sincerely,

Norman L. Skiles, P.E.
City Engineer

br
Enclosures

DEPARTMENT OF ECOLOGY
APPLICATION FOR DISPOSAL SITE PERMIT
PART I (All Sites)

Name of Site *Walla Walla Sanitary Landfill* *(Old)*

Card / Solid Waste / State Form (1–8): 4 0 1 4 6

Address *P. O. Box 478*
Walla Walla, Washington 99362

Owner of Record *CITY OF WALLA WALLA*

Site Number (9–10 County; 11–13 Serial): County 3 6

Address *P. O. Box 478*
Walla Walla, Washington 99362

Application Date (Day / Month / Year): 1 3 / 0 1 / 7 8

Location (14–20): SEC 2 2 / TWP 0 7 / RANGE 3 6 E (E=(W=)

Check Type of Site:

	Type	Code
x	Sanitary Landfill	200
	Garbage Feeding Operation	210
	Transfer Station	220
	Incinerator	230
	Rural Container System	240
	Drop Box System	250
	Compost Plant	260
	Reclamation Site	270
	Processing Site	280
x	Nonconforming	290

Site Acquisition

Box 21: *1*
Select 1, 2, 3, or 4 from Below

Presently owned	1
Will purchase	2
Will lease	3
Will rent	4

Is this an existing site? Yes 1 / No 0 — 22: *1*

PART II Governmental Approval

23 24 25 26 Community Code

Has a Permit Been Approved by: (Yes 1 / No 0)

A.

Item	No.	Entry
Municipality *City of Walla Walla*	27	*1*
Planning Commission *N/A*	28	
Shorelines Management – County *N/A*	29	
County Solid Waste Management Plan	30	*1*
Meets County Solid Waste Standards	31	*0*
Department of Game/Fisheries Hydraulic Permit *N/A*	32	
Department of Ecology	33	*1*
Covers Waste Discharge Permit *(N/A)*	34	
Land Resources Planning *(N/A)*	35	
Meets Minimum Standards *(N/A)*	36	
Flood Control Permit *(N/A)*	37	
Shorelines Management *(N/A)*	38	
Hydrogeology *(N/A)*	39	
Department of Natural Resources Surface Mining *N/A*	40	
Fire Control	41	*1*
Other	42	

(Local Health Department Use Only)

Final Approval Date (43–48): Day / Month / Year

DEPARTMENT OF ECOLOGY
APPLICATION FOR DISPOSAL SITE PERMIT
PART I (All Sites)

Name of Site *Walla Walla Sanitary Landfill (New)*

Address *P. O. Box 478*
Walla Walla, Washington 99362

Owner of Record *CITY OF WALLA WALLA*

Address *P. O. Box 478*
Walla Walla, Washington 99362

Application Date: Day *13* Month *07* Year *78*

Card 1 2 3 4 5 6 7 8: [ ] 4 0 1 4 6 [ ] [ ] — Solid State Form Waste

Site Number: County (9 10) *36*; Serial (11 12 13) [ ]

Location: SEC (14 15) *22*; TWP (16 17) *07*; RANGE (18 19 20) *35E*; E= W=

Check Type of Site:

x	Sanitary Landfill	200
	Garbage Feeding Operation	210
	Transfer Station	220
	Incinerator	230
	Rural Container System	240
	Drop Box System	250
	Compost Plant	260
	Reclamation Site	270
	Processing Site	280
	Nonconforming	290

Site Acquisition

Box 21: *1*

Select 1, 2, 3, or 4 from Below

Presently owned	1
Will purchase	2
Will lease	3
Will rent	4

Is this an existing site? Yes 1 / No 0 — 22: *1*

PART II Governmental Approval

Community Code (23 24 25 26): [ ]

Has a Permit Been Approved by: (Yes 1 / No 0)

A.

Municipality *City of Walla Walla*	27 *1*	Department of Ecology	33 *1*
Planning Commission	28 *1*	Covers Waste Discharge Permit	34
		Land Resources Planning	35
Shorelines Management - County	29 *N/A*	Meets Minimum Standards	36
		Flood Control Permit	37
County Solid Waste Management Plan	30 *1*	Shorelines Management	38
		Hydrogeology	39
Meets County Solid Waste Standards	31 *1*	Department of Natural Resources Surface Mining	40 *N/A*
Department of Game/Fisheries Hydraulic Permit	32 *N/A*	Fire Control	41 *1*
		Other	42

(---N/A---)

(Local Health Department Use Only)

Final Approval Date (43 44 45 46 47 48): Day Month Year [ ]

Walla Walla County-City Health Department

320 WILLOW
TELEPHONE 525-6730
WALLA WALLA, WASHINGTON 99362

January 18, 1978

Mr. Norman Skiles, City Engineer
City of Walla Walla
City Hall
Walla Walla, Washington 99362

Re: 1978 solid waste site permits

Dear Mr. Skiles:

We have received the completed solid waste disposal facility applications for the existing and proposed landfills.

Therefore, in accordance with R.C.W. 70.95.170, this letter serves as a conforming site permit for the new landfill until December 31, 1978 and as a nonconforming site permit for the existing site until July 1, 1978.

Vwery truly yours,

David W. Eaton

David W. Eaton, R.S.
Director of Environmental Health

DWE:as

New city landfill on Sudbury Road opens Monday

Today is your last chance to dump trash free.

The City of Walla Walla closes its old sanitary landfill at the end of Tacoma Street at 4:30 p.m.

The new landfill, complete with dumping charges for everyone, opens at 8 a.m. Monday on Sudbury Road.

"Some inconvenience is anticipated to occur until the operational routine is established," says City Engineer Norm Skiles.

"We're going to have new employees out there and it will be a completely different routine for people using the dump. We hope to put up with each other until we get the thing smoothed out."

Vehicles going to the new dump should take U.S. Highway 12 to Sudbury Road by the KUJ radio tower, then travel north on Sudbury about a quarter of a mile to the landfill.

Skiles says the dump location is well-marked.

All vehicles must cross a scale area to be weighed or to pay charges. All private individuals, including city and county residents, must pay disposal fees.

The rates will be 75 cents for cars or station wagons, $1.50 for pickup trucks, $3.60 per ton for solid waste disposal contractors, unless they have a separate contract, and $5 per ton for trucks.

Vehicles belonging to persons who aren't residents of this county will be charged $3 for cars or station wagons, $5 for pickup trucks and a $10 minimum plus $5 per ton over two tons for all other trucks.

"Private trucks will be weighed both loaded and empty to determine the charge," says Skiles.

"Trucks and commercial vehicles will be directed to dump in the landfill trench. Cars and pickup trucks will be directed to the transfer box."

The new dump's hours will be the same as the old one's — 8 a.m. to 4:30 p.m. seven days a week.

"The gate will be closed at 4:30 p.m. to allow the last material to be covered in accordance with state regulations," Skiles says.

"People are cautioned to cover their loose loads while enroute to the new landfill site. They can be cited by law-enforcement agencies for littering the roads."

The engineer says he has talked with representatives of the county sheriff's department and the Washington State Patrol about enforcing the litter laws.

Skiles has one last warning: No scavenging will be allowed at the new dump. Salvage activities are prohibited by state law.

Source: Walla Walla Union, July 9, 1978. Penrose Library, Whitman College

Schwyn Environmental Services	Sudbury Road Landfill Walla Walla, Washington	**July 9, 1978** **Opening Announcement**	Figure C-1

STATE OF
WASHINGTON

Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504 206 753-2800
Mail Stop PV-11

February 8, 1979

Kenneth E. Fry, M.D.
Walla Walla County-City
Health Department
304 N. 2nd St.
Walla Walla, WA 99362

Dear Dr. Fry:

The Department of Ecology is trying to reach persons that have jurisdiction or responsibility for the safe operation of sanitary landfills.

The improper disposal of hazardous waste is becoming recognized as one of the major problems facing our society. In order for us to have the goods and services we demand, a good many hazardous by-products are created. Some of these by-products are extremely hazardous to man and the environment and require special disposal procedures. You may be able to help insure that these extremely hazardous wastes receive the kind of care they require.

There is now a law and a regulation that forbids the disposal of extremely hazardous waste at any place other than an approved disposal site. Because the site(s) you work with are not approved for the disposal of extremely hazardous waste, we are asking you to help keep these wastes out. This would require you to notify the landfill operators under your jurisdiction of the existence of the hazardous waste regulation and request that they not allow extremely hazardous waste to enter their sites.

We realize that the designation procedure is complex and we do not expect landfill operators to perform the actual designation.

To help understand the regulation, we have prepared guidelines for the designation of extremely hazardous waste. A copy of these guidelines is enclosed. Also enclosed are examples of extremely hazardous waste found in a few typical industries.

Operators would not screen every vehicle entering their disposal site, but would watch for large shipments of waste from such industries as chemical manufacturers, pesticide manufacturers, metal platers, liquid waste haulers, oil refineries, etc.

The person seeking to dispose of a waste should be able to describe the composition of the material well enough to eliminate the likelihood that it is extremely hazardous. If they cannot convince the operator of the safety of the material they should be, 1) asked to get more information about the waste from the generator, or 2) directed to a chemical processor or treater, or to an out-of-state chemical landfill.

If questions arise that cannot be answered, call the nearest Department of Ecology regional office. A map is included that shows the areas served by each region and their telephone numbers.

We have already notified many generators of extremely hazardous waste that it is illegal to dispose of these materials in local landfill and we feel that if the landfills cooperate by screening incoming wastes, a significant improvement in disposal practices will occur.

Your help in this matter will be greatly appreciated and if you have any questions, please don't hesitate to call one of the numbers listed on the map.

Sincerely,

Tom Cook
Solid Waste Management Division
Office of Land Programs

TC:lt
020611

Enclosures

GUIDELINES FOR THE DESIGNATION OF EXTREMELY HAZARDOUS WASTE

WAC 173-302 regulates the disposal of extremely hazardous wastes (EHW)

What are extremely hazardous wastes?

> They are "wastes" and "wastes" only - as defined in section (30) WAC 173-302-040, i.e., WASTE: any discarded, unwanted or abandoned material but not including materials in commerce.
>
> They are those wastes which meet any of the three selective criteria establishing them as substances which are highly toxic to humans or wildlife or present a significant environmental hazard.

The three selective criteria are:

1. Hazardous due to toxicity (or poison level)
2. Hazardous due to quantity (or amount)
3. Hazardous due to persistence (or permanence)

What do these criteria mean?

1. Toxicity, means how toxic or poisonous the substance is. It is a fact that all substances are poisonous to various life forms, incuding man, at some quantity and under some conditions. For this reason, classification systems are established which relate the concentration of the poison to the body weight of the organism, or other concentration, to provide a standard effect, usually death. Obviously the lower the concentration of a material which produces a harmful effect, the more poisonous or toxic that material must be.

The regulation designates as EHW, any waste whose oral LD_{50} is less than 50 mg/kg or whose aquatic LC_{50} is less than 10 ppm. These levels of toxicity refer to test animals or fish but they also represent an approximation of the lethal level to man.

What does oral LD_{50} mean?

Oral LD_{50} is defined in this regulation as the single dosage in milligrams per kilogram (mg/kg) body weight, when orally administered, kills within 14 days, half a group of ten or more white rats each weighing between 200 and 300 grams.

What does aquatic LC_{50} mean?

Aquatic LC_{50} is a concentration in mg/l (ppm) which kills, in 96 hours, half of a group of 10 or more of a medium sensitivity warm water species such as bluegill or flathead minnow, or cold water species such as salmonidae. For an example, see the most recent "Standard Methods for the Examination of Wastewater," APHA.

Since it is not practical to biologically test every waste to see if it is EHW, a method of designating waste according to its known toxic constituents was developed. The toxicity level must first be established using the criteria in the following table:

RATING	CATEGORY	ORAL LD_{50}	AQUATIC LD_{50}
Extremely toxic	A	Less than 5 mg/kg	Less than 1 ppm
Highly toxic	B	5 to 50 mg/kg	1 to 10 ppm
Moderately toxic	C	50 to 500 mg/kg	10 to 100 ppm

Substances with different oral LD_{50} and aquatic LC_{50} categories will be classified in the more restrictive category.

How do I find out what the values are for oral LD_{50} and/or aquatic LC_{50}?

For a great number of specific chemical compounds a listing or oral LD_{50} is found in the "Registry of Toxic Effects of Chemical Substances," published by the National Institute of Occupational Safety and Health (NIOSH).

For a listing of aquatic LC_{50}, refer to the most recent "Determination of Harmful Quantities for Hazardous Substances" in 40 CFR, part 118 as published by the U.S. Government, or LC_{50} in the NIOSH, "Registry of Toxic Effects of Chemical Substances."

When I have established the toxicity level - A, B, or C, then what?

Class A and B compounds are designated and regulated as extremely hazardous wastes if there is one pound and more than 1% of Class A material or ten pounds and more than 10% of Class B material in the waste. Class C substances will be regulated because of toxicity only in combination with A and B category wastes. Remember, the weights refer to the toxic substance and not to the entire waste mixture. There are specific procedures in the regulation for designating wastes that contain combinations of A, B, or C substances.

What if the components of my waste stream are not known or no "book value" is obtainable?

You can analyze the waste stream (or have it analyzed) to determine the composition and then refer to the lists. Alternately you can have bioassays of the waste (both oral LD_{50} and aquatic LC_{50}) performed to determine the appropriate values.

2. Quantity - Special provisions have been made for regulating large quantities of hazardous waste. It was felt that some wastes might not be dangerous enough to regulate solely on the basis of toxicity

(criteria 1), but would pose a substantial threat to man and the environment if disposed of in large quantities.

Wastes with an oral LD_{50} of less than 500 mg/kg or an aquatic LC_{50} of less than 100 ppm shall be an EHW when the quantity of the waste exceeds 100 pounds.

Again, rather than require biological testing, provisions have been made to use existing toxicity data for designation.

The toxicity category is determined from the previous table and then the waste is compared to the following criteria:

- Any waste containing more than .1% and 1 pound of category A substance is an EHW.
- Any waste containing more than 1% and 10 pounds of category B substance is an EHW.
- Any waste containing more than 10% and 100 pounds of category C substance is also an EHW.

There are specific procedures in the regulation for designating wastes that contain combinations of A, B, or C substances.

3. Persistence deals with the fact that some toxic substances are capable of remaining in a toxic form for a very long time. In the strictest sense, only elements such as heavy metals are truly permanent, but some classes are known to show prolonged stability and resistence to any type of detoxifying degradation. Many of the persistent types have been demonstrated to bio accumulate (that is, build up in the environment and/or food chain); and frequently display such undesirable effects as chronic toxicity, mutagenesity, carcinogensity, teratogenesity, etc. Three classes of compounds were specified as probable extremely hazardous wastes based on persistence:

a. Soluble heavy metals (soluble lead, arsenic, mercury, etc.)

b. Halogenated hydrocarbons (DDT, PCB, etc.)

c. Polycyclic aromatic hydrocarbons (coaltar, etc.)

Wastes containing these persistent substances are designated as EHW if there is one percent or more of the persistent material and there is one hundred pounds or more of the waste.

If the presence and quantity of these classes is not known in your waste stream, a variety of analytical procedures are available to you to establish the values. Examples of procedures can be found in the regulation.

Examples of Extremely Hazardous Waste Found in Typical Industries

The following is a description of some of the wastes generated by various industries and their relationship to the hazardous waste regulation. It is not a list and it is not absolute. There will always be exceptions and there are a multitude of industries that are not mentioned.

The purpose is to describe some "typical" waste streams so that landfill operators can have an understanding of what type of compounds cause a waste to be extremely hazardous and, as such, should not be disposed of in sanitary landfills.

Chapter 173-302 WAC - the Hazardous Waste Regulation is the final word on whether or not a waste is extremely hazardous and should always be considered.

Wood and pole treating: This industry uses pentachlorophenol and creosote to preserve wood. They occasionally remove sludge from storage tanks and dispose of it. Sludge containing 0.1 percent or more and one pound or more of pentachlorophenol would be extremely hazardous waste (EHW). Sludges containing 1 percent or more and 10 pounds or more of creosote are EHW.

Printing: Solvents, heavy metals, and acids are sometimes discarded from printing plants. Solvents such as acetone or paint thinner are not normally EHW. Carbon tetrachloride and trichloroethylene are chlorinated hydrocarbons and as such are EHW if present at concentrations of 1 percent or greater in wastes whose quantity is 100 pounds or more. These materials are EHW because they persist in the environment for a very long time without losing their hazardous properties. Heavy metals also persist in the environment in their hazardous form. Lead and zinc are toxic heavy metals sometimes found in printing industry wastes. Wastes containing 1 percent of these metals are EHW if discarded in quantities of 100 pounds or more. Nitric acid is used as an etching solution in newspaper printing. Pure nitric acid is an EHW if disposed of in quantities of 100 pounds or greater. If the acid has been neutralized at all, it probably would not be an EHW.

Chemical manufacturing: Waste from the chemical industry comes from sludges, waste solvents, reaction residues, spent catalysts, still bottoms, and wash water. Many of these wastes can contain materials that would qualify the wastes as EHW. It is impossible to list all the materials, so it will have to suffice to say that these wastes from chemical manufacturers should be carefully screened on a case-by-case basis.

Pesticides: The manufacture and application of pesticides result in wastes that are discarded. The most common form of waste from these activities is empty containers. Containers may be EHW if they are not triple-rinsed and if they contain one pound or more of residual material. Pesticides sometimes become outdated or contaminated and are thrown

away. These materials may be EHW. Containers labeled "warning" or "danger" probably contain pesticides that meet the toxicity criteria of the hazardous waste regulation.

Paint manufacturers: Solvents, tank bottom sludges, and pigments are materials that might be EHW and that may be discarded by the manufacturers of paint. Chlorinated, hydrocarbon-based solvents would be treated in the manner describes under Printing. Disposal of other solvents would not normally be regulated. Tank bottoms and pigments may contain heavy metals and would be regulated at the 1-percent/100-pound level. The most common toxic heavy metals found in the paint manufacturing industry are chrome, cadmium, and lead.

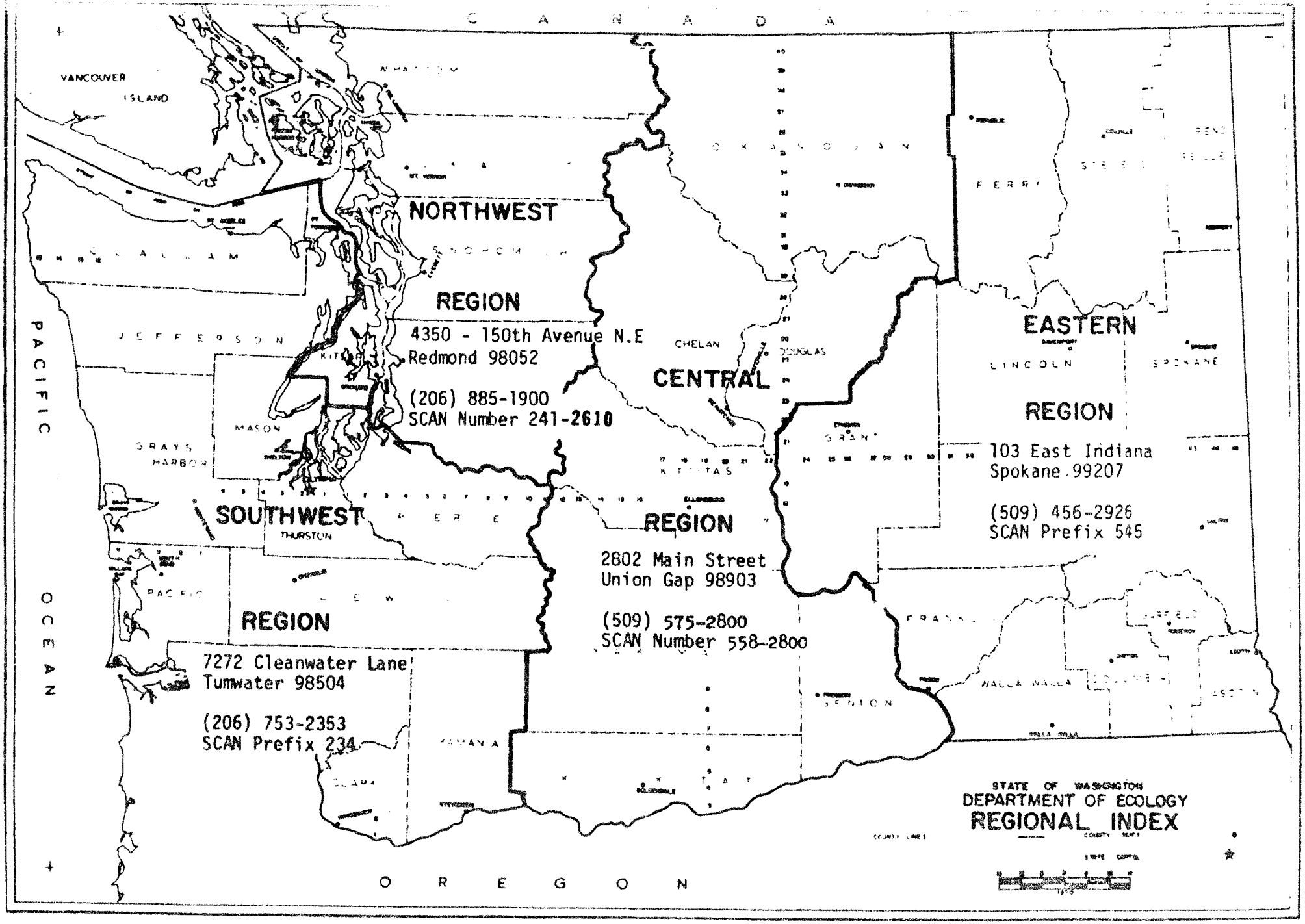
Petroleum refining: Wastes from this industry include tank bottom sludges, spent catalysts, and acids. Sludges or catalysts may contain metals such as zinc and lead and/or phenols. Limitations on the disposal of zinc and lead-bearing wastes have been discussed earlier. Wastes which contain 100 pounds or more and 10 percent or more phenols are EHW.

Metal plating: This industry produces waste sludge and waste plating and etching solutions (acids). The sludges may contain a variety of heavy metals, including chrome, zinc, cadmium, nickel, and copper. Chrome and zinc have already been discussed. Wastes containing copper may be EHW, depending on the toxicity of the particular copper compound. The disposal of some copper compounds is regulated at the 0.1-percent and 1-pound level, while others are regulated at the 1-percent and 10-pound level. A quick check with the Department of Ecology can establish the toxicity levels for various copper compounds. Cadmium and nickel-bearing wastes are regulated as persistent heavy metals at the 1-percent and 100-pound level. The plating or etching solutions are sometimes classified as EHW due to the content of cyanide compounds. Almost all cyanide compounds are EHW at the 0.1-percent and 1-pound level. Acid wastes should be considered on a case-by-case basis.

Electronics manufacturing: This industry produces wastes containing many of the compounds discussed under Metal Finishing; the same considerations should be examined.

Public utilities: Transformers containing polychlorinated biphenyls are considered persistent hazardous wastes and are subject to the 1-percent and 100-pound limitation for disposal at a landfill.

Spill cleanup residue: Almost anything can turn up under this category and usually does. The same criteria should be examined for these wastes as was examined for all the various industry wastes; i.e., toxicity and persistence.


C A N A D A
VANCOUVER ISLAND
NORTHWEST REGION
4350 - 150th Avenue N.E
Redmond 98052
(206) 885-1900
SCAN Number 241-2610
CENTRAL REGION
2802 Main Street
Union Gap 98903
(509) 575-2800
SCAN Number 558-2800
EASTERN REGION
103 East Indiana
Spokane 99207
(509) 456-2926
SCAN Prefix 545
SOUTHWEST REGION
7272 Cleanwater Lane
Tumwater 98504
(206) 753-2353
SCAN Prefix 234
PACIFIC OCEAN
O R E G O N
STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
REGIONAL INDEX

2/76

CITY OF WALLA WALLA

BOX 478 WALLA WALLA, WA. 99362

Office of Public Works Department

June 7, 1979

Mr. David W. Eaton
Director, Environmental Health
Walla Walla County-City Health Department
310 West Poplar
P. O. Box 1753
Walla Walla, Washington 99362

Subject: Hazardous Waste Disposal

Dear Dave:

A few months ago you indicated that you would be able to get ahold of some model letters and regulations concerning the disposal of hazardous waste materials. We would like such an item to include in our policy and procedure manual as well as for regulation of our new landfill. Your timely consideration of this matter will be appreciated.

Sincerely,

Thomas J. Farrell
Utilities Operations Manager

br

Sent a suggested form & the latest RR on July 18, 79

Walla Walla
County-City Health Department

310 West Poplar • P.O. Box 1753 • Walla Walla, Washington 99362
Telephone 525-6730

January 8, 1980

Mr. Norm Skiles
Director of Public Works
P O Box 478
Walla Walla, Washington 99362

RE: 1980 Landfill Permit

Dear Norm:

On December 11,1979, an annual insepction of the Sudbury Road landfill site was conducted by our department in the company of Mr. Tom Ferrel. Tom explained how the life expectancy of the site has been increased using the new trench technique.

We have been provided with well sample lab reports for 1979. The only significant increase over previous results are for FE & COD in well # 3. Tom feels this may be due to ground water infiltration on a localized basis. He indicated that steps are already being taken to divert the drainage away from the well casing. In any case, follow-up tests on well # 3 should be done as soon as possible.

Routine monitoring for PH, BOD, Cl, Disolved Solids, Total Alkalinity, FE, COD, and Total Coliform, should continue for all three wells on a quarterly basis in 1980. In addition, the Environmental Protection Agency is now requiring that ground water underlying landfills be tested for the same inorganic chemicals as drinking water.

The Washington State Department of Ecology will conduct a survey of landfills in the area within the next six (6) months and will be using the results of the inorganic analysis as part of their evaluation. These samples should be collected sometime in January. We are willing to assist you in collecting the samples and will mail them to the DSHS lab if you like.

1980 Landfill Permit

As you know, monitoring for methane gas production is a high priority for our department. The E. P. A.'s proposed regulations address methane gas limits. For this reason we strongly encourage the purchase of gas detection equipment, perhaps in conjunction with the proposed grant money application currently under consideration. We would like to see routine methane gas monitoring initiated for both the old and new sites within the next six (6) months.

In accordance with R.C.W 70.95.170, this letter serves as the 1980 solid waste site permit for the Sudbury landfill until December 31, 1980.

Very truly yours,

David W. Eaton

David Eaton, R. S.
Director
Environmental Health

DE: bo

cc. Mr. Jim Malm, Washington State Department of Ecology

CITY OF WALLA WALLA

BOX 478 WALLA WALLA, WA. 99362

Office of Public Works Department

July 31, 1980

Department of Ecology
Mail Stop PV-11
Olympia, Washington 98504

Attention: Charles A. Meyer, Solid Waste Management Division

Subject: Landfill Waterline; Washington Future Solid Waste Grant
Contract No. 267512743(2)

Gentlemen:

Enclosed is the City of Walla Walla's first request for reimbursement under the above grant. Please note that the amount of the funded design element has been exceeded. We request that the excess monies expended be deducted from the contingency. The Notice to Proceed was issued on December 30, 1979. The work was substantially completed by January 31, 1980. The construction contract has not been finaled; the City has notified the contractor about the extent of a major change order that has been pending which is dependent on DOE's review/acceptance of the forthcoming grant request. The additional expenditures for engineering were necessary after we found that there were/are capacity problems with the well.

Please note that the hydropneumatic tank was deleted. We determined that construction of the tank could not be economically justified.

The reevaluation of the system took many weeks after Council authorized award of the contract. Further engineering evaluation determined that several changes would be necessary. The solution that was favored was to:

1) Replace the bowls (pumps) in order to pump through the life of the well.

2) Retain the existing pump motor.

3) Pump at atmospheric pressure into a reservoir.

4) Pump from the reservoir with a booster pump.

Additionally, further engineering analysis and field trial has been made of a traveling, "big-gun" irrigator. We have successfully determined that we can apply water within relatively broad limits required for dust suppression through irrigation. The application rate can be adjusted to minimize soil penetration with desired limits.

You will soon be receiving a grant request to complete the work intended under Grant No. 267512743(2).

If you have any questions please call SCAN 736-4229.

Sincerely,

Fred A. Selle
Engineering Supervisor

br
Enclosure: A19-1 Voucher Support Form
cc: Jim Malm, DOE, Spokane (w/o enc.)
Dave Eaton, City-County Health Department (w/o enc.)
Harry Kinzer, Administrative Services Director

STATE OF WASHINGTON

Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY

East 103 Indiana Avenue, Spokane, Washington 99207 509/456-2926

December 12, 1980

RECEIVED
DEC 13 1980
WALLA WALLA CO.-CITY HEALTH DEPT.
WALLA WALLA, WASH.

Mr. David Eaton
Walla Walla County-City Health
P. O. Box 1753
Walla Walla, WA 99362

Dear Mr. Eaton:

The federal criteria for solid waste disposal facilities require ground water monitoring to prove no contamination is occurring.

To comply with the criteria, we recommend that appropriate ground water monitoring wells be constructed and a sampling and analysis program be initiated at the Walla Walla County sanitary landfill by December 31, 1981.

Please contact Doug Dunster at our office if you have any questions regarding the abov[illegible].

Sincerely,

Claude W. Sappington

Claude W. Sappington
Division Supervisor
Environmental Quality Division

CWS:adh

cc: Brad Everson, Olympia
Douglas G. Dunster

Indicator
PH
COD
BOD
Cl
Tot DS.
Fe
Cond.

Called Claude 12-15-80 3:00 PM He said that the parameters [illegible] [illegible] that [illegible] wells [illegible] [illegible] routine [illegible]
DE

CITY OF WALLA WALLA

BOX 478 WALLA WALLA, WA. 99362

Office of Public Works Department December 18, 1980

Mr. David Eaton, R. S., Director
Environmental Health
Walla Walla County-City Health Department
P. O. Box 1753
Walla Walla, Washington 99362

Dear David:

The enclosed "Application for Disposal Permit" is provided for your consideration. Please note that items 5 and 8 remain blank as the codes are not available to us. If a complete copy of this application is returned to us we will have the information available for future use.

We are holding off on any organic and inorganic water quality tests until we hear from you on the free laboratory service.

Sincerely,

Thomas E. Farrell
Utilities Operations Manager

geb
Enclosure

CITY OF WALLA WALLA

EXPLANATION OF DIAGRAMS

1) Illustration One shows a profile of the excavation pattern at any base elevation. For the purposes of illustration the lowest grade is depicted as being to the left of the diagram and is assumed to be ten feet above the known high water table.

2) Illustration Three depicts the series of cells excavated concurrently, or as a group of cells to be excavated in conjunction with one another. Thus all cells labeled by "2" will be removed before beginning on the next layer. The sequence is required to assure safe hauling conditions by employing stable banks, minimum grade changes on haul roads and an orderly operation.

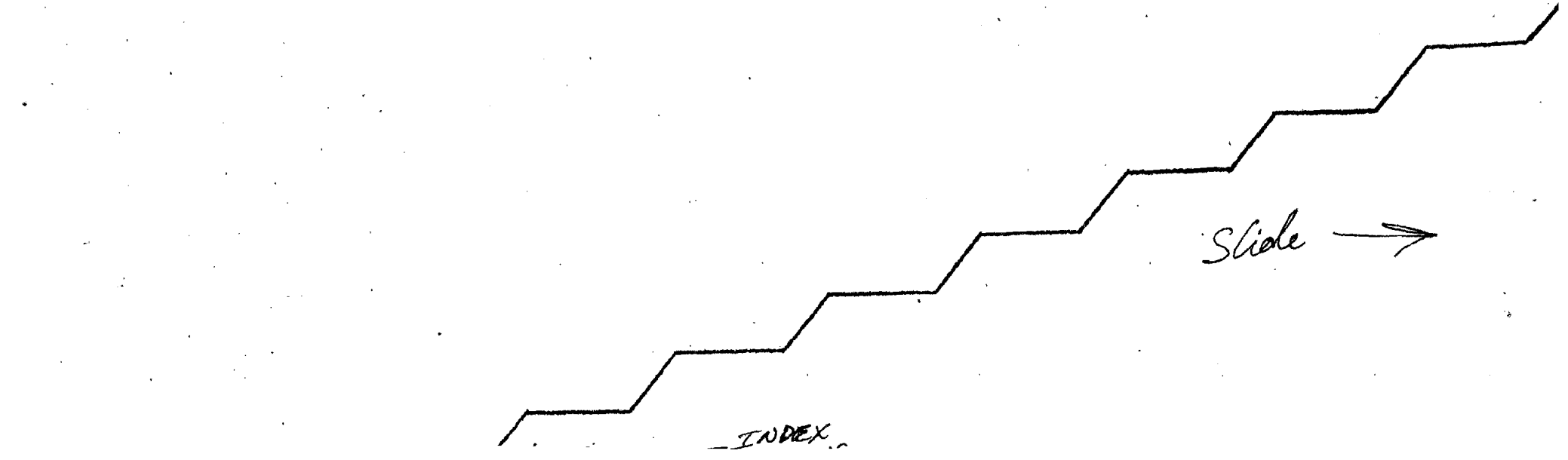
3) Illustration Two depicts the landfill excavation profile as conceived giving the proper dimensions of each cell or "lift". The cell depth is seen to be eight feet with appropriate slopes. The twenty foot wide detail shown on the far left of the Illustration shows the perimeter road located on the north end of the facility.

4) Illustration Four demonstrates the tiering of cells and the establishment of a new finished grade suitable for farming.

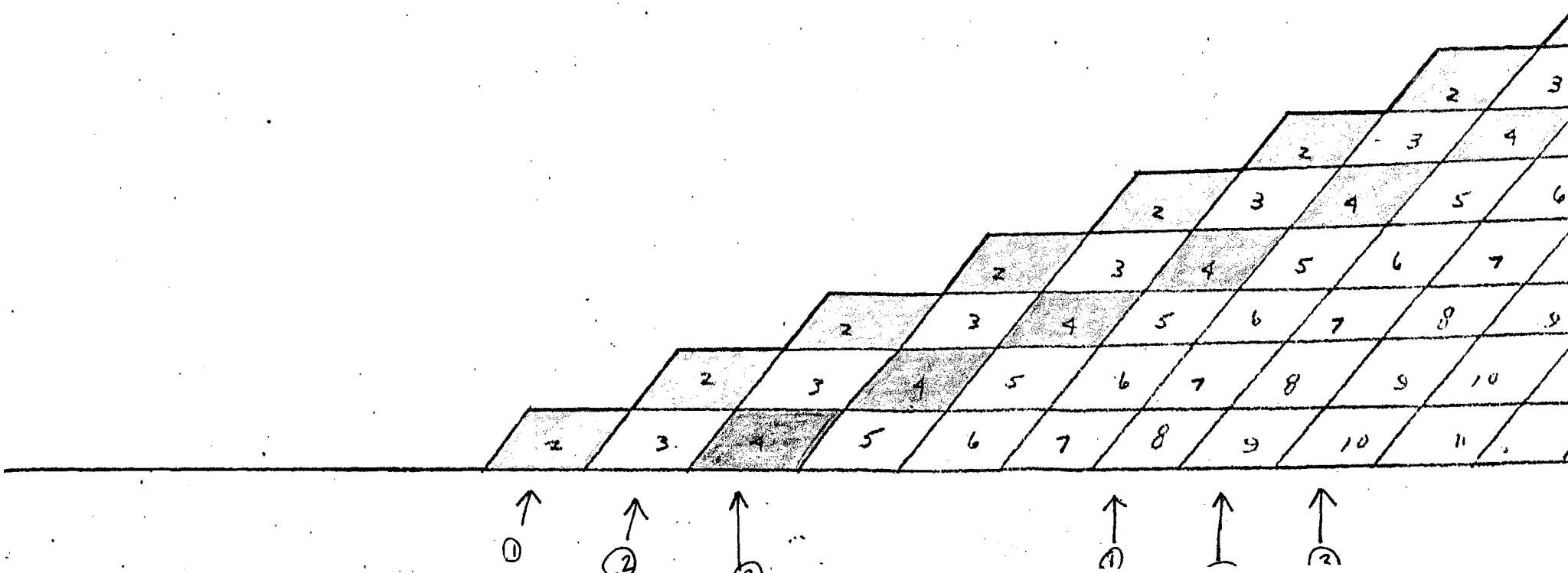
5) The progression of excavation can be easily seen by placing Illustration One on top of Illustration Three and matching index arrows tip to tip, hold against the light and slide the top sheet to the right and realign the index arrows with the next set of corresponding arrows. The manner of excavating to maintain safe operating conditions is easily seen.

br

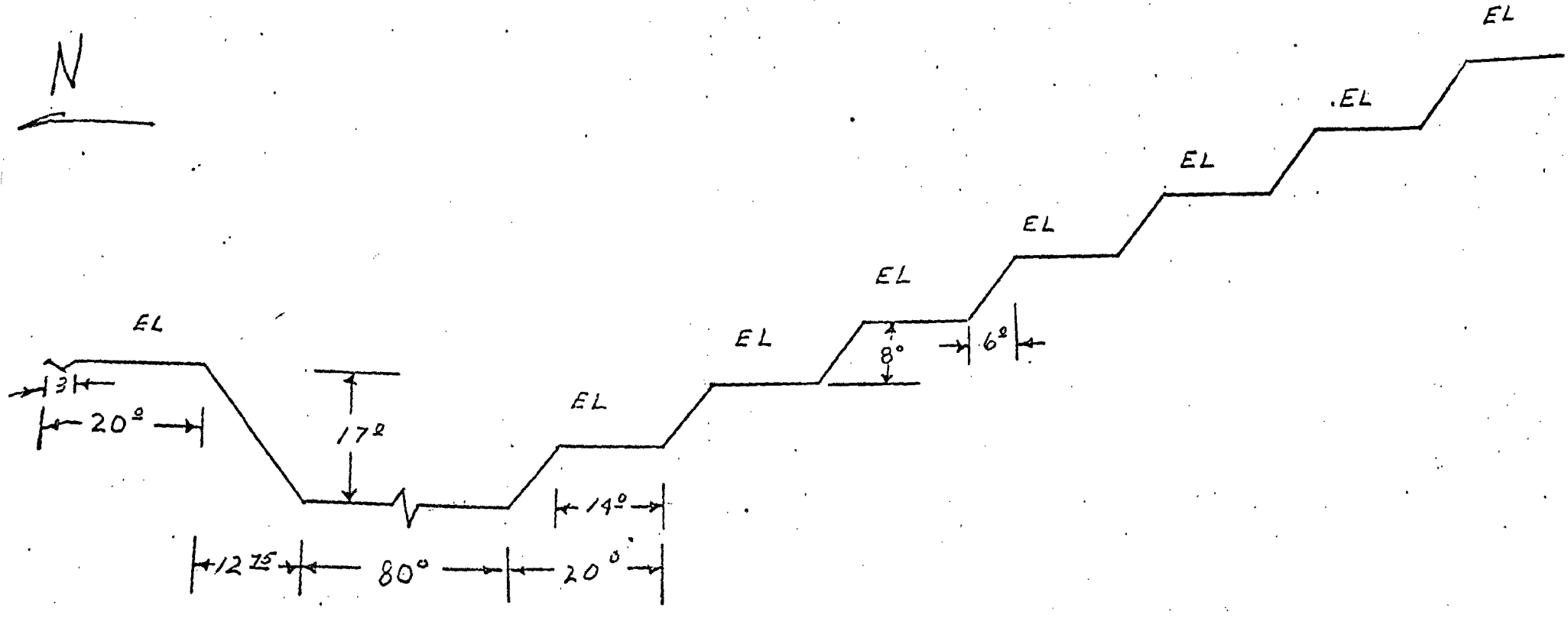
1) Line index arrows up point to point w/ arrows #1 on Sheet # 3
2) Hold sheets against a light slide sheet #1 to the right, lined index w/ arrows #2
3) You now see how the excavations progress when all goes well.



Cell Diagram

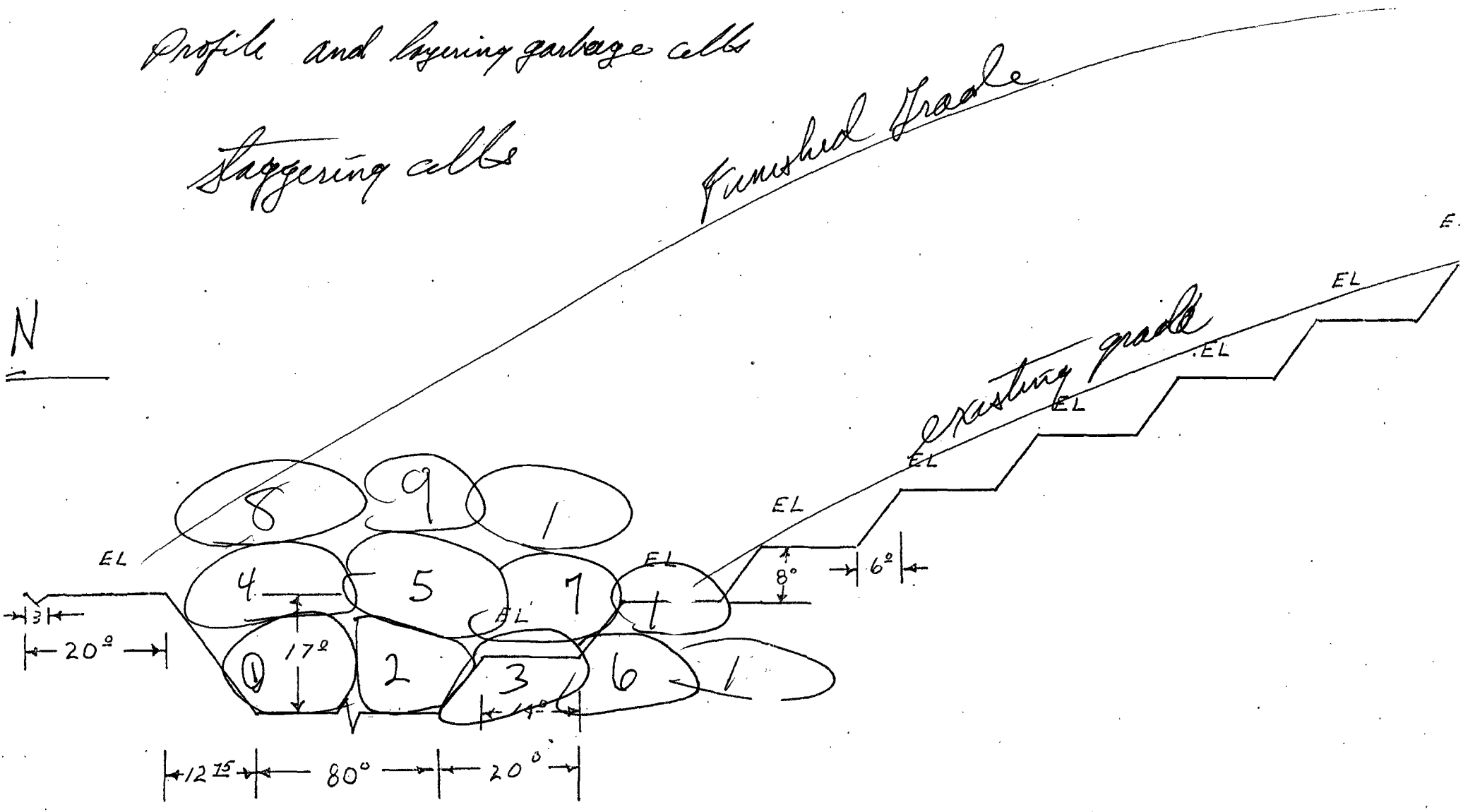


Profile



Profile and layering garbage cells

Staggering cells



December 22, 1980

INTER-OFFICE COMMUNICATION

TO: Art Meyer, Supervisor, Solid Waste Disposal Division

FROM: Thomas J. Farrell, Utilities Operations Manager

SUBJECT: Hazardous Waste Disposal

The attached copies are provided for your and that of the landfill crew's information. One copy of the RCW is to be posted at the landfill at your earliest convenience. The remaining copies are yours to distribute to the scale attendants.

The procedures to be used for enforcing the new hazardous waste regulations are not clear. Our reponsibility, by law, is to not accept hazardous waste material if we have any way to know if it is in a load. In reality we will have to do more as we cannot depend on haulers to announce their loads if they contain material we cannot handle. The equipment operators will have to be alert to dangerous material and work with the scale attendant to track down illegal haulers should we begin to have a problem.

So far I have advised against becoming a landfill site for hazardous wastes. The community does not appear to have a great enough need for a hazardous waste site to warrant our investment in preparing such a site. What need there is appears to be taken care of by the Arlington site. If we find a threat to public health because of illegal dumping at unsupervised sites we may be required to operate a hazwaste site regardless of the economic shortcomings.

geb
Attachments

POST - LANDFILL

RCW 70.105.030 LIST AND INFORMATION TO BE FURNISHED BY DEPOSITOR OF HAZARDOUS WASTE -- RULES AND REGULATIONS.

(1) AFTER THE EFFECTIVE DATE OF THE REGULATIONS ADOPTED BY THE DEPARTMENT DESIGNATING EXTREMELY HAZARDOUS WASTES, ANY PERSON PLANNING TO DISPOSE OF EXTREMELY HAZARDOUS WASTE AS DESIGNATED BY THE DEPARTMENT SHALL PROVIDE THE OPERATOR OF THE DISPOSAL SITE WITH A LIST SETTING FORTH THE EXTREMELY HAZARDOUS WASTES FOR DISPOSAL, THE AMOUNT OF SUCH WASTES, THE GENERAL CHEMICAL AND MINERAL COMPOSITION OF SUCH WASTE LISTED BY APPROXIMATE MAXIMUM AND MINIMUM PERCENTAGES, AND THE ORIGIN OF ANY SUCH WASTE. SUCH LIST, WHEN APPROPRIATE, SHALL INCLUDE INFORMATION ON ANTIDOTES, FIRST AID, OR SAFETY MEASURES TO BE TAKEN IN CASE OF ACCIDENTAL CONTACT WITH THE PARTICULAR EXTREMELY HAZARDOUS WASTE BEING DISPOSED.

RCW 70.105.030 LIST AND INFORMATION TO BE FURNISHED BY DEPOSITOR OF HAZARDOUS WASTE -- RULES AND REGULATIONS.

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July 24, 1985

Duane Scroggins
Director, Public Works
City of Walla Walla
P. O. Box 478
Walla Walla, WA 99362

Re: Asbestos Disposal

Dear Duane:

For the past several years the City of Walla Walla has been allowing the disposal of asbestos in the landfill under certain specific conditions.

The Department of Ecology has stated that if the asbestos is packaged according to the air pollution control standards, it is not considered a hazardous waste and can therefore be disposed of at a sanitary landfill. EPA has recently published asbestos waste management guidelines. (Copy enclosed) We are strongly recommending that the City adopt these guidelines before accepting more asbestos for disposal in the landfill.

Very truly yours;

David Eaton, R.S.
Director of Environmental Health

DE/bs

Enclosure

OFFICE OF THE
PROSECUTING ATTORNEY
OF
WALLA WALLA COUNTY
WASHINGTON STATE

DONALD W. SCHACHT
PROSECUTING ATTORNEY
337 DRUMHELLER BUILDING
P.O. BOX 834
WALLA WALLA, WA 99362-0018
TELEPHONE 527-3232

JAMES L. NAGLE, DEPUTY
MARY A. KOCK, DEPUTY
JAMES A. HERSHEY, DEPUTY

July 20, 1987

Mr. Dave Eaton
Health Department
P. O. Box 1753
Walla Walla, WA 99362

Dear Mr. Eaton:

I have reviewed the issue of whether the old city landfill is controlled by WAC 173-301 as opposed to WAC 173-304, the latter of which became effective November 27, 1985. In my opinion, WAC 173-301 applies because (1) under WAC 173-304-100(27), the landfill is not a facility which was in operation on or before the effective date of the new regulations; and (2) the city had already engaged in those actions necessary to ensure that the facility would be closed in conformance with WAC 173-301-305 and 306, which is the exemption stated under WAC 173-304-400(1)(e). The city is still undergoing work for "post closure" referred to in WAC 173-304-100(11). You have authority, independent of the state regulations, to specify the deadline for completion of any other work, but it appears that it may be poliltically expedient to force completion of final covering and surfacing by November, 1989.

"Close" is not defined by the regulations. It is defined in Black's Law Dictionary (5th Edition, 1979, p. 231) "to finish, bring to an end, conclude, terminate, complete, windup. . . to shut up, so as to prevent entrance or access by any person. . . to suspend or stop operations of." The state's regulation defining closure includes the word "closed". "Closure" only requires the ceasing of operation, taking steps to provide for the final cover and surface as soon as possible, and doing whatever is necessary to monitor the site. There is no other reasonable interpretation of these regulations.

Very truly yours,

JAMES L. NAGLE
Deputy Prosecuting Attorney

JLN/jck

GROUNDWATER MONITORING STATUS REPORT

CITY OF WALLA WALLA

WASTE MANAGEMENT SITE, SUDBURY ROAD

Introduction

In 1985, leading indicators from landfill monitoring wells aroused staff and health official concern. All operations at the 1100 acre waste disposal site on Sudbury Road were placed under one field supervisor trained in water pollution control matters.

This paper is a first draft accumulating data collected since that date, epitomizing pertinent historical events, briefly describing groundwater issues and presenting a short synopsis of some readily apparent actions that not only the City but also all other users should begin as soon as practical.

We have been informed that Washington State Department of Ecology is concerned about deficiencies in spray farm irrigation practices of D&K Frozen Foods. Both parties should be aware of current enforcement attitudes and practices of both State and Federal regulators.

This paper begins with a brief history.

1. History

Salient highlights of the history of the City of Walla Walla Waste Management area abutting the Washington State Penitentiary and Sudbury Road is presented here for orientation and analytical purposes. The City purchased the site in 1970 for $525,000. The Sanitation Utility participated in the amount of $125,000 to provide for future landfill.

The City owns 967.15 acres. Pacific Power and Light owns about 80 acres as a strip of land through the site running north-south near the east side. There are three electrical transmission lines in that strip---Pacific, Bonneville, and Columbia Rural. Burlington Northern owns the railroad right of way running east-west through the site, which is generally at least 100 feet wide and contains about 35 acres. The City usually (loosely) refers to the management site as 1100 acres.

For analysis purposes, it is important to note that the site was irrigated by previous owners on the upstream side of the aquifer being monitored by our testing wells. There exists a deep well now used for landfill dust control that furnished water to pivot irrigators. The site is utilized for three functions.

1.1 Spray Farm. The spray irrigation farm construction began in 1971 and was operational in 1973. The farm is operated under agreements with the two food processing facilities in Walla Walla, known by various names over the past 17 years. The agreements were in part dictated by Federal and State grant conditions to USEPA and State acts requiring industries to pay all costs for services.

1.11 Costs.

a) City revenue bonds were to be repaid by the food processors which transactions are believed to be concluded.

b) The industries must pay for all costs of operations. Recently, D&K Foods operates the facility directly under an NPDES permit; however, the City as landowner is ultimately responsible under environmental laws to correct any environmental damage.

c) The industries were required to pay 6% annual rental ($19,000). There is early record of such rental fees being billed, but none in recent history.

1.12 Operations. The spray irrigation farm is required to be operated in accordance with a U. S. Environmental Protection Agency permit through Washington Department of Ecology. Originally the permit was issued to the City, who performed all operation functions and billed the food processors for costs.

1.121 Initial Operations and designs were to utilize the spray farm from June 1 through mid-October when evapotranspiration rates and weather conditions together with timed sequential spray patterns reasonably assured no excess

water would reach groundwater aquifer or run off as surplus surface water.

Certain low-strength wastes (asparagus wash water) were treated at the City's treatment plant.

The City contracted with a farmer as a totally secondary activity being subordinate to primary function of environmentally safe deposit of food processors' wastewater.

1.122 In 1978 operations changed significantly and may be reflected in recent groundwater readings. The principal food processing facility changed owners and operations. The spray farm is operated nearly year-round. Thus, there are wastewater operations on saturated ground which logically must fall toward lower aquifers, on frozen ground which is likely to run off as surface water, and at other times exceeding design parameters.

1.123 In 1985, operations were performed by the principal food processor. Some operations may have aggravated environmental problems such as not metering flows to avoid spraying too long in one area, not following sequential spraying to accommodate the farmer, thus over-irrigating a small area and related problems. The food processor is under scrutiny of WDOE for such practice and liable for any fines imposed.

A memo from Project No. 71-414 is attached for a more detailed summary of spray farm agreements.

1.2 Sludge Utilization and Management. Wastewater treatment processes remove solids from the waste water stream, which are broadly classified as sludge. The sludge consists generally of inorganic solids removed in primary treatment and micro-organisms which feed on organic solids removed in secondary treatment. As inorganic solids may contain heavy metals and organic solids may contain pathogens, care and further processing is needed. That further processing starts with anaerobic microbiological digestion.

Material from the anaerobic digestion is "disposed" on the spray farm and other private farms as part of the final "treatment". As the sludge might contain materials harmful to the environment, careful control and monitoring is required. Sludge properly managed is a resource and managed as a recyclable resource recovery. Sludge is an excellent soil conditioner and nutrient when applied at agronomic rates (crops use all the sludge).

As the sludge comes from the digester, nitrogen is present as ammonia (NH_3). Spreading the sludge at agronomic rates results in nitrogen evolving through a nitrate (NO_2) form to a stable nitrate (NO_3) form capable of being used as plant nutrient. Thus the treatment process reaches full circle.

A sludge utilization plan was adopted by the City and WDOE in 1982 as part of our waste treatment plant reconstruction concluded in 1983. The plan calls for reserving the northwestern 200 acres of the Sudbury Road site for emergency sludge disposal. As part of the plant expansion grant program, a special sludge disposal truck was purchased. The truck injects sludge into the soil. The soil is usually further processed by discing to capture as much ammonia as possible for converting to fertilizer (nitrate). Since that plan was concluded, the City staff has been pursuing other courses of utilization, including:

1.21 Private farms adjacent to the plant have been utilizing sludge as a soil nutrient. This is to our mutual advantage as the current tank truck process means we haul about 94% water to deliver 6% sludge. Other farmers have expressed interest; however, they have been unwilling to install groundwater monitoring wells and/or obtain permits from the City/County Health Department.

1.22 Spray farm operations have involved sludge application. Sludge supernatant is mixed with food processor waste to transport the sludge to the spray farm for distribution through spray nozzles. Total nutrient load must be calculated and controlled.

1.23 Sludge is utilized as a soil conditioner and nutrient for landfill cover. It is expected that the Tausick Way Landfill

project will use most available sludge for three years and then periodic applications after that date.

1.24 Dry sludge disposal processes are being investigated and included in the City's Six Year Capital Improvement Program. When time comes to replace our sludge truck at $125,000 plus inflation, staff is in favor of developing a vacuum assisted drying facility so that sludge can be transported in conventional equipment. This not only reduces transportation costs but also allows sludge to be disposed of at the landfill as conventional solid waste in case of emergency.

Long range planning, then, considers using that 200 acres for landfill and spray farm operations. Note that well #3 and #4 were installed as a requirement of the Sludge Utilization Plan.

INSERT FIGURES.....

1.3 Landfill. The Sudbury Sanitary Landfill officially began operation in June, 1977, with the issuance of a permit from the County/City Health Department. Three wells were constructed at that time. All were to domestic well standards which do not meet today's groundwater monitoring well standards. Wells 1 and 3 were to monitor groundwater while Well 2 was drilled deeper for domestic and vehicle cleaning use. Well 1 was in retrospect not drilled into an aquifer.

Groundwater monitoring and testing programs did begin in 1977 and were "state of the art" at that point as far as landfill operations were performed at that time. Early operations reportedly not well controlled. Operators did the best they could with underpowered, undersized, and inadequate equipment and controls. Some events due to groundwater and operation concerns have caused historical changes in operations.

1.31 Pertinent historical benchmarks at the landfill include:

1.311 From 1983 through 1984 a properly sized landfill compactor was purchased as well as an adequately powered self-loading scraper. There is still not adequate backup for the compactor.

1.312 In 1984 and 1985, review of groundwater test results began concerns in earnest. Supervision and testing programs at the waste disposal site were transferred to the water pollution control staff at the Wastewater Treatment Plant. The waste disposal site was managed as one unit.

Well 1 had not been used for some time due to vandalism and other problems.

Operators reported nausea and ill effects possibly from drinking water from Well #2. Staff quit using the water from Well #2 for drinking and began using bottled water. Noted

that vehicle cleaning activities caused water to stand on surface of Well #2, so regraded and changed procedures to prevent potential for leakage through well seals. Unusual and uncharacteristic readings were noted from Well #3. Surface seal failure was suspected.

Operators report that early operations may have breached groundwater, allowing some contamination, especially along the Burlington Northern right of way near Wells 2 and 3, which is supported by groundwater tests. Elevations of trench bottoms were raised.

1.313 Dedicated groundwater monitoring wells were constructed in 1986. Groundwater samples were split to separate labs for verification and accuracy of results. These tests disclose problems which must be addressed by the City. All data produced is in the hands of the County Health Department and Washington State Department of Ecology. So far the agencies seem satisfied with our efforts.

The drilling operation discloses that groundwater, although fairly deep, was under a piezometric test of about 30 psi.

1.314 A Solid Waste Management Plan Update began in 1985 with a State grant and concluded in December of 1987. The history of the landfill was reviewed and an operating plan developed. Bottom elevations of trenches and disposal areas

were reevaluated based on disclosures and analysis of well drilling operations. Benchmarks were established on all wells for better control. The plan calls for moving into certain areas heretofore thought of as spray farm operation.

1.32 Selected groundwater test histories are presented here to demonstrate reason for concern and changes in operating procedures.

We are required by WAC 173-304 to not exceed minimum contaminant levels (MCL) as set for drinking water standards by the United States Environmental Protection Agency (USEPA).

1.321 Chlorides are an anion not captured (chelated) by soil. Chlorides are one of the primary "flags" when looking for potential groundwater contamination from surface activities, including landfill and irrigation.

An examination of Figure 1.___ seems to show a general background of 10 mg/l for most wells; however, note Well #7 upstream from all other wells where irrigation activity occurred in history shows a much smaller possible background.

The key issue shows Wells #1, #2, and #3, which are downstream from landfill operations show a definite and gradual increase beginning in about 1980. Well #6 was located to measure impacts of spray farm while Wells #4 and #5 were located to measure impacts of sludge disposal.

The wells are generally below minimum contaminant levels.

1.322 Conductivity is a test that can measure an increase in salts and is another test to provide an early alert to potential problems from surface activities.

An examination of Figure 1.___ also shows a gradual increase especially in Wells #1, #2, and #3. These tests seem to indicate a background in excess of MCC's; however, Well #7 discloses a much lower level, suggesting early irrigation practices may have elevated levels.

Note the dramatic impact of contemporary monitoring wells. This suggests surface seals of early wells failed, including Well #2. Results from Well #2 are now generally disregarded in absolute terms.

1.323 Total dissolved solids (TDS) are presented to demonstrate impact of new wells in reaction to the noted elevation of TDS levels above permitted contaminant levels as early as 1981. Although TDS levels fell below MCC's except WEll #2, there is still an increase beyond Well #7.

1.324 Iron problems are more likely to indicate an irrigation problem---particularly over-irrigating with heavy organic loads which reduces iron chemically bound (chelated)

with soil to "free" iron, which can then be transported to groundwater.

Test results are yet inconclusive, but show historical spikes and a recent, rapid increase. Another possibility for the recent increase could be iron reactive bacteria. Staff is revising test procedures to ascertain this potential. The tests alert us to the potential of a problem at this time.

1.325 Nitrates are one of the leading indicators of organic contamination. Nitrate levels shown in Figure 1.___ are inconclusive and require further analysis. Spikes are shown that exceed MCC's but current levels are above Well #7, which is upstream of all surface activity. As all wells show elevated levels of nitrates, the potential cause is more likely to be from spray farm activities than landfill activities.

Wastewater staff has performed full volatile organic scan in recent history. If these tests exceeded RMCL's, we would likely be required to take immediate action; however, no traces were found. Volatile organic analysis and many additional tests are expected to be required in the future. The five tests shown here are less than 10% of the tests we now perform to give a concept of scope Federal and State environmental laws are placing on the City of Walla Walla.

2. Groundwater Impacts

Leading indicators from groundwater monitoring wells show that both spray farm and landfill activities (possibly together with past irrigation prior to City ownership) have impacted groundwater beneath the City's waste management area.

All the raw data utilized to construct Figures 1.4 through 1.8 are on file in County/City Health Department and Washington State Department of Ecology files. The data will impact our plans to seek a variance from requirements of WAC 173-304. Although we can still state that there is no danger to public health, we must realize that statement is because there are no known domestic users along our western border around the Burlington Northern right of way. While test results show groundwater generally remains below minimum contaminant levels, we are aware that staff members reported ill effects from drinking water from Well #2.

We cannot deny that operations have impacted groundwater. We do not yet know full impacts but need to take appropriate action as a "good neighbor" if nothing else. Sooner or later regulatory agencies will demand and/or take action.

3. ACTION. The City of Walla Walla has already taken steps to reduce the potential for contaminants reaching groundwater at the City's landfill. Operating plans call for utilization of some space now used for sludge or spray farm operations. One purpose for this paper is to

begin the process of integrating operations and meeting and conferring with D&K Foods.

3.1 Spray Farm. Spray farm infrastructure is now over 16 years old and showing its age. The WDOE is aware of deficiencies at the spray farm, particularly over the past two years, as well as exceeding design parameters since 1978. There are several potential actions presented in "shot gun" format for brainstorming purposes:

---Repair deficiencies such as flow meters broken for almost two years and over-irrigation. We are aware that D&K made application to renew the Federal NPDES Permit in 1987; however, several violations were noted and they are to reapply.

---Plan for infrastructure rehabilitation or replacement including above-ground spray facilities for better utilization of ground.

---Design area was for 4 1/2 months operation. Need to redesign for 10-12 month operation which might include:

--Purchase more land
--Construct lagoon for wet weather (saturated ground) storage
--Install industrial waste treatment facility
--Reduce flows
--Etc.

---Coordinate with landfill operations plan.

3.2 Sludge As partially discussed in history, several actions are being considered for sludge management. We must

---Maintain the function of 200 acre emergency disposal of sludge at non-agronomic rates if necessary for domestic wastewater treatment.

---Evolve to "dry" sludge handling process.

---Expand sludge disposal to farms and other City property.

---Use sludge as a resource to recover, reclaim, and recondition lands, including landfills (e.g., Tausick Road).

3.3 Landfill As a process involving the County Solid Waste Management Plan, Sudbury Road Operating Plan, WAC 173-304 Minimum Functional Standards for Solid Waste Disposal, and other publications and acts beginning in 1985. The staff is pursuing several action programs at the Sudbury Road Landfill.

---Excavating trench for next four years and using material for cover at Tausick Way. It is planned to use local soil testing lab to measure permeability of soil and related tests. We are also considering installation of lysimeters in the bottom of that trench.

---It appears that we should install two more monitoring wells. We might be well advised to consult with a hydrogeologist before locating and installing.

---Research planned to begin February 1987 was not begun due to reassignment of staff. We may need to bring a consultant on board to do work necessary to seek variances from WAC 173-304. A schedule for rate increases at the landfill considers that potential cost.

For example, due to recent increase in iron in groundwater samples, we have retested to disregard impact of bacteria, reviewed domestic well logs in the surrounding area and find natural high iron readings, are aware of the possibility of tests at Columbia Basin Research Center that show over-irrigation impacts groundwater in aeolias loess, and related but uncoordinated data or potential for data needed to present our case to WDOE.

---Operating plans now call for utilization of natural dry draws to minimize impacts on groundwater over deep trenches. We must coordinate with D&K Foods.

---Purchase abandoned BN right of way, possibly 35 acres, to accommodate landfill long range plans as well as better secure the site.

The purpose of this first draft is to begin the process of conferring with D&K Foods and make known obvious concerns. The City, together with D&K, has the responsibility and opportunity to begin correcting potential problems that the City is ultimately responsible for as landowner before regulators demand correction. If left unchecked, the problem can blow out of proportion. Also know that current enforcement action of USEPA regulators is to literally destroy individuals as example.

br

1/27/88

CITY OF WALLA WALLA

BOX 478 WALLA WALLA, WA. 99362

Office of Development Services
Planning Division

September 24, 1987

Dave Eaton
City-County Health Dept.
P.O. Box 1753
Walla Walla, WA 99362

Re: Determination of Nonsignificance
Trench Excavation Sudbury Landfill

Gentlemen:

Attached you will find a Determination of Nonsignificance issued for the excavation of MMSW Solid Waste Disposal Trench at Sudbury Road Landfill, post closure grading at the Tausick Way Landfill, and transportation and placement of Sudbury Road Landfill excavation on Tausick Way Landfill.

As an agency with jurisdiction, this determination is being forwarded to your office for review and comment. Should you have any comments on this proposal, we request that they be submitted to this office within fifteen (15) days, or by Friday, October 9, 1987.

Sincerely,

Robert C. Martin
Development Services Manager

RCM:kw

Enclosures: Determination of Nonsignificance
Environmental Checklist
Vicinity Map

DETERMINATION OF NONSIGNIFICANCE

Description of proposal Excavate MMSW Solid Waste Disposal Trench at Sudbury Road Landfill, post closure grading Tausick Way Landfill, transport and place Sudbury Road Landfill excavation on Tausick Way Landfill. This is a maintenance project.

Proponent City of Walla Walla

Location of proposal, including street address, if any Tausick Way Landfill site

Lead agency City of Walla Walla

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

☐ There is no comment period for this DNS.

☒ This DNS is issued under 197-11-340(2); the lead agency will not act on this proposal for 15 days from the date below. Comments must be submitted by September 11, 1987

Responsible official Harry D. Kinzer

Position/title City Manager Phone 527-4522

Address P.O. Box 478, Walla Walla, WA 99362

Date 8/27/87 Signature Harry D Kinzer

☒ You may appeal this determination to (name) Walla Walla City Council

at (location) P.O. Box 478, 15 North Third Street, Walla Walla, WA 99362

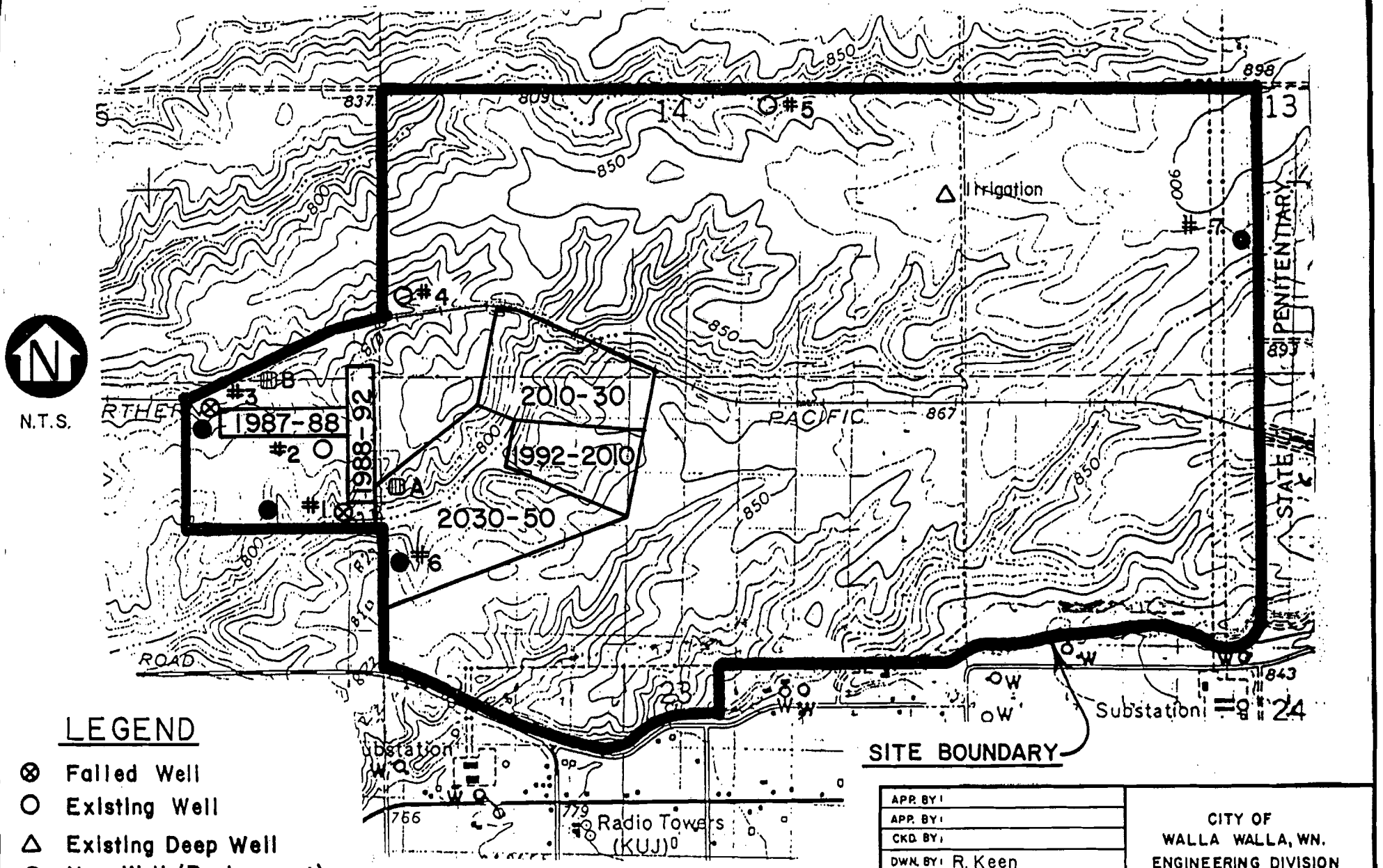
no later than (date) September 11, 1987

by (method) written appeal

You should be prepared to make specific factual objections. Contact * to read or ask about the procedures for SEPA appeals.

*Development Services 527-4386

☐ There is no agency appeal.



APP. BY:	CITY OF WALLA WALLA, WN. ENGINEERING DIVISION DEPT. OF PUBLIC WORKS
APP. BY:	
CKD. BY:	
DWN. BY: R. Keen	
DSN. BY:	
DATE: 6-10-86	

WASTE DISPOSAL SITE
LANDFILL and WELL LOCATIONS

FILE NO.	PROJECT NO.	SHEET 1 OF 3

EC-6-87
General File

ENVIRONMENTAL CHECKLIST

Purpose of Checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply". Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable: Excavate MMSW Solid Waste Disposal Trench at Sudbury Road Landfill, post closure grading Tausick Way Landfill, transport and place Sudbury Road Landfill excavation on Tausick Way Landfill. This is a maintenance project.
2. Name of applicant: City of Walla Walla
3. Address and phone number of applicant and contact person: P.O. Box 278, Walla Walla, WA 99362
   509 527 4463
   Duane Scroggins, Public Works Director
4. Date checklist prepared: 7/15/87
5. Agency requesting checklist: City of Walla Walla
6. Proposed timing or schedule (including phasing, if applicable): Begin construction August, 1987; Complete July, 1988

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. Sudbury Road Landfill is an element of a 1000 acre waste disposal site which may operate 300+ years.

   Tausick Way will receive sludge conditioning in agronomic rate and will be utilized for agricultural production until underlying solid waste decomposes and stabilizes, then converted to normal land use.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

None

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

None

10. List any government approvals or permits that will be needed for your proposal, if known.

None - this is a maintenance operation.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

The project requires excavation of a trench for MMSW disposal at the City's Sudbury Road landfill as scheduled for use from 1988 to 1992. Volume of material is estimated to be 240,000 cubic yards. The excavated material is windblown loess which will (when conditioned with agronomic rate of sludge) serve as topsoil and "insurance" final cover for a post-closure maintenance operation of the City's closed landfill at Tausick Way, about 60 acres, which has not been in operation since about 1976.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

Commonly known as Sudbury Road Landfill and Tausick Way Landfill,all within corporate city limits of the City of Walla Walla; and owned/operated by the City of Walla Walla.

TO BE COMPLETED BY APPLICANT

EVALUATION FOR AGENCY USE ONLY

B. ENVIRONMENTAL ELEMENTS

1. **Earth**

a. General description of the site (circle one): (Flat,) rolling, hilly, steep slopes, mountainous, other _____.

b. What is the steepest slope on the site (approximate percent slope)?

Tausick Way - 5%
Sudbury -(Present) 10%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

Loess
No agricultural uses - dedicated and permitted MMSW landfill

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

See Project description.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Minor erosion might occur during construction, but will be contained; no erosion expected from finished product.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

None

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Not Applicable

2. **Air**

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

There will be dust from construction activities, but expected to be confined to site by watering and usual construction practice.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None Known.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

None

TO BE COMPLETED BY APPLICANT

EVALUATION FOR AGENCY USE ONLY

3. **Water**

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year–round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Mill Creek near Tausick Road; none near Sudbury Road.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Tausick Road near Mill Creek, but separated by bike path and other improvements.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

None

5) Does the proposal lie within a 100–year floodplain? If so, note location on the site plan.

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground:

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals . . .; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

None

c. Water Runoff (including storm water):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

No evidence or reasonable expectation of runoff.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No, material involved is topsoil.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

None required.

4. **Plants**

a. Check or circle types of vegetation found on the site:
__ deciduous tree: alder, maple, aspen, other
__ evergreen tree: fir, cedar, pine, other
__ shrubs
__ grass
__ pasture
__ crop or grain
__ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
__ water plants: water lily, eelgrass, milfoil, other
X other types of vegetation (noxious weeds & grasses)

b. What kind and amount of vegetation will be removed or altered?

Noxious weeds and grasses will be removed and replaced with agriculturally useful hay (grain) or equal. Some minor shrubs will be removed for agricultural purposes.

c. List threatened or endangered species known to be on or near the site.

None Known.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Agricultrual uses (grass, hay, wheat, etc. or dictated by economics)

5. **Animals**

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, other: Pheasant
mammals: deer, bear, elk, beaver, other: Rabbits
fish: bass, salmon, trout, herring, shellfish, other: None

b. List any threatened or endangered species known to be on or near the site.

None Known

c. Is the site part of a migration route? If so, explain.

None Known

d. Proposed measures to preserve or enhance wildlife, if any:

None involved.

6. **Energy and Natural Resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Fossil fuels will be used to excavate and transport materials.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

None

7. **Environmental Health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Grading and compaction old landfill may uncover unknown materials for up to one day - may be methane.

1) Describe special emergency services that might be required.

Contractor advised of potential and required to take special precautions.

2) Proposed measures to reduce or control environmental health hazards, if any:

No hazard off site; contractor required to meet WISHA standards.

b. **Noise**

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Sites are adjacent to heavily traveled and used area. Construction noises will be incremental and temporary.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

No long term noises by this specific project.

3) Proposed measures to reduce or control noise impacts, if any:

Normal muffler equipment

South

8. **Land and Shoreline Use**

a. What is the current use of the site and adjacent properties? Sudbury Road: Part of larger waste disposal site; some residences to ~~West~~; wheat and vacant land on West, North and East. Tausick Way: Closed City landfill; minor commercial to North; vacant to South, West and East

b. Has the site been used for agriculture? If so, describe.
No viable agricultural process

c. Describe any structures on the site.
None

d. Will any structures be demolished? If so, what?
No

e. What is the current zoning classification of the site?
MMSW (Public Use)

f. What is the current comprehensive plan designation of the site?
Public Use

g. If applicable, what is the current shoreline master program designation of the site?
Not Applicable (?)

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify. No

i. Approximately how many people would reside or work in the completed project?
None

j. Approximately how many people would the completed project displace?
None

k. Proposed measures to avoid or reduce displacement impacts, if any:
Not Applicable

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
Not Applicable

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low–income housing.

None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low–income housing.

None

c. Proposed measures to reduce or control housing impacts, if any:

Not Applicable

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

None

b. What views in the immediate vicinity would be altered or obstructed?

None

c. Proposed measures to reduce or control aesthetic impacts, if any:

Not Applicable

11. **Light and Glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

c. What existing off–site sources of light or glare may affect your proposal?

Not Applicable

d. Proposed measures to reduce or control light and glare impacts, if any:

None

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?

Tausick Way: Eastgate Park to West, Mill Creek bike path to South
Sudbury Road: None

b. Would the proposed project displace any existing recreational uses? If so, describe.

None: area closed to public

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Not Applicable

13. **Historic and Cultural Preservation**

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

None

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

None

c. Proposed measures to reduce or control impacts, if any:

Not Applicable

14. **Transportation**

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Sudbury Road and Tausick Road abut specific sites.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

Not Applicable

c. How many parking spaces would the completed project have? How many would the project eliminate?

None

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

No

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Transporting of excavated material is directed to freeways and heavily used public arterial streets.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

about 30-50; no peak volumes likely

g. Proposed measures to reduce or control transportation impacts, if any:

None needed; traffic is an unmeasurable incremental increase of heavily traveled streets and highways.

15. **Public Services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

Likely to reduce need for public service.

b. Proposed measures to reduce or control direct impacts on public services, if any.

None

16. **Utilities**

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

None Required

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: .....

Date Submitted: 7/21/87

DEPARTMENT OF ECOLOGY

APPLICATION FOR DISPOSAL SITE PERMIT

PART I (All Sites)

NAME OF SITE Walla Walla City Landfill

ADDRESS Tacoma Avenue

Walla Walla, Washington 99362

OWNER OF RECORD City of Walla Walla

ADDRESS P. O. Box 478

Walla Walla, Washington 99362

1	2	3	4	5	6	7	8
	4	0	1	4	6		

Card Solid Waste State Form

Check Type of Code for Box 7 & 8

x	Landfill	20
	Incinerator	21
	Composting	22
	Transfer Station	23
	Reclamation Site	24
	Hog Feeding	25
	Nonconforming	26
		27

Site Number

9	10	11	12	13

County Serial

Approved

14	15	16	17	18	19

Site acquisition - Box 27

Presently owned	1
Will purchase	2
Will lease	3
Will Rent	4

Location

20	21	22	23	24	25	26

22 SEC 7N TWP 36E RANGE E=0 W=1

Site Acquisition [27] Existing [28] Yes=1 No=0

PART II Governmental Approval (All Sites)

A Municipality Walla Walla

29	30	31	32

Community Code

33 NA

Planning Commission 35 0

Shoreline Management - County 36 0

County Solid Waste Management Plan 37 0

eets County Solid Waste Standards 38 0

Department of Game/Fisheries Hydraulic Permit — 39: 0

Department of Ecology

Covers			
Waste Discharge Permit	40	0	
Land Resources Mining	41	0	
Meets Minimum Standards	42	0	
Flood Control Permit	43	0	R
Shorelines Management	44	0	R ?
Hydrogeology	45	0	

Department of Natural Resources-Surface Mining — 46: 0

Fire Control — 47: 1

Other _____ — 48: NA

B Zoning

1. Classification of Site Area I.L. - Light Industrial
2. Enforcement Agency Walla Walla City-County Planning Departmen
3. Restrictions (If Any) None
4. Use of Adjacent Properties Within a Quarter Mile (Check Appropriate Box)

	North	East	South	West
a. Residential			1/16 Mi	1/16 Mi
b. Commercial				Adj.
c. Light Industrial	Adj.			
d. Heavy Industrial				
e. Agricultural		Adj.		
f. Mixed				
g. None				

H. Public Facilities 1/16 Mi Adj. Adj.

PART III SOIL AND GEOLOGICAL CHARACTERISTICS (All Sites)

A Location - Attach copy of USGS Topographical map to each copy of Application using 7.5 minute quadrangle map, if published.

1. Plot on topographical map the following on site or within one mile of outer perimeter of site:

		Checkoff
a.	Wells	x
b.	Springs	x
c.	Swamps	x
d.	Streams	x
e.	Public Water Supplies	x
f.	Other Bodies of Water	x
g.	Underground or Surface Mines	N/A
h.	Mining Spoil Piles	N/A
i.	Irrigation Canals	N/A
j.	Irrigation Pools	N/A
k.	Mine Pools and Discharge Points	N/A
l.	Areal Extent of Irrigation Pools	N/A
m.	Areal Extent of Mine Pools	N/A
n.	Gas and Oil Wells	N/A
o.	Other (Specify)	N/A

B Soils

1. List all soil series and phases within site and approximate thickness:

a. YaA - Yakima Cobbly Loam see attached

b.

c.

d.

e.

f.

g.

h.

i.

j.

k.

2. List all soil series and phases to be used as cover material:

a. WaB - Walla Walla Silt Loam

b. AmA - Ahtanum Silt Loam

c. HmA - Hermiston Silt Loam

d. YmA - Yakima Silt Loam

e.

f. Note: Cover material to be obtained from other

g. City owned land.

h.

i.

j.

k.

3. A copy of soil map or references to site location and source of cover material on published soil survey must be included.

C Ground Water Geology

1. Glacial Geology or

a. Type(s) of Deposit(s) None

b. Texture of Deposit(s) None

c. Thickness of Deposit(s) None

2. Bedrock

a. Type(s) None

b. Depth to

c. Extent or Weathering

d. Name and Age of Formation(s)

a. Depth to ground water 45 feet ; 1086 feet

(1) How determined boring

(2) Seasonal variation 5 feet

(3) If depth to ground water cannot be determined, it is recommended that one boring or well near the highest elevation of the proposed site be drilled to a depth of 10 feet into the ground water or 10 feet into bedrock, whichever is deepest (maximum depth - 150 ft).

	Checkoff
(a) Locate well or boring on topographic map	x
(b) Provide complete log (description of well)	x
(c) Indicate method of drilling	Mission Dril
b. Direction(s) of Ground Water Movement	Assumed West
c. Discharge of Ground Water (Indicate on topographical map)	x
(1) Distance and direction of discharge point(s)	Unknown
(2) Name(s) of discharge point(s) (springs, streams, etc.)	Unknown
(3) Area tributary to discharge point(s)	Unknown

d. Subsurface information (detailed information is needed on subsurface conditions for proper analysis of the site. This information on soils, geology and ground water may be determined from deep cuts, borings, and wells, backhoe pits, strip mines, quarries, natural outcrops, or road or railroad cuts). Describe location, detailed description and findings and locate on topographic map, logs.

Subsurface information obtained from State Highway borings. Cannot determine points of discharge but assume is in Westerly direction through gravel layer of ground water Stratum.

e. How was information determined?

4. Surface Water

a. Flooding hazard frequency is one times in 100 years
b. Will there be a discharge of leachate to surface waters? Yes__ Nox__
c. Will leachate collection and treatment facilities be constructed? Yes__ Nox__
(1) If yes, have you applied for Waste Discharge Permit? Yes__ No__
d. Size of watershed above landfill: 2 acres
e. Rainfall - Inches
(1) Annual value 15.50 inches
(2) Peak 12 Hour value 2.74 inches Peak 24 Hour value
(3) Peak 1 hour value 1.53 inches

5. Prevailing Winds. Furnish wind rose or the following predominate value:

a. Winter Direction South Intensity 5.2 mph (mean)

b. Spring Direction South Intensity 6.0 mph (mean)

c. Summer Direction South Intensity 5.3 mph (mean)

d. Fall Direction South Intensity 4.7 mph (mean)

PART IV SOLID WASTE CHARACTERISTICS (All Sites)

A Source

	Population	Type (Description)	Present Volume (Tons)	Projected Volume (Ten Years) Tons
1. Residential	24,000	Household Waste	16,000	20,000
2. Commercial		Paper	2,280	3,500
3. Industrial		Paper & Metal Prod.	5,600	7,000
4. Agricultural	None			
5. Other (Explain)		Leaves, Brush Stumps, Etc	500	1,000

Additional comments on source, type, volume, chemical analysis of special wastes

None

B Daily Waste Quantities

	Volume	Weight
1. Estimated per capita daily waste quantities		3.88 lbs
2. Maximum daily volume or weight		81 Tons
3. Average daily volume or weight		60 Tons
4. Additional comments None		

C Daily Customer Traffic

	Number
1. Estimate number of transfer vehicles	0
2. Estimated number of municipal collection vehicles	6
3. Estimated number of private collection vehicles	2
4. Estimated commercial/industrial/special trucks	2
5. Estimated residential pickup trucks/station wagons daily	
6. Estimated residential cars	84*

7. Additional comments *A study was made during a 9 day period in which an average of 84 cars, station wagons, pickups used the landfill site per day.

PART V DISPOSAL SITES DESIGN AND OPERATION

A Detailed Plans and Maps of Disposal Site

Submit one copy of each set of plans with each set of application forms.

1. Property Line Map

   a. One map should indicate property lines of site, use of adjacent properties, all right-of-ways (fuel, power line, roads, etc.)

      (1) If right-of-way exist, Name of Owner _____

      (2) Does owner/operator own mineral rights Yes___ No___

      (3) If not, name and address of owner of mineral rights

2. Detailed topographic maps of the site should include the following. More than one map may be used to show the required information on site and within 1/4 mile perimeter of site.

	Checkoff
a. Scale 1:400 or larger	x
b. Five foot contour interval or less	x
c. Location of access roads and roads on landfill	x
d. Location of permanent fencing	x
e. Location of weighing facilities/gate attendant	x

f.	Location of existing and proposed utilities (water, sewers, electricity, gas, telephone, etc.)	x
g.	Location of right-of-ways for power lines over 1kv	x
h.	Location of discharge point of ground water	x
i.	Location and identity of monitoring wells	x
j.	Location and identity of other wells	x
k.	Direction of ground water flow (indicate all directions found)	x
l.	Fire protection facilities if beyond 1/4 mile, show on general topo	x
m.	Leachate collection and treatment facilities	N/A
n.	Employee facilities	x
o.	Equipment storage and repair buildings	N/A
p.	Salvaging facilities	N/A
q.	Buffer zone, plantings, etc.	x
r.	Location and identity of springs	x
s.	Location and identity of swamps	x
t.	Location and identity of streams	x
u.	Location and identity of fire hydrants	x
v.	Location and identity of fire ponds	N/A
w.	Diversion ditches and water control structures	N/A
y.	Lifts	x
z.	Cover stock piles	None
aa.	Other (Specify)_____	
bb.	_____	
cc.	_____	
dd.	_____	
ee.	_____	

3. Lift Design (landfill only)		Checkoff
a.	Total thickness of each lift	x
b.	Working grade of each lift	x
c.	Slope and width of working face	x
d.	Approximate time interval between lifts	x
e.	Sequence of lifts and cover usage in fill area	x
f.	Final slope sequence	x
g.	Cover supply sources	x
h.	Drainage and water control devices	N/A
i.	Other (specify)_____	

_____

_____

_____

4. Plans for Finished Site (Check each item included) — Checkoff

a.	Slope and contour	
b.		
c.		
d.		
e.		
f.		

5. Boring or test well

a.	None	
b.		
c.		
d.		

6. Leachate Collection and Treatment - Required Yes____ No x

a.	Location of collection and treatment facilities	
b.	Cross sections and elevations of collection system	
c.	Cross sections and elevations of treatment facilities	
d.	Location of discharge points of treated leachate	
e.	Comments	

7. Location of proposed ground water monitoring points

a.	Number	None
b.	Depth	
c.	Log of boring or well	
d.	Sampling method	
e.	Sampling frequency	
f.	Comments	

B General Plan of Operation. (Describe in addendum, check as completed.)

1.	Proposed landfill method	x	13.	Erosion Control	x
2.	Schedule of filling	x	14.	Traffic Control	x
3.	Site preparation	x	15.	Final cover	x
4.	Designation of unloading area	x	16.	Final slope	x
5.	Size of working face	x	17.	Revegetation procedure	x
6.	Cell construction	x	18.	Final site maintenance	x
7.	Compaction and cover practice	x	19.	Record system	x
8.	Blowing litter control	x	20.	Salvaging system	x
9.	Surface water management	x	21.	Noise control	x
10.	Dust control	x	22.	Employee facilities	x
11.	Gas venting provisions	x	23.	Vector control	x
12.	Road construction	x	24.	Other (specify)	x

PART V

DISPOSAL SITE DESIGN AND OPERATION

B. General plan of operation of the existing landfill.

The method used to landfill the existing site will be the area and trench methods with the bulk of the cover being hauled in from other areas although we have been successful in using some of the local material as cover, but it is quite rocky and it is our intention to haul in suitable soil to use as final cover. This cover will be hauled to the existing site from other City owned property.

The working face is kept to a minimum width allowing for room for the crawler tractor and at least two trucks to dump refuse at the same time. The depth of the cells run from 8 - 10 feet and are compacted by a D6C crawler tractor in two foot lifts. The refuse is dumped at the base of the slope and is pushing up continuously with the crawler tractor which is constantly compacting the refuse. We have a portable screen placed along the top of the slope to prevent the paper from blowing with a sprinkler set to keep the refuse wet to control blowing and dust control.

So far surface water and gas venting has not been a problem, therefore no provision has been made for this.

We have an asphalt surfaced road into the gate of the landfill with gravel roads from the gate to dumping site. We have directional signs placed at various locations directing people to the proper locations.

Erosion will be controlled with a grass planting after the landfill is completed with the final slope being graded to allow for proper drainage of the whole landfill area.

We are presently weighing the bulk of the refuse hauled into the landfill, but the cars are impossible to weigh at this time. We do not allow any salvaging of any type at this time.

Facilities have been provided for the landfill employees including hot and cold water, restroom facilities, electricity and telephone.

We have a continuous vector control program.

PART VI LANDFILL OPERATIONAL SUPPORT

A Equipment used in Landfill Operations

1. List Type, Manufacturer, Model Number, Age and Brief Description

One (1) D6C Caterpillar dozer - 6 years old.

Good Working condition.

B Access roads, bridges and tunnels: Roads (all weather access roads negotiable by loaded transfer and collection vehicles shall be available to the entry of the site. Minimum width for two-way traffic shall be twenty-two (22) feet, or for one-way (separate roads) a minimum width shall be twelve (12) feet. On heavily-traveled roads, an additional left hand turn storage land and an additional acceleration lane may be required.

1. Provide the following for access roads leading to site:
Road types: (1) Concrete; (2) Asphalt; (3) Gravel; (4) Dirt;
(5) Other (Specify) Gravel with oiled surface mat.

Route or Street Number	Load Limit Tons	Seasonal Restriction	Road Type
Tacoma Ave (existing)		None	5

2. Provide the following for roads on the landfill site:

Width	Length	Road Type	Location
22'	As Req	3 & 4 (all weather)	As required to route traffic to dumping location

3. Bridges (Location, Height and Weight Restrictions - Include only those leading to landfill.)

NONE

Route or Street	Name	Location	Width	Height Restriction	Weight Restrict

4. Tunnels

NONE

Route or Street	Name	Location	Width	Height

5. Other Restrictions (Curves, Overhanging Trees, Telephone Lines, Power Lines, etc.

NONE

Route or Street	Location	Alternate Route Yes	No	Description

6. Employee Facilities (WAC 248-62)

		Checkoff (Existing)
1.	Shelter	x
2.	Drinking Water	x
3.	Describe	
4.	Toilet Facilities	x
5.	Lavatories	x
6.	Showers	No
7.	Sewage Disposal	x
8.	Screened	x
9.	Heat	x
10.	Lights	x
11.	Other (Explain)_____	

C Control Program (Briefly describe program - be specific if chemicals or pesticides are to be used).

1. Rodent Control As Needed - Rat Poison
2. Fly Control Daily Cover
3. Bird Control Daily Cover
4. Dust Control Watering and Planting Vegetation
5. Odor Control Chemical Deodorant
6. Noise Control Mufflers on Equipment
7. Other (Specify) None

D Fire Protection

1. Fire Department (Name and Address - Telephone) City of Walla Walla Station Roosevelt & University (525-4580)

   a. Distance from site One Mile

2. Pond

   a. Location None

   b. Volume of water _____ Elevation _____

3. Soil Stockpile

   a. Location None
   b. Volume _____

4. Water Under Pressure

   a. Location At Landfill Site
   b. Owner City of Walla Walla
   c. Volume of Water _____
   d. Pressure 100 psi
   e. Distance to Fire Hydrant _____

5. Comments _____

E Public Utilities

	Yes or No On site	Yes or No Off site	Distance from Site	Date Available
1. Light	No	Yes	1/4 Mile	*
2. Water	Yes	Yes	1/4 Mile	
3. Sewage	No	Yes	1/4 Mile	
4. Telephone	No	Yes	1/4 Mile	
5. Other (Explain)				

*No Public Facilities are planned at the landfill site other than drinking water.

F Weighing and Measuring Facilities

1. Scales

   a. Description Truck Scales
   b. Location At Landfill Entrance
   c. Charges None

2. Other (Specify)

   a. Type None
   b. Description _____
   c. Location _____

G Records System (See Guide in Instructions) Yes x No

Use is made of the record system developed by the City Sanitation Department.

PREPARED BY City Engineering Department
City of Walla Walla
P. O. Box 478
Walla Walla, Washington 99362

E. Fire Protection

1. Fire Department (Name and Address - Telephone) *Walla Walla Fire Department*

12th and Poplar 525-3141

Distance from site *3 miles*

2. Pond

a. Location *N/A*

b. Volume of water *N/A*

c. Elevation *N/A*

3. Soil Stockpile

a. Location *N/A - Initial Stockpile*

b. Volume *N/A*

4. Water Under Pressure

a. Location *Monitor Well #2*

b. Owner *City of Walla Walla*

c. Volume of Water *50 gpm*

d. Pressure *60 Psi*

e. Distance to Fire Hydrant *On-Site*

5. Comments

F. Public Utilities

	On site Yes or No	Off site Yes or No	Distance from Site	Date Available
1. Light	Yes			
2. Water	Yes			
3. Sewage	Yes			
4. Telephone	Yes			
5. Other (Explain)				

Before opening

G. Weighing and Measuring Facilities

1. Scales

a. Description *To Be Purchased*

b. Location *Personnel Building*

c. Charges *Approximately 40 cents per cubic yard*

2. Other (Specify)

a. Type N/A
b. Description -
c. Location

H. Records System (See Guide in Instructions) Yes X No

Daily Truck Weight Record
Weekly Labor Record
Daily Activity Summary
Operating Cost Record
Facility Cost Report
Total Cost Report
Cost and Revenue Summary

PREPARED BY *Norman L. Skiles*

City Engineer

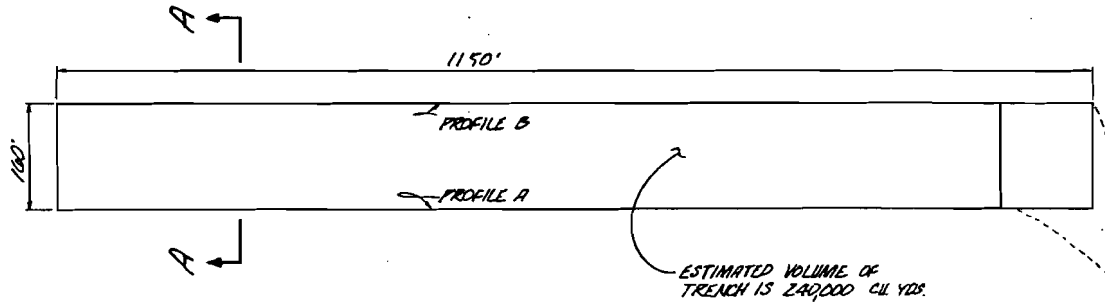
P.O. Box 478

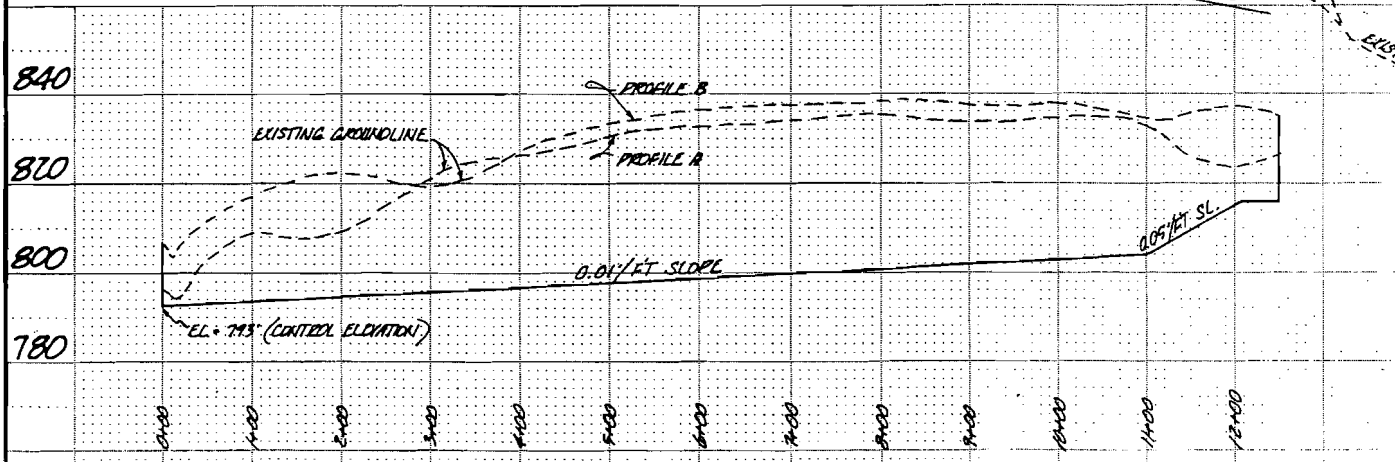
Walla Walla, Washington 99362

DATE *January 12, 1977*

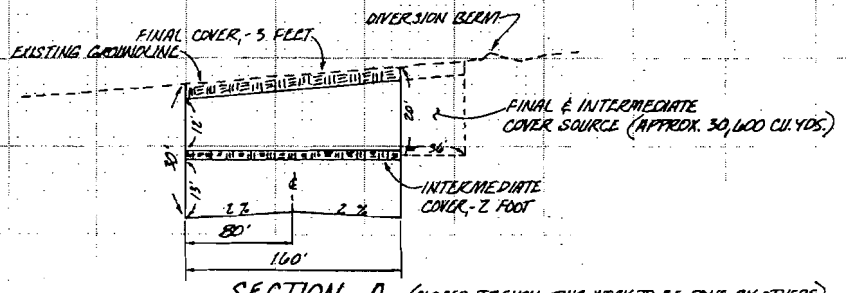
NOTE:
PROFILE TAKEN FROM TOPOGRAPHIC AERIAL PHOTO MAP DATED 1979 & SURFACE ELEVATIONS HAVE BEEN RAISED AN UNDETERMINED AMOUNT FROM PREVIOUS TRENCHING OPERATIONS. ACTUAL TRENCH DIMENSIONS WILL VARY AS REQUIRED TO MEET COVER NEEDS AT TROSLER ROAD.

TRENCH PLAN
(SUDBURY COVER SOURCE)





TRENCH PROFILE
(SUDBURY COVER SOURCE)



SECTION A (CLOSED TRENCH - THIS WORK TO BE DONE BY OTHERS)

NO.	REVISION	BY	DATE

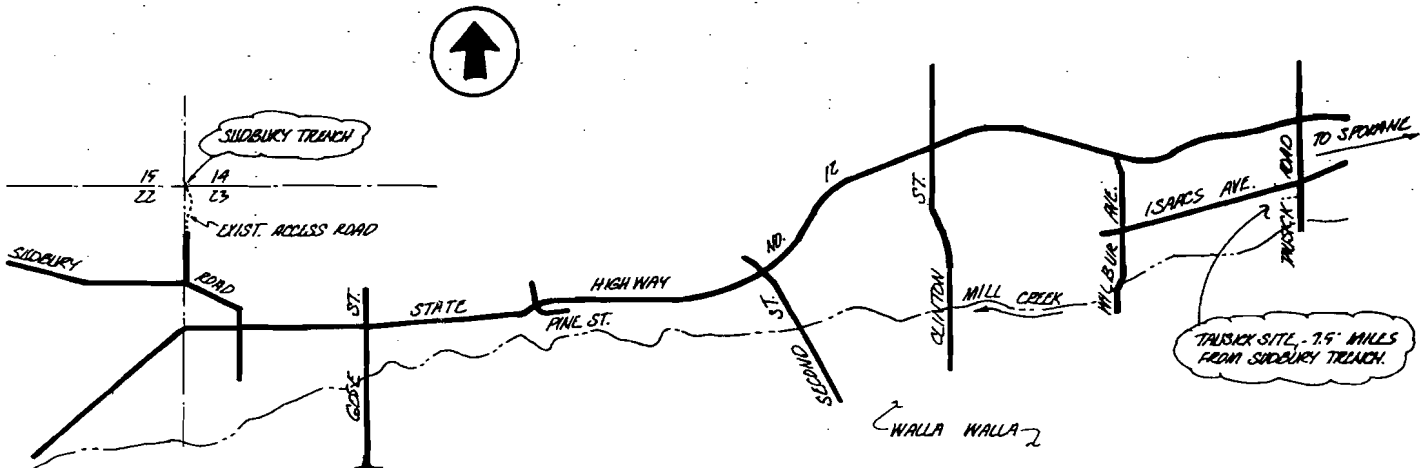
DESIGNED
DRAWN Kathy McFarling
CHECKED
APPROVED

AS BUILT DATE 7-6-87
SCALE HORIZ. DO NOT SCALE
VERT.
FILE NO

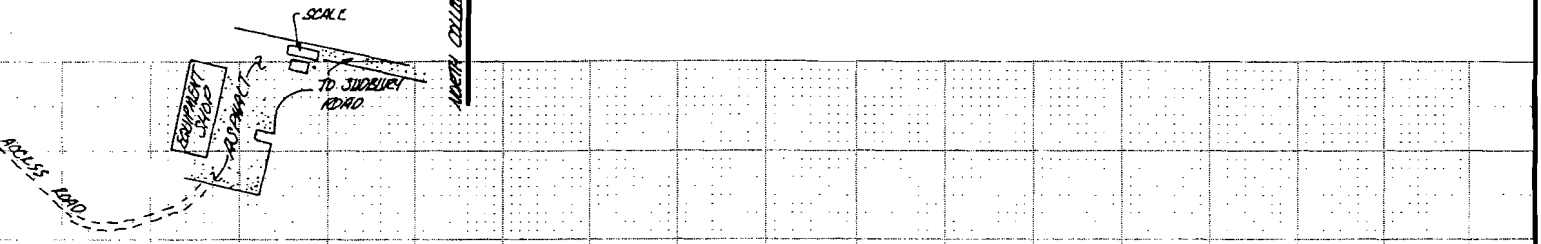
CITY OF WALLA
PUBLIC WORKS / ENG
PO BOX 478
WALLA WALLA, WASHING

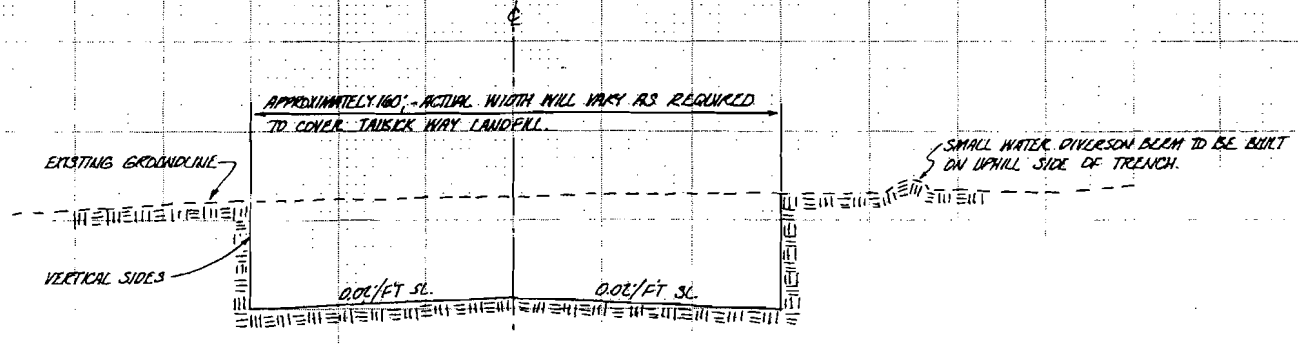
PLAN
NOTE BOOK
No.

PROFILE
NOTE BOOK
No.



VICINITY MAP





SECTION A (BY THIS CONTRACT - HAUL TO TAUSICK WAY LANDFILL & COMPACT)

DUANE L. SCROGGINS — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

LLA ERING	SUDBURY TRENCH FOR COVER DIRT SOURCE	TAUSICK WAY LANDFILL - POST CLOSURE MAINTENANCE	8 OF 8 DWG

City File
6-20-88

CITY OF WALLA WALLA

SUDBURY ROAD LANDFILL

OPERATING PLAN

OPERATING HOURS

The landfill is open to the public seven days each week from 8:30 a.m. to 4:00 p.m. except the landfill is closed for holidays---New Year's Day, Memorial Day, 4th of July, Labor Day, Veterans Day, Thanksgiving Day, and Christmas.

SITE SUPERVISION AND ACCESS

Sudbury Road Landfill will normally be continuously supervised when open to the public by scale house/gate attendant and one or more operators at the active face. At certain low volume periods, there will be no equipment operation if the incoming waste can be deposited in a drop box transfer station located near the gate. In addition, the Wastewater Superintendent in charge of the landfill makes daily inspections of operations.

Access to the site is controlled by two gates, one electronically operated from the scale house and the second at Sudbury Road will be closed and locked when the landfill is closed to the public.

COMMUNICATIONS EQUIPMENT

Telephones are located at the scale operations building. Pickups are equipped with FM radios on City Public Works frequency in contact with base stations.

TRAFFIC CONTROL

Traffic control at the site should be performed by means of signs, safety cones and direction by the scale attendant and operators.

PERMANENT ACCESS ROAD

A permanent paved road provides access to the landfill from Sudbury Road. The permanent road is a two-lane road with a gate at Sudbury Road and an electronic gate in view of the scale house.

OPERATING EQUIPMENT

The equipment utilized at the City's landfill includes:

1) Compactor
   --826C Caterpillar (1984) - one
   --Backup - none

2) Bulldozer
--D6C Caterpillar (1975 used) - one
--Backup - rental

3) Scraper
--16 CY John Deere PDC (1982) - one
--Backup - rental

4) Front End Loader
--W9B Case (1967) - one
--Backup - City fleet

5) Pickup
0331 Chevrolet 3/4 ton (1985)
0510 Chevrolet - Utility (1984)

6) Dust Control
--1,200 foot deep well - 8", 125HP pump and 60 HP booster pump
--5,600 feet buried 8" main
--Cascade reel irrigator w/1,200 feet poly "hose" and 170 gpm "gun"

All City equipment is regularly maintained by City Garage staff under an Equipment Pool program that provides funds for replacement except dust control equipment. Major repairs involve outside mechanics and specialty shops. When the City replaces its present compactor it is planned to keep the unit in reserve for emergencies and breakdowns rather than trading or selling the unit.

OPERATING PERSONNEL

The Sudbury Road Landfill staffing involves the following positions:

Scale House: One full time attendant
One permanent part-time attendant

Landfill - Operator: Landfill foreman/operator, full time
Heavy equipment operator, full time

Landfill - Environmental, Supervisory, Planning, Administration, Engineering:

Wastewater Superintendent, 6 mos.
Wastewater Laboratory Technician, 4 mos.
Wastewater Staff, Operator Relief, Maintenance, 2 mos.
Public Works Director, in responsible charge
City Engineer and Staff, engineering services

WASTE PROCESSING

Minor Operations - Transfer Station

The scale house attendant shall direct all automobiles and lightly loaded pickups to the four drop box transfer station provided near the scalehouse. An equipment operator shall provide that only one or two drop boxes have their gate left open for the public until the drop box is nearly full before allowing deposition of waste in another drop box. The equipment operator shall notify the collection supervisor that when drop boxes are ready to be hauled to the landfill active face for ultimate disposal. All landfill operating personnel shall observe safety practices and adherence to warning signs notifying the public of dangers associated with utilizing the transfer station.

The scale house operator will note all vehicles. The landfill reporting process includes an average unit weight for each vehicle using the drop boxes. The weight is derived by weighing the drop boxes and averaging per number of vehicles. Vehicles carrying less than 500 pounds are not weighed.

On certain Sundays and light waste receiving days there will be no utilization of the active face and no staffing of the active face. Scale operator will direct all vehicles to the transfer station. When usage becomes sufficiently great, the master plan provides for additional drop boxes. The landfill operators will periodically sweep and clean the transfer station loading and unloading area.

Minor Operations - Asbestos Disposal

At the request and insistence of the Department of Ecology (Pasco, Air Quality) and local contractors, the City of Walla Walla provides for asbestos disposal as long as it is not inconvenient. We are assured there are no environmental problems with asbestos, and inert mineral, as long as the material does not become airborne. A special trench disposal site has been provided for asbestos disposal to comply with USEPA and Washington Department of Ecology regulations. The scale house attendant shall note that asbestos is bagged or otherwise protected from being airborne by double wrapping, etc., in compliance with USEPA manual supplied at the scale house. The scale house attendant shall direct the driver to the special asbestos disposal area and notify the equipment operator. The equipment operator shall observe the unloading of the asbestos and provide daily cover with a D6 bulldozer provided. Extreme care shall be taken to not rupture any of the protective coating of the asbestos wrappings.

Minor Operations - Animal Disposal

The Sudbury Road Landfill provides a special trench for animal disposal from various veterinarian offices, pound, and hobby

farms. Scale house attendant shall direct anyone who is disposing of animals to the special trench provided. The backhoe is typically used to provide daily cover to eliminate fly and odor problems.

Minor Operations - "White Goods", Salvage and Recycling

When the scale house attendant notes a waste disposer carrying white goods (large appliances) or other readily salvageable metals as the primary constituent in the waste, the attendant shall direct the disposer to deposit the material in a special site located near the scale house for storage of white goods and salvageable materials. A salvage operation from Albany, Oregon, has historically passed through the area, picking up such materials when markets can return him a profit. Typically the operator comes through this area on an annual basis. When market conditions are such that it is not cost effective to salvage these materials, and they have sat awaiting disposal for more than 12 months, the materials shall be disposed of in a regular manner in the landfill.

There are signs posted at the landfill directing landfill users to the various recycling centers available for private industry in the area.

Salvaging material from the working face shall not be allowed at the Sudbury Road Landfill.

Primary Operations - MMSW Handling

Over 95% of the waste delivered to the Sudbury Road Landfill is mixed municipal solid waste transported to the site by commercial and public garbage disposal services and contractors from Walla Walla County and Columbia County. The scale attendant directs the operators to the active face of the landfill over temporary roads provided which are well used and self evident or are well signed.

Current operations and disposal methods are by a trench disposal method. The refuse unloading area is kept as small as practicable and close to the active face. The material is spread and compacted by means of a landfill compactor. The compactor size was chosen so that it would operate generally four hours per day and provide adequate compaction. The current day's waste is spread on a slope not to exceed 33% and at depths of approximately one to two feet and continuously compacted. At the end of each day the active face is covered with a thin layer of earth, earth mixed with garbage, or waste not subject to dispersal by winds. Cells shall not be extended more than 12 feet in height. Periodically (not to exceed three days) earth from the next trench to be utilized for waste disposal is brought to the active face to provide a temporary cover of six to twelve inches of soil which is spread and compacted by a compactor.

Refuse delivered to the site will be spread and compacted in layers within a confined area. The compacted waste will be covered with a continuous layer of material. Compacted volume of waste and cover materials constitutes a cell; typically a cell will not exceed twelve feet in height. The dimension of the cell depends on the quantity of incoming waste and the compaction achieved. A series of adjoining cells constructed to the same grade constitutes a lift. It typically takes two to six lifts to fill a trench.

That portion of the uncompleted cell on which additional waste is spread is the working face and should not exceed one-half acre in size and shall be at a slope flatter than 33%. Where an additional cell is to be constructed adjacent to the side on the following day, side slopes can be maintained at the steepest possible grade to maintain the required thickness of material. Otherwise, side slopes should not be constructed steeper than 33%.

The refuse will usually be spread and compacted from the bottom of the working face slope to the top. In some situations it is preferable to dump from the top of the working face and push the waste down the bottom of the slope, depending on the direction of arrival of incoming waste. Each layer should be compacted by an adequate number of passes of the compactor so that all portions of the layer have been compacted at least twice. When a trench is completely filled an intermediate cover of approximately one foot of site material will be used to seal off the areas that are not up to final grade, but will not be receiving solid waste for more than six months. The intermediate cover material should be periodically maintained so that cracks do not appear and proper drainage is maintained.

Bench marks have been set at wells to control elevations. Recent trench excavations have been held to no less than 20 feet above the piezometric water levels determined during installation of dedicated monitoring wells in 1986.

Landfill Operation Plans

The landfill operating plans shown in the appendix are sketched to suggest a land utilization plan. A description and capacity of each area follows:

Area	Comment
Overlay 1	
1&2.	Operated from 1977 to about 1980. No compaction equipment on hand.
3.	Operated from 1978-79 and 1980 to 1986. Some reports trench excavation uncontrolled.
4.	Operations from 1986 to 1988

Temporary cover 1988-89.

5. Asbestos disposal, operated from 1985 to conclusion of need, circa 2350.

Overlay 2

5. Asbestos disposal, continued operation.

6. Trench dug in fall 1987. Bottom elevation raised based on groundwater elevation after stabilization from prezometric head. Calculated to last four years to 1991.

7. Seven years life to elevation 845 +/- may use Area 8 first depending upon timing of purchasing Burlington Northern right of way.

8. Thirty year life to elevation 855.

Overlay 3

9. Ten year life to elevation 855.

10. Sixteen year life to elevation 845.

11. Four year life to elevation 848.

12. Eleven year life to elevation 840.

13. Twenty year life to elevation 848.

14. Excavate for Area 13 cover.

Overlay 4

15. Seventeen year life. Continue excavating trench for Area 16cover; then fill to complete Area 16 pyramid.

We have now reached the year 2106.

16. 215 year life, area fill method or/6:1 side slope to elevation of "pyramid" top @ 1050.

We are now at the year 2321.

17. Seven year life.

18. Eight year life and close landfill in identified area about2340AD.

We can continue to adjacent City-owned areas. To accommodate this plan, there are several parallel actions involved, which include:

1. Sludge management. The City has set long range plans to construct a vacuum assisted sludge drying bed at its wastewater treatment facility. We will evolve to a dry transport process and plan to deliver the dried sludge resource to agricultural enterprises. Some specific sites are already being utilized.

2. Spray farm operations. When the spray farm was first constructed, design and disposal were reportedly based on a June to October use schedule. The usage is almost year round now, with some evidence that raises concerns about groundwater impacts. If a year round disposal process is required, more land and added processing (lagoon storage?) may be required.

3. Resource recovery. If electricity rates return to 7 /kwhr, then it may become economically viable to consider incineration or other state of the art waste disposal process that can extend the life of the landfill even further.

4. Liners and compliance with WAC 173-304. The City has installed weather stations and is in the process of collecting soil data (e.g., in place density and permeability) on recent excavation. It will take three years to get correlation; therefore, the City will:

   a) Seek a variance to extend compliance date from November 1989 to at least November 1991 to accumulate a site specific data base.

   b) Seek a variance from liner requirements based on that data.

   c) Seek a variance from cover requirements based on that data. This is an extremely minor technical variance as tests already demonstrate on-site soil has a 9.5×10^{-6} cm/sec permeability factor which, for practical purposes, complies with 1×10^{-6} cm/sec specification (which was arbitrarily selected to begin with). The cost of mixing soil with bentonite through a pug mill was bid at about $25 per cubic yard at Cedar Hills Landfill.

      The Final Report, Sudbury Road Landfill Utilization Plan for City of Walla Walla, 1987, is referenced here for expansion of near term operating details.

5. Closure plan specified in WAC 173-304 for 1988 will not be completed or even attempted until site specific data is gathered under (4) above. A variance for the closure plan requirements of WAC 173-304 will parallel liner and

related standards. It makes no sense to consider a "closure plan" before standards are established.

CLOSURE/POST CLOSURE

No formal closure process is planned until Area 18 is completed circa 2340. A variance from the requirements of WAC 173-304 will be in order. Temporary closures will be made by shaping the top of each area and applying 18" soil cover to the final daily cover of 6" to 12" to provide a 2 foot cover for interim periods. Groundwater wells will continue to be sampled as a condition of continued operation. The area will remain under City control and operate as an agricultural enterprise with inherent yearly seedbed activities that will maintain the surface integrity throughout the post closure period. Since the City will be operating a landfill in the area for years to come, equipment and materials will be available.

Stormwater Drainage Control

Stormwater should be directed away from the active portions of the landfill by means of ditches or detention ponds as warranted by the rainfall experience. In most instances rainfall is absorbed by the loessal soils in which this landfill is located without ponding or runoff.

CORRECTIVE ACTION, GROUNDWATER CONTAMINATION

If groundwater is found to be contaminated as measured by exceeding USEPA RMCL for drinking water, there are a number of actions that can be considered:

1. Since there is no potable water usage for several miles down gradient, there may be no threat to human health.

2. The landfill is adjacent to vacant wheatland. At current land values, a cost effective action would be to simply purchase land and move the point of compliance.

3. Programs such as depression point pumping are possible with transport to a wastewater treatment plant or return to the land through spray farm operation. It would be necessary to perform an engineering analysis.

4. Municipal water supplies are well protected, as indicated by geohydrological studies on file with Washington Department of Ecology as part of prior activities in the area.

LEACHATE AND GAS COLLECTION EQUIPMENT

No leachate or gas collection equipment is utilized at this site. A vertical shaft connected to a horizontal drain line at the downgrade west end of Area 3 shows no leachate or moisture at this time. Low rainfall coupled with deep loess deposits seems to combine to minimize problems.

The City is preparing to seek a variance to these requirements on the following time frame:

1) In 1989, seek a variance to the November 1989 date for compliance until November 1991 to:

   a) Complete weather data study. It is quite likely the area will average less than 12" rainfall most years, thus will not need a variance at all, just vadose monitoring. It will take three years data to get correlation.

   b) In 1991, seek a variance for liner, cover, etc., requirements based on engineering study.

SITE SAFETY PLAN

Fire Control

The Sudbury Road Landfill is located within the corporate city limits of the City of Walla Walla and is served by a full time, professional Class III Fire Department of the City of Walla Walla. Response time from Fire Station 1 is generally less than five minutes. Ambulance and related fire safety equipment is housed at Fire Station 1 at 12th and Poplar Streets in the City of Walla Walla. This is located approximately two miles from the Sudbury Road Landfill. The Fire Department can be accessed through a 911 system by dialing 911 on the telephone. An alternative method of contacting fire crews is through Public Works Department FM radio systems.

In case of fire, the local Fire Department should be notified. Secondly, the Public Works Department should be notified by radio to provide additional manpower resources should the need arise. The first method in an attempt to extinguish the fire is to spread soil over the burning material.

Fire extinguishers are located in all buildings at the landfill site and all pieces of equipment. These fire extinguishers are checked annually to assure readiness in case of fire.

Additional Safety Measures

Landfill operation staff is trained to address emergency situations that could occur at the landfill. First aid kits are provided. All landfill operators are trained and carry an industrial first aid card issued by the Department of Labor and Industries.

In case of explosion, dial 911 to dispatch Fire Department, Walla Walla County Health Department, Water Pollution Control Superintendent, and Public Works Director. In case hazardous material is brought to the landfill, contact Water Pollution Control Superintendent, Walla Walla County Health Department, Department of Ecology. In case of severe injury, contact 911, ask for ambulance dispatch; contact Wastewater Pollution Control Superintendent and Public Works Department. The emergency telephone number should be located near each telephone at the landfill. Emergency numbers should list the following:

Fire and Ambulance - 911
Police - 911
Walla Walla County Health Department - 527-3290
Washington State Department of Ecology - 509-456-2926

All federal, state, and local safety requirements should also be adhered to by operating personnel. Safety plan should be updated annually by operations personnel to insure that telephone numbers and addresses are current.

OPERATIONAL RECORDS

All landfill is weighed by one means or another before being deposited at the active face of the landfill. Daily records are maintained and placed into the main frame computer at the City of Walla Walla Finance Department. Reports are prepared to show daily and annual tonnage by major users.

Any incidents that might occur should be noted on the City's incident reporting form. The site will be periodically inspected by the Walla Walla County Health Department. In addition to these inspections the Water Pollution Control Superintendent or his representative will inspect the site daily to identify any problems that need correction. The Public Works Director and City Engineer will periodically visit and inspect the site to identify problems that need correction. The bound log book shall be kept at the maintenance facility to note areas filled, major maintenance performed, significant site activities, and other notable information regarding operation inspection of the landfill. The date of all entries and initial of the person making the entries should be included.

DUST CONTROL

Temporary roads require dust control during summer months. The City has a Cascade Irrigation System to sprinkle areas needing dust control, especially in the unloading area and working face. Permanent access roads are paved; temporary access roads are graveled and watered with a water truck. These roads are maintained to keep the dust to a minimum.

VECTOR CONTROL

Rodents and other vectors are controlled at the landfill through thorough compaction of the solid waste, through working face size reduction, and through use of interim cover. Annual inspections of the landfill are conducted by health authorities to identify any problems. If problems are noted, then the City is equipped to control rodents through Warfarin poison stations. Birds and flies have not been a problem at this location.

NOISE CONTROL

Noise control has not been a problem at the Sudbury Road Landfill. The site is several hundreds of feet from the nearest residence and generally in an isolated location. Furthermore, the site is in a rolling terrain and a trench method of landfilling shields equipment from any noise problem.

MONITORING

GROUNDWATER MONITORING
Sampling Frequency

Samples will be collected from the groundwater monitoring network on a quarterly basis. The frequency of collection will continue through the post-closure period or until sampling results indicate that further sampling and analysis are no longer needed. Groundwater monitoring wells are shown in the appendix.

Groundwater Testing Parameters

Data to be collected quarterly will vary throughout the life of the landfill and post-closure period. Initially basic information should be collected quarterly in conformance with the minimum functional standards (WAC 173-304-490-(2)(D)). These basic sampling constituents are referred to as primary parameters. Additional primary sampling parameters will be added as required by the Walla Walla County Health Department and as directed by sampling results according to guidelines specified in WAC 173-304-490. Parameters that may be tested periodically are referred to as secondary parameters. The secondary parameters will be tested at the request of the County Health Department.

Primary Parameters	Secondary Parameters
Water level measurements	Priority pollutants
Temperature	Volatiles (VOC)
Conductivity	
pH	
Chloride	
Nitrite, nitrate, & ammonia as nitrogen	
Sulfate	
Dissolved iron	
Dissolved zinc	
Dissolved manganese	
Chemical oxygen demand	
Total organic carbon	
Total coliform	

All tests of groundwater monitoring should be reported upon verification of accuracy by splits to the Walla Walla County Health Department.

Sampling and Testing Procedures

Groundwater monitoring wells shall be sampled by personnel from the Walla Walla Wastewater Treatment Plant laboratories who are well experienced at sampling processes. Sample collection, observation, and storage prior to testing will follow established industry standards as specified in Standard Methods.

Samples will be analyzed in the Walla Walla Wastewater Treatment Plant laboratory using standard methods with splits to certified laboratories in the Tri-Cities (United) and Spokane (ABC).

Chain of custody procedures will be followed on all groundwater sampling. This documents the origin of sample containers from sample collected through analysis. Certain tests will be made at the well head, such as temperature and pH to minimize any impacts of transportation and delays in testing procedures.

SURFACE WATER MONITORING

No surface water monitoring stations are necessary at the Sudbury Road Landfill. There is no evidence of any runoff. A complete weather station has been installed at the maintenance facility as part of an evidentiary process seeking a variance to the requirements of WAC 173-304. The average annual precipitation map is not site specific. It will, however, require a minimum of three years site specific data for statistical correlation.

METHANE GAS MONITORING

Methane gas has not been a problem at the Sudbury Road Landfill. On-site buildings are checked periodically for presence of methane

gas as well as visual inspection of the perimeter for any evidence of problems. When an area of the landfill is closed methane gas wells may be placed near the boundaries of the landfill.

WEATHER MONITORING

The City installed a recording rain gauge at the scale house February 1987. It will take three years' data to obtain correlation with USC&GS records; however, first year readings were under 12" rainfall. Thus, the site may be in an arid region and not require a variance process.

Additional weather and cover permeability data will begin mid-1988 at the City's closed Tausick Way landfill site.

LEAKS, ACTION

WAC 173-304-405(2)(e) requires verbage as to correcting leaks. It is assumed this action is the steps necessary to correct leakage at the toe or through the cover of landfills operated under the area method. The Sudbury Road Landfill is primarily a trench method operation and has experienced no leakage in the eleven years of operation, including those areas filled under an area method of disposal.

Furthermore, the Sudbury Road Landfill is sited on deep loessal soils with average permeability at 80% relative density (standard proctor) of 9.5×10^{-6} cm/sec and a rainfall of perhaps 10"-14" per year in a high evapotranspiration rate climate. Thus, rainfall is not likely to seep through a two foot cover to cause any leakage.

This natural available resource is our first line of defense---prevention. In the unlikely event leakage occurs, standard procedures of containment and depression point pumping to spray back on the surface plus placing additional cover would be employed.

Also, the Sudbury Road Landfill is located in a semi-arid wheatland. No one inhabits the area down gradient for several miles, so there would be no immediate public health hazard. As the land is less than $700 per acre, a secondary line of defense is to purchase additional land and retain the problem on City-owned lands.

br
SUDBOPER

References

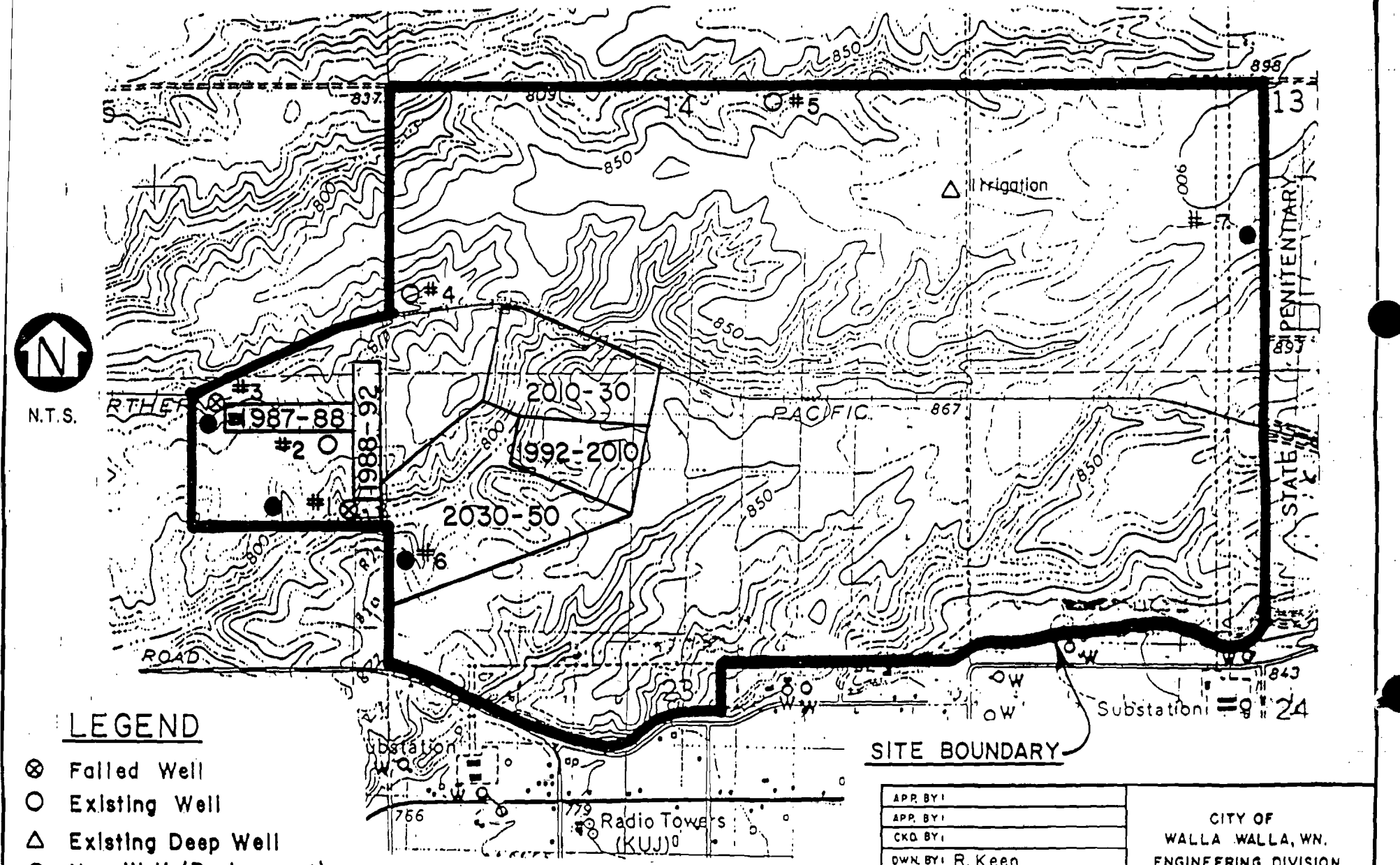
1. Anderson-Perry & Associates and Norman Dahl & Associates, Sudbury Road Landfill Utilization Plan for City of Walla Walla, December 1987.

2. Anderson Perry & Associates, Solid Waste Collection Study for City of Walla Walla, 1987.

3. Anderson Perry & Associates, Solid Waste Management Plan for Walla Walla County, March 1987.

4. CH2M/Hill, Sludge Utilization Plan, City of Walla Walla, September 1982.

5. Washington State Department of Ecology, WAC 173-304, Minimum Functional Standards for Solid Waste Handling, 1985.



LEGEND

- ⊗ Failed Well
- ○ Existing Well
- △ Existing Deep Well
- ● New Well (Replacement)
- Landfill Operating Areas (Projected Years)

Leachate & Methane Wells

APP. BY:	
APP. BY:	
CKD. BY:	
DWN. BY: R. Keen	
DSN. BY:	
DATE: 6-10-86	

CITY OF
WALLA WALLA, WN.
ENGINEERING DIVISION
DEPT. OF PUBLIC WORKS

WASTE DISPOSAL SITE
LANDFILL and WELL LOCATIONS

FILE NO.	PROJECT NO.	SHEET 1 OF 2

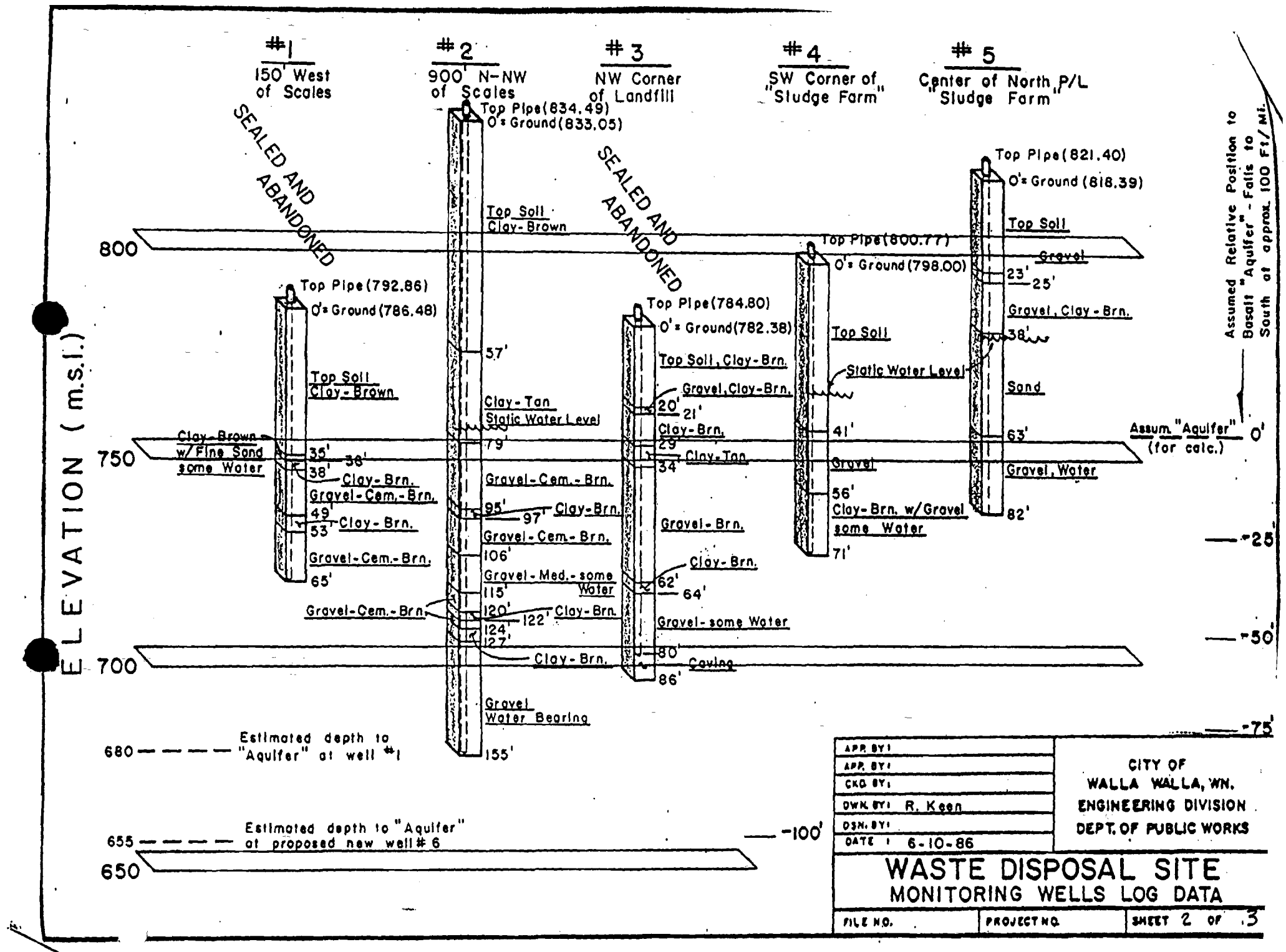
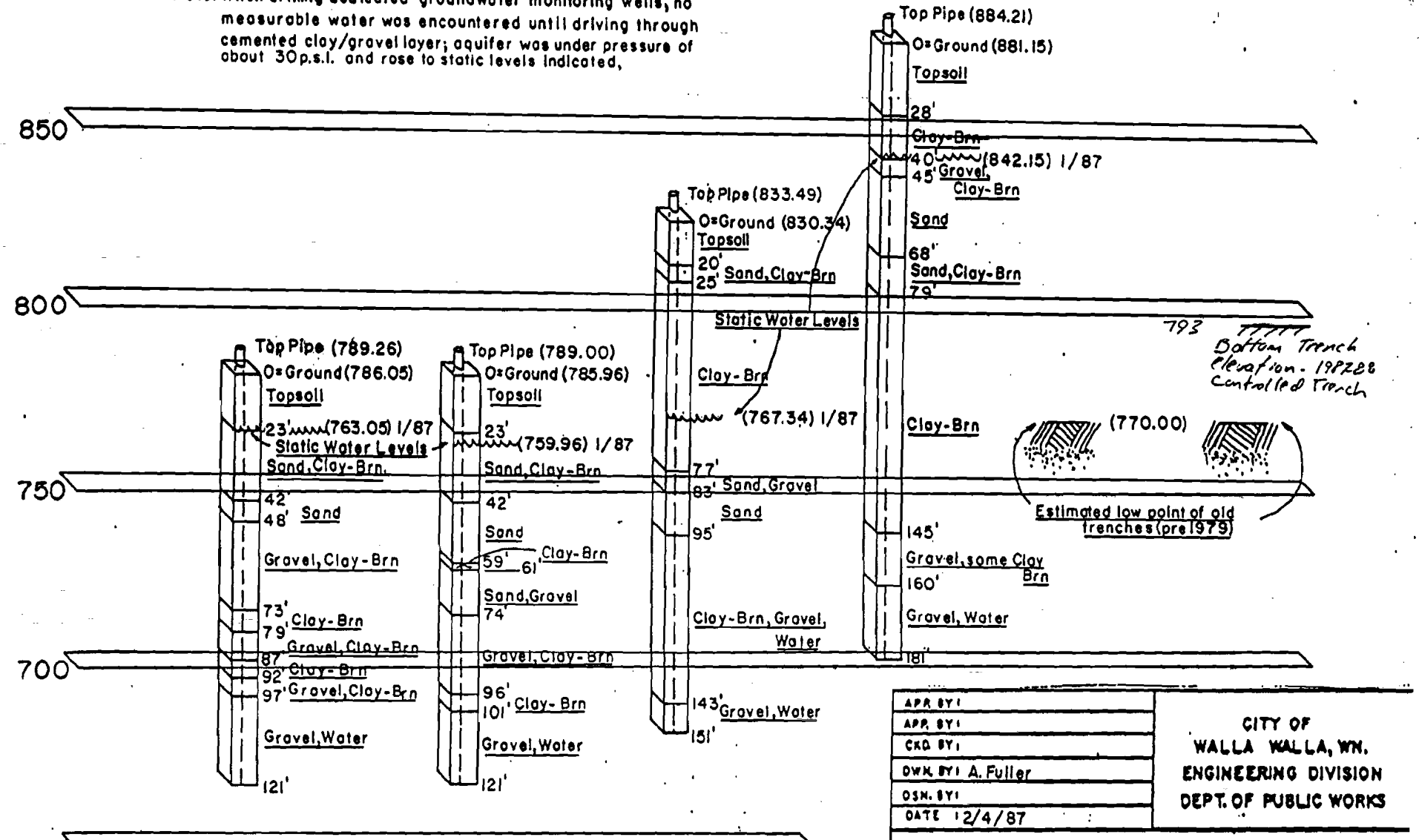

#1
150' West of Scales
SEALED AND ABANDONED
Top Pipe(792.86)
0'= Ground(786.48)
Top Soil
Clay-Brown
Clay-Brown w/Fine Sand some Water
35'
38'
36'
Clay-Brn.
Gravel-Cem.-Brn.
49'
53'
Clay-Brn.
Gravel-Cem.-Brn.
65'
#2
900' N-NW of Scales
Top Pipe(834.49)
0'= Ground(833.05)
Top Soil
Clay-Brown
57'
Clay-Tan
Static Water Level
79'
Gravel-Cem.-Brn.
95'
97'
Clay-Brn.
Gravel-Cem.-Brn.
106'
Gravel-Med.-some Water
115'
Gravel-Cem.-Brn.
120'
122'
Clay-Brn.
124'
127'
Clay-Brn.
Gravel Water Bearing
155'
#3
NW Corner of Landfill
SEALED AND ABANDONED
Top Pipe(784.80)
0'= Ground(782.38)
Top Soil, Clay-Brn.
Gravel, Clay-Brn.
20'
21'
Clay-Brn.
29'
34'
Clay-Tan
Gravel-Brn.
Clay-Brn.
62'
64'
Gravel-some Water
80'
Caving
86'
#4
SW Corner of "Sludge Farm"
Top Pipe(800.77)
0'= Ground(798.00)
Top Soil
Static Water Level
41'
Gravel
56'
Clay-Brn. w/Gravel some Water
71'
#5
Center of North P/L Sludge Farm
Top Pipe(821.40)
0'= Ground (818.39)
Top Soil
Gravel
23'
25'
Gravel, Clay-Brn.
38'
Sand
63'
Gravel, Water
82'
ELEVATION (m.s.l.)
800
750
700
680
655
650
Estimated depth to "Aquifer" at well #1
Estimated depth to "Aquifer" at proposed new well # 6
Assumed Relative Position to Basalt "Aquifer" - Falls to South at approx. 100 Ft/Mi.
Assum. "Aquifer" (for calc.)
0'
-25'
-50'
-75'
-100'
APR. BY:
APR. BY:
CKD. BY:
DWN. BY: R. Keen
DSN. BY:
DATE: 6-10-86
CITY OF WALLA WALLA, WN.
ENGINEERING DIVISION
DEPT. OF PUBLIC WORKS
WASTE DISPOSAL SITE
MONITORING WELLS LOG DATA
FILE NO.
PROJECT NO.
SHEET 2 OF 3

Figure 1.2

#1 #3 #6 #7 A B

Note: When drilling dedicated groundwater monitoring wells, no measurable water was encountered until driving through cemented clay/gravel layer; aquifer was under pressure of about 30p.s.i. and rose to static levels indicated.



APP. BY:	
APP. BY:	
CKD. BY:	
DWN. BY: A. Fuller	
DSN. BY:	
DATE 12/4/87	

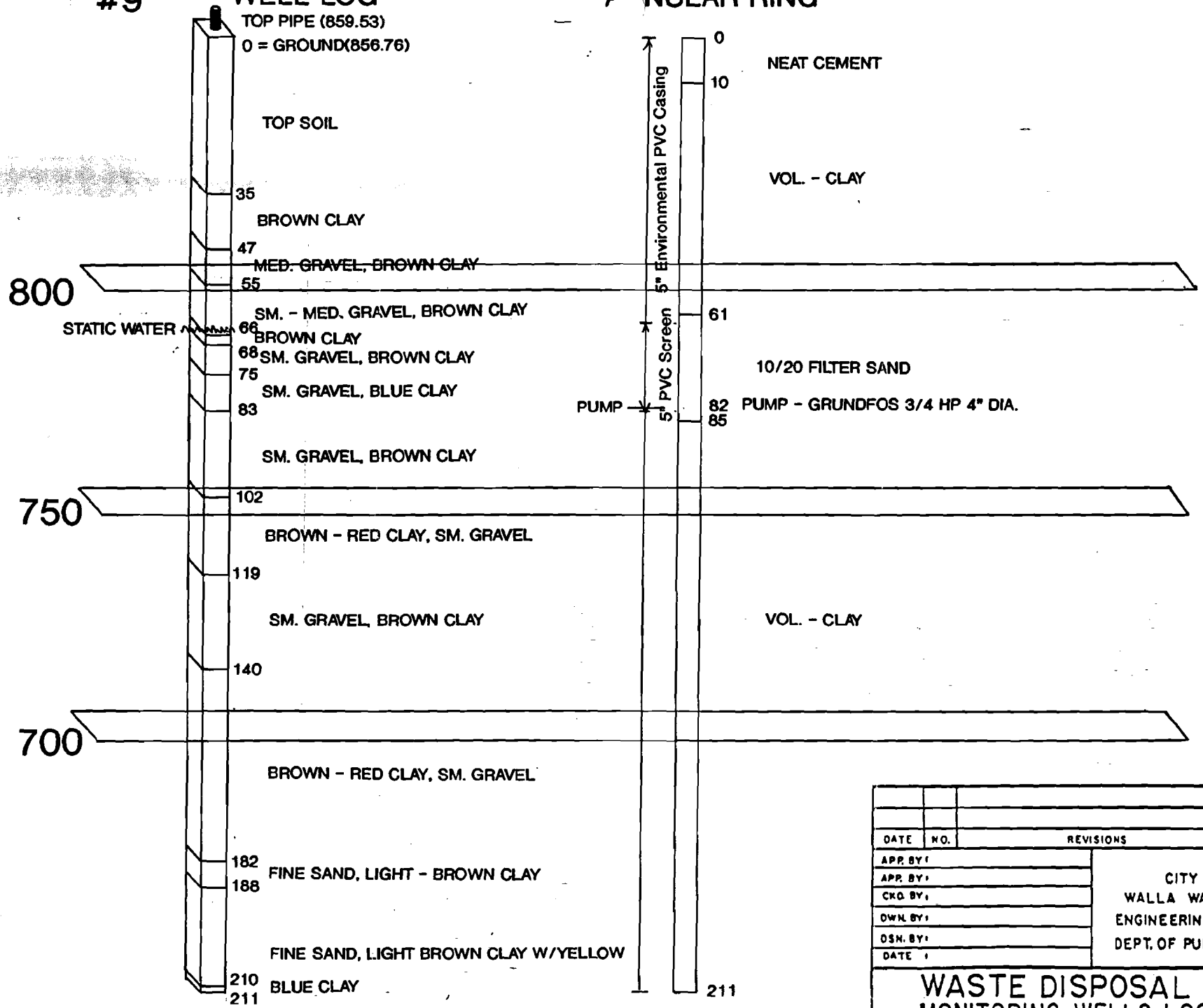
CITY OF WALLA WALLA, WN.
ENGINEERING DIVISION
DEPT. OF PUBLIC WORKS

WASTE DISPOSAL SITE
NEW DEDICATED MONITORING WELLS LOGS

FILE NO.	PROJECT NO.	SHEET 3 OF 3

FIGURE 1.3

#9 WELL LOG



ANNULAR RING

DATE	NO.	REVISIONS	BY

APP. BY:
APP. BY:
CKD. BY:
DWN. BY:
DSN. BY:
DATE:

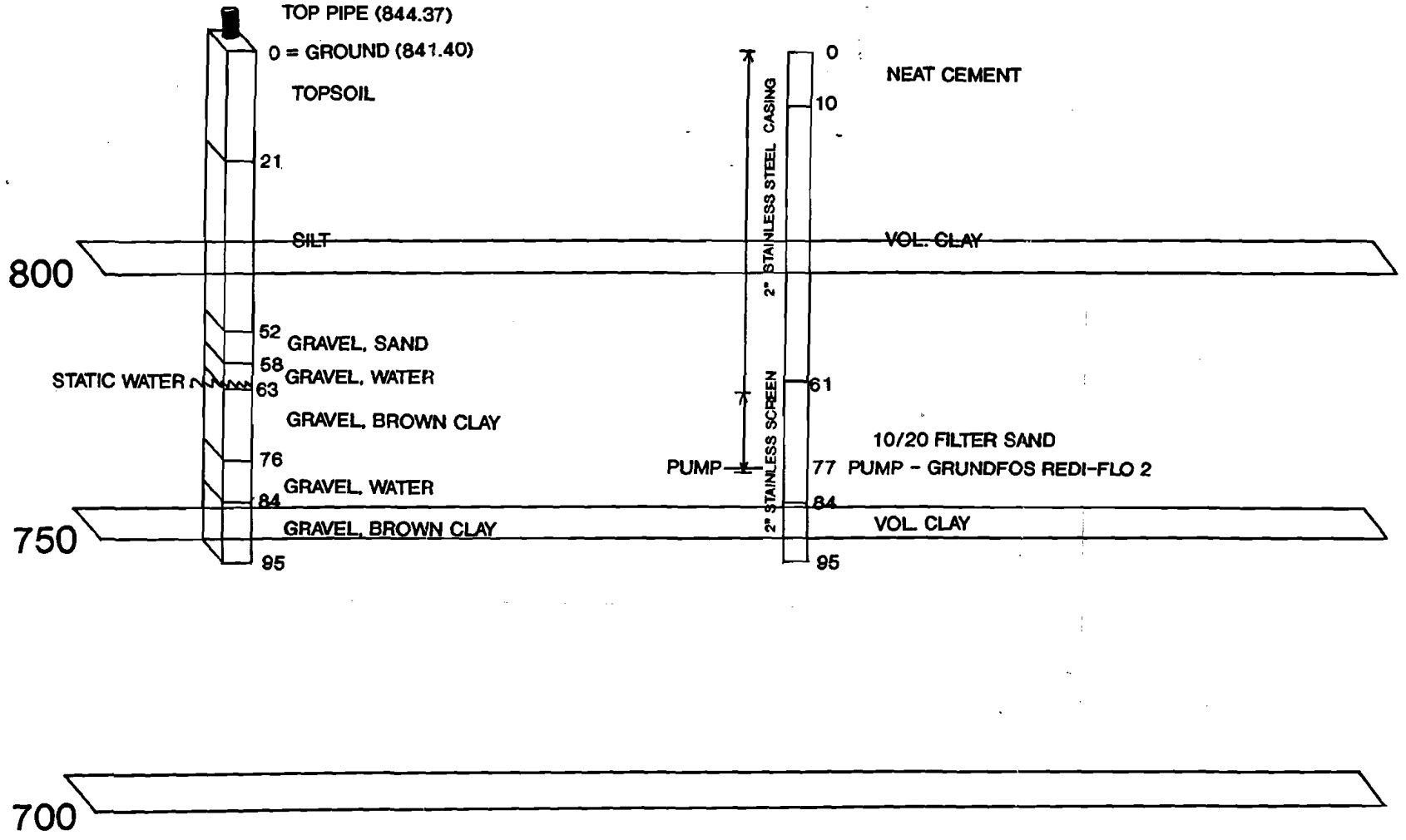
CITY OF
WALLA WALLA, WN.
ENGINEERING DIVISION
DEPT. OF PUBLIC WORKS

WASTE DISPOSAL SITE
MONITORING WELLS LOG DATA

FILE NO. | PROJECT NO. | SHEET OF

#8A

WELL LOG — ANNULAR RING



DATE	NO.	REVISIONS	BY

APP. BY:
APP. BY:
CKD. BY:
DWN. BY:
DSN. BY:
DATE:

CITY OF
WALLA WALLA, WN.
ENGINEERING DIVISION
DEPT. OF PUBLIC WORKS

WASTE DISPOSAL SITE
MONITORING WELLS LOG DATA

FILE NO. | PROJECT NO. | T OF

GEOHYDROLOGY STUDY

WASTE MANAGEMENT SITE, SUDBURY ROAD
WALLA WALLA, WASHINGTON

OUTLINE

GEOHYDROLOGY STUDY

WASTE MANAGEMENT SITE, SUDBURY ROAD
WALLA WALLA, WASHINGTON

1. PURPOSE AND CONCERN.

A. Purpose. - The purpose of the waste management study is to determine the geologic and hydrogeologic conditions that exist at the site. Having determined these conditions, determine how the waste management site effects these conditions, and determine what, if anything, needs to be altered or changed. The standards against which the waste management site conditions are evaluated are the Washington State and Federal Environmental Protection Agency regulations.

B. Present Concern. - Test well water samples tend to indicate changes in the underlying aquifer, in the "old gravels".

2. FACILITY LOCATION AND DESCRIPTION.

A. The waste management site is a composite facility consisting of a solid waste disposal area, and a waste water disposal area. The solid waste disposal area presently consists of approximately 70 acres in the SE 1/4, Section 15, and the NE 1/4, Section 22, T7N, R35E, WM. The solid waste program buries normal non-toxic waste and has a limited program for hazardous waste such as asbestos. The adjoining waste water disposal area is the SW 1/4, Section 13; S 1/2, Section 14; N 1/2, Section 23 to Sudbury Road and NW 1/4, Section 24, limited to a topographic boundary. The

waste water is the product of produce processing facilities in Walla Walla. The waste water is pumped to Walla Walla sewage disposal plant in Section 24, T7N, R35E and repumped to the described farm area. The farm area has installed a sprinkler system, with sprinkler heads on a grid of 60x80 feet. Sprinkler heads are designed for 20 gallons per minute. The distribution system on the farm is designed to control application of waste water to specific areas. No details of the design system or rates of application were given.

B. Sludge Management. - Sludge from the Walla Walla waste treatment processes is added to the processing facilities waste water system and disposed through the sprinkling system. In addition, sludge is disposed in the northwest 200 acres of Section 14, north of the railroad. Method of disposal is by injection into the soil from a specially designed truck. Total volume of sludge disposed each year was not given.

3. REGIONAL GEOLOGY.

A. Walla Walla Valley. - The oldest rocks in this region are the Columbia River Basalts which cover a large area in Washington, Oregon, and Idaho. It is sufficient to say that Columbia River Basalts underlie the Walla Walla Valley everywhere either at the surface or with depth. Since these are the known basement rocks, it is important to also know that these basalts have been greatly disturbed or distorted in the creation of the Walla Walla Valley.

B. Blue Mountains. - The Blue Mountains are an anticlinal structure that extends in length over a hundred miles in a northeast-southwest direction, and rises to elevations of 5,000 feet or more. The crest of the anticline is broad, measuring several miles in width and the anticlinal limbs decline into valleys on each flank. The basalt strata dip into the valleys in the order of one to five degrees.

C. Horse Heaven Ridge. - This structure is the south boundary of the Walla Walla Valley, separating the Walla Walla Valley from the Umatilla Valley or Basin. This structure is an anticlinal fold modified somewhat by faulting. This structure (over 40 miles in length) extends from the Blue Mountains into the pasco Basin, northwest of the Walla Walla Valley. The Horse Heaven Ridge (anticline) reaches elevations of 1600 to 1700 feet, has a rather narrow crest, with the basalt strata dipping into the Walla Walla Valley on the north side and the Umatilla Basin on the south side.

D. Touchet Slope. - This slope is a smaller anticlinal structure which forms the general northwest side of the Walla Walla Valley. The direction of dip of the strata is to the south and southeast. This structure merges with the dipping strata of the Blue Mountains.

E. From these descriptions, it is evident that the Walla Walla Valley is formed as a structural rock basin, with the rock surface in at least two areas existing below

sea level. In addition, the rock shape of the valley is triangular with the rock slopes within the triangle being irregular, and abrupt in place. The basalt strata were extruded 6 to 16 million years ago, during Miocene time. Deformation of the basalt rock strata occurred at some later geologic date, which some authors place in late to middle Pliocene time 1.5 to 3.0 million years ago. Other authors ascribe the deformation time to late Pliocene to early Pliestocene 1.0 to 1.5 million years ago. The evidence cited being the relationship of dated Pliestocene sediments to the structurally deformed basalts. In the study I have used the publication "Geology and Ground Water Resources of the Walla Walla River Basin, Washington-Oregon" dated 1965 by Mr. R. C. Newcomb as a constant reference for geologic data and well logs. This paper is also known as "Water Supply Bulletin 21" and was published by the U. S. Geological Survey in cooperation with the States of Washington and Oregon. The geologic times as presented in that paper are used as presented.

F. Old Gravels and Clays. - These materials consist of old clays deposited upon the basalts in the lower elevations of the basin. A typical log record is Bonneville Power Administration Water Well, T7N, R35E, Section 23M-1, which shows:

Surface elevation - 772 feet
0.0' to 20.0' Recent alluvium as soil, gravel, and boulders
20.0' to 124' (Old Gravels) Cemented gravels with clay lenses

124' to 463' (Old Clays) Clay - multi-colored strata; brown, blue-gray and red
463' to 515' Basalt - water bearing

The old gravels are well-rounded basalt, gravels and cobbles, in some depths cemented or indurated, and in other depths open and pervious. These gravels represent the alluvial materials deposited by the Walla Walla Valley tributary streams as they build alluvial fans into the basin. Therefore, the top elevation of these materials show a decline in the west direction, or down valley. These old clays and old gravels are lumped together as a single stratigraphic unit and are age dated as early Pliestocene time being 700,000 to 1.5 million years ago. There is no known outcrop areas of these "old clay" materials, but open pit excavations have been dug into the "old gravels".

Overlying the old clays and gravels are three types of fine-grained materials. These materials act as the cover material, and are those materials which are observed at the surface. They are not, however, all of the same age.

G. Palouse Silt (Palouse Formation). - These materials are silty clay to clayey silt and were deposited by wind as a loess. In the Walla Walla Valley, the Palouse silt is generally above Elevation 900. It is very fine-grained, and relatively impervious. The most common age date is middle Pliestocene time, 300,000 to 700,000 years ago. The Palouse silt, as loess, was deposited on the basalts at the higher elevations and on the old clays and gravels that filled the

lower basin. It is not found everywhere because it is easily eroded and removed.

H. Valley Terraces. - This is more a topographic description than a material or formation name. It represents the reworked materials from the Palouse silts and in some instances the Touchet silts.

I. Touchet Silts (Touchet Beds). - These are fine-grained materials, as light gray silt containing some lenses of sand and gravel. These materials, because of blockage in the downstream Columbia River system were deposited as flat lying sediments. The Touchet silts overly basalt, old gravels and clays, and Palouse silt and reworked Palouse silt. The highest elevations observed in the Walla Walla Valley was about 950 feet. The Touchet silts are considered late to middle Pliestocene or 50,000 to 150,000 years ago.

J. Recent Alluvium. - The sands, gravels, and boulders deposited by present stream flow comprise the recent alluvium. Generally speaking, the recent alluvium overlies the basalts and the old gravels in the active stream beds.

4. WASTE MANAGEMENT SITE - GEOLOGY AND HYDROGEOLOGY.

A. The site geology is shown on the two developed geologic profiles, which were taken normal or 90 degrees to each other. Profile "A" extends in part across the valley with a bearing of N25°W-S25°E which encounters all of the material with depth to Basalt rock. Profile "B" extends in N65°E to S65°W bearing which parallels the major drainage systems, for a distance of several miles.

B. Profile "A". - The surface materials are soils of reworked Palouse Formation grading with depth into, in place, Palouse Formation. In this location as shown, the Palouse Formation is from 40 to 50 feet in thickness and was deposited upon the "Old Gravels". The lower elevation is shown as 790 feet and the surface elevation as 850 feet taken from the topographic map. See Pictures 6, 7 and 8. This is the future disposal trench, Phase II, when the present trench is filled or completed. The trench is 200 feet wide having vertical side walls and the floor is graded with a slope of 0.01 foot per foot. This is Elevation 792 at Station 0+00, the north end, and Elevation 803 at the south end, Station 11+00 where it ramps up. Comparison of this trench design to developed geologic Profile A indicates 20 to 30 feet of Palouse Formation below the trench, overlying the "Old Gravel". These conditions could be confirmed with a backhoe pit which would also allow sampling for moisture and density or compaction and permeability.

C. "Old Gravels". - At the location of the section, the "Old Gravels" extend in depth from Elevations 790 to 660, plus or minus, a depth 130 feet. The materials comprising the "Old Gravels" are clayey gravels or gravelly clays as lenses or strata, compact and impervious; with lenses of sand, loose; lenses of gravel, loose; and lenses of clay. There does not appear to be an identifiable order of deposition. There are some indications of more than one pervious lense or strata under varying head conditions.

None of the test wells fully penetrate the "Old Gravels" although Well No. 7 is nearly so. Full penetration would allow equal sampling of all the aquifer at each test location.

D. Aquifers within the "Old Gravels" have been logged at various depths and until the aquifer is penetrated, the hole or boring, had been dry. Water was added to drilling operation to make a slurry with which to drill. When penetrated the confined water rose in the hole to elevations corresponding to the confining pressure. The following data was taken from the log records and from reading the wells on 5 April 1989:

Hole 1 - O.G. Elevation 786
Aquifer depth 97 feet, Elevation 689
Static water level 33.2 feet, Elevation 752.8
97 - 33.2 = 63.8 feet of head = 27.6 psi

Hole 2 - O.G. Elevation 834
Aquifer depth 127 feet, Elevation 707
127 - 76 = 51 feet of head = 22 psi

Hole 3 - O.G. Elevation 786
Aquifer depth 101 feet, Elevation 685
Static water level 31.0 feet, Elevation 758
101 - 31 = 70 feet of head = 30 psi

Hole 4 - O.G. Elevation 798
Aquifer depth assume bottom at 71 feet,
Elevation 727
Static water level 34.7 feet, Elevation 763
71 - 34.7 = 36.3 feet of head = 15.7 psi

Hole 5 - O.G. Elevation 818
Aquifer depth 63 feet, Elevation 755
Static water level 36.9 feet, Elevation 781.5
63 - 36.9 = 26.1 feet of head = 11.3 psi

Hole 6 - O.G. Elevation 830
Aquifer depth 143 feet, Elevation 687
Static water level 77.0 feet, Elevation 753
143 - 77 = 66 feet of head = 28.6 psi

Hole 7 - O.G. Elevation 881
Aquifer depth 160 feet, Elevation 721
Static water level 39 feet, Elevation 842
160 - 39 = 121 feet of head = 52 psi

F. "Old Clays". - At the location of the section the "Old Clays" extend in depth from Elevations 660 to 310, a distance of 350 feet. These clays are described as various colors from gray to greenish gray, to greens and blues. In addition there are occasional lenses of gravelly clays but nothing with a water bearing capacity.

G. Basalts. - Description as taken, in general, from the irrigation well log NE 1/4, SE 1/4, Section 14, T7N, R35E, W.M. Underlying the "Old Clays" at a depth of 560 feet is basalt rock, Elevation 310. The rock is hard, and dark gray in color. Approximately 100 feet into the basalt, Elevation 210, an aquifer was penetrated. The water is confined and rose in the hole to depth 200 feet, Elevation 675. Continued drilling penetrated at least three additional aquifers to a final depth of 1227 feet. Presently when measured, the irrigation well had a static water level of depth 205 feet. This is shown on the geologic sections as Elevation 670. This elevation is not high enough to feed or add water to the "Old Gravels" even if the casing leaked or was eroded through.

Profile "A" then depicts the sedimentary materials as indicated in the borings as nearly horizontal extending from Basalt rock near Looney Road, SW1/4SW1/4, Section 34, T8N, R35E to the approximate center of Section 25, T7N, R35E, W.M., a distance of 27,700 feet. The Basalt rock line

varies from Elevation 770 from Looney Road to Elevation 290 in the Arbini well located in T7N, Section 25, R35E.

H. Profile "B" depicts the material as interpreted along an extended section from near center, Elevation 800, Section 22, T7N, R35E to Section 36, T8N, R36E, W.M. at Elevation 1150, a distance of 48,000 feet or nine miles. Profile "B" indicates a rising ground slope at about one-half degree or 50 feet per mile. The underlying material as "Old Gravel" appears to conform to this slope, with the "Old Clays" deposited on the rising Basalt rock. The aquifer in the "Old Gravels" is flatter rising about 25 feet per mile through the area of the waste management site. The recharge area for the aquifers is the gravel exposures along Dry Creek, with an elevation of 1150 feet. In this area, the Basalts are the immediate underlying rock which is impervious and the water is easily introduced into the "Old Gravels" by lateral migration.

Equal opportunity for recharge exists from Mill Creek in Sections 13, 23 and 24 of T7N, R36E, approximately Elevations 1080 to 1200 where Mill Creek is flowing on alluvium overlying the "Old Gravels".

I. In both areas of potential recharge it is considered that the confirmed aquifer system remains fully charged, as evidenced by the small changes in the static water level in the record wells, and by the numerous springs which are known in the downstream area.

J. Review and Evaluation. - The log records indicate that the aquifers encountered in the "Old Gravels" are under a confined condition. If this is true, as indicated, then to infiltrate or intrude water into the aquifer requires a head greater than that recorded. surface conditions at the land fill and spray farm did not show large saturated areas of any type. Therefore it seems illogical to assume that waste water from the spray farm or seepage (leachage) from the land fill is infiltrating the aquifer. Other reasons for the indicated changes in the water sampling program should be determined. These could be the stagnate conditions of the wells, not being purged sufficiently, or not being pumped often enough and long enough to get true samples. Incrustation is the deposition of minerals on the screen and around the boring extending out into the aquifer materials. It is often hard as a solid deposit or can be soft, as a sludge or gelatin. Incrustation can cause false or misleading chemical analysis.

In order to determine the dissolved minerals causing the increased changes in the total dissolved solids chemical analysis, it is suggested that complete chemical analysis be made. Then a comparison would indicate which dissolved minerals are being deposited or increased as probable incrustation in the wells.

It is noted in reviewing the chemical analysis records for 1987 and 1988, that in 1988 the ABC Laboratories, Inc., Spokane, Washington, conducted specified tests which

duplicated tests conducted by the waste water treatment laboratory. Some variation is noted, however nothing of an alarming condition. One point is made regarding tests by the Walla Walla waste water laboratory where coliform is reported in Well No. 7 in 1987 in the 1st and 3rd quarters and in Well No. 5 in 1988 in the 1st and 4th quarters. It is my opinion that these tests represent either sampling or testing errors as I do not believe that coliform is being transmitted in the aquifer. It is suggested that when such tests are determined that new samples be obtained from the wells to verify such results.

5. SOLID WASTE DISPOSAL (LAND FILL).

A. Location. - The land fill is presently located in the NE 1/4, Section 22 and SE 1/4, Section 15, T7N, R35E, W.M. This is an area of approximately 70 acres, which abuts the railroad right-of-way along its north boundary. The land fill area is characterized as a small ridge which is bordered by intermittent stream channels on each side. The ridge trends with the valley slope NE-SW. These intermittent stream channels are incised 20 to 30 feet into the Palouse silts. Ground elevation varies from 780 feet in the erosion channel to a maximum of 830 feet along the crest of the ridge.

B. Origin. - The land fill operation began in June 1977.

C. Explorations. - The land fill area has been explored by three borings, numbered 1, 2 and 3. When completed these

borings were used as sampling wells in the water monitoring program. The geologic profile "B", Section 1, developed from these borings and other water wells indicates that the lower elevation of the Palouse silts in this area is 740 feet. The lower elevation of the "Old Gravels" is Elevation 600. This data establishes the geologic conditions for the land fill.

D. Development. - The solid waste disposal plan has been developed in three phases.

Phase I is divided into four (4) areas all contained within the described 70 acres. Area 1 is the north portion abutting the railroad as an area 450-600 feet wide and 1000-1100 feet long which was sequentially trenched to a bottom elevation of approximately 780 feet and the trench filled. The last trench in this Area 1 is now being filled. See Picture 10. In Area 1, a vent system to release generated gasses was installed from Elevation 846 to Elevation 789. This pipe system has a horizontal perforated pipe some 40 feet in length. When measured on 5 April 1989, the reading indicated the area to be dry.

Area 2 is parallel to the west boundary, and is trenched 100 feet wide and 850 feet long, with a bottom elevation of 790 feet. This trench is designated to receive "asbestos" materials and is only partially filled. This trench is to remain open for this specific purpose.

Area 3 was a topographic natural low area, Elevation 780, which received solid waste until it was filled. It is located adjacent to the mid-portion of the south boundary.

Area 4 was likewise, a topographic low area, Elevation 780, which received solid waste until it was filled. It was located south of Phase II and east of the scale house.

Therefore, Phase I, with the exception of the "asbestos" trench is being completed with the filling of the last trench. These described areas were filled in the time period from June 1977 to the present date.

Phase II is the recently excavated trench located in Section 22, parallel to the north-south section line 22-23. The trench is 200 feet wide and 1100-1200 feet in length. The trench has vertical side walls of varying height with a maximum of approximately 35 feet, and the trench floor is graded with a slope of one percent. The floor elevation is 792 feet at the north end, which abuts the railroad embankment, and 803 feet at the south end where it ramps up. See Pictures 6, 7 and 8. This trench occupies about five acres, and should hold approximately 250,000 cubic yards of solid waste. Estimated trench life is four to five years, with the trench being filled from the south to north.

Phase III is the future planning phase. It is anticipated that the NW 1/4, Section 23, adjacent to the present area, will be utilized for a period of 50 years. Arrangement for its use is described in the lease arrangement for the spray farm.

E. Review of Land Fill. - It is evident from the descriptions given that the solid waste has been buried or encased in the Palouse silts in a dry condition. That a cover soil has been placed over these solid wastes, and that 20 to 30 feet of clayey silt (Palouse Formation) exists below the trenches or natural ground elevations. It is also evident that a confined aquifer exists at a lower elevation, approximately 680 feet which is under a confining head of 22 to 30 pounds per square inch. When penetrated the confined head creates a piezometric surface varying from 750 to 760 feet in elevation which is 20 feet below the bottom of the solid waste. The solid waste disposal does not present a threat to the aquifer system.

6. WASTE WATER DISPOSAL (SPRAY FARM).

A. The spray farm is located in the SW 1/4, Section 13; S 1/2, Section 14; N 1/2, Section 23 to Sudbury Road and NW 1/4, Section 24, limited to a topographic boundary. There is approximately 900 acres in this area of which 200 acres are reserved for dry farming methods with sludge application. The spray farm was operational in 1973 and has operated since that time. However, the method and amount of waste water application has changed, or been modified.

B. Explorations. - The spray farm area has been explored by four borings, numbered 4, 5, 6 and 7. These wells are also presently being used as water sampling wells in the water monitoring program. It should be noted that all four wells are on the periphery of the farm. Wells 4

and 6 are on the west side; Well 5 on the north side; and Well 7 on the east side. The south side has no explorations and adjoins properties along the main highway.

C. Sampling of Water Wells. - To be able to evaluate the water sampling program requires some knowledge about the well construction. Originally Wells 1, 2 and 3 were constructed at the time of starting the land fill and records show water sampling for those three wells from 1979 through 1985. These wells were drilled by L. Marlott, Milton-Freewater, Oregon, and logs were not provided or available. In 1983 Harding Drilling Co., Walla Walla, Washington, drilled Wells 4 and 5 and drill logs were provided. The wells were completed by installing five-inch PVC pipe to full depth. The bottom 20 feet of both well casings were perforated using 1/2-inch drill holes on six-inch centers for 160 perforations. This means a pattern of eight holes per foot or two holes in each quadrant of the casing. Well No. 4 has a Wizard pump installed in it but it is not recorded if additional casing was added. Well No. 5 is as completed.

In 1986 Harding Drilling Co. drilled four wells which are numbered 1, 3, 6 and 7. Wells 1 and 3 are to replace original Wells 1 and 3 which were sealed. All of the new wells are described as "dedicated wells". This description generally means that these wells were all constructed to the same standard as requested by the E.P.A. The wells were drilled by cable tools using six-inch casing and were cased

to the bottom depths shown. In the cased holes was installed a 10-foot section of Johnson well screen, two-inches in diameter, and having a .010 screen slot size, which means the slot is 10/1000 of an inch. A two-inch diameter stainless steel riser pipe with threaded joints was installed to the surface. Around the well screen was placed a filter sand to ten feet above the screen. The outer six-inch casing was pulled back and Vol clay added to the outside of the two-inch riser to within ten feet of the surface. A Portland cement grout seal was added to reach the surface.

It should be pointed out that prior to the screen installation, the wells were not developed by any special technique nor were they pump tested. The testing shown on the well log is by bailing for one hour, which means a limited quantity of water was removed after completion of drilling and no water samples taken at that time.

D. Pump Installation. - Wizard Pumps were selected for use in the two-inch diameter stainless steel riser pipe. The Wizard pump is an air-actuated, bladder pump with the pump intake located at the mid-point of the well screen. The bladder section fills and is discharged out (approximately 250 ml. per pulse) by air pressure and the bladder section refills during a second phase, and the operation starts all over. With three to four cycles per minute, it takes four to five minutes to pump a gallon of water (reference 3785 ml = one gallon).

To purge the well of 50 gallons of water will take a time period of approximately four hours. However, this seems to be a reasonable time to obtain a true water sample. It is necessary to remember that these wells are sampled only four times a year.

7. FUTURE EXPLORATORY PROGRAM.

A. Well Location. - As previously noted, all of the present wells in the spray farm are around the periphery. To give a more complete sampling, a boring should be located in the central section as the NW 1/4, NE 1/4, Section 23. This location will provide data at the halfway point between Wells 6 and 7 and confirm the materials and contacts, aquifer location, and piezometric head. If necessary, a second exploratory well should be located as determined from data obtained from the first well.

B. Future Program. - In the present program the log records indicate the depth at which water was encountered and also indicates a final static water level. It leaves in doubt the fact that the boring was dry until water was encountered and that the aquifer (water strata) was under a confining head. These facts should be clearly stated on the log and not inferred. In addition the aquifer should be completely penetrated to indicate quantity and total head. Partial penetration may not give total head. In an alluvial deposit such as these "Old Gravels", the full depth of the gravels should be penetrated or explored for possibly more than one aquifer.

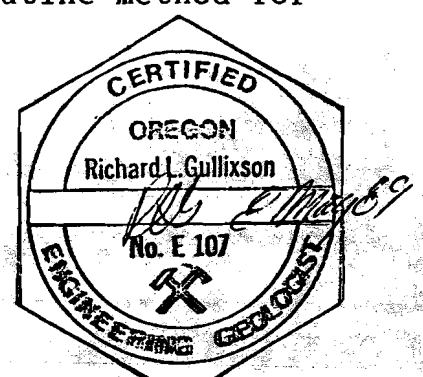
The exploratory boring should be sampled, and samples tested for material types to provide confidence in the log record. Sampling programs should be defined in the drilling contract as to method and equipment, and how samples are stored. After drilling is completed the exploratory well should be tested for yield, and since the end product is to be a sampling well in a monitoring program, it should also be sterilized. Therefore the testing should be by pump to establish the yield and drawdown and the well chlorinated and the chlorine pumped to specified discharge levels. At completion the well should be capped with a tack welded plate, until ready for use.

8. CONCLUSION.

It is my opinion that seepage and/or waste water from either the land fill or the spray farm is not entering the aquifer in the "Old Gravels". That indicated changes in the aquifer water sampling program are due to water well conditions, pumping methods or sampling methods.

9. RECOMMENDATION.

It is recommended that one or two additional water wells be constructed to substantiate subsurface geologic conditions. Using the newly constructed well, establish the chemical analysis (TDS), and establish a routine method for pumping and sampling the water.



CITY OF
WALLA WALLA

April 3, 1992

4-9-92
Copy sent to
Mike Nikkel
N. 4601 Monroe St
Suite 110
Spokane, WA
99205

Mr. Dave Eaton
Walla Walla County Health Department
P. O. Box 1753
Walla Walla, Washington 99362

Subject: Sudbury Landfill Closure Plan

Dear Dave:

We have prepared an "interim closure" plan for our 1990-1995 operating area. The plan follows guidelines of the Washington State Department of Ecology's Solid Waste Landfill Design Manual, Publication No. 87-13. The index generally follows Chapter 7 of that manual.

As the "closure" plan is for one cell of a several hundred year active operating landfill (or more), it is basically impossible to totally separate closure and post-closure activities from normal operating costs. We have attempted to do so as you directed.

In following the State Design Manual we believed we were keeping our narrative to "relevant" items. The hydrogeologic facts of the region seem to need repeating.

As you might recall, we abandoned old Well No. 1 and Well No. 3 because the original well stopped in different lenses which dried up. Our geologist believes that it has been demonstrated that the upper strata lenses are not interconnected with each other directly but are charged from an artesian, underlying continuous aquifer.

We had to redrill those wells into the (one, single) first continuous aquifer underneath the landfill which is under a piezometric head.

Please advise if you need additional data.

Sincerely,

Duane L. Scroggins, P.E.
Public Works Director

brh:L1214COH
Attachment

INTERIM "CLOSURE PLAN"---SUDBURY ROAD LANDFILL

CITY OF WALLA WALLA, WASHINGTON

INDEX

INTRODUCTION

The purpose of this exercise is to prepare an interim "closure" plan for the 1990-1995(+/-) Operating Area of the Sudbury Road Landfill, owned and operated by the City of Walla Walla, Washington. In accordance with the approved Operating Plan (11)*, this closure plan is considered an interim "closure plan" mandated by regulatory processes. The City of Walla Walla's Sudbury Road Landfill is identified on the operating plan as about 200 acres of a 1,000 acre waste disposal site owned by and within corporate city limits of the City of Walla Walla about four miles northwesterly of the city center. The particular operating area identified as 1990-1995 trench in the attached topographic map is one element of Area 6 identified in the operating plan. The operating plan schedules this area to be reactivated in the year 2089 and continued to the year 2340, and identified as Areas 15A-18 in the plan. Thus, most of the soil used for interim "cover" now will be re-used for daily and/or final cover when the City's landfill operations return. The format for this exercise follows WDOE Landfill Design Manual (12), Chapter 7, and begins with a discussion of ultimate land use.

FINAL LAND USE CONSIDERATIONS

The Sudbury Road Landfill was originally a dry-land wheat farm site. Land abutting to the north and to the west is still dry-land wheat farm in an arid environment. Average annual rainfall is about 10.55 inches (6). The USEPA defines arid regions as 25 inches of annual rainfall (7) while WDOE definition is 12 inches of annual rainfall. The Washington State Penitentiary abuts the City's waste disposal area on the east. Washington State Penitentiary farm operations abut City land for about one-half mile before WSP housing structures are located. There is approximately one mile of City-owned land between the active operating area and the City's easterly boundary line. The area southerly of the identified landfill area is either City-owned cannery wastewater irrigation disposal lands or dry-land wheat farm about one quarter mile southerly to Sudbury Road. South of Sudbury Road there are some scattered rural residential properties. There are no structures down-gradient (surface water or groundwater) for several miles. The long range land usage is likely to remain the same under any reasonably predictable scenario.

The City has a unique site which provides an opportunity to operate in this area for centuries. For example, there is an abundant supply of relatively homogenous soil to provide sufficient cover for the landfill so that the ultimate use of the landfill could be a return to dry-land wheat farming with, say, 5 foot cover. This abundance of suitable soil is unique to most landfills. The City could acquire additional lands to the north

*Numbers in parentheses refer to reference materials

or west some time in later centuries and continue their landfilling operation, return the land to dry-land wheat farming with basically no impact on the environment if the more recent research on landfills in arid region holds true. As reported by Professor William L. Rathje in National Geographic and other articles, the waste simply "mummifies". The "myth" (9) of landfill availability may well be true of this specific site. The Walla Walla Airport runway is about 4.75 miles from landfill operating areas.

HYDROGEOLOGIC REPORT

In addition to other hydrogeologic studies in the Walla Walla and Pullman areas, the City has employed a certified engineering geologist to do a site specific geohydrology study in 1989 (8). His report amplifies on earlier documents. In general, the landfill site rests on Palouse loess. The basic stratification rests upon a triangular basin of Columbia basalt at about USC&G elevation 300 at experimental irrigation Test Well No. 8. The basin is formed by anticlines in the basic basalt underlaying strata at Horse Heaven Hills on the south, Touchet Hills on the north, and the Blue Mountains on the east, with the Blue Mountains being the base of the triangle.

There is about a 300 foot layer of ancient lakebed "clay" ending roughly at elevation 610 under the center of the 1,000 acre waste disposal site.

The next "layer" is the first continuous aquifer under the landfill, and is an "old gravel" artesian aquifer about 80 feet in depth capped by a thin and relatively impermeable membrane. The aquifer, wherever penetrated in the waste disposal site, is under a piezometric head of about 30 psi. The general slope of this "old gravel" aquifer is about 100 feet per mile running westerly.

On top of the impervious layer is a succession of lake deposits formed by flooding processes during the ice ages. Surface soil is generally aolian or airborne fine loesses. The soil structure is very homogenous. Although we occasionally strike lenses of fossil water during full drilling operations, the area between the "old clay" and ground surface is generally considered to be part of one stratographic unit charged upstream by the artesian aquifer or where the strata comes close to the surface as described in Mr. Gullixson's report.

Mr. Gullixson adds that it is virtually impossible for landfill contaminants in this particular strata to reach groundwaters. The surface soil is generally described as Walla Walla silt loam in the soil survey for Walla Walla County, Washington, published by the USDA Soil Conservation Service. Permeability tests on this particular soil and soil classification test would place it much closer to a clay with a permeability of approximately $1X10^{-5}$ centimeters per second (2) and a relatively uniform grain size close to a silty clay.

Earlier wells at the 1,000 acre Sudbury Road site stopped at upper lenses assuming the lens was perhaps part of an aquifer. The lenses were found to not be interconnected (differing elevations) and eventually dried up under a routine monitoring water removal. Thus the first continuous aquifer under the landfill is the artesian aquifer (8).

Recent studies performed by Phil Small, Agri-Management, Inc. of Yakima, for D&K Frozen Foods in their program of operating the spray farm "cannery wash water disposal area" demonstrate the unusually high field capacity of this soil. These studies show that even under the literal water disposal on the site, i.e., water disposalspraying, the maximum penetration of water in the soil was five feet. Most of the water is then stored in the upper two feet of soil and is then either transpired by cover crop into the atmosphere during growing season or evaporated out directly into the air. As we understand, this feature was also demonstrated by studies at the Oregon Agricultural Experiment Station in Palouse loesses as well as Washington State University studies being conducted for sludge management. This is even more data which suggests that it is highly unlikely that rainfall or other waters associated with landfills will penetrate to any underground aquifer at this site.

TOPOGRAPHIC PLAN--COVER DESIGN--SOURCE OF COVER MATERIAL

A topographic map of the specific area has been prepared and is included as part of this document for the 1990-1995 trench operating area. The "cover" basically consists of approximately four feet or more of native soil placed between 85-90% relative compaction in about 6-inch compacted lifts and graded to a finish slope of 2% with 3:1 fill slope where abutting future operating areas. Compaction is readily achieved with landfill operating equipment which includes the loaded scraper and refuse compactor. See discussion under cost for elaboration.

This compactive effort is based on our experience at the Tausick Way Landfill where cover was compacted to not more than 80% relative compaction. Three full-scale lysimeters were installed to measure the effectiveness of this cover over a long-term period at the Tausick Way site. Preliminary analysis suggests that on a full-scale basis we may be achieving as much as $1X10^{-6}$ centimeters per second permeability.

The cover design on Tausick Way was based on information gleaned from telephone conversations with Dan Solomon of WSU working for the Regional Sludge Committee, Oregon State Agricultural Laboratory staff, and the local agricultural community. The general theory is that the Palouse loesses available to us in this area have a tremendous rainfall storage capacity, which if managed properly can be almost totally utilized by a cover crop. In effect, any water that reaches the surface is stored in the soil and then utilized and transpired back to the atmosphere by the cover crop.

LANDSCAPING (COVER CROP)

The soil placed as a cover is generally void of nutrients and very "light", subject to wind erosion. Based on the City's experience with sludge management (4) and practical experience with Sudbury Road landfill soil placed as final cover on our Tausick Way landfill, we will condition the soil with Wastewater Treatment Plant sludge at agronomic rates of five dry tons per acre. This does two things---first, it will supply nutrients and condition the soil to grow a cover crop, and secondly, it "binds" with the soil to minimize wind erosion (dust problems).

The cover crop will be 50% tall fescue, 25% medium fescue, and 25% creeping red fescue, as utilized on the Tausick Way site. The root system of these grasses is generally 3 inches to 6 inches deep. It generally takes two to three years to obtain an adequate cover crop.

In arid regions, it is common practice to contour harrow periodically to capture rainfall and store for cover crop. We are advised by experienced agricultural community it is necessary element of operation to maintain a cover crop.

ON-SITE STRUCTURES AND OPERATING PLAN FOR CLOSURE

There are no on-site structures involved with this specific interim "closure". The operating plans for the "closure" of the Sudbury Road Landfill are integral with the operating plans for continuing operation of the landfill. If the landfill is ever closed, permanent closure would be the same as the interim closure. One exception might be to add some additional soil to return the land to dry-land wheat farming operations, given the unique "problem" of almost too much suitable soil. The current practice on other interim closure areas at Sudbury Road and the final closure at Tausick Way Landfill can provide grazing or grass/hay agricultural operations.

SURFACE WATER MANAGEMENT PLAN

There are no readily evident surface water channels (erosion) in the City's 1,000 acre waste disposal site caused by natural events. Generally in this region rainfall will reach the soil and store for irrigation of cover crops. As described in the Federal Register (7), arid regions with less than 25 inches rainfall per year seem to have few, if any, storm water problems.

On occasion the ground will freeze and water will then run off, but there is typically no significant erosion during that period. During periods of very heavy rainfall there may be some minor local erosion and runoff. The general technique is to replace the eroded soil and replant. If necessary, straw silt fences and creating on-site evapotranspiration ponds can be installed.

It is important to observe contour and soil conservation agricultural practices. Periodic harrowing is to be performed to capture and store what little rainfall there is in this region to maintain a cover crop.

LEACHATE MANAGEMENT PLAN

The City constructed a lined, test leachate well and collector in 1986 at the bottom of the 1984-89 trench. No leachate has been detected in the test well. Moreover, areas 1, 2, and 3 operated since 1977 shown on the operating plan exhibit no leachate at the toe of shallow cover. If leachate were produced or were to become a problem it would generally appear at the toe of the cover for those early operations.

In general, our experience is similar to that of Professor William L. Rathje as noted in the National Geographic Magazine---namely, the refuse mummifies. We have excavated in Tausick Way Landfill and can read newspapers more than 30 years old.

The USEPA (7:50.991) notes that "the agency decided on 25 inches" rainfall as a definition of arid regions because this number is generally supported by landfill cost studies derived from State data." These data indicate that little leachate is generated in areas where precipitation does not exceed 25 inches "annually". Thus, we do not expect or anticipate any leachate problem. If one should occur, there are many options given this site location, e.g., store in a lined lagoon and integrate with adjacent spray farm operations, etc.

LANDFILL GAS MANAGEMENT PLAN

Due to the low permeability and homogeneity of the soil at the Sudbury Road Landfill site, there is no observed lateral gas issue to be managed.

The City has installed two methane monitoring wells along the southwesterly boundary, which are monitored quarterly. Scale house and equipment sheds are monitored for methane at the same time.

ENVIRONMENTAL MONITORING SYSTEMS

Environmental monitoring is accomplished as a minor element of the environmental monitoring programs in place for Sudbury Road Landfill operating programs described in the operating plan. There are no significant additional environmental monitoring requirements to be put in place specifically for temporary" closure".

COST ESTIMATES, TO IMPLEMENT CLOSURE PLAN

As directed, we have prepared a spread sheet showing all elements involved with the temporary "closure" costs associated with the 1990-1995 cell identified in the attached exhibit. We understand

the purpose is to attempt to establish a closure and post-closure cost for the financial assurance elements provided by WAC 173.304. It is also understood that the current USEPA closure plan will not even attempt a mechanism for municipal closure reserves for at least two and one-half years (7).

TEMPORARY "CLOSURE" COSTS FOR 1990-95 CELL

NOTE: Does not include post-closure costs of Tausick Way Landfill and the post-closure maintenance of pre-1991 cells.

"COVER" COSTS — COST ANALYSIS

"Cover" Element	Quantity	Ordinary Cost of Landfilling Unit Price	Ordinary Cost of Landfilling Cost	Unique Cover Placement Cost Unit Price	Unique Cover Placement Cost Cost
1. Earthwork	54,000 CY	($2.50)	($135,000)	$	$
a) Excavation (active, future trench)	54,000 CY	1.50	81,000		-0-
b) Transport to "Storage Area"	54,000 CY	$0.50	27,000		-0-
c) Place Cover	54,000 CY			0.25	13,500
d) Compact Cover	54,000 CY			0.25	13,500
e) QA/QC (by consultant)	22 Each			35.00	770
f) Final Grading	8.4 Acres			200	1,680
g) Engineering/ Surveying (by City staff)	54,000 CY	0.25	8,100	0.05	2,700
2. Cover					
a) Sludge/Nutrient	8.4 Acres	200	1,680		-0-
b) Seed 25#/A @ $7.75/#	8.4 Acres			194	1,630
c) Seeding (top)	6 Acres			100	600
d) Hydro Seed (Slopes)	1.4 Acres			2,000	2,800
3. Miscellaneous					
a) Engineering/ Surveying and "as built" checks (by City staff)			3,000		500
	TOTAL		$120,780		$ 38,680

POST "CLOSURE" COST --- 30 YEARS

"Cover" Element	Quantity	COST ANALYSIS: Ordinary Cost of Landfilling — Unit Price	Ordinary Cost of Landfilling — Cost	Unique Cover Placement Cost — Unit Price	Unique Cover Placement Cost — Cost
1.Cover Maintenance					
a)Repair Erosion	Lump Sum			L.S.	100/yr
b)Regrade/Fill	Lump Sum			L.S.	100/yr
c)Weed Control	8.4 Acres			$ 100	$ 840
d)Reapply sludge and fertilize (3 yr cycle)	8.4 Acres			-0-	-0-
e)Routine Inspection				L.S.	100/yr
2.Environmental					
a)Groundwater Monitoring (Quarterly)					
--Sampling, per well	10 wells X 4	$100/well	$ 4,000/yr		N/A
--Laboratory	10 wells X 4	750	30,000/yr		
--Added reporting costs, drafting, graphics, etc.	Lump Sum		5,000 to 20,000		Zero to $ 5,000
b)Lysimeter (Quarterly,visual)				2 hrs	$ 44/yr
c)Methane/Misc. Monitoring, Quarterly	2 Wells			2 hrs	N/A
3.Miscellaneous					
a)Engineering/ Surveying	Lump Sum		$ 500		$ 250
b)Storm Water Management	Lump Sum		200		100
c)DOE/County Health--added costs to make extra reports; Effort beyond operating QA/QC needs	Lump Sum	Zero to	10,000		Zero to $10,000
TOTAL ANNUAL COST			$ 39,700		$ 1,578
Present worth @ 7%					19,581
Potential Additional Reporting Costs			$ 30,000		15,000/y

CLOSURE/

In preparing the above costs analysis, it is written with the understanding that the City of Walla Walla expects to operate in this area for hundreds of years. The approved operating plan for 200 of the 1,000 acres is for a period of approximately 300 years; moreover, it is possible in this area to acquire additional abutting lands and extend the life of the landfill for many years beyond the 200 years. The cost analysis is divided into costs which are an elemental part of operating a landfill in this area, which also satisfies the requirements of WAC 173.304 for closure and post-closure costs. Thus, meeting the requirements for financial assurance merely becomes an accounting/regulatory exercise. This is especially so for cities or counties which can't go out of existence like private landfills. The costs of cover placement and post-closure costs are less than the normal operating margin for the landfill. One should also understand that one of the greater concerns of the City and one that is more likely to generate a reserve is a self-insurance program not even mentioned in the administrative codes. As directed, we will discuss each element of the table, as follows:

1) Earthwork:

The City of Walla Walla has on-site a bulldozer, self-loading 16 yard scraper, landfill compactor, and miscellaneous trucks and backhoes, as well as the availability of other equipment from Street and Water utilities, such as backhoes, dump trucks, water trucks, and miscellaneous construction equipment. The City also has on-site a dust control system which can provide water from a deep basalt aquifer well to maintain moisture control in its cover operations. The ordinary operations of the landfill require excavation of trenches for future active areas and transport to a storage area where the material will be used as daily and final cover so there is no additional cost involved.

The cost analysis is an attempt to break out costs unique to cover placement, as directed. We calculate that the cost of earthwork at the site is approximately $2.50 per cubic yard with City equipment, which is close to unit prices bid in present industry. In our analysis we estimated the unit cost for particular activities, as follows:

a) Excavation:

This cost element is the estimated cost of excavating trenches for future active areas, which is part of the normal costs of operating our landfill and not an additional cost for placing cover. This cost was estimated at $1.50 per cubic yard, using primarily the scraper, augmented by our bulldozer and ripper.

b) Transport to "Storage Area":

This cost element is our estimated cost of transporting material to a place to store for daily cover or future use. It adds nothing to the cost of placing a final "cover" of the trench, per se. Thus, it is not estimated to be a unique cover placement cost.

c) Place Cover:

This is a cost item of placing the cover at this particular site to be "closed" for the next 100 years, give or take. This involves placing the material in accordance with the standard specifications with a loaded scraper approximately in 6-inch compacted or 12-inch loose lifts. The material is to be placed at a compactive rate between 85% and 90% relative compaction. By a number of tests and experience, this takes little in the way of compactive effort other than following the procedures outlined in the standard specifications, i.e., placing the material and routing loaded scrapers over both in a manner to achieve normal compactive efforts. One of the larger concerns with this material is to over-compact and reduce the capability of the soil to grow a cover crop and store incidental rainfall as a field storage phenomena normal for Palouse loesses.

As noted on Page 4 of this plan, cover will be not less than four (4) feet of native material. This "cover" is also a storage process for future daily activities when this area will again become an active operation around 2100.

d) Compact cover:

In the event that the loaded scraper does not achieve a relatively uniform density to accommodate a cover crop, we will use the landfill compactor with one or two passes on each of the six-inch compacted layers as noted on Page 4 of the cover material.

e) QA/QC:

Quality assurance and quality control will be measured in accordance with the standard specifications. The standard specifications require a compaction test for each 2,500 cubic yards of material or in this case 22 compaction tests. Our compaction tests will be performed by the consulting firm of Anderson/Perry in accordance with the standard specifications.

f) Final Grading:

This cost item involves using the City's grader to perform a final grading of the site before seeding to the grades to be set by the City Engineer's staff.

g) Engineering/Surveying:

Engineering and surveying services will be performed by the City Engineering staff under the direction of the City Engineer (a licensed professional engineer with the State of Washington) or the Public Works Director, also a licensed professional engineer with the State of Washington. The controls will be in accordance with the standard specifications. Engineering and surveying services include design, grade control, "as built", annual review and related services.

2) Cover:

Cover activities specified in the cost analysis above include seeding, soil amendment procedures and costs involved in the 8 1/2 acres of final cover for the identified trench in this report.

a) Sludge/Nutrient:

As discussed hereinbefore, the Wastewater Treatment Plant sludge will be applied to this soil as a soil amendment. This is considered to be ordinary operating cost, either of the landfill or the Wastewater Treatment Plant and not an additional cost of cover replacement. It is a practice that the City pursues based on excellent experience in similar situations. Placement will be at an agronomic rate of 5 dry tons/acre, in accordance with the City's sludge management plan (4).

b) Seed:

We propose to spread seed at the rate of 25 pounds per acre with a ryegrass mixture as described hereinbefore. Price is in accordance with our experience of purchasing seed for Tausick Way Landfill.

c) Seeding:

The cost item identified in the table above for seeding is simply the cost of drilling the seed in the more or less leveled areas of the cover after all the work is performed and the seed bed is prepared. If the seeding operation does not work satisfactorily for the steeper slopes where the cover will abut future operations, hydro seeding will be performed.

d) Hydro Seeding:

On the steeper (3:1) slopes it may be necessary to hydro seed the slopes with the same seed mixture as noted here

before. Hydro seeding will be performed by a contractor generally as an extension of a contract for a street project.

3) Miscellaneous Costs:

This item is provided in the cost analysis to cover other costs which may not be specifically identified in the actual placing of the cover. These costs can include engineering and surveying costs:

a) Engineering/Surveying:

All engineering and surveying will be performed by the City staff. The City employs several registered professional engineers, any of whom could be called upon to perform the earthwork and grading services required for the landfill.

"POST-CLOSURE" COSTS:

Post-closure costs are those costs of maintaining the cover over the identified trench area and will continue for a period of thirty years or more. Most of the cost of performing post-closure requirements and the minimum functional standards are actually normal operating costs of the landfill as were a cost of closing a trench. Post-closure costs are more typically identified as regular annual operating costs.

1) Cover maintenance:

Cover maintenance includes a variety of activities intended to maintain the grade of the landfill on a relatively uniform basis as taking into account the fact that the trench will settle perhaps 6 inches per year over the next 30 years on a descending exponential curve basis.

a) Repair Erosion:

If the cover crop is successful, and based on our experience of the Tausick Way Landfill and other experience of the agricultural community in this area, it is not anticipated that we would expect much in the way of stormwater runoff or typical erosion. The cover crop, coupled with judicious sludge application, is likely to reduce windborne erosion to a minimum. In most situations in this area, the rainfall will generally store in the upper foot or so of the soil for use by the cover crop in following summers, especially if a harrowing normal agrarian haying operation takes place.

b) Regrade/Fill:

As the area settles our concern will be to make sure that the settlement is relatively uniform and that there are no lakes or ponds of water allowed to accumulate on the surface of the fill area. This work would involve simply from time to time bringing in a scraper full of material excavated from an active trench operation to fill in any low spots that might occur and reseeding.

c) Weed Control:

Weed control will be an annual operation primarily required to control noxious weeds. We would do this work whether the land is part of a trench cover or as part of a normal area within City control of the Sudbury Landfill area. We have, however, shown the cost as a cover placement cost even though we would perform the weed control program regardless of whether it was a cover of a trench or not.

d) Reapply Sludge:

We anticipate reapplying wastewater sludge on about a three year cycle at the usual five dry tons per acre recommendation of our sludge control plan (4). There is no cost item for this operation, as it is a normal cost of our Wastewater Treatment program.

e) Routine Inspections:

We will make a routine inspection of the site on a regular monthly basis as part of the daily routine of operations at the landfill. It is a simple matter of a few minutes in the course of operating our landfill and will be performed by our Wastewater Treatment Plant Superintendent who is in charge of this operation. Names, addresses, phone numbers of landfill staff and related data is listed in the operational plan.

2) Environmental:

Post-closure costs of complying with the environmental requirements of the WAC 173.304 are also largely a regular element of normal operating costs. Groundwater monitoring, for example, is performed on ten or more wells for a 1,000 acre disposal site, of which approximately three are all that are required for our landfill. We report all data as a matter of normal practice.

a) Groundwater Monitoring:

Groundwater monitoring will be performed quarterly. This is an increase from the USEPA requirements by a factor of 2 or more. The USEPA requires groundwater monitoring on a semi-annual basis and allows less testing if the State agency has primacy. However, our

State agency requires quarterly testing. All groundwater monitoring will be performed in accordance with the operating plan with quality assurance in accordance with the City's certified laboratory, which contains all elements of QA/QC such as test procedures, sampling procedures, chain of control, etc. Each well will be sampled in accordance with the laboratory procedures spelled out in the quality assurance manuals of the laboratory. Laboratory testing is intended to be at the City's certified laboratory. State and EPA laboratories perform as quality contractors to monitor quality assurance and quality control from time to time as part of the certification program.

There are expected to be substantial added reporting costs above and beyond our needs as directed by regulators. The costs identified here are merely to demonstrate the high cost of some of the reporting packages that we seem to be expected to produce from time to time.

The Federal Register notes that semi-annual testing is adequate----in fact, conference with USEPA staff suggests annual is adequate for many elements, e.g., organics. Quarterly testing is a requirement of WDOE at more than twice the cost of USEPA Standards. It is expected this cost will reduce in the future.

b) Lysimeters:

The 1990-1995 trench was provided with six lysimeters, which will be monitored quarterly. It is not expected that we will find any moisture or any deposits from those lysimeters based on experience with Tausick Way and leachate monitoring systems in earlier trenches within Sudbury Road. The cost is simply a 30-minute inspection quarterly.

c) Methane/Miscellaneous Monitoring:

Here again we expect to perform inspections of monitoring wells on-site wells, and don't anticipate any methane or any issues---this will simply be another 30 minutes per quarter documentation process.

3) Miscellaneous:

Some of the miscellaneous costs that we might expect to incur in a "closure, post-closure" period of this particular Sudbury Road Landfill cell are identified for discussion purposes:

a) Engineering and Surveying:

All engineering and surveying services will be performed by the City Engineer. This could include elevation

checks to ascertain that the settlement of the trench is relatively uniform without developing depressions or catchments of water or other problems.

b) Stormwater Management:

The issue of stormwater management in this arid region is included here so that it is understood that it was not forgotten. In a normal site specific situation, stormwaters that reach the surface of these lands with a reasonable cover crop will be captured and stored in the upper one to two feet of soil and seldom exceed the field capacity to a point where surplus waters would "run-off". The management here would include such things to assure that a supply of silt fencing material (straw) is available to prevent significant erosion, prepare a grassy swalle area in the vicinity of the northwestern corner of the property to catch and store any excess storm water that might escape the cover area.

c) DOE/County Health Added Costs:

Here again is a factor just to identify the potential cost of merely preparing reports for regulatory personnel, which will vary depending upon the regulatory person we're dealing with or the issues that become involved.

IMPLEMENTATION SCHEDULE AND INSPECTION:

As the 1990-1995 trench nears its completion, "final cover" will be excavated from the next operating trench. This process usually occurs over about a one to two year period. Final grading will be done also as a process of involving other activities associated with landfill operation. If conditions warrant, the cover may be staged, again, as part of other operations. Inspection is ongoing by Superintendent, City Engineer's staff, or private QA/QC as staged elements are performed. Seeding, fertilization, and first cover is planned to be performed in fall or spring, typically as performed during routine, regional agricultural practices.

Inspection and staffing will generally be in accordance with the operating plan. Annual inspection will be performed by County Health staff as directed and under supervision of WDOE.

SUDBCLO3
April 3, 1992

CLOSURE PLAN/REFERENCES

1. Anderson Perry & Associates, Norman Dahl & Associates, Solid Waste Management Plan for Walla Walla County, Approved 1987 (DOE Grant and Files)

2. Anderson Perry & Associates, Permeability Tests of Sudbury Road Landfill Materials, letters, May 20, 1988; May 25, 1988; July 21, 1988; and August 9, 1988 (DOE files)

3. Anderson Perry & Associates, Norman Dahl & Associates, Sudbury Road Landfill Utilization Plan for City of Walla Walla, 1987 (DOE Grant & Files)

4. CH2M/Hill, Sludge Utilization Plan, City of Walla Walla, September, 1982 (DOE Files)

5. Darcy, Sue, Coping with Subtitle D, World Wastes, Volume 34, No. 5, May 1991, Communication Channels, Inc., Atlanta, GA.

6. Eaton, David, R.S., Walla Walla County/City Health Department; Telephone and personal conversations, 1991, re. site specific Sudbury Road Landfill weather data. Department of Ecology staff accepts data confirming 10.55 inches annual rainfall at landfill and meeting arid region criterion.

7. United States Environmental Protection Agency (USEPA), Solid Waste Disposal Facility Criteria; Final Rule, Volume 56, No. 196, October 9, 1991, Rules and Regulations

8. Gullixson, Richard L., Certified Engineering Geologist, Geohydrology Study, Waste Management Site, Sudbury Road, Walla Walla, Washington, May, 1989, City of Walla Walla Public Works Records (DOE Files)

9. Scarlett, Lynn A., Consumer's Guide to Environmental Myths and Realities, National Center for Policy Analysis, 12655 North Central Expressway, Suite 720, Dallas, Texas, September, 1991

10. Scroggins, Duane L., P.E., Sudbury Road Landfill, Variance, Letter to Walla Walla County/City Health Department, July 18, 1989 (DOE Files)

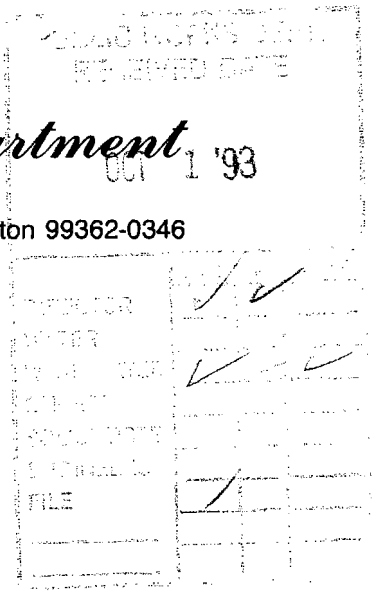
11. Scroggins, Duane L., P.E., City of Walla Walla, Sudbury Road Landfill Operating Plan, June, 1988 (DOE and Walla Walla County/City Health Department Files)

12. Washington State Department of Ecology, Solid Waste Landfill Design Manual, Publication No. 87-13, WDOE, Olympia, WA.

13. Washington State Department of Transportation, American Public Works Association, Washington State Chapter, 1991 Standard Specifications for Road, Bridge and Municipal Construction

Walla Walla County-City Health Department

310 West Poplar • P.O. Box 1753 • Walla Walla, Washington 99362-0346
Telephone 527-3290



September 27, 1993

Duane Scroggins
Director of Public Works
City of Walla Walla
P.O. Box 478
Walla Walla, WA. 99362

We have completed our review of the City's most recent landfill permit renewal application and 1992 annual landfill report. Therefore in accordance with RCW 70.95, this letter serves as the 1993-94 landfill permit until a new permit under WAC 173-351 is issued. This permit is being issued with the following conditions:

1. The landfill shall continue to operate in conformance with the approved landfill operating plan and shall meet the requirements of WAC 173-304 until the permit under WAC 173-351 is issued.

2. By November 1, 1993, please submit a copy of the City budget sheet showing an amount in the landfill reserve account equal to or greater than the latest updated closure / post-closure cost estimates for the current operating trench.

3. When your new equipment operator is on board, daily cover shall be provided over the working face of the trench.

4. Beginning in the last quarter of 1993, wells 1,3,5A and 6 shall be tested quarterly for parameters listed in Appendix I & II of the proposed new landfill standards. (WAC 173-351) This will give the City a head start meeting the new ground water monitoring requirements and will spread the cost of initial baseline sampling over two years.

5. The City must apply for a new landfill permit no later than ninety days after promulgation of the new regulations. We have heard that WAC 173-351 may be adopted in October and will become effective thirty days later in November. So application may be required as early as early February, 1994.

6. By March 1, 1994, submit the annual landfill report for 1993 to include:

   - Annual ground water monitoring results, statistical analysis, water levels, flow rate and direction of flow. I assume EMCON Northwest will prepare this portion of

the report.

- Vadose lysimeter monitoring results.

- Methane monitoring results from the Sudbury and Tausick Way landfills.

- Rainfall measurements for the Sudbury landfill.

- Submit a copy of the volumes and kinds of waste received. Use the Department of Ecology form that was used for 1992.

7. An inspection of the landfill was conducted on April 4, 1993. We observed a new large depression located just west of the current operating trench which contained a considerable amount of standing water. This depression should be filled to reduce the risk of ground water contamination.
The surface of the recently closed cell was "wavy". The small depressions created by an uneven surface do not allow proper drainage away from the cell. Also, numerous runoff ditches were observed on the west slope of the cell. During subsequent conversations with Al Prouty, he confirmed that the ditches have been filled and reseeded and that the depressions have been reworked. A follow-up inspection will be conducted.

If you have any questions, please contact us.

Sincerely,

David W. Eaton,R.S.
Director of Environmental Health

STATE OF WASHINGTON
DEPARTMENT OF GENERAL ADMINISTRATION
OFFICE OF STATE PROCUREMENT
Rm. 216 General Administration Building, P.O. Box 41017 • Olympia, Washington 98504-1017 • (206) 753-0900

July 23, 1993

TO: All Counties, Cities and Towns Participating in the Political Subdivision Program

FROM: Dave Andersen, C.P.M., Manager, 7/16/93
Political Subdivision Program. Office of State Procurement

SUBJECT: **Feasibility Study: Community Hazardous Waste Management Program**

The Office of State Procurement (OSP) invites your assistance in a feasibility study for a proposed community hazardous waste management program.

OSP is considering the develop of a contract to support local "Hazo Days," whereby citizens can drop off a multitude of household hazardous materials, including, but not limited to, antifreeze, pesticides, acids, solvent based products, used oil, paints, mercury batteries, etc.

The contract would include stringent contractor requirements to reduce long term liabilities associated with certain wastes, and would also have options for award by either county, groups of counties, or state wide to one or more contractors.

If you are interested in participating in this study and wish further information, please contact our Environmental Initiatives Contract Administrator, Chuck Van Hall, at (206) 753-1040. Scan 234-1040.

I thank you in advance for your assistance.

DNA:dna(CVH93J16)

cc: State of Washington Hazardous Waste Disposal Services Committee

File: Landfill Permit

WALLA WALLA COUNTY-CITY HEALTH DEPARTMENT

310 W. Poplar, P.O. Box 1753
Walla Walla, WA 99362
Phone (509) 527-3290

Sudbury Road Landfill
FULL PERMIT
For
MUNICIPAL SOLID WASTE LANDFILLING

Permit No. 0001

Section I. Permittee Information

Facility Name: City of Walla Walla Sudbury Road Municipal Landfill

Facility Location: Sudbury Road, Walla Walla

The Permittee

Owner/Operator: City of Walla Walla

Name of Contact: Dick McKinley, Director of Public Works

Address: P.O. Box 478, Walla Walla, Washington 99362

Telephone: (509) 527-4463

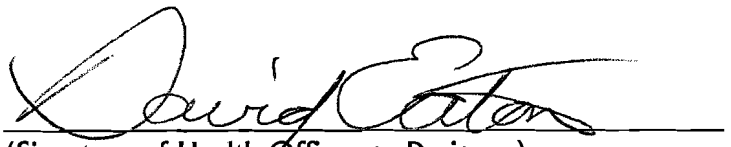
General

Section II. Authorization. The permittee is hereby authorized to conduct activities associated with landfilling of municipal solid waste, in conformance with the attached general and specific conditions upon the basis of information supplied in the full permit application and in compliance with chapter 173-351 WAC and RCW 70.95.163, (including demonstrations) and all relevant federal, state, and local regulations (including state air quality, water quality and noise regulations.)

The permit may be suspended or revoked according to the terms set forth in Section XII herein. If the permit is suspended or revoked, the permittee may appeal the action according to the terms of the permit and RCW 70.95.210.

This permit is transferable only upon prior written approval of the Walla Walla County-City Health Department. The prospective transferee must demonstrate its ability to comply with laws, regulations and permit conditions. The permit shall be reviewed annually and reissued by the expiration date in conformance with Section I herein.

This permit is subject to yearly renewal in accordance with Section XII (3) of the General Conditions, until reissuance is required under Section XII (4).



(Signature of Health Officer or Designee)

Date of Issuance: July 14, 1997 Renewal Date: July 1, 1998

Date of Modification: _____

Date of Modification: _____

Date of Modification: _____

Date of Expiration: July 1, 2007

Section III. Demonstrations In granting this permit, the Walla Walla County-City Health Department acknowledges the following successful demonstrations for each applicable MSWLF unit made in the permit application for the time period specified:

	MSWLF Unit Name/Description	Description of Demonstration	Appropriate Section of 173-351	Expiration Date of Demonstration
1.	Area Seven (7)	Validity of arid design landfill	173-351-300(2)(b)	NA

Section IV. Description of Permitted Units, Scope of this Permit and Authorized Activities.

The permittee is authorized to conduct the following activities during the specified times at municipal solid waste landfill (MSWLF) units as described below:

a. 1. MSWLF Unit Name/Description: Existing Medical Waste Trench

2. Rule applying to this unit: X 173-304 (Limited purpose landfill)

3. Types of waste authorized in this unit:
MSW, industrial, commercial, other Medical waste

4. Authorized design volume (including final cover) Authorized for use until Area 7 is operational.

5. Earliest authorized start of activity: In use

6. Latest authorized completion date: When Area 7 is operational

b. 1. MSWLF Unit Name/Description: Asbestos Trench

2. Rule applying to this unit: X 173-304 (Limited purpose landfill)

3. Types of waste authorized in this unit:
MSW, industrial, commercial, other Asbestos

4. Authorized design volume (including final cover) 42, 600 cubic yards

5. Earliest authorized start of activity: In Use

6. Latest authorized completion date: July 1, 2007

c. 1. MSWLF Unit Name/Description: Area 6

2. Rule applying to this unit: ___ 173-304 _X_ 173-351

3. Types of waste authorized in this unit:
MSW, industrial, commercial, other- Municipal & non-hazardous industiral & commercial solid waste.

4. Authorized design volume (including final cover) 485,500 tons.

5. Earliest authorized start of activity: In Use

6. Latest authorized completion date: 2003.

d. 1. MSWLF Unit Name/Description: Area 7

2. Rule applying to this unit: ___ 173-304 _X_ 173-351

3. Types of waste authorized in this unit:
MSW, industrial, commercial, other- Municipal & non-hazardous industrial & commercial solid waste.

4. Authorized design volume (including final cover) 2,125,000 cubic yards.

5. Earliest authorized start of activity: When Area 6 is closed and Area 7 becomes operational

6. Latest authorized completion date: 2033

Section V. Pre-Construction, Pre-Operational, Pre-Closure Review, and Cessation of Construction or Operation Activities.

1. For each new or laterally expanded unit, the permittee shall submit final design drawings, construction specifications and a construction quality assurance manual at least 60 days prior to the beginning construction date specified in Section IV. The permittee shall not begin construction until the jurisdictional health department approves these documents in writing.

2. The permittee is authorized to accept solid waste at any new or laterally expanded unit, only after a licensed engineer, having supervised construction, certifies that the construction is in accordance with this permit and in accordance with the construction quality assurance plans. The operator must notify the Walla Walla County-City Health Department in writing of the date when solid waste will be first received at the unit. The permittee shall not accept authorized solid waste until approved in writing by the Walla Walla County-City Health Department.

3. One hundred and eighty (180) days prior to beginning closure activities, specified in Section IV, the permittee shall notify the Walla Walla County-City Health Department of the intent to close each unit or all units according to the approved closure plan, and submit final engineering closure plans to the health department for review, comment, and approval. Closure activities shall not begin until approval in writing from the jurisdictional health department for closure has been received.

4. If construction or operation activities started under a permit issued pursuant to this chapter cease for a period of twelve consecutive months, the Walla Walla County-City Health Department may at its discretion revoke the permit. The Walla Walla County-City Health Department shall provide notice to the owner or operator in writing explaining the reasons for revocation. The health department shall not revoke a permit where the cessation of construction or operation is caused by factors beyond the reasonable control of the permittee or when such cessation is in accordance with the provisions or the permit.

Section VI. Plan of Operation and Operational Requirements

All operational and maintenance activities conducted at the facility shall be in conformance with the plan of operation, dated November, 1996, and subsequent approved amendments. The permittee is subject to the specific operational and maintenance conditions as follows:

1. Waste Acceptance

   a. The permittee is authorized to accept for disposal, municipal solid waste and non-municipal solid waste, including industrial, inert and demolition, wood waste, other types of non-hazardous solid waste and solid wastes that have been excluded, exempted or otherwise removed from regulation under Chapter 173-303 WAC, the Dangerous Waste Regulation or otherwise excluded by state law, provided that such non-municipal wastes are co-disposed with municipal solid waste stream in a

unit authorized in this permit, and such disposal is not elsewhere prohibited by law.

b. The permittee must implement the procedures for excluding the receipt of dangerous waste according to the approved plan of operation.

2. Daily cover. The permittee shall apply daily cover according to the approved plan of operation.

3. Disease vectors. The permittee shall prevent or control disease vectors according to the approved plan of operation.

4. Explosive gas control. The permittee must control explosive gases to ensure that concentrations of methane do not exceed standards set forth in chapter 173-351 WAC.

5. Air Criteria. The permittee must comply with all applicable requirements of the Washington State implementation plan approved under Federal Clean Air Act laws and shall not conduct open burning unless authorized in the approved plan of operation. Household waste shall not be open burned under any conditions.

6. Access Requirements. The permittee shall control access by humans and animals, according to approved plan of operation and the approved engineering plans. The permittee shall have a lockable gate at each entry to the facility.

7. Run-on/Run-off Control Systems. The permittee shall maintain the run-on/run-off control systems for the active and closed MSWLF units according to the approved plan of operation, and the approved engineering plans.

8. Surface Water Requirements. The permittee shall not allow discharges of pollutants into waters of the state that violate state law and regulations from point or nonpoint sources, in accordance with the approved plan of operation and the approved engineering plans.

9. Liquids Restrictions. The permittee shall not allow liquids to be disposed of, except in accordance with the approved plan of operation.

10. Record Keeping. The permittee shall keep records required by the plan of operation at an approved location. The permittee shall notify the Walla Walla County-City Health Department when documents (not otherwise excluded from this requirement in the plan of operation) have been placed in or added to the operating record.
The permittee shall furnish all information contained in the operating record for inspection at all reasonable times by the Walla Walla County-City Health Department.

11. Annual Reports. The permittee shall submit an annual report for the previous calendar year to the jurisdictional health department and the Department of Ecology by April 1of each year, on forms supplied by the Department of Ecology and other information as required in this permit.

12. Additional Operating Requirements. The permittee shall operate the facility to control road dust, collect scattered litter, prohibit scavenging, and ensure that qualified landfill personnel are on site in accordance with the approved plan of operation.

13. Reserve Operational Equipment. The permittee shall ensure that reserve operational equipment is available at all times according to the approved plan of operation.

14. Permanent Posts. The permittee shall clearly mark the active boundaries according to the approved plan of operation.

15. Compaction. The permittee shall thoroughly compact solid waste before succeeding layers are added according to the approved plan of operation.

16. Maintenance of Monitoring Systems. The permittee shall maintain the monitoring systems for air, ground water and surface water according to the approved plan of operation and the approved hydrogeologic report.

17. Require Recycling. The permittee shall provide the opportunity to recycle solid wastes according to the approved plan of operation.

18. Municipal/Sewage Sludge/Biosolids. The permittee shall prohibit disposal of municipal sewage sludge or biosolids except in accordance with WAC 173-351-220(10).

Section VII. Ground Water Monitoring Program and Hydrogeologic Report

1. Groundwater Standard. The permittee shall not cause exceedances of the standards for ground water quality set forth in chapter 173-200 WAC (Water Quality Standards of the Ground Waters of the State of Washington) or chapter 173-290 WAC (Drinking Water Standards). If it is determined that these standards have been exceeded, or a statistically significant increase over background for one or more of the constituents listed in WAC 173-351-990, Appendix 1, has occurred, the permittee shall immediately comply with the requirements of WAC 173-351-430 (4).

2. Hydrogeologic Report. The hydrogeologic report dated June, 1995, which meets the performance standards of WAC 173-351-490, is hereby approved.

3. Ground Water Monitoring Program. The Ground Water Monitoring Program, dated June, 1995, which meets the performance standards of WAC 173-351-400 through 490, is hereby approved.

4. Sampling and Analysis Plan. The Sampling and Analysis Plan, dated June, 1995, which meets the performance standards of WAC 173-351-410, is hereby approved.

Section VIII. Quality Assurance and Quality Control. The permittee shall perform all construction activities, including closure cap construction according to the construction quality assurance performed by an independent third party and quality control plan dated November, 1996 is hereby approved.

Section IX. Closure and Post-Closure Plans. The permittee shall perform closure and post-closure according to the closure and post-closure plans dated November, 1996, which are hereby approved.

Section X. Financial Assurance for Closure, Post-Closure. The permittee shall maintain financial instruments for closure & post-closure dated November, 1996 and May, 1997 and which are hereby approved. The closure/post-closure cost estimates shall be updated annually and submitted to the Walla Walla County-City Health Department with the annual landfill report.

Section XI. Other Specific Conditions.

Section XII. General Conditions

1. Transferability

   a. All permits issued pursuant to this regulation are transferable only upon prior written approval of the Walla Walla County-City Health Department and a demonstration that the prospective transferee will be able to comply with applicable laws and regulations, permit conditions, and other requirements to which the prospective transferor is subject.

   b. Upon transfer of ownership of all or part of the facility, a provision must be included in the property deed indicating the period of time during which the facility has been disposing of solid waste, a description of the solid waste contained within, and the fact that the records for the facility have been filed with the Walla Walla County-City Health Department. The deed also must reference a map, which must be filed with the county clerk, showing the limits of the active areas as defined in WAC 173-351-100.

2. Appeals

   Whenever the Walla Walla County-City Health Department denies a permit or suspends a permit for a solid waste disposal site, it shall, upon request of the applicant or holder of the permit, grant a hearing on such denial or suspension within thirty days after the request therefor is made. Notice of the hearing shall be given to all interested parties including the county or hearing the health officer shall notify the applicant or the holder of the permit in writing of his or her determination thereof. Any party aggrieved by such determination may appeal to the pollution control hearings board by filing with the hearings board a notice of appeal within thirty days after receipt of notice of determination of the health officer. The hearings board shall hold a hearing in accordance with the provisions of the Administrative Procedure Act, chapter 34-05 RCW, as now or hereafter amended.

3. Renewal

   a. The owner or operator of a facility shall apply for renewal of the facility's permit annually, except for that year that a permit has been or will be reissued under WAC 173-351-720(6).

b. Renewal procedures. The owner or operator of a facility shall apply for renewal of this permit annually, except for the year that a permit has been or will be reissued. The owner or operator is authorized to continue all activities authorized under the currently expired permit, if the Walla Walla County-City Health Department has not rendered a decision on renewal by the yearly renewal date of the current permit.

4. Reissuance

Any owner or operator intending to continue construction, operation or post-closure beyond the permitted duration of a valid MSWLF permit must file a reissuance application at least ninety days before the existing permit expires.

5. Modification

a. The permittee intending to modify this permit must file a modification application at least thirty days before the intended modification. A modification applications must be made on forms authorized by the jurisdictional health department and the department.

b. In order to allow for permit modifications to be authorized at the time of permit renewal, the permittee may combine the application required for a permit modification with the application required for a renewal permit at the time of permit renewal.

6. Suspensions and Revocations

The Walla Walla County-City Health Department may revoke this permit if the facility is being operated in violation of chapter 70.95 RCW, chapter 173-351 WAC or local ordinances governing solid waste disposal facilities.

7. Inspections. Employees of the Walla Walla County-City Health Department or their agents may enter upon, inspect, sample, and move freely about the premises of any MSWLF unit after presentation of credentials.

Section XIII. Additional Standard Conditions

County W Program SWFAP
Facility Sudbury Landfill
File Code 1.2 '98

COORDINATOR: RENZ, HEIDI REPORT 1 OF 1

DATE/TIME REC'D: 04/09/1998 2:15 PM REPORT TYPE: INITIAL
ACTUAL DATE: 04/08/1998

CALLER NAME: RAKESTRAW, DENNIS ANONYMOUS?:
WALLA WALLA SUDBURY LANDFILL
PHONE: W 509-527-3746 EXT: TYPE:
W 509-527-4591 EXT: TYPE:

COUNTY: WALLA WALLA CITY: WALLA WALLA

LOCATION INFO: SUDBURY LANDFILL

MEDIUM: SOIL
MATERIAL: OIL/PETROLEUM QTY: UNIT: HAZARDOUS:
DIESEL FUEL OTHER:

OIL/PETROLEUM QTY: 2000 UNIT: GALLON HAZARDOUS:
OIL OTHER OTHER:

CAUSE: HUMAN FACTOR HUMAN FACTOR: INTENTIONAL
IMPACT: SOIL CONTAMINATION
SOURCE: COMMERCIAL ACTIVITY: DISPOSING

ALLEGED VIOLATOR 1: WALT JOHNSON SEPTIC SERVICE
JOHNSON, WALT
ADDRESS: 2229 FERN STREET

WALLA WALLA WA 99362

CONTACT 1: JOHNSON, WALT
PHONE: 509-529-3044 EXT: TYPE:

ADDITIONAL INFORMATION ON INCIDENT:

ILLEGAL DUMPING OF USED OIL AND DIESEL; PUMPING LIQUID NOW; TOOK SAMPLES; DAVE EATON, HEALTH DISTRICT, HAS BEEN ON SITE. DUMPED IN MEDICAL WASTE PIT; ALREADY PUMPED 1200 GALLONS (RECOVERED; TWO TRUCK LOADS

==========

PROGRAM/ORGANIZATION: SOLID WASTE SERVICES

CONTACT: HIBBLER, MIKE
REFERRAL DATE: 04/09/1998 PRIMARY?: Y

INVESTIGATOR: KRAFFT, WAYNE
DATE STARTED: 04/09/1998 DATE COMPLETED: 04/17/1998
ACTION: FIELD RESPONSE DATE: 04/17/1998

NARRATIVE TEXT: OIL HAS BEEN PUMPED FROM CELL (1,200 OF 2,000 GALLONS). CONTAMINATED SOIL HAS BEEN EXCAVATED AND WILL BE TREATED ON-SITE. TESTS OF OIL SHOW NO CONTAMINATION -- HEAVY OIL ONLY.

COUNTY: WALLA WALLA CITY: WALLA WALLA

LOCATION INFO: SUDBURY LANDFILL

MEDIUM: SOIL

MATERIAL:	OIL/PETROLEUM	QTY:	UNIT:	HAZARDOUS: N
	DIESEL FUEL	OTHER:		
	OIL/PETROLEUM	QTY: 2000	UNIT: GALLON	HAZARDOUS: N
	OIL OTHER	OTHER:		

CAUSE: HUMAN FACTOR HUMAN FACTOR: INTENTIONAL
IMPACT: SOIL CONTAMINATION
SOURCE: COMMERCIAL ACTIVITY: DISPOSING

NONPOINT: POINT: LUST:

ACTUAL VIOLATOR 1: WALT JOHNSON SEPTIC SERVICE ENFORCEMENT
JOHNSON, WALT SENSITIVE:
ADDRESS: 2229 FERN STREET

WALLA WALLA WA 99362

CONTACT 1: JOHNSON, WALT
PHONE: 509-529-3044 EXT: TYPE:

==========

PROGRAM/ORGANIZATION: SWS DATE: 04/09/1998 URGENT RESPONSE?:

COORDINATOR: RENZ, HEIDI REPORT 1 OF 1

DATE/TIME REC'D: 04/09/1998 2:15 PM REPORT TYPE: INITIAL

CALLER NAME: RAKESTRAW, DENNIS ANONYMOUS?:
WALLA WALLA SUDBURY LANDFILL
PHONE: W 509-527-3746 EXT: TYPE:
W 509-527-4591 EXT: TYPE:

COUNTY: WALLA WALLA CITY: WALLA WALLA
LOCATION INFO: SUDBURY LANDFILL

MEDIUM: SOIL
MATERIAL: OIL/PETROLEUM QTY: UNIT: HAZARDOUS:
DIESEL FUEL OTHER:
OIL/PETROLEUM QTY: 2000 UNIT: GALLON HAZARDOUS:
OIL OTHER OTHER:

CAUSE: HUMAN FACTOR HUMAN FACTOR: INTENTIONAL
IMPACT: SOIL CONTAMINATION
SOURCE: COMMERCIAL ACTIVITY: DISPOSING

ALLEGED VIOLATOR 1: WALT JOHNSON SEPTIC SERVICE
JOHNSON, WALT
ADDRESS: 2229 FERN STREET

WALLA WALLA WA 99362

CONTACT 1: JOHNSON, WALT
PHONE: 509-529-3044 EXT: TYPE:

ADDITIONAL INFORMATION ON INCIDENT:

ILLEGAL DUMPING OF USED OIL AND DIESEL; PUMPING LIQUID NOW; TOOK SAMPLES; DAVE EATON, HEALTH DISTRICT, HAS BEEN ON SITE. DUMPED IN MEDICAL WASTE PIT; ALREADY PUMPED 1200 GALLONS (RECOVERED; TWO TRUCK LOADS

INVESTIGATOR: Wayne Krafft

DATE STARTED: 4/9/98 DATE COMPLETED: 4/17/98

ACTION: Site visit ACTION DATE: 4/17/98

NARRATIVE:
oil has been pumped from cell, (1,200 gal of 2,000 gal). Contaminated soil has been excavated and will be treated on-site. Tests of oil show no contaminants - heavy oil only.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

WASHINGTON STATE DEPARTMENT OF ECOLOGY
ENVIRONMENTAL REPORTS TRACKING SYSTEM
INPUT FORM

Recorder: ~~[illegible]~~ **DATE**: 4/9/98 TIME: 2:15 PM INCIDENT DATE: 4-9-98 4-8-98 Noon approx.

ANONYMOUS: Yes No

Reported By: Dennis Rakestraw Business: ~~Walla Walla~~ Walla Walla ^ Sudbury Landfill

Address:

City: State: Zip: Best Time to Return Call:

Home Phone #: Phone Type:

Work Phone #: 509/527-3746 or 4591 Phone Type:

COUNTY: **CITY**: ~~[illegible]~~ Walla Walla Weather: Tides:

Waterway: Type:

Incident Location: Sudbury Landfill

Medium: Soil Material: oil/petroleum Oil/Petroleum: oil + diesel

Other Material:

Quantity: ~~1500~~? 2000 Unit of Measure: gal Cause: Impact:

Source: Activity:

Vessel Name: Vessel Type: Human Factor:

ALLEGED VIOLATOR (AV) BUSINESS: Walt Johnson Septic Service AV Name: Walt Johnson

AV Address: 2229 Fern ST

City: Walla Walla State: WA Zip: 99362

Contact: Walt Johnson Phone #: 529-3044 Type: Ext.

Comments: (Incident Details): Illegal dumping ~~[illegible]~~ used oil + diesel; pumping liquid now; took samples; Dave Eaton; Health Dist. has been on site. dumped in medical waste pit; already pumped ~~750~~ gal. Two Truck loads - 1K gallon (~~a~~ gallon)

Bold Type = Refer to Pull Down Menu **Caps, Bold, Underline MUST be filled in**

2/97

TO: Sheila

DATE: 4/9/98 TIME: 2:10

FROM: Dennis

OF: Wallula Landfill

BEST TIME TO CALL BACK

MESSAGE: OR 509/547-4591

- [x] Called You
- [ ] Returned Your Call
- [ ] Will Call Again
- [x] Please Call
- [ ] Wants to See You
- [ ] Was Here To See You

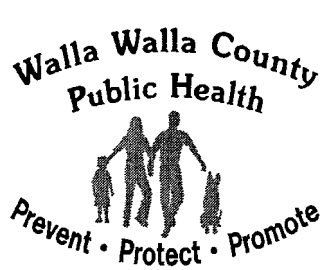
AREA CODE PHONE NUMBER EXTENSION

AREA CODE / FAX NUMBER 509/522-3746

SF 8023 12/94

A Message For You

INITIALS



FNE

WALLA WALLA COUNTY HEALTH DEPARTMENT
310 W. Poplar Street, Suite 102 • PO Box 1753
Walla Walla, WA 99362
Phone 509/527-3290 • Fax 509/527-3264 • TDD 509/527-3244

July 29, 2005

Mr. Hal Thomas
Public Works Director
City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

Dear Mr. Thomas

Enclosed is the Sudbury Road Landfill solid waste permit for 2005-2006. Issuance of the permit authorizes the City to begin construction activities in Area 7. However, a final design approval recommendation by the Department of Ecology is contingent upon: > ACTION

- Providing Ginny Darrell with the information she requested in her July 6th e-mail. compl 8/1/05
- Also, Wayne Krafft's comments regarding Volume 1, Appendix C and Volume 2, Appendix F should be addressed as soon as possible. (Letter dated July 5th.)
- Detailed explanation of changes in the Area 7 liner design.

If there are any questions, please call me at 524-2669.

Sincerely,

David Eaton, R.S.
Director of Environmental Health Programs

Walla Walla County Health Department

310 W. Poplar, P.O. Box 1753
Walla Walla, WA 99362
Phone (509) 527-3290

Sudbury Road Landfill
FULL PERMIT
For
MUNICIPAL SOLID WASTE LANDFILLING

Permit No. 0001

Section I. Permittee Information

Facility Name: City of Walla Walla Sudbury Road Municipal Landfill

Facility Location: Sudbury Road, Walla Walla

The Permittee

Owner/Operator: City of Walla Walla

Name of Contact: Hal Thomas, Director of Public Works

Address: P.O. Box 478, Walla Walla, Washington 99362

Telephone: (509) 527-4463

General

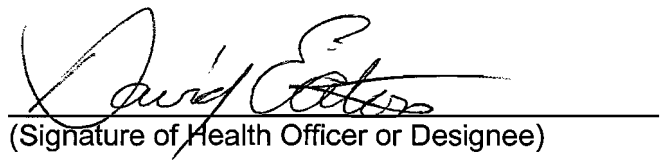
Section II. Authorization. The permittee is hereby authorized to conduct activities associated with landfilling of municipal solid waste, in conformance with the attached general and specific conditions upon the basis of information supplied in the full permit application and in compliance with chapter 173-351 WAC and RCW 70.95.163, (including demonstrations) and all relevant federal, state, and local regulations (including state air quality, water quality and noise regulations.)

The permit may be suspended or revoked according to the terms set forth in Section XII herein. If the permit is suspended or revoked, the permittee may appeal the action according to the terms of the permit and RCW 70.95.210.

This permit is transferable only upon prior written approval of the Walla Walla County Health Department. The prospective transferee must demonstrate its ability to comply with laws, regulations and permit conditions. The permit shall be reviewed annually and reissued by the expiration date in conformance with Section I herein.

This permit is subject to yearly renewal in accordance with Section XII (3) of the General

Conditions, until reissuance is required under Section XII (4).



(Signature of Health Officer or Designee)

Date of Issuance: **June 28, 2004** Renewal Date: **August 1, 2005**

Date of Modification: **November, 2004**

Date of Modification:

Date of Modification:

Date of Expiration: **July 1, 2006**

Section III. Demonstrations In granting this permit, the Walla Walla County Health Department acknowledges the following required demonstrations for each applicable MSWLF unit made in the permit application for the time period specified:

- Demonstration that the proposed alternative cover for Area 7 meets requirements of the rule. The alternative soil cover demonstration will be conducted as outlined in the **Shaw** EMCON/OWT letter to Dennis Rakestraw dated May 25, 2005. (Page 5) Results of the demonstration will be used to determine final approval of the Area 7 closure plan. See **Section IX** of this permit.

Section IV. Description of Permitted Units, Scope of this Permit and Authorized Activities.

The permittee is authorized to conduct the following activities during the specified times at municipal solid waste landfill (MSWLF) units as described below:

a. 1. **MSWLF Unit Name/Description: Area 6**

2. Rule applying to this unit: X 173-351

3. Types of waste authorized in this unit:
MSW, industrial, commercial, other- Municipal & non-hazardous industrial & commercial solid waste.

4. Authorized design volume (including final cover) **1,509,400 cubic yards**.

5. Earliest authorized start of activity: In Use

6. Latest authorized completion date: **In accordance with approved closure plan**

b. 1. **MSWLF Unit Name/Description**: **Area 7**

2. Rule applying to this unit: X 173-351

3. Authorized design volume (including final cover) **1,592,000 cubic yards**.

4. Earliest authorized start of activity: **Approval of final design,**

5. Latest authorized completion date: **In accordance with approved closure plan.**

c. 1. **MSWLF Unit Name/Description: Asbestos and Medical Waste Trenches**

2. Rule applying to this unit: X 173-304

3. Closed February, 2005. Maintain post-closure activities in accordance with requirements of WAC 173-304.

Section V. Pre-Construction, Pre-Operational, Pre-Closure Review and Cessation of Construction or Operation Activities.

1. For each new or laterally expanded unit, the permittee shall submit final design drawings, construction specifications and a construction quality assurance manual at least 60 days prior to the beginning construction date specified in Section IV. The permittee shall not begin construction until the jurisdictional health department approves these documents in writing.

2. The permittee is authorized to accept solid waste at any new or laterally expanded unit, only after a licensed engineer, having supervised construction, certifies that the construction is in accordance with this permit and in accordance with the construction quality assurance plans. The operator must notify the Walla Walla County Health Department in writing of the date when solid waste will be first received at the unit. The permittee shall not accept authorized solid waste until approved in writing by the Walla Walla County Health Department.

3. One hundred and eighty (180) days prior to beginning closure activities, specified in Section IV, the permittee shall notify the Walla Walla County Health Department of the intent to close each unit or all units according to the approved closure plan, and submit initial engineering closure plans to the health department for review, comment, and approval. Closure activities shall not begin until approval in writing from the jurisdictional health department for closure has been received.

4. If construction or operation activities started under a permit issued pursuant to this chapter cease for a period of twelve consecutive months, the Walla Walla County Health Department may at its discretion revoke the permit. The Walla Walla County Health Department shall provide notice to the owner or operator in writing explaining the reasons for revocation. The health department shall not revoke a permit where the cessation of construction or operation is caused by factors beyond the reasonable control of the permittee or when such cessation is in accordance with the provisions or the permit.

Section VI. Plan of Operation and Operational Requirements

All operational and maintenance activities conducted at the facility shall be in conformance with the plan of operation **dated November, 2004, and subsequent approved amendments, except leachate shall not be applied to Area 7 until it is demonstrated that the bottom liner meets the performance equivalent to the standard design according to the criteria in WAC 173-351-300(2)(a)(iii).** The permittee is subject to the specific operational and maintenance conditions as follows:

1. **Waste Acceptance**

   a. The permittee is authorized to accept for disposal, municipal solid waste and non-municipal solid waste, including industrial, inert and demolition, wood waste, other types of non-hazardous solid waste and solid wastes that have been excluded, exempted or otherwise removed from regulation under Chapter 173-303 WAC, the Dangerous Waste Regulation or otherwise excluded by state law, provided that such non-municipal wastes are co-disposed with municipal solid waste stream in a unit authorized in this permit, and such disposal is not elsewhere prohibited by law.

   b. The permittee must implement the procedures for excluding the receipt of dangerous waste according to the approved plan of operation.

2. **Daily cover.** The permittee shall apply daily cover according to the approved plan of operation or utilize the approved tarp system.

3. **Disease vectors.** The permittee shall prevent or control disease vectors according to the approved plan of operation.

4. **Explosive gas control.** The permittee must control explosive gases to ensure that concentrations of methane do not exceed standards set forth in chapter 173-351 WAC.

5. **Air Criteria.** The permittee must comply with all applicable requirements of the Washington State implementation plan approved under Federal Clean Air Act laws and shall not conduct open burning unless authorized in the approved plan of operation. Household waste shall not be open burned under any conditions.

6. **Access Requirements.** The permittee shall control access by humans and animals, according to approved plan of operation and the approved engineering plans. The permittee shall have a lockable gate at each entry to the facility.

7. **Run-on/Run-off Control Systems.** The permittee shall maintain the run-on/run-off control systems for the active and closed MSWLF units according to the approved plan of operation, and the approved engineering plans.

8. **Surface Water Requirements.** The permittee shall not allow discharges of pollutants into waters of the state that violate state law and regulations from point or nonpoint sources, in accordance with the approved plan of operation and the approved engineering plans.

9. **Liquids Restrictions.** The permittee shall not allow liquids to be disposed of, except in accordance with the approved plan of operation.

10. **Record Keeping.** The permittee shall keep records required by the plan of operation at an approved location. The permittee shall notify the Walla Walla County-City Health Department when documents (not otherwise excluded from this requirement in the plan of operation) have been placed in or added to the operating record. The permittee shall furnish all information contained in the operating record for inspection at all reasonable times by the Walla Walla County-City Health Department.

11. **Annual Reports.** The permittee shall submit an annual report for the previous calendar year to the jurisdictional health department and the Department of Ecology by **April 1** of each year, on forms supplied by the Department of Ecology and other information as required in this permit.

12. **Additional Operating Requirements.** The permittee shall operate the facility to control road dust, collect scattered litter, prohibit scavenging, and ensure that qualified landfill personnel are on site in accordance with the approved plan of operation.

13. **Reserve Operational Equipment.** The permittee shall ensure that reserve operational equipment is available at all times according to the approved plan of operation.

14. **Permanent Posts.** The permittee shall clearly mark the active boundaries according to the approved plan of operation.

15. **Compaction.** The permittee shall thoroughly compact solid waste before succeeding layers are added according to the approved plan of operation.

16. **Maintenance of Monitoring Systems.** The permittee shall maintain the monitoring systems for air, ground water and surface water according to the approved plan of operation and the approved hydrogeologic report.

17. **Require Recycling.** The permittee shall provide the opportunity to recycle solid wastes according to the approved plan of operation.

18. **Municipal/Sewage Sludge/Biosolids.** The permittee shall prohibit disposal of municipal sewage sludge or biosolids except in accordance with WAC 173-351-220(10).

Section VII. Ground Water Monitoring Program and Hydrogeologic Report

1. **Groundwater Standard.** The permittee shall not cause exceedances of the standards for ground water quality set forth in chapter 173-200 WAC (Water Quality Standards of the Ground Waters of the State of Washington) or chapter 173-290 WAC (Drinking Water Standards). If it is determined that these standards have been exceeded, or a statistically significant increase over background for one or more of the constituents listed in WAC 173-351-990, Appendix 1, has occurred, the permittee shall immediately comply with the requirements of WAC 173-351-430 (4).

2. **Hydrogeologic Report.** The hydrogeologic report dated **June, 1995**, together with amendments approved by letters dated **August 11, 1999** (Addition or well #14) and **January 7, 2002,** (Addition of well #15) which meets the performance standards of WAC 173-351-490, is hereby approved.

3. **Ground Water Monitoring Program.** The Ground Water Monitoring Program, dated **June, 1995**, together with amendments approved by letters dated **August 11, 1999**(Addition or well #14) and **January 7, 2002,** (Addition of well #15) which meets the performance standards of WAC 173-351-400 through 490, is hereby approved.

4. **Sampling and Analysis Plan.** The Sampling and Analysis Plan, dated **June, 1995**, together with amendments approved by letters dated **August 11, 1999** (Addition of well #14), **January 7, 2002,** (Addition of well #15), **June 9, 2003** (amended detection monitoring schedule) and **April 11, 2005** (elimination of cyanide testing in well #14), which meets the performance standards of WAC 173-351-410, is hereby approved.

Section VIII. Quality Assurance and Quality Control. The permittee shall perform all construction activities according to the construction quality assurance plan dated **November, 2004,** which is hereby approved, for **Area 6 and Area 7.**

Section IX. Closure and Post-Closure Plans. The permittee shall perform closure and post-closure according to the closure and post-closure plans dated **November, 2004**, which are hereby approved for **Area 6.** The closure plan for **Area 7** is provisionally approved until completion of the Area 6 alternative cover demonstration. If the Area 6 alternative cover proves to be an equivalent design, full closure plan approval will be considered at that time.

Section X. Financial Assurance for Closure, Post-Closure. The permittee shall maintain financial instruments for closure & post-closure dated **November, 2004, revised May 2005,** which are hereby approved for **Area 6 and Area 7**. The closure/post-closure cost estimates **shall be updated annually** and submitted to the Walla Walla County Health Department with the annual landfill report. In addition to normal updates, the closure cost estimates for Area 7 may need to be adjusted depending on the results of the Area 6 alternative cover demonstration.

Section XI. Other Specific Conditions.

Section XII. General Conditions

1. **Transferability**

   a All permits issued pursuant to this regulation are transferable only upon prior written approval of the Walla Walla County Health Department and a demonstration that the prospective transferee will be able to comply with applicable laws and regulations, permit conditions, and other requirements to which the prospective transferor is subject.

   b. Upon transfer of ownership of all or part of the facility, a provision must be included in the property deed indicating the period of time during which the facility has been disposing of solid waste, a description of the solid waste contained within, and the fact that the records for the facility have been filed with the Walla Walla County Health Department. The deed also must reference a map, which must be filed with the county clerk, showing the limits of the active areas as defined in WAC 173-351-100.

2. **Appeals**

Whenever the Walla Walla County Health Department denies a permit or suspends a permit for a solid waste disposal site, it shall, upon request of the applicant or holder of the permit, grant a hearing on such denial or suspension within thirty days after the request therefore is made. Notice of the hearing shall be given to all interested parties including the county or hearing the health officer shall notify the applicant or the holder of the permit in writing of his or her determination thereof. Any party aggrieved by such determination may appeal to the pollution control hearings board by filing with the hearings board a notice of appeal within thirty days after receipt of notice of determination of the health officer. The hearings board shall hold a hearing in accordance with the provisions of the Administrative Procedure Act, chapter 34-05 RCW, as now or hereafter amended.

3. **Renewal / Reissuance**

a. The owner or operator of the facility shall apply for renewal and reissuance of the facility's permit annually.

4. **Modification**

a. The permittee intending to modify this permit must file a modification application at least thirty days before the intended modification. A modification application must be made on forms authorized by the jurisdictional health department and the department.

b. In order to allow for permit modifications to be authorized at the time of permit renewal, the permittee may combine the application required for a permit modification with the application required for a renewal permit at the time of permit renewal.

6. **Suspensions and Revocations**

The Walla Walla County Health Department may revoke this permit if the facility is being operated in violation of chapter 70.95 RCW, chapter 173-351 WAC or local ordinances governing solid waste disposal facilities.

7. **Inspections.** Employees of the Walla Walla County Health Department or their agents may enter upon, inspect, sample, and move freely about the premises of any MSWLF unit after presentation of credentials.

Section XIII. Additional Standard Conditions

1. **Vadose monitoring liquid shall be tested for parameters contained in Appendix IV of WAC 173-351-990, if enough liquid is produced.**

2. **The landfill needs an additional onsite operator on Mondays and Saturdays. With only one operator, the working face of the landfill could be unattended for several hours per day. This may result in potential safety and liability issues.**

APPENDIX C

Site Photographs

Schwyn Environmental Services

North

0 360

Approximate Scale in Feet

Note:
Photograph taken three days before landfill opens.

Source: USDA, Farm Services Agency (AFPO)
Reproduced by Bergman Photographic Services.

Schwyn Environmental Services

Sudbury Road Landfill
Walla Walla, Washington

July 7, 1978
Aerial Photograph

Figure
C-1

Source: WSDOT

0 350

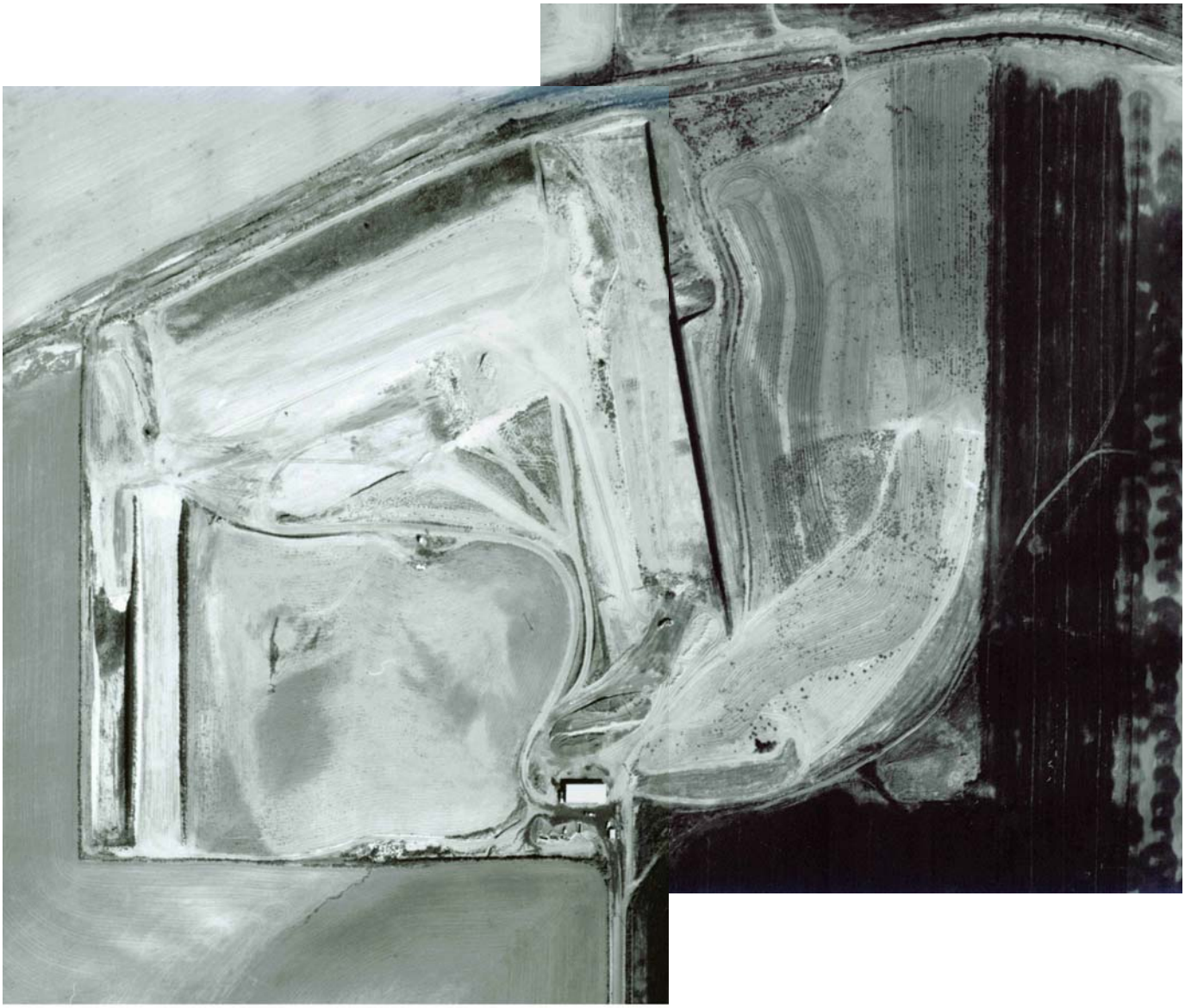
Approximate Scale in Feet

Schwyn Environmental Services

Sudbury Road Landfill
Walla Walla, Washington

August 2, 1979
Aerial Photograph

Figure
C-2



North

0 395

Approximate Scale in Feet

Source: WSDOT

Schwyn Environmental Services

Sudbury Road Landfill
Walla Walla, Washington

September 27, 1990
Aerial Photograph

Figure
C-4

North

0 330

Approximate Scale in Feet

Source: WSDOT

Schwyn Environmental Services

Sudbury Road Landfill
Walla Walla, Washington

August 1, 1990
Aerial Photograph

Figure
C-3

North

0 475

Approximate Scale in Feet

Source: Walker and Associates, 1994.

Schwyn Environmental Services

Sudbury Road Landfill
Walla Walla, Washington

December 21, 1994
Aerial Photograph

Figure
C-5

North

0 200 400

Approximate Scale in Feet

Source: Walla Walla City GIS Department

Schwyn Environmental Services

Sudbury Road Landfill Walla Walla, Washington	**March 10, 2003** **Aerial Photograph**	Figure C-6

APPENDIX D

Interview Summaries

Schwyn Environmental Services

SUMMARY OF INTERVIEWS

AL PROUTY

Mr. Al Prouty was interviewed by Craig Schwyn via telephone and in-person on several occasions.

4/7/2005: Phone Discussion with Al Prouty

Mr. Prouty stated that when he got to the landfill the trenches were being excavated 25 to 30 ft below the surface level of the draw located north of Area 5 and the railroad right-of-way.. When he took over he placed fill back into the active trench to bring the bottom up approximately level with the draw.

Mr. Prouty stated that the waste was not compacted or covered sufficiently when he took over. He covered waste in about 800 ft of trench when he took over.

Mr. Prouty indicated that he kept good records but that they may have been destroyed during position and office changes.

4/14/2005: Interview with Al Prouty at his Walla Walla home.

Landfill photographs from 1979 and 1990 were used for discussion purposes during the interview.

Mr. Prouty indicated that he made regular visits to the landfill during the late 1970s and early 1980s, though it was not under his supervision. Mr. Prouty was the Supervisor of the Waste Water Treatment Plant during those years.

Asbestos pits were first excavated when Al began to supervise the landfill.
Asbestos pit 1 located west of Area 5 and was closed in 1984.

Area 5 Trenches were generally excavated about 20 ft deep. Four trenches are located in Area 5. Al started on the second trench. Installed a gas vent in third trench and a lysimeter in the fourth trench.

Al verified that the landfill began operation in 1978.

MW-1a and MW-3a were all filled with cement. MW1a was located near MW-11 where the drop boxes were located.

The existing drop boxes are located in the old animal burial area.

Al indicated that the waste in Trench 5a, 5b and 5c had very minimal soil cover 1985. Al spent much of his first year as supervisor getting the waste covered. He said that he put a lot of cover on Area 5 (5 to 8 ft). Cover on Trenches 5b and 5c is 3-4 ft thick.

Al stated that his rule-of-thumb was to not excavate below the level of the gully next to the railroad right-of-way.

He indicated that the bottom of the gas vent in area 5c and a lysimeter placed in area 5d are level with the bottom of the trenched in those areas.

Al believes that the Area 5 trench 5a may have been excavated 25 to 30 feet below the level of the gully.

Al recalled that waste in Area 2 was placed when Area 1 was full and while Area 5 was being excavated. He believes that the waste is a very thin layer place on the former surface, primarily filling the natural gully in the area.

5/6/2005: Phone Discussion with Al Prouty

Mr. Schwyn contacted Al to discuss the first asbestos disposal area and the medical waste trench.

Al stated that the first asbestos disposal area consisted of several trenches excavated approximately 12 ft deep (~level with the gully at 790 ft MSL). The west side was cut 8 to 10 feet from the fence so that a vehicle could get by.

The asbestos cell filled very quickly due to the amount of material being brought in at that time. Many asbestos abatement projects were being initiated.

The second asbestos trench was cut much bigger to accommodate the quantity of material.

Mr. Prouty stated that only one medical waste trench was excavated and used under his supervision.

BOB SMITH

Mr. Bob Smith was interviewed on March 24, 2005 by Craig Schwyn. Landfill photographs from 1979 and 1990 were used for discussion purposes. Mr. Smith provided the following information.

Bob initially began working for the City at the Wastewater Treatment Plant (WWTP) in 1979. Based on his best recollection he was transferred to the SRL in 1985 about the same time as Al Prouty. Bob has traditionally operated the scrapper and heavy equipment for trench excavation and cover.

Bob did not observe waste ever being placed in Area 2. He indicated that appliances were stored in Area 2 for recycling. If the recycler didn't show up the appliances were place in the active cell for disposal.

Bob started when Cell 5c was almost filled. Cell 5b had been filled and covered before he stated.

When Bob started asbestos wastes were being disposed of in a cell located west of Area 5. He recollects that the cell was three or four scrapers wide. Asbestos was subsequently placed in a new trench constructed at the southwest corner of the landfill.

Bob excavated Area 5 trenches 5c and 5d fairly deep. He estimated the depth to be about 40 feet below surface. He never observed groundwater in the trenches. Bob helped Al Prouty install a methane gas pipe in the base of one of the trenches and indicated it would be a good indicator of the trench depth.

Bob indicated that dead animals were commonly buried all along the fence line. A backhoe was used to dig a trench and the animals were dropped in and covered.

APPENDIX E

Well Information

COPY

DEC 9 1976

State of Washington
Department of Ecology

December 1, 1976

City of Walla Walla
Office of General Services
P. O. Box 478
Walla Walla, WA 99362

Attention: Mr. Verne Tompkins, Director

Re: Sanitary Landfill Monitoring Wells

Dear Verne:

This letter is to confirm our meeting with you at your office on November 2, 1976. At that meeting we discussed the number and location of the monitoring wells to be constructed at the proposed new landfill site.

We agreed that three (3) wells will be constructed in the locations as listed on the topographic map you sent to us on November 9, 1976. Prior approval to construct these wells was necessary in order to use the well log data for additional information regarding the geology and hydrology of the proposed sanitary landfill.

If you have any additional questions or comments regarding this matter, please feel free to contact us.

Sincerely,

Claude W. Sappington
Environmental Quality Advisor

CWS:adh

cc: Avery Wells, DOE - Olympia
Dave Eaton - Walla Walla County-City Health Dept.

RJG J.M. 8-23-79

CITY OF WALLA WALLA

BOX 478 WALLA WALLA, WA. 99362

Office of Public Works Director

August 16, 1979

Walla Walla Co
Solid Waste

RECEIVED
AUG 23 1979
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

State Department of Ecology
Mail Stop PV-11
Olympia, Washington 98504

Attention: Charles A. Meyer, Solid Waste Management Division,
Office of Land Programs

Subject: Supplementary Grant for Sudbury Sanitary Landfill

Gentlemen:

Please find the enclosed project description for constructing a water system to provide dust suppression at the newly opened landfill.

During the development of the project, Fred Selle, Engineering Supervisor, contacted Mr. Meyer via telephone several times to keep him informed of the City's landfill problems and keep him abreast of the City's progress toward a solution. It was expressed during those conversations that the City staff must expeditiously pursue a solution to the immediate problem. At the time the City staff could determine a prudent solution, it would apply for financial assistance from the Department of Ecology (DOE). We requested that the DOE favorably consider applying the costs that the City incurs during the preliminary and design phase of the project as a match toward the general construction phase of the project. We again do so.

In addition to this request, the City will, in the near future, submit grant funding applications for the old landfill closure, and finally a supplemental request for additional items for development of the new landfill that are not as immediate as the dust problem solution.

Sincerely,

Norman L. Skiles

Norman L. Skiles, P.E.
Public Works Director

FS/br
cc: Dave Eaton, County-City Health Department
Advanced Engineering Consultants, Roger Johnson

August 16, 1979

CITY OF WALLA WALLA LANDFILL WATER SYSTEM

I. PROJECT OBJECTIVE: The project objective is to supply water to the existing landfill site and, using controlled application of the water, suppress dust.

II. PROBLEM HISTORY: The City of Walla Walla has been operating at the current landfill site for approximately one year. During that period a significant operational problem has occurred---dust. Dust has caused the failure of equipment (City and private), operational safety problems by obstructing operator and user vision, and a very uncomfortable and unhealthy environment for personnel working at the landfill. The dusty environment has caused the Department of Labor and Industries (DLI) to cite the City of Walla Walla.

The City under pressure from DLI has accelerated its efforts to resolve the problem. The City has connected a sprinkler irrigation system to an existing deep well irrigation pump and had a water tank constructed and installed on an existing City truck. The water transmission and distribution system for the sprinkler system was borrowed from the City's Industrial Waste Farm. Its use is temporary since it must be returned to the farm lessee.

In order to provide long term, cost effective dust suppression it was necessary to design a water system that would be able to serve the landfill during its useful life. The City contracted with the U. S. Army Corps of Engineers to provide aerial mapping for design. In order to expedite design of a system, it was decided to seek consulting engineering services. Two of three firms contacted submitted proposals. The selected firm has met with the City staff for conceptive design review. They have been directed to proceed and provide contract documents. The scheduled date to open bids is September 11, 1979.

III. PROJECT DESCRIPTION: The City requests that the Department of Ecology participate in the project engineering and construction costs as they have been outlined in the attached cost estimate breakdown.

The Design Engineering element proposed includes aerial mapping (used in design), cost for design engineering provided by the consultant, and in-house engineering.

The Construction element will include: 1) the construction of a hydro-pneumatic tank and building at the existing well site, 2) approximately 2,000 feet of water transmission line, 3) railroad crossing, and 4) a water distribution system. The water distribution system will allow controlled application rates to the excavation, waste disposal, and surface reclamation sites. A complementary benefit of the system will be increased fire protection for the site and adjacent wheat fields.

The Engineering and Contract Administration element will include field engineering, inspection, contract administration performed during the construction phase of the project.

CITY OF WALLA WALLA LANDFILL WATER SYSTEM

COST ESTIMATE BREAKDOWN

	Major Project Element	Estimated Cost	Requested From Ref. 26 Grant	Estimated Date of Delivery or Completion
I.	Design Engineering	$ 6,000		August 24, 1979
II.	Construction			
	a. Transmission System	$57,000		October 1, 1979
	b. Distribution System	$19,000		October 1, 1979
III.	Engineering and Contract Administration	$ 3,000		December 1, 1979
	SUBTOTAL	$85,000		
IV.	Contingency (10%)	$ 8,500		
	TOTAL	$93,500	$46,750	

CITY OF WALLA WALLA

BOX 478 WALLA WALLA, WA. 99362

Office of Public Works Director

April 13, 1981

Walla Walla County-City Health Department
P. O. Box 1753
Walla Walla, Washington 99362

Attention: David Eaton, Director, Environmental Health

Subject: Landfill Sites and 1981 Permits

Gentlemen:

In response to your letter dated February 4, 1981, the following information is provided.

A review of the well logs for the landfill shows that the wells were sealed in accordance with good well drilling practice. The apparent settling at the surface is probably a result of two things---some normal settlement of the bentonite clay and settlement of the loose earth pushed up around the casing for landscaping purposes. However, we will fill in the settlement and retamp the area. The damaged top section on Landfill Well No. 3 has been repaired and raised and the surrounding terrain contoured to assist drainage away from the well head. Methane monitoring equipment is on order and due for delivery before the end of the month. The meter is of the style used by Denver for monitoring its landfills. The engineering plan for cell construction is enclosed for your inspection and we would welcome the opportunity to review it on-site during your re-inspection of the landfill. The "phased plan" for final covering of the old landfill is moving slowly due to the extensive number of manhours required to prepare the working documents and grant requests. However, recent staff accretions will help resolve the problem and we expect to begin major project work in the late spring of 1981. A methane monitoring schematic will be part of the closure plan.

Sincerely,

Norman L. Skiles

Norman L. Skiles, P.E.
Public Works Director

5-1981 - Discarded caps on top of well casings (all three)

TF
br
Enclosure

CITY OF WALLA WALLA

LANDFILL EXCAVATION SCHEME

This summary of earth moving operations describes the general methods of opening and closing landfill cells.

GENERAL GUIDELINES

1) Excavation ceases at ten feet above the known high water table elevation as determined by soundings taken from the landfill test wells.

2) The bottom of the trench is compacted thoroughly before being placed in service. The compaction is done to help establish an impermeable barrier for leachate migration down into the water table. The palouse soil type and low annual precipitation combine to make compaction reasonably effective, considering the ten feet of soil left over the known high water level.

3) Solid waste deposited in the cells will be covered by at least six inches of soil at the close of the operating day. The soil cover is to prevent debris blowing and to discourage vermin.

4) Permanently closed cells and final top covers will receive one foot of compacted cover followed by three feet of uncompacted cover. The purpose of the one foot of compacted cover is to form a barrier to water penetration which would stimulate leachates. A uniform grade of compacted cover will assist in water draining off to the sides of the cells as opposed to a downward migration. The three feet of soil cover is to provide sufficient base for growth of a ground cover. The finished grade will be suitable for farming machinery.

5) Cells will be excavated in the sequence and manner as illustrated in the accompanying diagrams 1 through 4.

br
Attachments

CITY OF
WALLA WALLA

PUBLIC WORKS

CITY HALL - 15 N. 3rd Ave.
P.O. Box 478
Walla Walla, WA 99362-0216
(509) 527-4463
FAX (509) 527-3745
SCAN 445-4463

March 14, 1994

Nr. Norman Dahl
EMCON Northwest, Inc.
18912 North Creek Parkway
Suite 100
Bothell, Washington 98011-8016

Dear Norm:

Well No. 6 was located to be the "downstream" monitoring well for both Area 7 and Area 8, based on data available at that time. Refer to the attached Groundwater Static Surface Elevations.

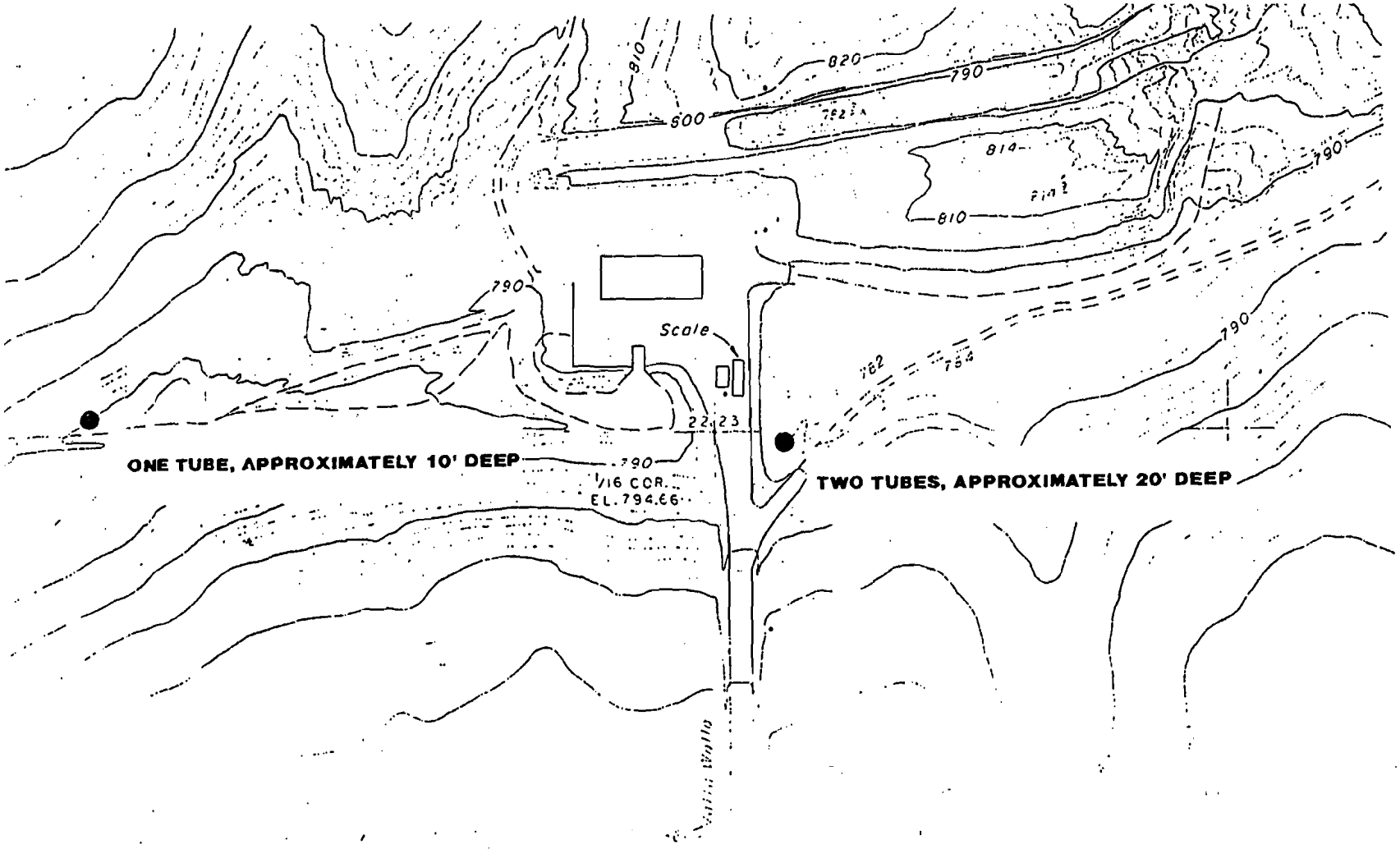
Assuming direction of flow is normal to the aquifer hydraulic surface contour, then Well No. 6 is located to intercept the first groundwater aquifer flowing under both cells. Remember that Cell 7 bottom will slope from 2% to 5% from east to west and cell 8 southwesterly, both generally along the axis of each cell.

This is just for your records to respond to "need" to install additional monitoring wells "downstream" from Cell 7 and "closer" to Cell 8, as hypothesized by regulators.

Sincerely,

Duane L. Scroggins, P.E.
Public Works Director

brh/L1031494
Enclosure
cc: Al Prouty



METHANE MONITORING WELLS

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

(1) OWNER: Name Walla Walla City Land Fill Address Monitoring Well # 1A

(2) LOCATION OF WELL: County Walla Walla SEE BELOW ¼ ¼ Sec. T. N., R. W.M.

Bearing and distance from section or subdivision corner NE¼ NE¼ NW¼ Sec 22 T7N R35E

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) .... #1
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 5 inches.
Drilled 65 ft. Depth of completed well 65 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 5 " Diam. from 0 ft. to 65 ft.
Threaded ☐ " Diam. from ft. to ft.
25# PVC Welded ☒ " Diam. from ft. to ft.

Perforations: Yes ☒ No ☐
Type of perforator used Machine
SIZE of perforations 1/2 in. by 3 in.
perforations from ft. to ft.
40 perforations from 25 ft. to 65 ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☒
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☒ No ☐ Size of gravel: 3/4 - 1 1/4
Gravel placed from 25 ft. to 65 ft.

Surface seal: Yes ☒ No ☐ To what depth? 25 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name None
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 27 ft. below top of well Date Nov 21-76
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Baller test 4 gal./min. with 35 ft. drawdown after 1/2 hrs.
Artesian flow g.p.m. Date
Temperature of water 58 Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG: T7N R35E

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top Soil & Brown clay	0	35
Brown clay with Fine Sand Some water	35	36
Clay - Brown	36	38
Gravel - Cement - Brown	38	49
Clay - Brown	49	53
Gravel - Cement - Brown	53	65

W. W. Land Fill #1

BEGIN AT THE NORTHEAST CORNER OF SECTION 22 IN TOWNSHIP 7 NORTH, RANGE 35 EAST OF THE WILLAMETTE MERIDIAN AND RUNNING THENCE SOUTHERLY ALONG THE EAST LINE OF SAID SECTION 22, A DISTANCE OF 533 FEET; THENCE WESTERLY AT RIGHT ANGLES TO THE EAST LINE OF SAID SECTION 22, A DISTANCE OF 471 FEET TO THE SITE OF TEST WELL #1

RECEIVED
JAN 11 1977
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

Work started Nov 15, 1976 Completed Nov 22, 1976

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. Mahatt
(Person, firm, or corporation) (Type or print)

Address RT # 2 Box 111 Milton Freewater

[Signed] Lowell W. Mahatt
(Well Driller)

License No. C-81 Date Dec. 16, 1976

(USE ADDITIONAL SHEETS IF NECESSARY)

Third Copy — Owner's Copy

STATE OF WASHINGTON

Permit No. ....

(1) OWNER: Name Walla Walla City Address

(2) LOCATION OF WELL: County — ¼ SE ¼ Sec. Below T. N., R.

Bearing and distance from section or subdivision corner SE¼ NE¼ NE¼ Sec 2

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☑ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one).... # 2
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☑ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 5 inches.
Drilled 155 ft. Depth of completed well 155 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 5 " Diam. from 0 ft. to 155 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☑ " Diam. from ft. to ft.
125# PVC

Perforations: Yes ☑ No ☐
Type of perforator used Machine
SIZE of perforations 1/2 in. by 3 in.
perforations from ft. to ft.
80 perforations from 80 ft. to 155 ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☑
Manufacturer's Name
Type Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☑ No ☐ Size of gravel: 3/4 x 1 1/4
Gravel placed from 30 ft. to 155 ft.

Surface seal: Yes ☑ No ☐ To what depth? 30 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Wilcox
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ft.
Static level 75 ft. below top of well Date Dec. 14-76
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☑ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 50 gal./min. with 30 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water 59 Was a chemical analysis made? Yes ☐ No ☑

(10) WELL LOG: T 7 N R 3

Formation: Describe by color, character, size of material and structur show thickness of aquifers and the kind and nature of the material i stratum penetrated, with at least one entry for each change of form

MATERIAL	FROM	
Top soil & clay - Brown	0	5
Clay - Tan	57	7
Gravel Cement - Brown	79	
Clay - Brown	95	9
Gravel Cement - Brown	97	1
Gravel Med - Some water	106	1
Gravel Cement - Brown	115	1
Clay - Brown	120	1
Gravel Cement - Brown	122	1
Clay - Brown	124	1
Gravel Water bearing	127	1

BEGIN AT THE NORTHEAST CORN OF SECTION 22 IN TOWNSHIP 7 NORTH, RANGE 35 EAST OF THE WILLAMETTE MERIDIAN AND RUNNING THENCE SOUTHERLY ALONG THE EAST LINE OF SAI SECTION 22, A DISTANCE O 1270 FEET, THE WESTERLY AT RIGHT ANGLES TO THE EAST LINE OF SAID SECTION 22, A DISTANCE OF 150 FEET TO THE SITE OF TEST WELL #2

Work started Dec 1, 19 76 Completed Dec 15,

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this rep true to the best of my knowledge and belief.

NAME Lowell W. Marlatt
(Person, firm, or corporation) (Type or print

Address R.T. # 2 Box 111 Milton Free

[Signed] Lowell W. Marlatt
(Well Driller)

License No. C-81 Date Dec 16,

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7356—CS—(Rev. 4-71).

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. ______
Permit No. ______

(1) OWNER: Name Walla Walla City Address [illegible]

(2) LOCATION OF WELL: County Walla Walla ___ ¼ ___ ¼ Sec ___ T ___ N., R ___ W.M.
Bearing and distance from section or subdivision corner MONITOR WELL #3A

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☑ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ______
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☑ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 5 inches.
Drilled 85 ft. Depth of completed well 80 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 5" Diam. from 0 ft. to 80 ft.
Threaded ☐ ___" Diam. from ___ ft. to ___ ft.
PVC Welded ☑ ___" Diam. from ___ ft. to ___ ft.

Perforations: Yes ☑ No ☐
Type of perforator used Machine
SIZE of perforations 1/2 in. by 3 in.
___ perforations from ___ ft. to ___ ft.
52 perforations from 25 ft. to 80 ft.
___ perforations from ___ ft. to ___ ft.

Screens: Yes ☐ No ☑
Manufacturer's Name ______
Type ______ Model No. ______
Diam. ___ Slot size ___ from ___ ft. to ___ ft.
Diam. ___ Slot size ___ from ___ ft. to ___ ft.

Gravel packed: Yes ☑ No ☐ Size of gravel: 1/4 - 1 1/4
Gravel placed from 25 ft. to 80 ft.

Surface seal: Yes ☑ No ☐ To what depth? 25 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) PUMP: Manufacturer's Name None
Type: ______ H.P. ______

(8) WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 28 ft. below top of well Date Nov 21-76
Artesian pressure ELV 756 lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☑ If yes, by whom? ______
Yield: ___ gal./min. with ___ ft. drawdown after ___ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ______
Bailer test 25 gal./min. with 40 ft. drawdown after 1 hrs.
Artesian flow ______ g.p.m. Date ______
Temperature of water 58 Was a chemical analysis made? Yes ☐ No ☑

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top Soil & Clay - Brown	0	20
782	ELV	764
Gravel in Brown Clay	20	21
	ELV	763
Clay - Brown	21	29
	ELV	755
Clay - Tan	29	34
	ELV	750
Gravel Brown	34	62
	ELV	722
Clay - Brown	62	64
	ELV	720
Gravel Some water 62'		
Caving 80-86	64	86
	ELV	698

#3

Work started Nov 14, 1976 Completed Nov 21, 1976

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. Mallatt (Person, firm, or corporation) (Type or print)
Address Rt 2 Box 111 Milton-Freewater
[Signed] Lowell W. Mallatt (Well Driller)
License No. C-81 Date Dec. 16, 1976

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

#1

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

(1) OWNER: Name City of Walla Walla Address Box 478

LOCATION OF WELL: County Walla Walla SW ¼ NE ¼ Sec. 22 T. 7 N., R. 35 E W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 1
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 2" inches.
Drilled 121 ft. Depth of completed well 121 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 2 " Diam. from +2 ft. to 118 ft.
Threaded ☒ ..... " Diam. from ..... ft. to ..... ft.
Welded ☐ ..... " Diam. from ..... ft. to ..... ft.

Perforations: Yes ☐ No ☒
Type of perforator used .....
SIZE of perforations ..... in. by ..... in.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type 316 Model No. .....
Diam. 2 Slot size .010 from 108 ft. to 118 ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☒ No ☐ To what depth? ..... ft.
Material used in seal .....
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

(7) PUMP: Manufacturer's Name .....
Type: ..... H.P. .....

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 23' ft. below top of well Date 10-22-86
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? DRILLER
Yield: 12 gal./min. with 1 ft. drawdown after 1 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
10:00	23'				
11:00	24'				
01	23'				

Date of test 9-8-86
Bailer test ..... gal./min. with ..... ft. drawdown after ..... hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water 54 Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Topsoil	0	23
Sand + Brown Clay	23	42
Sand	42	48
Brown Clay + Gravel	48	73
Brown Clay	73	79
Brown Clay + Gravel	79	87
Brown Clay	87	92
Brown Clay + Gravel	92	97
Gravel - water	97	121
7 Sacks Filter Sand 10-20 From 121 To 90 FT		
Pumped in 15 Sacks Vol Clay From 90 To 6'		
1 FT of Sand 6' To 5'		
Put in 6 Sacks Portland Cement From 5' To 6 Round Level		

Work started 8-27, 19 86. Completed 9-18, 19 86

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Harding Drilling Co.
(Person, firm, or corporation) (Type or print)

Address Rt 3 Box 67 Walla Walla, Wa

[Signed] Mike Harding
(Well Driller)

License No. 173 Date 10-28, 19 86

WATER WELL REPORT

Driller's Copy

STATE OF WASHINGTON

Application No. ....

Permit No. ....

OWNER: Name Walla Walla City Land Fill Address NEW LAND FILL

LOCATION OF WELL: County Walla Walla ¼ ¼ Sec. T N., R. W.M.

and distance from section or subdivision corner MONITOR WELL #1A

PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

TYPE OF WORK: Owner's number of well (if more than one) .... #1
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

DIMENSIONS: Diameter of well 5 inches.
Drilled 65 ft. Depth of completed well 65 ft.

CONSTRUCTION DETAILS:
Casing installed: 5 " Diam. from 0 ft. to 65 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

Perforations: Yes ☒ No ☐
Type of perforator used Machine
SIZE of perforations 1/2 in. by 3 in.
perforations from ft. to ft.
40 perforations from 25 ft. to 65 ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☒
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☒ No ☐ Size of gravel: 3/4 x 1 1/4
Gravel placed from 25 ft. to 65 ft.

Surface seal: Yes ☐ No ☐ To what depth? 25 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

PUMP: Manufacturer's Name None
Type: H.P.

WATER LEVELS: Land-surface elevation above mean sea level.... ft.
-27 ft. below top of well Date Nov 21-76
Pressure EW 739 lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

TEST TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom?
gal./min. with ft. drawdown after hrs.
" " "
" " "

Data (time taken as zero when pump turned off) (water level measured from well top to water level)

Water Level	Time	Water Level	Time	Water Level

Date of test
4 gal./min. with 35 ft. drawdown after 1/2 hrs.

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top Soil & Brown clay	0	35
	786	751 ELV
Brown clay with Fine Sand. Some water ELV 754	35	36
Clay - Brown ELV 745	36	38
Gravel - Cement - Brown	38	49
	ELV	737
Clay - Brown	49	53
	ELV	733
Gravel - Cement - Brown	53	65
	ELV	721
W. W. Land Fill #1		

Work started Nov 15 1976 Completed Nov 22 1976

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. McNatt
(Person, firm, or corporation) (Type or print)

Address RT #2 Box 111 Milton Freewater Ore.

[Signed] Lowell W. McNatt
(Well Driller)

... of Ecology
... Copy — Owner's Copy
Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. ....
Permit No. ....

OWNER: Name Walla Walla City Address LANDFILL - NEW

LOCATION OF WELL: County Walla Walla ___ ¼ ___ ¼ Sec ___ T ___ N., R ___ W.M.

...ng and distance from section or subdivision corner MONITOR WELL #3A

PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☑ Other ☐

TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☑ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

DIMENSIONS: Diameter of well 5 inches.
Drilled 85 ft. Depth of completed well 80 ft.

CONSTRUCTION DETAILS:
Casing installed: 5" Diam. from 0 ft. to 80 ft.
Threaded ☐ ___" Diam. from ___ ft. to ___ ft.
PVC Welded ☑ ___" Diam. from ___ ft. to ___ ft.

Perforations: Yes ☑ No ☐
Type of perforator used Machine
SIZE of perforations 1/2 in. by 3 in.
___ perforations from ___ ft. to ___ ft.
52 perforations from 25 ft. to 80 ft.
___ perforations from ___ ft. to ___ ft.

Screens: Yes ☐ No ☑
Manufacturer's Name ___
Type ___ Model No. ___
Diam. ___ Slot size ___ from ___ ft. to ___ ft.
Diam. ___ Slot size ___ from ___ ft. to ___ ft.

Gravel packed: Yes ☑ No ☐ Size of gravel: 1/4 - 1 1/4
Gravel placed from 25 ft. to 80 ft.

Surface seal: Yes ☑ No ☐ To what depth? 25 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ___ Depth of strata ___
Method of sealing strata off ___

PUMP: Manufacturer's Name None
Type: ___ H.P. ___

WATER LEVELS: Land-surface elevation above mean sea level.... ft.
Static level 28 ft. below top of well Date Nov 21-76
Artesian pressure EL 750 lbs. per square inch Date ___
Artesian water is controlled by ___ (Cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☑ If yes, by whom? ___
Yield: ___ gal./min. with ___ ft. drawdown after ___ hrs.
" " "
" " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ___
Bailer test 25 gal./min. with 40 ft. drawdown after 1 hrs.
Artesian flow ___ g.p.m. Date ___
Temperature of water 58 Was a chemical analysis made? Yes ☐ No ☑

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top Soil & Clay - Brown	0	20
782	ELV 764	
Gravel in Brown clay	20	21
	ELV 763	
Clay - Brown	21	29
	ELV 755	
Clay - Tan	29	34
	ELV 750	
Gravel Brown	34	62
	ELV 722	
Clay - Brown	62	64
	ELV 720	
Gravel some water 62'		
Caving 80-86	64	86
	ELV 698	

#3

Work started Nov 14 1976 Completed Nov 21 1976

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. Mallatt (Person, firm, or corporation) (Type or print)

Address Rt #2 Box 111 Milton Freewater O...

[Signed] Lowell W. Mallatt (Well Driller)

License No. C-81 Date Dec 16, 1976

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

#3

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

(1) OWNER: Name City of Walla Walla Address Box 478

(2) LOCATION OF WELL: County Walla Walla — NW ¼ NE ¼ Sec 22 T. 7 N., R. 35 W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 3
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well ..... inches.
Drilled ..... ft. Depth of completed well ..... ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 2 " Diam. from +2 ft. to 118 ft.
Threaded ☒ " Diam. from ..... ft. to ..... ft.
Welded ☐ " Diam. from ..... ft. to ..... ft.

Perforations: Yes ☐ No ☒
Type of perforator used .....
SIZE of perforations ..... in. by ..... in.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type 316 Model No. .....
Diam. 2 Slot size .010 from 108 ft. to 118 ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☒ No ☐ To what depth? ..... ft.
Material used in seal .....
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

(7) PUMP: Manufacturer's Name .....
Type: ..... H.P. .....

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 26 ft. below top of well Date 10-22-86
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Driller
Yield: 10 gal./min. with 2 ft. drawdown after 1 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
:00	28	:01	26		

Date of test 10-1-86
Bailer test ..... gal./min. with ..... ft. drawdown after ..... hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water 54 Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Topsoil	0	23
Brown Clay + Sand	23	42
Sand	42	59
Brown Clay	59	61
Sand + Gravel	61	74
Brown Clay + Gravel	74	96
Brown Clay	96	101
Gravel - water	101	121
Put in 8 Sacks 10-20 Filter Sand From 121' To 90'		
Pumped in 13 Sacks Vol Clay From 90' To 16'		
Put in Sand From 16' To 10'		
Put in 9 Sacks Portland Cement From 10' To Ground Level		

Work started 9-18, 19 86 Completed 10-21, 19 86

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME HARDING DRILLING Co.
(Person, firm, or corporation) (Type or print)

Address RT 3 Box 67 Walla Walla Wn.

[Signed] Mike Harding
(Well Driller)

License No. 173 Date 10-24, 19 86

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

City Farm #4

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

(1) OWNER: Name..... Address.....

(2) LOCATION OF WELL: County..... — ....¼ ....¼ Sec..... T.....N., R.....W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one).....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 71 ft. Depth of completed well 71 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 5" Diam. from 0 ft. to 71 ft.
Threaded ☐ ....." Diam. from ..... ft. to ..... ft.
Welded ☐ ....." Diam. from ..... ft. to ..... ft.

Perforations: Yes ☒ No ☐
Type of perforator used Ox. 11
SIZE of perforations ½ in. by 6 cent in.
160 perforations from 51 ft. to 71 ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☐ No ☒
Manufacturer's Name.....
Type..... Model No.....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☒ No ☐ To what depth? 40 ft.
Material used in seal Portland Cement
Did any strata contain unusable water? Yes ☐ No ☒
Type of water?..... Depth of strata.....
Method of sealing strata off.....

(7) PUMP: Manufacturer's Name.....
Type: ..... H.P.....

(8) WATER LEVELS: Land-surface elevation above mean sea level..... ft.
Static level 32 ft. below top of well Date 8-5-63
Artesian pressure ..... lbs. per square inch Date.....
Artesian water is controlled by..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom?.....
Yield: ..... gal./min. with ..... ft. drawdown after ..... hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test .....
Bailer test..... gal./min. with..... ft. drawdown after..... hrs.
Artesian flow..... g.p.m. Date.....
Temperature of water..... Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Topsoil	0	41
Gravel	41	56
Brown Clay + Gravel - wet	56	71

Work started 8-1, 19 63 Completed ....., 19.....

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Hirsig Drilling Co.
(Person, firm, or corporation) (Type or print)

Address R 3 Box 350 Walla Walla Wn

[Signed] .....
(Well Driller)

License No. 123 Date 8-12, 19 63

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

(1) OWNER: Name CITY OF WALLA WALLA Address C/o Public Works Department P. O. Box 478, Walla Walla, WA 99362

(2) LOCATION OF WELL: County ..... — ¼ ¼ Sec. T. N., R. W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 82 ft. Depth of completed well 82 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from 0 ft. to 52 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☐ " Diam. from ft. to ft.

Perforations: Yes ☒ No ☐
Type of perforator used DRILL
SIZE of perforations ¼ in. by 6" centers
160 perforations from 62 ft. to 82 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☒
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 35 ft.
Material used in seal PORTLAND Cement
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level .... ft.
Static level 41 ft. below top of well Date 9-14-53
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Topsoil	0	23
Gravel	23	25
Brown Clay & Gravel	25	38
Sand	38	63
Gravel - water	63	82

Work started 9-8 19 53 Completed 9-15 19 53

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME HARDING DRILLING Co.
(Person, firm, or corporation) (Type or print)

Address RT 3 So 3RD Walla Walla Wn.

[Signed] Mike Harding
(Well Driller)

License No. 173 Date 9-19, 1953

(USE ADDITIONAL SHEETS IF NECESSARY)

ile Original and First Copy with
epartment of Ecology
econd Copy — Owner's Copy
hird Copy — Driller's Copy

#6

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. ....

1) OWNER: Name City of Walla Walla Address Box 478

LOCATION OF WELL: County Walla Walla SW ¼ NW ¼ Sec 23 T 7 N., R 35 W.M.

ea d distance from section or subdivision corner

3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

4) TYPE OF WORK: Owner's number of well (if more than one).... 6
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

5) DIMENSIONS: Diameter of well 2 inches.
Drilled 151 ft. Depth of completed well 151 ft.

6) CONSTRUCTION DETAILS:

Casing installed: 2 " Diam. from T 2 ft. to 148 ft.
Threaded ☒ " Diam. from ..... ft. to ..... ft.
Welded ☐ " Diam. from ..... ft. to ..... ft.

Perforations: Yes ☐ No ☒
Type of perforator used .....
SIZE of perforations ..... in. by ..... in.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type 316 Model No .....
Diam. 2 Slot size .010 from 138 ft. to 148 ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

Surface seal: Yes ☒ No ☐ To what depth? ..... ft.
Material used in seal .....
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

(7) PUMP: Manufacturer's Name .....
Type: ..... H.P .....

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ..... ft.
Static level 63 ft. below top of well Date 10-22-86
Artesian pressure ..... lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Driller
Yield: 8 gal./min. with 2 ft. drawdown after 1 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
00	63	01	63		

e of test 5-26-86
Bailer test ..... gal./min. with ..... ft. drawdown after ..... hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water 53 Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Topsoil	0	20
Sand & Brown Clay	20	25
Brown Clay	25	77
Sand & Gravel	77	83
Sand	83	95
Brown Clay & Gravel - wtr	95	143
Gravel - water	143	151
7 Sacks 10-20 Filter Sand From 151' To 122'		
Pumped in 15 Sacks Vol Clay From 122 To 16'		
Sand From 16' To 10'		
Put in 12 Sacks Cement From 10' To Ground Level		

Work started 8-18 , 19 86 Completed 9-18 , 19 86

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Harding Drilling Co
(Person, firm, or corporation) (Type or print)

Address Rt 3 Box 67 Walla Walla Wa

[Signed] Mike Harding
(Well Driller)

License No. 173 Date 10-24 , 19 86

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

#7

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

(1) OWNER: Name City of Walla Walla Address Box 478

LOCATION OF WELL: County Walla Walla SE ¼ SW ¼ Sec. 13 T. 7 N., R. 35 W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one).... 7
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 2 inches.
Drilled 181 ft. Depth of completed well 181 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 2 " Diam. from 2 ft. to 178 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☐ " Diam. from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type 304 Model No.
Diam. 2 Slot size .010 from 168 ft. to 178 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? ft.
Material used in seal
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level.... ft.
Static level 39 ft. below top of well Date 10-22-86
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Drillers
Yield: 10 gal./min. with 3 ft. drawdown after 1 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
00	42	01	39		

Date of test 10-13-86
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water 53 Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Topsoil	0	28
Brown Clay	28	40
Brown Clay + Gravel	40	45
Sand	45	68
Sand + Brown Clay	68	79
Brown Clay	79	145
Gravel + a little Brown Clay	145	160
Gravel - water	160	181
7 Sacks 10-20 Filter Sand From 181 To 148		
Pumped in 15 Sacks Vol Clay From 148 To 16'		
Put in Sand From 16' To 10'		
Put in 9 Sacks Portland Cement To Ground Level		

Work started 10-1, 19 86. Completed 10-21, 19 86

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Harding Drilling Co
(Person, firm, or corporation) (Type or print)

Address Rt 3 Box 67 Walla Walla Wa

[Signed] Mike Harding
(Well Driller)

License No. 173 Date 10-28, 19 86

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

WELL #8

Start Card No. ______

Water Right Permit No. ______

(1) OWNER: Name City of Walla Walla Address Box 478

(2) LOCATION OF WELL: County Walla Walla [illegible] ¼ NE ¼ Sec [illegible] T. 7A N., R. [illegible] W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address) ______

(3) PROPOSED USE: ☐ Domestic ☐ Irrigation ☐ DeWater Industrial ☐ Test Well ☒ Municipal ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ______

Abandoned ☐ New well ☒ Deepened ☐ Reconditioned ☐

Method: Dug ☐ Cable ☒ Rotary ☐ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 10" inches.
Drilled 220 feet. Depth of completed well 130 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 5 " Diam. from 130 ft. to +2 ft.
Welded ☐ ______ " Diam. from ______ ft. to ______ ft.
Liner installed ☐
Threaded ☒ ______ " Diam. from ______ ft. to ______ ft.

Perforations: Yes ☐ No ☒
Type of perforator used ______
SIZE of perforations ______ in. by ______ in.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type PVC Sch 40 Model No. A-98
Diam. 5" Slot size .020 from 90 ft. to 105 ft.
Diam. 5" Slot size .020 from 115 ft. to 130 ft.

Gravel packed: Yes ☒ No ☐ Size of gravel 1/4 To 3/4
Gravel placed from 220 ft. to 130 ft.

Surface seal: Yes ☒ No ☐ To what depth? 75' ft.
Material used in seal Bentonite and Cement
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) PUMP: Manufacturer's Name ______
Type: ______ H.P. ______

(8) WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 59 ft. below top of well Date 10-29
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.))

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Driller
Yield: 26 gal./min. with 66 ft. drawdown after 4 hrs.
[redacted] " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0:00	125				
0:03	85				
0:08	59				

Date of test 12-5-84

Bailer test ______ gal./min. with ______ ft. drawdown after ______ hrs.
Airtest ______ gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date ______
Temperature of water 52° Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Topsoil	0	21
Silt	21	52
Med-Gravel + Sand	52	58
Med-Gravel	58	63
Med-Gravel + Brown Clay	63	76
Med-Gravel (water)	76	84
Med-Gravel + Brown Clay	84	121
Brown Clay	121	124
Med Gravel - (water)	124	132
Brown Clay	132	[illegible]
Med-Gravel + Brown Clay	[illegible]	[illegible]
Brown Clay + Small Gravel	[illegible]	175
Med Gravel + Brown Clay	175	178
Brown Clay	178	220
10/20 Filter Sand Around 5" Screen		
From 130' To 75'		
From 75' To 13' - Filled with [illegible]		
From 13' To 10' - Sand Cushion		
From 10' To 0' - Neat Cement		

Work started 10-10, 1984 Completed 12-7, 1984

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME HARDING DRILLING Co. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address Rt 8 Box 140 Walla Walla Wa.

(Signed) Mike Harding License No. 173
(WELL DRILLER)

Contractor's Registration No. HARDIDC132KK Date 12-11, 1984

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

8 H
8 A

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 055642

7 7/A

Water Right Permit No. _____

(1) OWNER: Name City of Walla Walla Address Box 478 Walla Walla

(2) LOCATION OF WELL: County Walla Walla SW ¼ SW ¼ Sec 35 T 7 N., R 14 W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address) Walla Walla Land Fill

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ ☐ Irrigation ☐ DeWater ☒ Test Well ☐ Other

(4) TYPE OF WORK: Owner's number of well (if more than one) _____

Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☒ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 2 inches. Drilled 95 feet. Depth of completed well 84 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: _____ " Diam. from _____ ft. to _____ ft.

Welded ☐ Liner installed ☐ Threaded ☒ 2 " Diam. from +2 ft. to 63 ft.

Perforations: Yes ☐ No ☒

Type of perforator used _____

SIZE of perforations _____ in. by _____ in.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☒ No ☐

Manufacturer's Name Johnson

Type Stainless Steel Model No 316L

Diam. 2 Slot size .010 from 63 ft. to 78 ft.

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☒ Size of gravel _____

Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 61 ft.

Material used in seal Cement Vol-Clay

Did any strata contain unusable water? Yes ☐ No ☒

Type of water? _____ Depth of strata _____

Method of sealing strsta off _____

(7) PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.

Static level 62 ft. below top of well Date 11-18-91

Artesian pressure _____ lbs. per aquare inch Date _____

Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? Yes ☐ No ☒ If yes, by whom? _____

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

" " " "

" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____

Bailer test 15 gal./min. with 3 ft. drawdown after 1 hrs.

Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.

Artesian flow _____ g.p.m. Date 11-18-91

Temperature of water 57° Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Topsoil	0	21
Silt	21	52
Gravelt Sand	52	58
Gravel- water	58	63
Gravel & Brown Clay	63	76
Gravel- water	76	84
Gravel & Brown Clay	84	95
Vol-Clay From 95' To 84'		
10/20 Filter Sand 84' To 61'		
Vol-Clay From 61' To 10'		
Neat Cement From 10' To 0'		

Work started 10-30, 19 91 Completed 11-18, 19 91

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Harding Drilling Co. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address RT 8 Box 106 Walla Walla, Wa

(Signed) Mike Harding (WELL DRILLER) License No. 173

Contractor's Registration No. HARDIDC #132K Date 11-20, 19 91

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20 (10/87) -1329- 3

en07 ca...

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

Well #9

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 055641

Water Right Permit No. ______

(1) **OWNER:** Name City of WALLA WALLA Address Box 478 Walla Walla

(2) **LOCATION OF WELL:** County WALLA WALLA NE ¼ NE ¼ Sec 23 T 7 N., R 35 W.M.

(2a) **STREET ADDDRESS OF WELL** (or nearest address) Walla Walla LANDFILL

(3) **PROPOSED USE:** ☐ Domestic ☐ Irrigation ☐ DeWater Industrial ☐ Test Well ☒ Municipal ☐ Other ☐

(4) **TYPE OF WORK:** Owner's number of well (if more than one) 9

Abandoned ☐ New well ☒ Deepened ☐ Reconditioned ☐ Method: Dug ☐ Cable ☒ Rotary ☐ Bored ☐ Driven ☐ Jetted ☐

(5) **DIMENSIONS:** Diameter of well 10 inches.
Drilled 210 feet. Depth of completed well 83 ft.

(6) **CONSTRUCTION DETAILS:**

Casing installed: 10" Diam. from +1 ft. to 73 ft.
Welded ☐ 5" Diam. from +2 ft. to 83 ft.
Liner installed ☐
Threaded ☐ ______" Diam. from ______ ft. to ______ ft.

Perforations: Yes ☐ No ☒
Type of perforator used ______
SIZE of perforations ______ in. by ______ in.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.

Screens: Yes ☐ No ☒
Manufacturer's Name Johnson
Type [illegible] Model No. ______
Diam. 5 Slot size .010 from 63 ft. to 83 ft.
Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Gravel packed: Yes ☐ No ☒ Size of gravel ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes ☒ No ☐ To what depth? 61 ft.
Material used in seal Vol-Clay, [illegible]
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) **PUMP:** Manufacturer's Name GRUNDFOS
Type: Sub. H.P. ½

(8) **WATER LEVELS:** Land-surface elevation above mean sea level ______ ft.
Static level 65 ft. below top of well Date 10-29-91
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.))

(9) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? ______
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ______
Bailer test 15 gal./min. with 5 ft. drawdown after 1 hrs.
Airtest ______ gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date 10-25-91
Temperature of water 54 Was a chemical analysis made? Yes ☐ No ☒

(10) **WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top soil - Br. dirt	0	35
Br. clay	35	47
medium gravel Br. clay	47	55
sm-med gravel Br. clay	55	66
Br. clay	66	68
Sm gravel, Br. clay water	68	75
sm gravel Blue clay	75	83
Sm gravel Brown clay	83	102
Brown-Red clay sm gravel	102	119
Sm gravel Brown clay	119	140
Brown-Red Clay - sm gravel	140	182
Fine silt & sand light Br. clay	182	188
Fine sand light Br. clay w/yellow [illegible]	188	210
Blue clay	210	211
Vol-Clay From 211 To 85'		
10/20 Filter Sand Around	5" PVC	
Screen From 85' To 61		
Vol-Clay From 61' To 10'		
NEAT Cement 10' To 0		

Work started 9-20, 1991 Completed Oct 29, 1991

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Harding Drilling Co (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address Rt 8 Box 106 Walla Walla Wa 99362

(Signed) Gerald L Harding (WELL DRILLER) License No 1695

Contractor's Registration No. HARDING*132NC Date 11-25, 1991

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 17772

UNIQUE WELL I.D. # ABJ 926

Water Right Permit No. _____

(1) OWNER: Name City of Walla Walla Address P.O. Box 478 Walla Walla, Wa 99362

(2) LOCATION OF WELL: County Walla Walla - NE 1/4 NE 1/4 Sec 22 T. 7N N., R. 35E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Walla Walla Landfill

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ ☐ Irrigation ☐ Test Well ☒ Other ☐ ☐ DeWater

(4) TYPE OF WORK: Owner's number of well (If more than one) mw# 11

Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☒ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches. Drilled 41 feet. Depth of completed well 41 ft.

(6) CONSTRUCTION DETAILS:

Casing Installed: 2 " Diam. from +3 ft. to 26 ft.
Welded ☐ _____ " Diam. from _____ ft. to _____ ft.
Liner installed ☐
Threaded ☒ _____ " Diam. from _____ ft. to _____ ft.

Perforations: Yes ☐ No ☒
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type PVC Sch 40 Model No. _____
Diam. 2" Slot size .010 from 26 ft. to 41 ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☒ No ☐ Size of gravel 10/20 Sand
Gravel placed from 23 ft. to 41 ft.

Surface seal: Yes ☒ No ☐ To what depth? 23 ft.
Material used in seal Bentonite Chips
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name N/A
Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level _____ ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

mw# 11 MATERIAL	FROM	TO
silt dark brown saturated at 29 ft.	0	41

Work Started 2-10 19 95 Completed 2-10 19 95

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Environmental Waste Solutions (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address P.O. Box 11095 Spokane WA

(Signed) Dan Claassen (WELL DRILLER) License No. 1827

Contractor's Registration No. ENVIROEWIPP Date 2-11 19 95

(USE ADDITIONAL SHEETS IF NECESSARY)

MW-12

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. R 17774

UNIQUE WELL I.D. # ABJ 924

Water Right Permit No. _____

OWNER: Name City of Walla Walla Address P.O. Box 478 Walla Walla, wa 99362

(2) LOCATION OF WELL: County Walla Walla SE 1/4 SW 1/4 Sec 14 T. 7 N., R 35E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Walla walla land fill

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ ☐ Irrigation ☒ Test Well ☐ Other ☐ ☐ DeWater

(4) TYPE OF WORK: Owner's number of well (If more than one) mw # 12

Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☒ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches. Drilled 62 feet. Depth of completed well 62 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 2 " Diam. from +3 ft. to 47 ft.
Welded ☐ Liner installed ☐ Threaded ☒ _____ " Diam. from _____ ft. to _____ ft.
_____ " Diam. from _____ ft. to _____ ft.

Perforations: Yes ☐ No ☒
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type PVC SCH 40 Model No. _____
Diam. 2" Slot size .010 from 47 ft. to 62 ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☒ No ☐ Size of gravel 10/20 sand
Gravel placed from 41 ft. to 62 ft.

Surface seal: Yes ☒ No ☐ To what depth? 41 ft.
Material used in seal Bentonite chips
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name N/A
Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level _____ ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

mw # 12 MATERIAL	FROM	TO
silt, light brown, dry	0	20
clayey silt, brown	20	25
silt, dark brown dry	25	45
silty gravel, cobbles, some fine sand. saturated at 50 ft.	45	62

Work Started 2-9 19 95 Completed 2-10 19 95

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Environmental West Exploration (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address P.O. Box 11095, Spokane WA

(Signed) Dan Classen (WELL DRILLER) License No. 1827

Contractor's Registration No. EAWIRW610PP Date 2-11 19 95

(USE ADDITIONAL SHEETS IF NECESSARY)

LOG OF EXPLORATORY BORING

PROJECT NAME Stokely USA, Inc.
LOCATION Walla Walla, Washington
DRILLED BY Environmental West Exploration
DRILL METHOD Hollow Stem Auger
LOGGED BY Craig Schwyn

BORING NO. 10
PAGE 1 OF 3
GROUND ELEV.
TOTAL DEPTH 47.00'
DATE COMPLETED 12/27/93

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 to 27.0 feet: SILT (ML), grayish brown, trace fine to medium sand, low plasticity, damp.
		5-11-15		5				@ 5.0 feet: no sand, mottled white, 1/8-inch laminations.
		8-7-8		10				@ 10.0 feet: light olive brown, trace angular fine sand.
		3-5-6		15				@ 14.5 to 14.8 feet: lense with some medium to fine sand.
		4-4-4		20				

REMARKS

LOG OF EXPLORATORY BORING

PROJECT NAME	Stokely USA, Inc.	BORING NO.	10
LOCATION	Walla Walla, Washington	PAGE	2 OF 3
DRILLED BY	Environmental West Exploration	GROUND ELEV.	
DRILL METHOD	Hollow Stem Auger	TOTAL DEPTH	47.00'
LOGGED BY	Craig Schwyn	DATE COMPLETED	12/27/93

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
		5-7-30	▽ 24-27	25				0 to 27.0 feet: SILT (ML), continued. @ 25.0 feet: trace sand, mottled brown and reddish brown, saturated.
		33-38-50		30				27.0 to 34.0 feet: SILTY GRAVEL (GM), reddish brown, little fine to coarse sand with some silt. Angular basalt gravel up to 1 1/2-inch diameter.
		1-1-1		35				34.0 to 37.0 feet: GRAVELLY SILT (CL), silt with some gravel, very soft.
				40				37.0 to 47.0 feet: SILTY GRAVEL (GM), reddish brown, little fine to coarse sand, angular basalt gravel, very hard drilling.

REMARKS

LOG OF EXPLORATORY BORING

PROJECT NAME	**Stokely USA, Inc.**	BORING NO.	10
LOCATION	**Walla Walla, Washington**	PAGE	3 OF 3
DRILLED BY	**Environmental West Exploration**	GROUND ELEV.	
DRILL METHOD	**Hollow Stem Auger**	TOTAL DEPTH	47.00'
LOGGED BY	**Craig Schwyn**	DATE COMPLETED	12/27/93

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				45				37.0 to 47.0 feet: SILTY GRAVEL (GM), continued. @ 47.0 feet: no sample attempt: hard gravel.
				50				Total depth drilled = 47.0 feet. **WELL COMPLETION DETAILS:** +2.3 to 29.4 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe. 29.4 to 44.7 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.010-inch machined slots and a 2-inch-diameter threaded end cap. +3.0 to 3.0 feet: 6-inch-diameter, locking steel riser pipe. +0.4 to 2.0 feet: Concrete. 2.0 to 27.0 feet: Bentonite chips hydrated with potable water. 27.0 to 47.0 feet: 10 - 20 Colorado Silica Sand.
				55				
				60				

REMARKS

Soil Classification System

MAJOR DIVISIONS		GRAPHIC SYMBOL	USCS LETTER SYMBOL[1]	TYPICAL DESCRIPTIONS[2][3]
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)	GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
			GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)	GM	Silty gravel; gravel/sand/silt mixture(s)
			GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)	SW	Well-graded sand; gravelly sand; little or no fines
			SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)	SM	Silty sand; sand/silt mixture(s)
			SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)		ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
			CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
			OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)		MH	Inorganic silt; micaceous or diatomaceous fine sand
			CH	Inorganic clay of high plasticity; fat clay
			OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL		PT	Peat; humus; swamp soil with high organic content

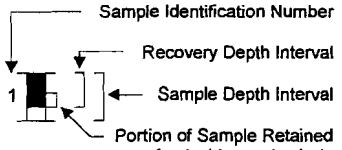
OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to the symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM) for a sand or gravel indicate a soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*, as outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the *Standard Test Method for Classification of Soils for Engineering Purposes*, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50%	"GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50%	"very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30%	"gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15%	"with gravel," "with sand," "with silt," etc.
	≤ 5%	"trace gravel," "trace sand," "trace silt," etc., or not noted.

Drilling and Sampling Key

SAMPLE NUMBER & INTERVAL



SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Other - See text if applicable

Groundwater

▽ ATD — Approximate water elevation at time of drilling (ATD) or on date noted. Groundwater levels can fluctuate due to precipitation, seasonal conditions, and other factors.

Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Landau Associates

Sudbury Road Landfill
Walla Walla, Washington

Soil Classification System and Key

Figure A-1

MW-14

SAMPLE DATA				SOIL PROFILE			WELL DETAIL
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-stem Auger Ground Elevation (ft): 831 (MSL) Drilled By: Environmental West	Groundwater
0						ML	**Brown SILT.** Silt with trace clay. Low plasicity. Very stiff. Damp.	6-inch Monument Cover Locking Well Cap
	1	b2	22					
10	2	b2	27					2-inch diameter schedule 40 PVC
	3	b2	41					
20	4	b2	33					
	5	b2	42				Light brown silt with trace subangular fine sand. Low plasticity. Very stiff. Wet.	
30	6	b2	45					Bentonite Chip Seal
	7	b2	53					
40	8	b2	36					
	9	b2	45					
50	10	b2	38					
	11	b2	33				Moisture increasing.	
60	12	b2	23					
	13	b2	NA					No. 10-20 sand pack
70								ATD

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

453003 City of Walla Walla/Sudbury Road Landfill/ WELL LOG C:\PROGRA~1\GINT\WPROJECTS\SUDBURY.GPJ 12/6/99

Log of Boring and Well MW-14

Figure A-2
(1 of 2)

MW-14

SAMPLE DATA				SOIL PROFILE			WELL DETAIL
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-stem Auger Ground Elevation (ft): 831 (MSL) Drilled By: Environmental West	Groundwater
70	14	b2	35			ML	Silt with clay, and fine to medium angular sand. Capillary fringe. Wet.	
	15	b2	22					2-inch diameter schedule 40 PVC screen (0.010-inch slot size) with No. 10-20 sand pack
80						GM	**SILTY GRAVEL with sand.** Based on drilling action.	Threaded end cap
90								
100								
110								
120								
130								
140								

Boring Completed 08/12/99
Total Depth of Boring = 82.0 ft.

Well Completed 08/12/99
Elevation at Top of Protective Casing = 833.46 ft.
Elevation at Top of Well Casing = 833.23 ft.
Total Depth of Well = 82 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

453003 City of Walla Walla/Sudbury Road Landfill/ WELL LOG C:\PROGRA~1\GINTW\PROJECTS\SUDBURY.GPJ 12/6/99

Log of Boring and Well MW-14

Figure A-2
(2 of 2)

MW-15

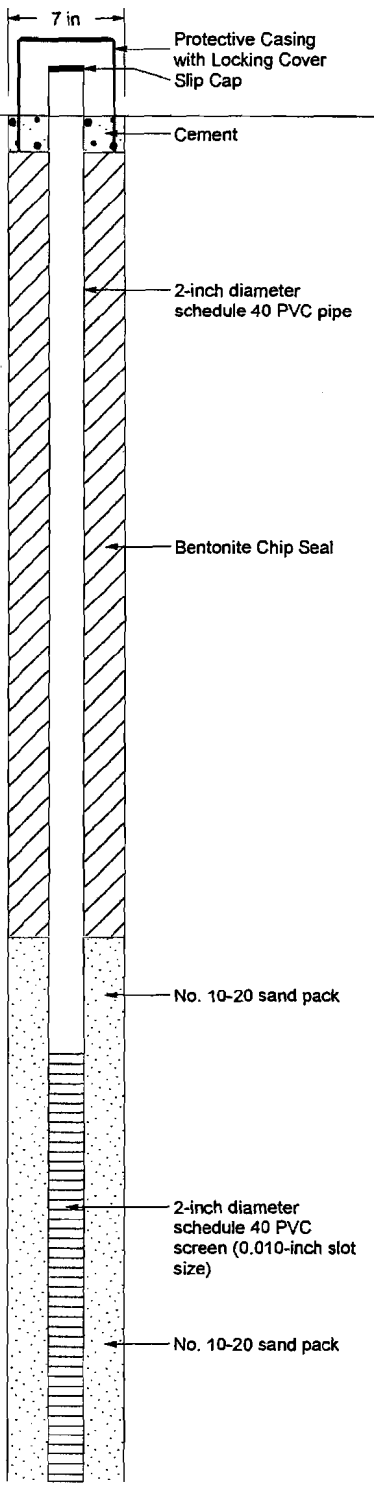
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	SOIL PROFILE
							Drilling Method: TUBEX Air Rotary Ground Elevation (ft): 787.0 (MSL) Drilled By: Environmental West
0						ML ML	Brown SILT. Low plasticity. moist.
5							
10	D-1	b2	21			ML	Brown SILT. Low plasticity. Very stiff, moist.
15							
20	D-2	b2	36			ML	Brown SILT. Low plasticity. Very stiff, moist.
25							
30	D-3	b2	50/4"			ML	Brown SILT interbedded with 1/4-inch lenses of fine, basalt sand. Subangular. Hard, very moist to wet.
35	D-4	b2	85			ML	Brown SILT. Hard, moist.
40							

GROUNDWATER

Water Level

ATD

Well Detail



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

.3003. 10/1/01 C:\PROGRA~1\GINTW\PROJECTS\SUDBURY.GPJ WELL LOG

Landau Associates

Sudbury Road Landfill
Walla Walla, Washington

Log of Boring and Well MW-15

Figure
A-2
(1 of 2)

MW-15

SAMPLE DATA				SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: TUBEX Air Rotary Ground Elevation (ft): 787.0 (MSL) Drilled By: Environmental West	Water Level	Well Detail
40	D-5	b2	66			ML ML GW	Brown SILT with trace of sand and 1-inch rounded gravel. Hard, wet.		Threaded end cap.
45	D-6	b2	50/5"				Brown sandy GRAVEL with silt. Surounded. Very dense, wet.		

Boring Completed 07/17/01
Total Depth of Boring = 46.5 ft.

Well Completed 07/17/01
Total Depth of Well = 43.0 ft.

50 55 60 65 70 75 80

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

-3003. 10/1/01 C:\PROGRA~1\GINTWA\PROJECTS\SUDBURY.GPJ WELL LOG

Landau Associates

Sudbury Road Landfill
Walla Walla, Washington

Log of Boring and Well MW-15

Figure
A-2
(2 of 2)

Schwyn Environmental Services
Drilling Log

Exploration No. **MW-16**
Sheet 1 of 4

Project: Sudbury Road Landfill Remedial Investigation

Start Date: 8/31/2005
Finish Date: 8/31/2005
Weather Conditions: Hot, windy
Geologist: Craig Schwyn
Driller: Environmental West Exp.
Method: 6-in dia. TUBEX

Well Construction
Surface Elevation: 812 ft. MSL Datum: Topo Map
Total Depth (BGL): 69 ft
Completion: Locking above ground 6-in steel casing with concrete surface pad
Seal (BGL): Bentonite chips, 0.5 to 50.5 ft
Sandpack (BGL): 10-20 Colo. silica sand 50.5 to 69 ft
Casing: 2-in. dia. flush threaded PVC, 2.4 ft AGL to 54 ft BGL
Screen: 0.01-in. slot PVC, 54 to 69 ft BGL, with threaded bottom cap

Water Level Information
Date: 9/1/2005
Time: 7:15
Depth to Water (ft BTOC): 58.02

Sample Number	Sample Interval Top / Bot	Blow Counts / 6-in.	Sampler Type	Depth (feet)	USCS Symbol	Sample Description	Comments Drilling Action
	0		Grab		ML	Brown **Silt**, trace sand and clay, low plasticity, damp.	
	4.5 / 5		Drill Chips				
	9.5 / 10		Drill Chips				
	14.5 / 15		Drill Chips				
	19.5 / 20		Drill Chips				

Total Depth: 69 ft. Continued [X]

Schwyn Environmental Services
Drilling Log

Exploration No. **MW-16**

Sheet 2 of 4

Project: Sudbury Road Landfill Remedial Investigation

Water Level Information
Date: 9/1/2005
Time: 7:15
Depth to Water (ft BTOC): 58.02

Sample Number	Sample Interval Top / Bot	Blow Counts / 6-in.	Sampler Type	Depth (feet)	USCS Symbol	Sample Description	Comments Drilling Action
				20	ML	**Silt** (cont.)	
				21			
				22			
				23			
				24			
	24.5 / 25		Drill Chips	25			
				26			
				27			
				28			
				29			
	29.5 / 30		Drill Chips	30			
				31			
				32			
				33			
				34			
	34.5 / 35		Drill Chips	35			
				36			
				37			
				38			
				39			
	39.5 / 40		Drill Chips				

Total Depth: 69 ft.

Continued [X]

Schwyn Environmental Services
Drilling Log

Exploration No. **MW-16**

Sheet 3 of 4

Project: Sudbury Road Landfill Remedial Investigation

Water Level Information
Date: 9/1/2005
Time: 7:15
Depth to Water (ft BTOC): 58.02

Sample Number	Sample Interval Top / Bot	Blow Counts / 6-in.	Sampler Type	Depth (feet)	USCS Symbol	Sample Description	Comments Drilling Action
				40	**ML**	**Silt** (cont.)	
				41			
				42			
				43			
				44			
	44.5 / 45		Drill Chips	45		@ 45 ft: moist.	
				46			
				47			
				48			
				49			
	50 / 51.5	10 / 8 / 8	2.4-in SS	50		Brown Silt, stiff, wet.	
				51			
				52			
				53			
				54			
	54.5 / 55		Drill Chips	55			
				56			
				57			
				58			
				59			
	59.5 / 60		Drill Chips				

Total Depth: 69 ft.

Continued [X]

Schwyn Environmental Services
Drilling Log

Exploration No. **MW-16**

Sheet 4 of 4

Project: Sudbury Road Landfill Remedial Investigation

Water Level Information
Date: 9/1/2005
Time: 7:15
Depth to Water (ft BTOC): 58.02

Sample Number	Sample Interval Top / Bot	Blow Counts / 6-in.	Sampler Type	Depth (feet)	USCS Symbol	Sample Description	Comments Drilling Action
				60	ML	**Silt** (cont.)	@ 60 ft: no free water in casing
				61			
				62			
				63			
				64			
				65			
	65 / 66	39 / 50/5"	2.4-in SS	66	GM	Brown silty **Gravel** with trace sand, 0.75 - 2" sub-rounded basalt gravel, dense, wet.	
				67			
				68			
				69		Total depth of exploration.	
				70			
				71			
				72			
				73			
				74			
				75			
				76			
				77			
				78			
				79			

Notes:
AGL = above ground level
BGL = below ground level
TOC = top of casing
BTOC = below top of casing

SS = Split Spoon Sampler (2.42 -in. I.D.)
SPT = Standard Penetration Test Sampler (1.5 -in. I.D.)

Water Supply Record

ID: 002122

Parcel Number: Zip Code: 99362

Send Report To:

Street Number: 2110 Street: SUDBURY RD Rural Route: Box:

Property Owner (last,first): CAMP , MERRILL/GLOR Phone: 509 529-0084

Occupants Name (last, first , Phone: 509

Work Phone: 509

Well Info

Source

○ Wel ◉ Sprin ○ Othe

Type of Casing

◉ Above Ground ○ Pit ○ Burie ○ Basement

Use Type

◉ Domesti ◉ Irrigation ◉ Both

Type of Pump: SUB

Storage

◉ Pressure Tan ◉ Cister

Type of Well

◉ Drilled Well ○ Driven Well ○ Dug Well

Depth of Well: 100 Depth of Casing:

Treatment

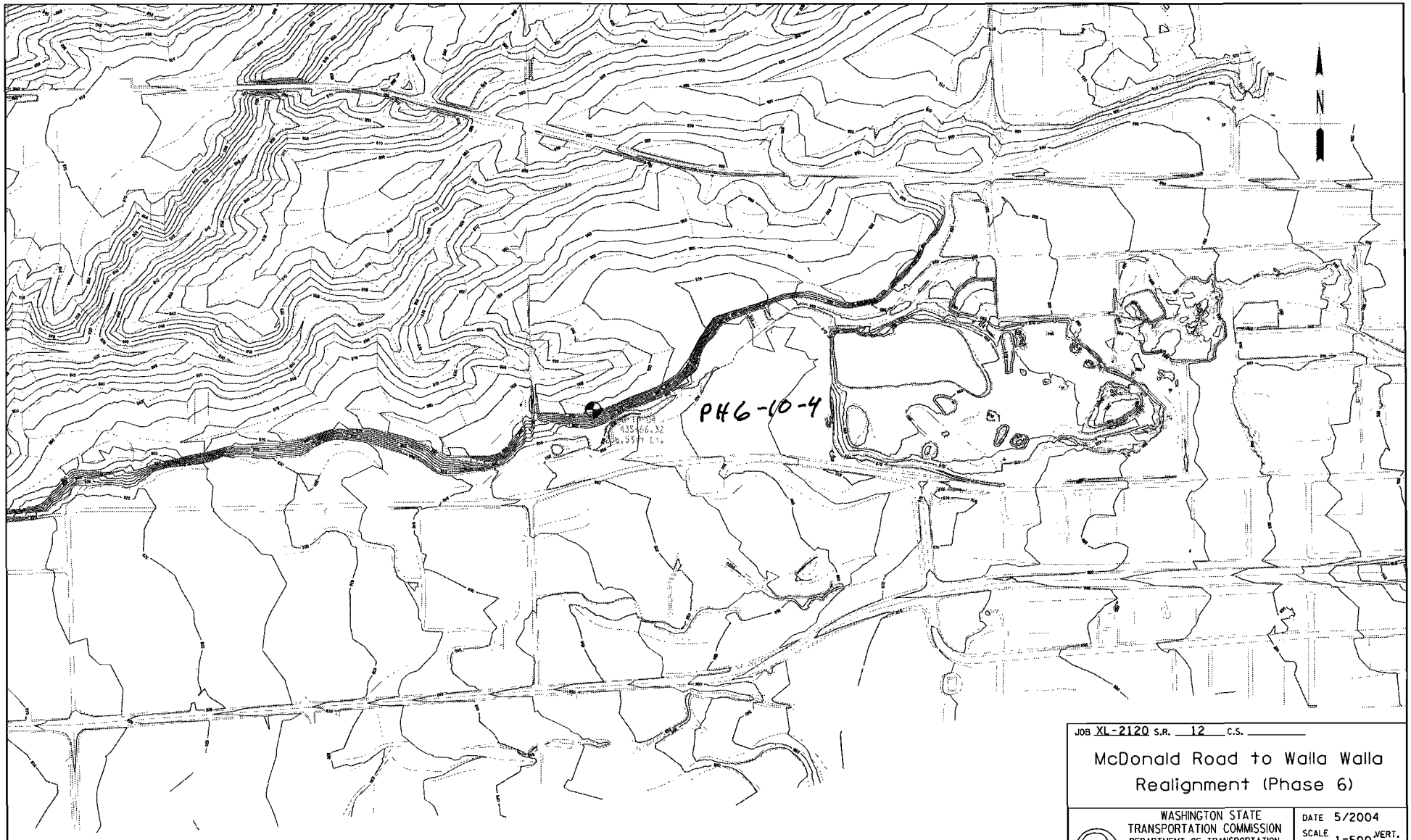
◉ Clorinator ◉ UV ◉ Softener ◉ Filte

Comments:

Test Results

Sample Date	Coliform Results		Nitrate Results	
02/04/82	○ Negative ◉ Positive	Lab #: 5012 ☐ EColi +	Lab #: Nitrate Result: By: Comments:	MPN 2.2
02/12/74	○ Negative ◉ Positive	Lab #: 1742 ☐ EColi +	Lab #: Nitrate Result: By: Comments:	MPN 16
02/19/82	◉ Negative ○ Positive	Lab #: 5032 ☐ EColi +	Lab #: Nitrate Result: By: Comments:	
03/01/74	◉ Negative ○ Positive	Lab #: 1074 ☐ EColi +	Lab #: Nitrate Result: By: Comments:	
04/17/88	○ Negative ◉ Positive	Lab #: 5057 ☐ EColi +	Lab #: Nitrate Result: By: Comments:	MPN 16----NO CL
05/04/80	○ Negative ◉ Positive	Lab #: 5073 ☐ EColi +	Lab #: Nitrate Result: By: Comments:	MPN 16 ---FECAL 9.2 NO CL
05/23/80	○ Negative ◉ Positive	Lab #: 5090 ☐ EColi +	Lab #: Nitrate Result: By: Comments:	MPN 16 NO CL

06/11/76	○ Negative ◉ Positive	Lab #: 1280	☐ EColi +	Lab #:	Nitrate Result:	By:	
				Comments:	MPN 2.2		▶*



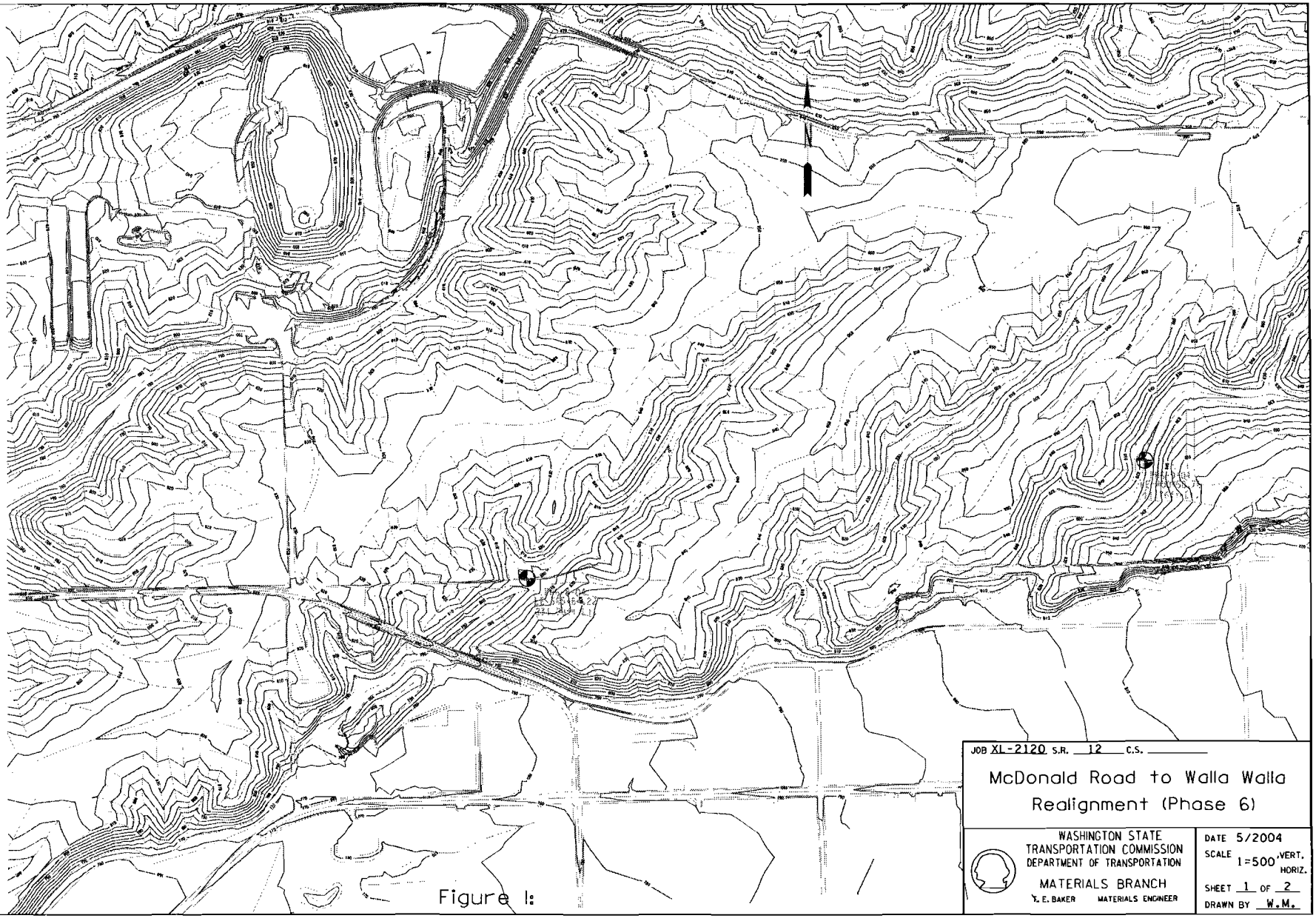
JOB XL-2120 S.R. 12 C.S.

McDonald Road to Walla Walla
Realignment (Phase 6)

WASHINGTON STATE
TRANSPORTATION COMMISSION
DEPARTMENT OF TRANSPORTATION
MATERIALS BRANCH
T. E. BAKER MATERIALS ENGINEER

DATE 5/2004
SCALE 1=500 VERT. HORIZ.
SHEET 2 OF 2
DRAWN BY W.M.

Figure 2:



JOB XL-2120 S.R. 12 C.S. _____

McDonald Road to Walla Walla
Realignment (Phase 6)

WASHINGTON STATE
TRANSPORTATION COMMISSION
DEPARTMENT OF TRANSPORTATION
MATERIALS BRANCH
K. E. BAKER MATERIALS ENGINEER

DATE 5/2004
SCALE 1=500' VERT. HORIZ.
SHEET 1 OF 2
DRAWN BY W.M.

Figure 1:

PH6-8-04

PH6-9-04

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65818

HOLE No. PH6-10-04

Sheet 1 of 3

Job No. XL-2120 SR 12 Elevation 898.6 ft (273.9 m)

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

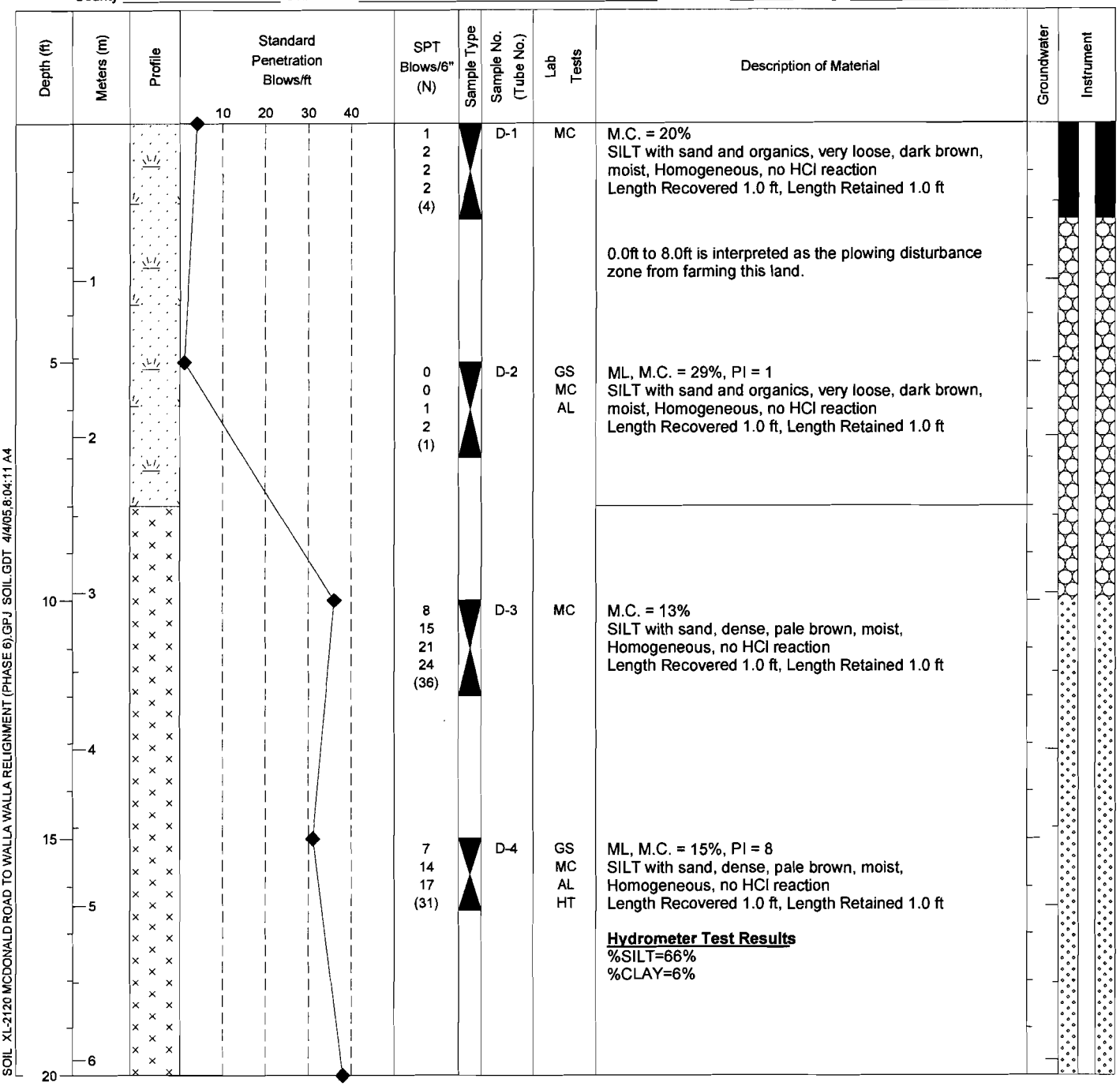
Site Address SR-12 MP 334.8 Approximately 1/2 Mile North Inspector Hanning

Start March 10, 2004 Completion March 10, 2004 Well ID# AHN 612 Equipment CME 850 w/ autohammer

Station 435+66.3 Offset 236.5ft Lt. Casing 6" Method Wet Rotary

Northing 604909.864 Easting 2507486.544 Latitude Longitude

County Walla Walla Subsection SW 1/4 of the NE 1/4 Section 24 Range 35 EWM Township 7N



SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:11 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65818

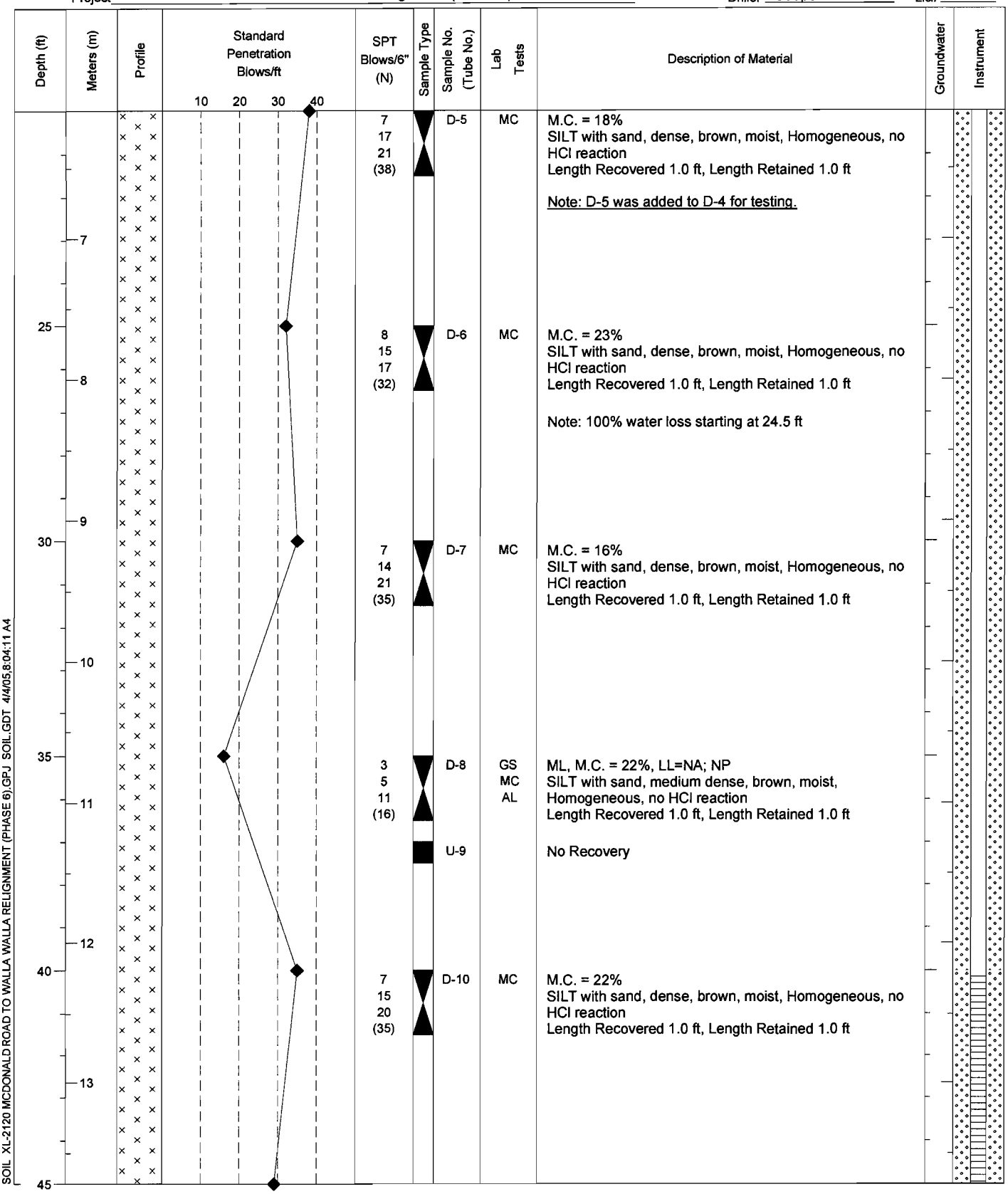
HOLE No. PH6-10-04

Job No. XL-2120 SR 12 Elevation 898.6 ft (273.9 m)

Sheet 2 of 3

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6)

Driller Cooper Lic# 2552



SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:11 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65818

Job No. XL-2120 SR 12 Elevation 898.6 ft (273.9 m)

HOLE No. PH6-10-04

Sheet 3 of 3

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6)

Driller Cooper Lic# 2552

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	14			9 14 15 (29)		D-11		SILT with sand, dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	15									
50				3 9 15 (24)		D-12		SILT with sand, medium dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	16							End of test hole boring at 51.5 ft below ground elevation. Note: Bailed hole, no recharge. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
55	17									
	18									
60	19									
65	20									
	21									
70										

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05 8:04:11 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65818

HOLE No. PH6-10-04

Sheet 1 of 3

Job No. XL-2120 SR 12 Elevation 898.6 ft (273.9 m)

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

Site Address SR-12 MP 334.8 Approximately 1/2 Mile North Inspector Hanning

Start March 10, 2004 Completion March 10, 2004 Well ID# AHN 612 Equipment CME 850 w/ autohammer

Station 435+66.3 Offset 236.5ft Lt. Casing 6" Method Wet Rotary

Northing 604909.864 Easting 2507486.544 Latitude Longitude

County Walla Walla Subsection SW 1/4 of the NE 1/4 Section 24 Range 35 EWM Township 7N

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				1 2 2 2 (4)		D-1	MC	M.C. = 20% SILT with sand and organics, very loose, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft 0.0ft to 8.0ft is interpreted as the plowing disturbance zone from farming this land.		
5	1			0 0 1 2 (1)		D-2	GS MC AL	ML, M.C. = 29%, PI = 1 SILT with sand and organics, very loose, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
10	2 3			8 15 21 24 (36)		D-3	MC	M.C. = 13% SILT with sand, dense, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
15	4 5			7 14 17 (31)		D-4	GS MC AL HT	ML, M.C. = 15%, PI = 8 SILT with sand, dense, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft **Hydrometer Test Results** %SILT=66% %CLAY=6%		
20	6									

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05 8:04:11 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65818

HOLE No. PH6-10-04

Job No. XL-2120 SR 12 Elevation 898.6 ft (273.9 m)

Sheet 2 of 3

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				7 17 21 (38)		D-5	MC	M.C. = 18% SILT with sand, dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft Note: D-5 was added to D-4 for testing.		
25	7			8 15 17 (32)		D-6	MC	M.C. = 23% SILT with sand, dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft Note: 100% water loss starting at 24.5 ft		
30	8 9			7 14 21 (35)		D-7	MC	M.C. = 16% SILT with sand, dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
35	10 11			3 5 11 (16)		D-8	GS MC AL	ML, M.C. = 22%, LL=NA; NP SILT with sand, medium dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
						U-9		No Recovery		
40	12 13			7 15 20 (35)		D-10	MC	M.C. = 22% SILT with sand, dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
45										

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05 8:04:11 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65818

HOLE No. PH6-10-04

Sheet 3 of 3

Job No. XL-2120 SR 12 Elevation 898.6 ft (273.9 m)

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	14			9 14 15 (29)		D-11		SILT with sand, dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	15									
50				3 9 15 (24)		D-12		SILT with sand, medium dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	16							End of test hole boring at 51.5 ft below ground elevation. Note: Bailed hole, no recharge. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
55	17									
	18									
60	19									
65	20									
	21									
70										

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05 8:04:11 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65816

HOLE No. PH6-8-04

Sheet 1 of 3

Job No. XL-2120 SR 12 Elevation 799.3 ft (243.6 m)

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

Site Address SR-12 MP 333.5 Approximately 1/4 Mile North Inspector Hanning

Start March 11, 2004 Completion March 11, 2004 Well ID# AHP 500 Equipment CME 850 w/ autohammer

Station 365+64.2 Offset 231.9ft Rt. Casing 6" Method Wet Rotary

Northing 604230.986 Easting 2500500.967 Latitude Longitude

County Walla Walla Subsection SE 1/4 of the NW 1/4 Section 23 Range 35 EWM Township 7N

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				2 3 3 3 (6)		D-1		Sandy SILT with organics, loose, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	1							0.0ft to about 8.0ft is interpreted as the plowing disturbance zone from farming this land.		
5				1 2 3 4 (5)		D-2		Sandy SILT with organics, loose, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	2									
10	3			2 4 4 4 (8)		D-3		SILT with sand, loose, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	4					U-4 A B C D E F		SILT with sand, loose, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 2.0 ft, Length Retained 2.0 ft		
15				1 2 3 4 (5)		D-5	GS MC AL	ML, M.C. = 18%, LL = 22; NP SILT with sand, loose, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	5									
20	6									

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:12 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65816

HOLE No. PH6-8-04

Job No. XL-2120 SR 12 Elevation 799.3 ft (243.6 m)

Sheet 2 of 3

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6)

Driller Cooper Lic# 2552

Depth (ft)	Meters (m)	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			6 11 11 (22)		D-6		SILT with sand, medium dense, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
25	7		4 7 18 (25)		D-7		SILT with sand, dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	8								
	9						Note: at 28.5 ft drilling behavior indicates possible sand stratification, casing dropped rapidly to 30'. No indication of gravel prior to 28 ft.		
30		>>	22 34 48 (82)		D-8		Poorly graded GRAVEL with silt and sand, subrounded, very dense, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 0.5 ft, Length Retained 0.5 ft		
	10								
35			22 50/4" (50/4")		D-9	GS MC	GP-GM, M.C. = 6% Poorly graded GRAVEL with silt and sand, subrounded, very dense, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 0.5 ft, Length Retained 0.5 ft		
	11								
	12								
40			50/5" (50/5")		D-10		Poorly graded GRAVEL with sand, subangular, very dense, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 0.4 ft, Length Retained 0.4 ft		
	13								
			50/6" (50/6")		D-11		Poorly graded GRAVEL with sand, subangular, very dense, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 0.4 ft, Length Retained 0.4 ft		
45									

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05 8:04:12 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65816

Job No. XL-2120 SR 12 Elevation 799.3 ft (243.6 m) HOLE No. PH6-8-04

Sheet 3 of 3

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	14							End of test hole boring at 44 ft below ground elevation. Note: Bailed hole, no recharge. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
	15									
50										
	16									
55										
	17									
	18									
60										
	19									
65										
	20									
	21									
70										

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:13 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65817

HOLE No. PH6-9-04

Sheet 1 of 2

Job No. XL-2120 SR 12 Elevation 819.1 ft (249.7 m)

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6)

Driller Cooper Lic# 2552

Site Address SR-12 MP 334 Approximately 1/2 Mile North

Inspector Hanning

Start March 9, 2004 Completion March 10, 2004 Well ID# AHN 611

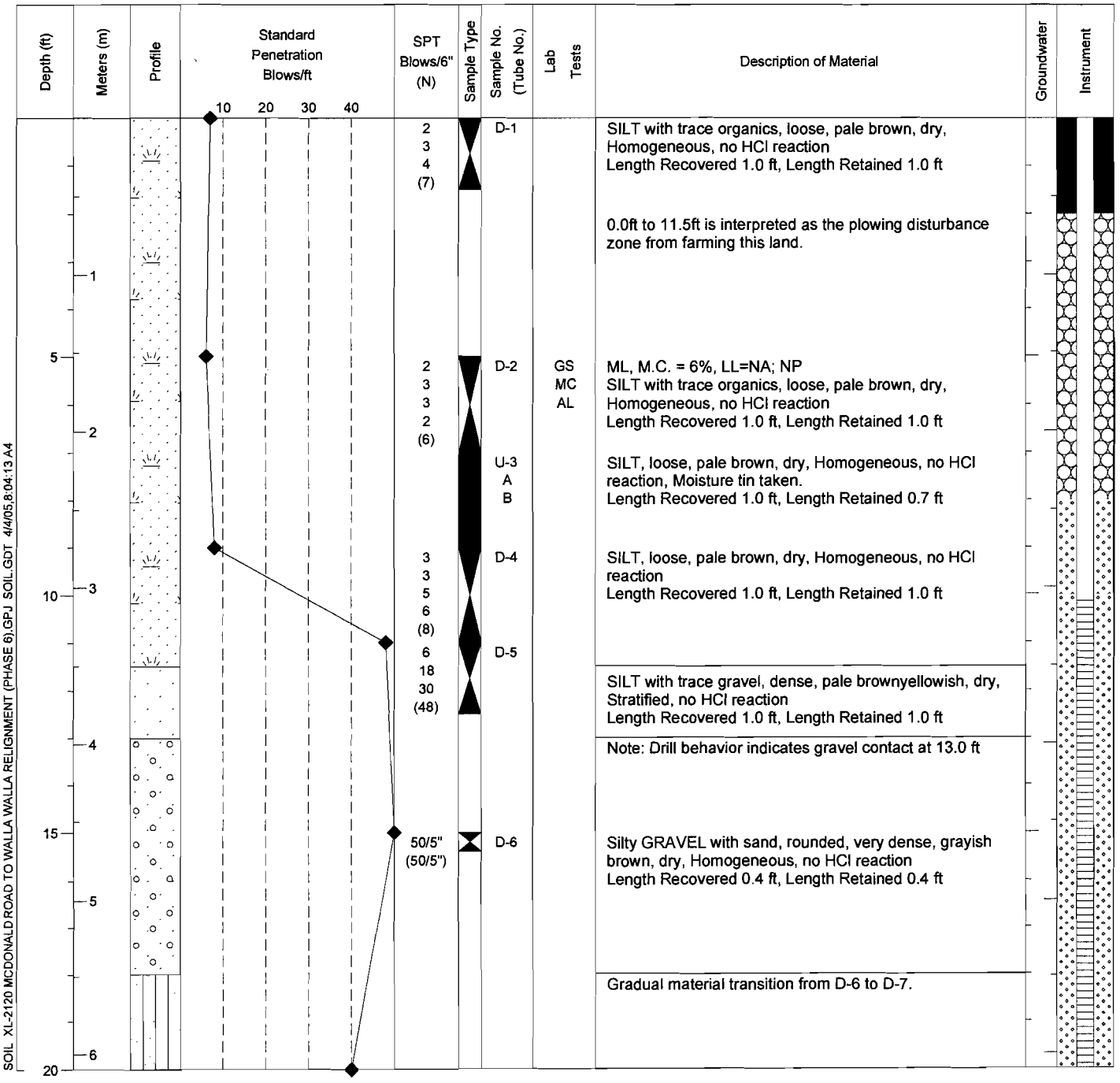
Equipment CME 850 w/ autohammer

Station 400+58.76 Offset 11.8ft Lt. Casing 8"

Method Auger

Northing 604889.891 Easting 2503941.469 Latitude Longitude

County Walla Walla Subsection SE 1/4 of the NE 1/4 Section 23 Range 35E Township 7N



SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:13 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65817

HOLE No. PH6-9-04

Job No. XL-2120 SR 12 Elevation 819.1 ft (249.7 m)

Sheet 2 of 2

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

Depth (ft)	Meters (m)	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10 19 21 (40)		D-7	GS MC AL	ML, M.C. = 18%, LL = 28, NP Sandy SILT, dense, olive brown, moist, Stratified, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
25	7	>>	7 25 30 (55)		D-8	GS MC	GW-GM, M.C. = 4% Well graded GRAVEL with silt and sand, subrounded, very dense, grayish brown, moist, Stratified, no HCl reaction, drilling behavior indicates gravel, and small cobbles. Length Recovered 1.0 ft, Length Retained 1.0 ft		
	8						Gradual material transition around 28.0ft.		
	9		22 50/2" (50/2")		D-9		Silty GRAVEL with sand, rounded, very dense, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 0.5 ft, Length Retained 0.5 ft		
30	10								
			44 50/6 (50/6")		D-10		Silty GRAVEL with sand, angular, very dense, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 0.8 ft, Length Retained 0.8 ft		
35	11								
	12	>>	100/4 (100/4")		D-11		Silty GRAVEL with sand, rounded, very dense, mottled to orangish brown, moist, Homogeneous, no HCl reaction Length Recovered 0.3 ft, Length Retained 0.3 ft		
40							End of test hole boring at 39.3 ft below ground elevation. Note: Bailed hole, no recharge. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
	13								
45									

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:14 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65816

HOLE No. PH6-8-04

Sheet 1 of 3

Job No. XL-2120 SR 12 Elevation 799.3 ft (243.6 m)

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

Site Address SR-12 MP 333.5 Approximately 1/4 Mile North Inspector Hanning

Start March 11, 2004 Completion March 11, 2004 Well ID# AHP 500 Equipment CME 850 w/ autohammer

Station 365+64.2 Offset 231.9ft Rt. Casing 6" Method Wet Rotary

Northing 604230.986 Easting 2500500.967 Latitude Longitude

County Walla Walla Subsection SE 1/4 of the NW 1/4 Section 23 Range 35 EWM Township 7N

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				2 3 3 3 (6)		D-1		Sandy SILT with organics, loose, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	1							0.0ft to about 8.0ft is interpreted as the plowing disturbance zone from farming this land.		
5				1 2 3 4 (5)		D-2		Sandy SILT with organics, loose, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	2									
10	3			2 4 4 4 (8)		D-3		SILT with sand, loose, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	4					U-4 A B C D E F		SILT with sand, loose, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 2.0 ft, Length Retained 2.0 ft		
15				1 2 3 4 (5)		D-5	GS MC AL	ML, M.C. = 18%, LL = 22; NP SILT with sand, loose, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	5									
	6									
20										

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05 8:04:12 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65816

Job No. XL-2120 SR 12 Elevation 799.3 ft (243.6 m) HOLE No. PH6-8-04

Sheet 2 of 3

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				6 11 11 (22)		D-6		SILT with sand, medium dense, pale brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
25	7			4 7 18 (25)		D-7		SILT with sand, dense, brown, moist, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	8									
	9							Note: at 28.5 ft drilling behavior indicates possible sand stratification, casing dropped rapidly to 30'. No indication of gravel prior to 28 ft.		
30			>>	22 34 48 (82)		D-8		Poorly graded GRAVEL with silt and sand, subrounded, very dense, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 0.5 ft, Length Retained 0.5 ft		
	10									
35	11			22 50/4" (50/4")		D-9	GS MC	GP-GM, M.C. = 6% Poorly graded GRAVEL with silt and sand, subrounded, very dense, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 0.5 ft, Length Retained 0.5 ft		
	12									
40				50/5" (50/5")		D-10		Poorly graded GRAVEL with sand, subangular, very dense, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 0.4 ft, Length Retained 0.4 ft		
	13									
				50/6" (50/6")		D-11		Poorly graded GRAVEL with sand, subangular, very dense, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 0.4 ft, Length Retained 0.4 ft		
45										

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:12 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65816

HOLE No. PH6-8-04

Job No. XL-2120 SR 12 Elevation 799.3 ft (243.6 m)

Sheet 3 of 3

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6)

Driller Cooper Lic# 2552

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	14							End of test hole boring at 44 ft below ground elevation. Note: Bailed hole, no recharge. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
	15									
50										
	16									
55										
	17									
	18									
60										
	19									
65										
	20									
	21									
70										

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:13 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65817

HOLE No. PH6-9-04

Sheet 1 of 2

Job No. XL-2120 SR 12 Elevation 819.1 ft (249.7 m)

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6)

Driller Cooper Lic# 2552

Site Address SR-12 MP 334 Approximately 1/2 Mile North

Inspector Hanning

Start March 9, 2004 Completion March 10, 2004 Well ID# AHN 611

Equipment CME 850 w/ autohammer

Station 400+58.76 Offset 11.8ft Lt. Casing 8"

Method Auger

Northing 604889.891 Easting 2503941.469 Latitude

Longitude

County Walla Walla Subsection SE 1/4 of the NE 1/4 Section 23 Range 35E Township 7N

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				2 3 4 (7)		D-1		SILT with trace organics, loose, pale brown, dry, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft 0.0ft to 11.5ft is interpreted as the plowing disturbance zone from farming this land.		
5	1			2 3 3 2 (6)		D-2	GS MC AL	ML, M.C. = 6%, LL=NA; NP SILT with trace organics, loose, pale brown, dry, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	2					U-3 A B		SILT, loose, pale brown, dry, Homogeneous, no HCl reaction, Moisture tin taken. Length Recovered 1.0 ft, Length Retained 0.7 ft		
10	3			3 3 5 6 (8)		D-4		SILT, loose, pale brown, dry, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
				6 18 30 (48)		D-5		SILT with trace gravel, dense, pale brownyellowish, dry, Stratified, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
	4							Note: Drill behavior indicates gravel contact at 13.0 ft		
15	5			50/5" (50/5")		D-6		Silty GRAVEL with sand, rounded, very dense, grayish brown, dry, Homogeneous, no HCl reaction Length Recovered 0.4 ft, Length Retained 0.4 ft		
								Gradual material transition from D-6 to D-7.		
20	6									

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:13 A4

Washington State Department of Transportation

LOG OF TEST BORING

Start Card R 65817

HOLE No. PH6-9-04

Job No. XL-2120 SR 12 Elevation 819.1 ft (249.7 m)

Sheet 2 of 2

Project SR 12 McDonald Road to Walla Walla Realignment (Phase 6) Driller Cooper Lic# 2552

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft (10 20 30 40)	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
				10 19 21 (40)		D-7	GS MC AL	ML, M.C. = 18%, LL = 28, NP Sandy SILT, dense, olive brown, moist, Stratified, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
25	7		>>	7 25 30 (55)		D-8	GS MC	GW-GM, M.C. = 4% Well graded GRAVEL with silt and sand, subrounded, very dense, grayish brown, moist, Stratified, no HCl reaction, drilling behavior indicates gravel, and small cobbles. Length Recovered 1.0 ft, Length Retained 1.0 ft		
	8							Gradual material transition around 28.0ft.		
30	9			22 50/2" (50/2")		D-9		Silty GRAVEL with sand, rounded, very dense, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 0.5 ft, Length Retained 0.5 ft		
	10									
35	11			44 50/6 (50/6")		D-10		Silty GRAVEL with sand, angular, very dense, dark brown, moist, Homogeneous, no HCl reaction Length Recovered 0.8 ft, Length Retained 0.8 ft		
	12		>>	100/4 (100/4")		D-11		Silty GRAVEL with sand, rounded, very dense, mottled to orangish brown, moist, Homogeneous, no HCl reaction Length Recovered 0.3 ft, Length Retained 0.3 ft		
40	13							End of test hole boring at 39.3 ft below ground elevation. Note: Bailed hole, no recharge. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
45										

SOIL XL-2120 MCDONALD ROAD TO WALLA WALLA RELIGNMENT (PHASE 6).GPJ SOIL.GDT 4/4/05,8:04:14 A4

CITY OF WALLA WALLA

BOX 478 WALLA WALLA, WA. 99362

Claude Walla Walla Co Solid Wastes

Office of Public Works Director

January 15, 1979

RECEIVED
JAN 23 1979
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

RECEIVED
JAN
WALLA WALLA COUNTY-CITY HEALTH DEPT.
WALLA WALLA, WASH.

Walla Walla County-City Health Department
310 West Poplar Street
Walla Walla, Washington 99362

Subject: Landfill Permit Application for 1979

Gentlemen:

In response to your letter of January 3 we are enclosing the bore logs for Well No. 1 and Well No. 2, which were the observation wells that were drilled on the landfill site. Also enclosed are the reports from the United States Testing Company for the wells shown as 1, 2, and 3. Well No. 1 is the well by the transfer drop box. Well No. 2 is the well being used for domestic supply to the personnel building, and Well No. 3 is the irrigation well north of the railroad tracks. The well reports cover the period from the time the tests were initially started after the wells were drilled to and including the last sample taken.

If you have any questions concerning the samples please contact our office.

Whenever you wish to inspect the landfill site the easiest thing to do would be to contact our office, and myself or someone from the staff will accompany you for that inspection.

Sincerely,

Norman L. Skiles

Norman L. Skiles, P.E.
Public Works Director

br
Enclosures

WATER WELL REPORT

STATE OF WASHINGTON

Application No. .....

Permit No. .....

...ent of Ecology
...Copy — Owner's Copy
...py — Driller's Copy

OWNER: Name Walla Walla City Land Fill Address .....

LOCATION OF WELL: County Walla Walla ¼ ¼ Sec. ... T. ... N., R. ... W.M.

and distance from section or subdivision corner MONITOR WELL #1

TO BE USED: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

TYPE OF WORK: Owner's number of well (if more than one) #1
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

DIMENSIONS: Diameter of well 5 inches.
Drilled 65 ft. Depth of completed well 65 ft.

CONSTRUCTION DETAILS:

Casing installed: 5 " Diam. from 0 ft. to 65 ft.
Threaded ☐ " Diam. from ... ft. to ... ft.
Welded ☒ " Diam. from ... ft. to ... ft.

Perforations: Yes ☒ No ☐
Type of perforator used Machine
SIZE of perforations ½ in. by 3 in.
... perforations from ... ft. to ... ft.
40 perforations from 25 ft. to 65 ft.
... perforations from ... ft. to ... ft.

Screens: Yes ☐ No ☒
Manufacturer's Name ...
Type ... Model No. ...
Diam. ... Slot size ... from ... ft. to ... ft.
Diam. ... Slot size ... from ... ft. to ... ft.

Gravel packed: Yes ☒ No ☐ Size of gravel ¾ x 1¼
Gravel placed from 25 ft. to 65 ft.

Surface seal: Yes ☒ No ☐ To what depth? 25 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ... Depth of strata ...
Method of sealing strata off ...

PUMP: Manufacturer's Name None
Type: ... H.P. ...

WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 27 ft. below top of well Date May 21-76
Artesian pressure Est 75? lbs. per square inch Date ...
Artesian water is controlled by ... (Cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? ...
... gal./min. with ... ft. drawdown after ... hrs.
" " "
" " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Water Level	Time	Water Level	Time	Water Level

Date of test ...
Bailer test 4 gal./min. with 3.5 ft. drawdown after ½ hrs.
Airlift test ... gal./min. with ... stem at ... hrs. Date ...
Artesian flow ... g.p.m. Date ...
Temperature of water 58 Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top soil & Brown clay	0	35
	Est 786	725
Brown clay with Fine Sand Some water Est 754	35	36
Clay - Brown Est 746	36	38
Gravel - Cement - Brown	38	49
	Est 727	
Clay - Brown	49	53
	Est 713	
Gravel - Cement - Brown	53	65
	Est 721	
W. W. Land Fill #1		

RECEIVED
JAN 2 3 1979
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

Work started May 15, 1976 Completed May 22, 1976

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. Minnott
(Person, firm, or corporation) (Type or print)

Address Rt 2 Box 111 Milton Freewater Ore.

[Signed] Lowell W. Minnott
(Well Driller)

License No. C-81 Date Dec. 16, 1976

Original to Department of Ecology
2nd Copy — Owner's Copy
3rd Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No. .....
Permit No. .....

) OWNER: Name Wall Wall City Address .....

) LOCATION OF WELL: County ..... ¼ ¼ Sec. ..... T. ..... N., R. .....
ring and distance from section or subdivision corner MONITOR WELL #2

) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☑ Other ☐

) TYPE OF WORK: Owner's number of well (if more than one) #2
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☑ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

) DIMENSIONS: Diameter of well 5 inches.
Drilled 155 ft. Depth of completed well 155 ft.

) CONSTRUCTION DETAILS:
Casing installed: 5" Diam. from 0 ft. to 155 ft.
Threaded ☐ ..." Diam. from ..... ft. to ..... ft.
PVC Welded ☑ ..." Diam. from ..... ft. to ..... ft.

Perforations: Yes ☑ No ☐
Type of perforator used Machine
SIZE of perforations ½ in. by 3 in.
..... perforations from ..... ft. to ..... ft.
80 perforations from 80 ft. to 155 ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☐ No ☑
Manufacturer's Name .....
Type ..... Model No. .....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☐ No ☐ Size of gravel: ¾ x 1¼
Gravel placed from 30 ft. to 155 ft.

Surface seal: Yes ☑ No ☐ To what depth? 30 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ..... Depth of strata .....
Method of sealing strata off .....

) PUMP: Manufacturer's Name None
Type: ..... H.P. .....

) WATER LEVELS: Land-surface elevation above mean sea level ..... ft.
atic level 75 ft. below top of well Date Dec. 14, 7
tesian pressure Est. 75? lbs. per square inch Date .....
Artesian water is controlled by ..... (Cap, valve, etc.)

) WELL TESTS: Drawdown is amount water level is lowered below static level
as a pump test made? Yes ☐ No ☑ If yes, by whom? .....
eld: ..... gal./min. with ..... ft. drawdown after ..... hrs.
" " " "
" " " "

very data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test .....
ller test 30 gal./min. with 30 ft. drawdown after 1 hrs.
ir flow ..... g.p.m. Date .....
perature of water 54 Was a chemical analysis made? Yes ☐ No ☑

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure; show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Topsoil & clay - Brown	0	8
	832	2
clay - Tan	57	7
	Est	2
Gravel Cement - Brown	79	9
	Est	7
clay - Brown	95	1
	Est	3
Gravel Cement - Brown	97	1
	Est	2
Gravel Med. Some water	106	1
	Est	2
Gravel cement - Brown	115	1
	Est	7
clay - Brown	120	1
	Est	7
Gravel Cement - Brown	127	1
	Est	7
clay - Brown	134	1
	Est	2
Gravel water bearing	137	1
	Est	7

RECEIVED
JAN 23 1979
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

Work started Dec. 1, 19 76 Completed Dec. 15, 19

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. Marlatt
(Person, firm, or corporation) (Type or print)

Address RT. #2 Box 111 Milton-Freewater

[Signed] Lowell Marlatt
(Well Driller)

License No. C-81 Date Dec. 16, 19

riginal and First Copy with
ment of Ecology
l Copy — Owner's Copy
Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No. ....

Permit No. ....

OWNER: Name Walla Walla City Address ....

LOCATION OF WELL: County Walla Walla ..... ¼ ..... ¼ Sec ..... T ..... N., R ..... W

g and distance from section or subdivision corner MONITOR WELL #3

PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☑ Other ☐

TYPE OF WORK: Owner's number of well (if more than one) ....
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☑ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

DIMENSIONS: Diameter of well 5 inches.
Drilled 85 ft. Depth of completed well 80 ft.

CONSTRUCTION DETAILS:
Casing installed: 5" Diam. from 0 ft. to 80 ft.
Threaded ☐ ....." Diam. from ..... ft. to ..... ft.
PVC Welded ☑ ....." Diam. from ..... ft. to ..... ft.

Perforations: Yes ☑ No ☐
Type of perforator used Machine
SIZE of perforations 1/2 in. by 3 in.
..... perforations from ..... ft. to ..... ft.
52 perforations from 25 ft. to 80 ft.
..... perforations from ..... ft. to ..... ft.

Screens: Yes ☐ No ☑
Manufacturer's Name ....
Type .... Model No. ....
Diam. ..... Slot size ..... from ..... ft. to ..... ft.
Diam. ..... Slot size ..... from ..... ft. to ..... ft.

Gravel packed: Yes ☑ No ☐ Size of gravel: 1/4 - 1 1/4
Gravel placed from 25 ft. to 80 ft.

Surface seal: Yes ☑ No ☐ To what depth? 25 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☑
Type of water? ..... Depth of strata .....
Method of sealing strata off ....

PUMP: Manufacturer's Name None
Type: .... H.P. .....

WATER LEVELS: Land-surface elevation above mean sea level ..... ft.
level 28 ft. below top of well Date Nov 21-76
on pressure ELV 756 lbs. per square inch Date .....
Artesian water is controlled by .... (Cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
pump test made? Yes ☐ No ☑ If yes, by whom? ....
..... gal./min. with ..... ft. drawdown after ..... hrs.
" " "
" " "

ery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

ate of test ....
test 25 gal./min. with 40 ft. drawdown after 1 hrs.
an flow ..... g.p.m. Date .....
erature of water 58 Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Top Soil & Clay - Brown	0	[illegible]
792	ELV	[illegible]
Gravel in Brown clay	20	21
	ELV	[illegible]
Clay - Brown	21	29
	ELV	[illegible]
Clay - Tan	29	[illegible]
	ELV	[illegible]
Gravel Brown [illegible]	34	[illegible]
	ELV	[illegible]
Clay - Brown	62	[illegible]
	ELV	[illegible]
Gravel Some water 62'		
Caving 80-86	64	[illegible]
	ELV	[illegible]

#3

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Work started Nov 14, 1976 Completed Nov 21, 197[illegible]

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Lowell W. Millett (Person, firm, or corporation) (Type or print)

Address Rt 2 Box 11 Milton-Freewater

[Signed] Lowell W. Millett (Well Driller)

License No. C 81 Date Dec 16, 197[illegible]

United States Testing Company, Inc.
2800 GEORGE WASHINGTON WAY
RICHLAND, WASHINGTON 99352
509-946-5157
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ATTENTION: Dorothy Wilson

Greg Neustel
Reports & Billings

REPORT

REPORT NO.: 1376P

DATE REC'D.: 8/31/77

DATE REP'D.: 9/7/77

CLIENT: City of Walla Walla
Sanitation Department
P.O. Box 478
Walla Walla, WA 99362

SUBJECT: Water

ANALYSIS:

PARAMETER	REPORTING UNITS	SAMPLE IDENTIFICATION W305 1 SE	W306 2 Middle	W307 3 NW
PH		7.9	7.9	7.8
BOD	mg/l	1.8	1.6	1.9
Cl	ppm	34.0	35.0	37.5
Fe	ppm	Less 0.01	Less.01	Less .01
Total Disolved Solids	ppm	406.5	342.0	348.5
Alkalinity	ppm	129.0	114.0	102.0
Total Coliform		More 16/100ml	2.2/100ml	More 16/100ml

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REPORT

REPORT NO.: 1412 P

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

DATE REC'D.: 10/26/77

DATE REP'D.: 11/8/77

SUBJECT: landfill water

ANALYSIS: Cost #150.00 P.O.

PARAMETER	REPORTING UNITS	#1 W416	#2 W417	#3 W418	SAMPLE IDENTIFICATION
pH		7.7	7.5	7.9	
BOD	ppm	1.2	1.2	1.2	
Cl	ppm	34.7	34.7	37.7	
Total coliform	ppm	>16	>16	>16	All 3 samples tested greater than 16 coliform/100 ml.-see attached letter.
Total dissolved solids	mg/l	376	360	292.5	
Alkalinity	mg/l	139.32	110.67	117.81	
Iron	ppm	.05	< .01	< .01	
COD	ppm	12.8	< 3.2	< 3.2	

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REPORT

REPORT NO.: 1443 P

DATE REC'D.: 11/30/77

DATE REP'D: 12/12/77

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

SUBJECT: water

ANALYSIS:

PARAMETER	REPORTING UNITS	1	2	3 SAMPLE IDENTIFICATION				
		W528	W529	W530				
pH		7.5	7.4	7.3				
BOD	ppm	2	1.6	2				
Cl	ppm	38.50	37.50	39.50				
Fe	ppm	1.9	<.25	<.25				
tal Diss. solids	ppm	384	356	348				
HCO_3	mg/1 as $CaCO_3$	117	107	96				
CO_3		0	0	0				
otal coliform	/100 ml	33	22	7				

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REPORT

REPORT NO.: 1473 P

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

DATE REC'D.: 12/28/77

DATE REP'D. 1/9/78

SUBJECT: land fill test wells

ANALYSIS:

PARAMETER	REPORTING UNITS	SAMPLE IDENTIFICATION W586 #2	W587 #3
		(sampled 12/28/77)	
pH		7.5	7.5
BOD	ppm	1.4	1.2
Cl	mg/l	36.25	36.50
Total Coliform	per 100 ml	2	130
Dis. solids	ppm	371.0	326.5
HCO_3	ppm	107.10	103.53
Fe	ppm	.05	.03
C	mg/l	4.8	19.2

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REPORT

REPORT NO.: 1492 P

DATE REC'D.: 1/25/78

DATE REP'D.: 2/6/78

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

SUBJECT: landfill site test wells

ANALYSIS:

PARAMETER	REPORTING UNITS	#1 W662	#2 W663	SAMPLE IDENTIFICATION				
pH		7.7	7.7					
BOD	mg/1 (same as ppm)	2.0	.6					
Cl	ppm	67.0	45.5					
Total coliform		2/100 ml	6/100 ml					
Total Dis. solids	mg/1	387.5	368.0					
Alkalinity	ppm	114.2	105.3					
Fe	ppm	.2	.4					
COD	ppm	28.6	19.8					

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REPORT

REPORT NO.: 1504 P

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

DATE REC'D.: 2/22/78

DATE REP'D: 3/6/78

SUBJECT: test well water

ANALYSIS:

PARAMETER	REPORTING UNITS	SAMPLE IDENTIFICATION W687 #2	W688 #3
pH		7.1	7.0
BOD	mg/1	1.2	.45
COD	mg/1	16	28
Cl	ppm	44.5	42.0
Tot. coliform	ml	8/100	9/100
Dis. solids	ppm	396.0	372.5
HCO_3	ppm	96.4	85.7
	ppm	.04	.08

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CITY ENGINEERING DEPT
RECD. DATE 3-29-78
CITY ENGR.
ASST. ENGR.
COUNTY ENGR.
VISOR
ACCT. NO.:

REPORT

REPORT NO.: 1543 P

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

DATE REC'D.: 3/29/78

DATE REP'D.: 4/10/78

SUBJECT: well water - land fill site

ANALYSIS:

PARAMETER	REPORTING UNITS	SAMPLE IDENTIFICATION W770 2	W771 3				
pH		7.2	7.2				
BOD	ppm	.5	.5				
Cl	ppm	37.5	39.0				
Total Coliform	/100 ml	< 2	2				
Dis. solids	mg/l	350	335				
HCO_3	mg/l	103.6	107.2				
Fe	ppm	<.02	<.02				
Cr	mg/l	3.6	25.2				

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RECEIVED DATE
DIRECTOR
ASST DIR.
UTILITY ENGR.
SUPERVISORS
FILE
ACCT. NO.:

REPORT

REPORT NO.: 1567 P

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

DATE REC'D.: 4/26/78

DATE REP'D.: 5/5/78

SUBJECT: water- land fill site test wells

ANALYSIS:

PARAMETER	REPORTING UNITS	SAMPLE IDENTIFICATION W829 #2	W830 #3
pH		7.6	7.6
BOD	ppm	75	80
Cl	ppm	35.99	37.99
Tot. coliform	per 100 ml	< 2.2	> 16
Dis. solids	ppm	370.0	360.5
HCO_3	ppm	110.7	103.5
[illegible]	ppm	< .1	< .1
COD	ppm	< 2	3.9

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ACCT. NO.

REPORT

REPORT NO.: 1596 P

DATE REC'D.: 5/31/78

DATE REP'D.: 6/19/78

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

SUBJECT: water- land fill site test wells

ANALYSIS:

PARAMETER	REPORTING UNITS	SAMPLE IDENTIFICATION W955 #1	W956 #2	W957 #3				
pH		7.22	7.40	7.40				
BOD	ppm	1.89	1.05	1.25				
Cl	ppm	44.0	41.5	44.5				
Total Coliform	per 100 ml	11	≤ 2	21				
Dis. solids	ppm	384	326	345				
HCO_3	ppm	129.5	108.5	112				
Fe	ppm	3.8	2.0	.15				
COD	ppm	39.6	3.6	28.8				

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CITY ENGINEER'S OFFICE
ACCT. NO.

REPORT

REPORT NO.: 1624 P

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

DATE REC'D.: 6/29/78

DATE REP'D.: 7/14/78

SUBJECT: ANALYSIS land fill site test wells

PARAMETER	REPORTING UNITS	W050 Well 1	W051 Well 2	W052 Well 3
		SAMPLE IDENTIFICATION		
pH		6.8	7.6	7.4
BOD	ppm	1.0*	1.0*	.8*
COD	ppm	120.0	16.0	64.0
Cl	mg/l	41.5	35.7	38.7
Tot. coliform	per 100 ml	33	2	240
Dis. solids	ppm	420.0	356.0	371.0
HCO_3	ppm	151.2	118.8	108.0
	ppm	2.7	2.3	2.0

*The BOD results are estimated because our electrode was not working properly at the initial reading, so they were read at five and again at seven days to get the estimate.

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REPORT

REPORT NO.: 1645 P

CLIENT: City of Walla Walla
Box 478
Walla Walla, WA 99362

DATE REC'D: 7/26/78

DATE REP'D.: 8/9/78

SUBJECT:

ANALYSIS:

PARAMETER	REPORTING UNITS	SAMPLE IDENTIFICATION W090 Well I	W091 Well II	W092 Well III			
pH		7.0	7.6	7.4			
BOD	mg/l	0.6	< 0.1	0.4			
Cl	mg/l	40.7	36.2	38.5			
Total coliform	per 100 ml	8	< 2	< 2			
Dis solids	ppm	381	348	371			
HCO_3	ppm	144.58	117.81	107.10			
	ppm	3.7	.10	1.1			
COD	ppm	67.96	67.96	67.96			

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CITY ENGINEERING DEPT
RECEIVED DATE 8-10-78
CITY ENGR.
ASS'T ENGR.
UTILITY ENGR.
SUPERVISORS ACCT. NO.
FILE

REPORT

REPORT NO.: 1645 P

DATE REC'D.: 7/26/78

DATE REP'D.: 8/9/78

CLIENT: City of Walla Walla
Box 478
Walla Walla, WA 99362

SUBJECT:

ANALYSIS:

PARAMETER	REPORTING UNITS	SAMPLE IDENTIFICATION W090	W091	W092				
		Well I	Well II	Well III				
pH		7.0	7.6	7.4				
BOD	mg/l	0.6	< 0.1	0.4				
Cl	mg/l	40.7	36.2	38.5				
Total coliform	per 100 ml	8	< 2	< 2				
Dis solids	ppm	381	348	371				
HCO_3	ppm	144.58	117.81	107.10				
Fe	ppm	3.7	.10	1.1				
COD	ppm	67.96	67.96	67.96				

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REPORT

ACCT. NO.:
REPORT NO.: 1395P

CLIENT: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

DATE REC'D.: 9/28/77

DATE REP'D.: 10/7/77

SUBJECT: water

ANALYSIS:

PARAMETER	REPORTING UNITS	1 SAMPLE IDENTIFICATION W363	2 W364	3 W365
pH		8.0	7.7	7.8
BOD	ppm	.6	.8	2.0
Cl	ppm	35.0	35.5	38.5
Total coliform		>16/100 ml	>16/100 ml	16/100 ml
T. D. S.	ppm	340	333	313
Alkalinity	ppm as $CaCO_3$	124.95	92.82	103.53
	ppm	2	.75	.5

ORIGINAL

ABC Laboratories, Inc.

3414 East 6th Ave. Spokane, Washington 99202 534-0161
4922 East Union Avenue Spokane, WA 99212

Lab. No. 1389-83

Client's No.

Date July 29, 1983
Sample Date: July 20, 1983

REPORT

Report to: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

Description: Perform tests as directed on three (3) submitted samples.

Tests	#1	#2	#3
pH	7.85	7.43	7.12
Iron, Fe, mg/l	.12	.02	.24
BOD, mg/l	1.3	.3	1.5
Chemical Oxygen Demand, mg/l	*5	6.3	*5
Total Dissolved Solids, mg/l	527	661	573
Chloride, Cl, mg/l	97	145	70
Specific Conductivity	670	825	775

Respectfully submitted
A. B. C. LABORATORIES, INC.

W. E. Burkhardt
Manager

ABC Laboratories, Inc.

4922 East Union Ave. Spokane, Washington 99212 (509) 534-0161

Lab. No. 1750-84

Client's No.

Date Jan. 13, 1984

Sample Date: Jan. 5, 1984

REPORT

Report to: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

Description: Perform tests as directed on three (3) submitted samples.

Tests	#1	#2	#3
pH	7.89	7.68	7.45
Iron, Fe, mg/l	.02	*.01	.02
BOD, mg/l	1.80	1.40	2.00
COD, mg/l	*5.	5.	*5.
Total Dissolved Solids, mg/l	526	704	552
Chloride, Cl^-, mg/l	170	260	118
Specific Conductibity	745	910	825

*Less than

Respectfully submitted
A. B. C. LABORATORIES, INC.

W. E. Burkhardt
Manager

lab - your copy B.

Walla Walla County-City Health Department

310 West Poplar • P.O. Box 1753 • Walla Walla, Washington 99362
Telephone 525-6730

1985
SAMPLING SUMMARY FOR
THE LANDFILL AND SLUDGE SITES

GROUND WATER	LANDFILL WELLS 1,2 & 3	Sample QUARTERLY for NO_3, Conductivity, Total Coliform, PH, BOD, Chlorides, TDS, Alkalinity, Fe and COD.
	SUDBURY ROAD SLUDGE SITE WELLS A & B	QUARTERLY - NO_3, Conductivity, Total Coliform, PH, BOD, Chlorides, TDS, Alkalinity, Fe and COD. SEMI-ANNUALLY - Ca,Mg,K, Na, HCO_3, CO_3, PO_4, SO_4 & TOC. ANNUALLY - Heavy Metals
	GUGLIELMELLI SOD FARM - SHOP WELL & ALIVERTI WELL	SEMI-ANNUALLY - Parameters in List I of Table 6 of plan. QUARTERLY - Parameters in List II of Table 6 of plan.
	SLUDGE MONITORING	QUARTERLY - TS,TKN & NH_4-N ANNUALLY - Heavy Metals
SOIL	SOIL MONITORING GUGLIELMELLI SOD FARM	ANNUALLY - Sod sample and soil from the 1-3 ft. level - All parameters in Table 9 of plan.
	SUDBURY ROAD SLUDGE SITE SOIL MONITORING	ANNUALLY - PH

Governor

Director

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

East 103 Indiana • Spokane, Washington 99207 • (509) 456-2926

N. 4601 Monroe, Suite 100
Spokane, WA 99205-1295

February 19, 1985

Walla Walla County-City Health Department
P. O. Box 1753
Walla Walla, WA 99362

Attention: Mr. David Eaton
Environmental Health Director

Re: City of Walla Walla Solid Waste Applications

Dear Mr. Eaton:

I regret the delay in responding to your communication regarding reissuance of permits for operation of both the city's municipal sludge disposal program and the sanitary landfill. Both permits are addressed in this one letter due to the interrelationship that exists.

We have reviewed the material submitted, together with the results of our joint inspection of the sanitary landfill and have concluded that comments and recommendations are required:

City Landfill Groundwater Monitoring - As you have noted, the analysis for chlorides have shown a persistent upward trend since monitoring began. Conductivity results appear to substantiate a deterioration of water quality. We understand the compiled results are annual averages and could be misleading, but they are still cause for concern. We are not aware that the monitoring data is being scrutinized on an ongoing basis by anyone other than you. This would seem to be an activity needing involvement by the city. This is particularly true since there is limited evidence suggesting groundwater contamination.

City Sludge Management, Groundwater Monitoring - The close proximity of land applied waste activities, including solid waste, cannery wastewater and municipal sludge, requires a comprehensive approach to both the sampling program and analysis interpretation. There may be selected parameters that could fingerprint the source of any existing and/or future groundwater problems. This possibility should be explored and, if appropriate, changes should be incorporated into future monitoring program(s).

City Sludge Management, Soil Monitoring - Application of sludge on the Gugliemelli Sod Farm appears to provide an economical and beneficial disposal method to all concerned. As we have discussed, there is some cause for concern due to the shallow groundwater in that area, and the fact that sod is made available for human contact.

Walla Walla County-City Health Department
Attention: Mr. David Eaton
Environmental Health Director

In addition to the protective steps you have already instituted and proposed, there may be benefit to soil testing. A chemical analysis of sod at harvest time might provide the basis for an estimation of which and how much of the applied sludge constituents are removed from the farm. Likewise, an analysis of a soil profile to groundwater might alert us to any accelerated migration problems associated with heavy irrigation of sod fields.

City Landfill Inspection Observations - Two operational aspects at the landfill could have an impact on groundwater. The first is the possibility that over application of dust control water could lead to excessive leaching. This could have happened through equipment failure and/or simple miscalculation of irrigation rates.

The second question that came up concerned the control of trench excavation relative to groundwater level. Solid waste mistakenly placed too deep could account for groundwater problems.

We have the following recommendations relative to reissuance of the subject permits:

a) It should be a requirement of both permits that the city develop an integrated sampling/monitoring program for solid waste and sludge disposal activities, and provide for ongoing oversight of analysis results. This could be scheduled for later implementation, but the existence of a landfill planning effort at this time is reason to expedite the program. Also, if it is decided that all sampling and analysis of groundwater will be done by sewage treatment plant personnel, a comprehensive program could be quickly implemented.

b) It should be a requirement of the sludge application permit that the city provide a report on the feasibility and/or value of soil and product analysis on the Gugliemelli Sod Farm.

c) It should be a requirement in the landfill permit that the city provide written assurances that watering and excavation activities at the landfill are accomplished in a manner consistent with groundwater protection goals.

Thank you for the time and effort put into this permit review process.

Walla Walla
County-City Health Department

310 West Poplar • P.O. Box 1753 • Walla Walla, Washington 99362
Telephone 525-6730

Averaged Results for Monitoring Wells

- NEW LANDFILL -

	1977			1978			1979			1980			1981		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
H	7.8	7.6	7.7	7.2	7.4	7.3	7	6.7	7.1	7.6	7.6	7.8	7.9	7.25	6.8
O D	1.4	1.6	1.6	1.5	13.5	13.9	3	3	3	3.2	2.1	6.2	2.5±.8	2.4 ±.3	3.1 ± 1.0
hlorides	36	36	38	56	41	41	47	42	11	50	50	37	565	215	40
D S	377	352	326	397	361	357	405	370	298	308	314	194	309	426	584
lkalinity	128	106	105	170	107	103	137	128	97	143	139	(315)	230	250	510
E	.99	.21	.16	2.2	.81	.5	.5	.22	18	.09	.09	.1	.10	.01	.08
O'D	12.8	4	11.2	63	10	30	15	7.7	38	65	57	46	4.0	1.22	5.14
oliform	20	12	37	15	4	58	2	2	2						
Conductivity													560	580	850

	1982			1983			1984			1985			1986		
	1	2	3	1	2	3	1	2	3						
PH	7.5	7.2	6.8	7.9	7.5	7.2	7.5	7.7	7.7						
BOD	1.7	.9	.8	1.3	.9	1.5	1.9	.7	1.5						
Chlorides	73	101	48	103	158	48	(132)	(190)	68						
TDS	462	616	567	507	672	542	675	755	538						
Alkalinity	—	—	—	—	—	—									
Fe	.24	.03	.23	.09	.03	.12	(3.1)	.04	(2.9)						
COD	12.8	13	12.0	8.3	8.4	5.6	7.6	8.6	2.6						
Conductivity	571	726	821	660	833	715	(830)	(881)	768						
NO=															

Walla Walla County-City Health Department
Attention: Mr. David Eaton
Environmental Health Director

A last point I'd like to make is that this letter contains comments and recommendations that are not based on intimate knowledge of the current city or Health Department activities. We would appreciate any corrections or clarifications you or the city may provide.

Sincerely,

Lawrence Peterson

L. N. Peterson
Assistant District Supervisor
Environmental Quality Division

LNP:adw

cc: Duane Scroggins, Public Works Director/City of Walla Walla

Walla Walla
County-City Health Department

310 West Poplar • P.O. Box 1753 • Walla Walla, Washington 99362
Telephone 525-6730

February 28, 1985

Duane Scroggins
Director of Public Works
City of Walla Walla
P. O. Box 478
Walla Walla, WA 99362

Re: 1985 Landfill Permit

Dear Duane:

We have received the 1985 solid waste site permit application for the Sudbury Road landfill together with the monitoring well test results. The application was sent to the Department of Ecology for their review. A copy of their letter is attached.

The chloride and conductivity levels continued to increase during 1984. Also, the October, 1984, sampling showed a sharp increase in iron concentrations. An increase in these parameters often indicates leachate contamination of the ground water. Based on this premise, a more intensive ground water monitoring program is needed. We are proposing that the two sludge utilization site monitoring wells be sampled at the same time and tested for the same parameters as the three landfill wells. All five wells should be tested tested quarterly for: NO_3, Conductivity, Total Coliform, PH, BOD, Chlorides, FE, TDS, Alkalinity, and COD.

In addition to the expanded ground water sampling program, Anderson & Perry should address the problem of possible ground water leachate contamination. What concerns me is the latest draft of the new Minimum Functional Standards for Solid Waste Handling in which it requires all landfills to have four feet of clay and a plastic liner under the landfill. If the current draft is adopted, our solid waste plan should reflect the new regulations since they may change things dramatically.

Methane monitoring should continue quarterly at the old landfill site and

semi-annually inside the new landfill shop and scale house.

We would appreciate receiving the results of both the monitoring well analyses and the methane readings as soon as they are available.

In accordance with the provisions of RCW-70.95, this letter serves as the 1985 sanitary landfill permit retroactive to January 1, 1985.

Very truly yours;

David Eaton, R.S.
Director of Environmental Health

DE/bs

COPY

Landfi
Carl

FILE

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

June 9, 1988

Mr. David Eaton
Director of Environmental Health
Walla Walla County-City Health Department
P. O. Box 1753
Walla Walla, WA 99362

Dear David:

I have reviewed the submitted ground water monitoring data for the Walla Walla sanitary landfill. The review included use of the Student t-Test to determine if there was a significant difference (statistically) between upgradient and downgradient concentrations for several indicator parameters.

Several factors and assumptions were considered:

1. The Averaged Replicate Test Statistic uses splits from each sample for several analyses of the same parameter. We do not have the luxury of having replicated data for each parameter from the same laboratory. I, therefore, used the first, second, third, and fourth quarter sampling results as the "splits".

2. I assumed that all of the reported concentrations are in mg/L and not ug/L.

3. For consistency, I utilized sample results from only one laboratory. The sampling results from the laboratory AUG were used for several reasons:

   - The City used this laboratory for all of their sampling efforts and, therefore, there was more data generated from that one laboratory.
   - It appears that several of the results from U. S. Testing were disregarded by the City.
   - ABC was not consistently utilized and, therefore, less data was generated from them.

4. Parameters used in the statistical analyses include chloride, conductivity and iron. Chloride is chemically stable, remaining as a free ion under a wide range of redox conditions. Iron is a common metal in municipal waste landfill leachate. The problem using iron, however, is that reported concentrations can vary considerably, probably due to sensitivity to oxidation, and filtration and acidification in the field and/or laboratory.

5. Sampling results from Wells 7, 1 and 3 were used because of their locations and the fact they were all designed and constructed during the same time period. Well 7 was used as the upgradient well, upgradient as far as ground water flow direction relative to landfilling activities. I realize there may be other interferences based on the activities from the state penitentiary. The parameters used in the statistical analyses would probably not be impacted by those disposal activities. Wells 1 and 3 were used as the downgradient wells. Wells 4 and 5 were not used because they were not sampled every quarter.

The statistical analysis indicates there is no significant differences in chloride and iron concentrations and conductivity from the upgradient and downgradient wells. It is important to emphasize that we only have four quarters of data, which is a small population to work with. The validity of the statistical analysis increases with increasing representative data. It is significant to note that iron concentrations from the downgradient wells, reported by all of the laboratories, at times exceeded the secondary drinking water standards of .3 mg/L.

At this time, I do not see a problem with reissuing the solid waste handling permit for 1988. The MFS also requires the City to measure ground water surface elevations in the wells at the time the wells are sampled. I would appreciate a copy of that information if it is available. In the future, it would also be helpful to have copies of the actual laboratory data sheets that are sent to the City from the analytical laboratory.

I have enlosed a copy of the application of student t-test to monitoring data taken from EPA Guidance Manual SW-828, "Classifying Solid Waste Disposal Facilities". In accordance with WAC 173-304-490(2)(f), the owner/operator of the facility shall use a statistical procedure for determing whether a significant change over background has occurred. The jurisdictional health department must approve the procedure with the guidance of Ecology. Walla Walla may want to contact some other cities and/or counties to discuss what statistical procedures those entities are proposing. As of today, I do not know of any one particular statistical procedure that is being utilized consistently for all solid waste handling facilities in the state.

I hope this information is helpful to you. If you have any questions, please feel free to contact me.

Sincerely,

Flora J. Goldstein

Flora J. Goldstein
Hydrogeologist
Environmental Quality Division

FJG:adw

Enclosure

6-8-88

WALLA WALLA GROUND WATER MONITORING DATA 1987

Leachate characteristics:
- Conductivity
- Fe
- Cl

USING WELL # 7 background
1 downgradien
3 downgradien

CHLORIDE

	WELL # 7		WELL # 1		WELL # 3	
	$\bar{x}$	diff $\bar{x}$	$\bar{x}$	diff $\bar{x}$	$\bar{x}$	diff $\bar{x}$
1st	13	7	54	21	116	12
2nd	5	1	87	12	129	1
3rd	2	4	71	4	118	10
4th	5	1	88	13	148	20

$mean_7 = 6$ $sum_7 = 13$ | $mean_1 = 75$ $sum_1 = 50$ | $mean_3 = 128$ $sum_3 = 43$

USING WELL # 7 and # 1

$$S_o = \frac{(sum_7)^2 + (sum_1)^2}{n_1 + n_2 - 2}$$

$$= \frac{169 + 2500}{6}$$

$$= 445$$

$$t = \frac{mean_7 - mean_1}{S_o \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$= \frac{6 - 75}{445 \sqrt{\frac{1}{4} + \frac{1}{4}}}$$

$$= \frac{69}{445 \times .71}$$

$$= .218$$

$.218 < 2.447$

NO SIGNIFICANT DIFFERENCE AT 95% CONFIDENCE

USING WELL # 7 AND # 3

$$S_o = \frac{(sum_7)^2 + (sum_3)^2}{n_1 + n_2 - 2}$$

$$\frac{169 + 1849}{6}$$

$$= 336$$

$$t = \frac{mean_7 - mean_3}{S_o \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$= \frac{6 - 128}{336 \times .71}$$

$$= \frac{122}{239}$$

$$= .510$$

$.510 < 2.447$

Conductivity

	Well # 7		Well # 1		Well # 3	
	numbers	diff $\bar{x}$	numbers	diff $\bar{x}$	numbers	diff $\bar{x}$
1st	239	75	469	85	668	99
2nd	145	19	538	16	793	26
3rd	139	25	597	43	827	60
4th	132	32	610	56	780	13

$mean_7 = 164$ $sum_7 = 151$ | $mean_1 = 554$ $sum_1 = 200$ | $mean_3 = 767$ $sum_3 = 19$

USING WELL # 7 and # 1

$$S_0 = \frac{(sum_7)^2 + (sum_1)^2}{n_1 + n_2 - 2}$$

$$= \frac{151^2 + 200^2}{6}$$

$$= \frac{22801 + 40000}{6}$$

$$= 10467$$

$$t = \frac{mean_7 - mean_1}{S_0 \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$= \frac{164 - 554}{10467 * .71}$$

$$= .05$$

$$.05 < 2.447$$

USING # 7 and # 3

$$S_0 = \frac{(sum_7)^2 + (sum_3)^2}{n_1 + n_2 - 2}$$

$$= \frac{22801 + 39204}{6}$$

$$= 10334$$

$$t = \frac{mean_7 - mean_3}{S_0 \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$= \frac{164 - 767}{10334 \times .71}$$

$$= .08 < 2.447$$

IRON

	WELL # 7 mg/L	diff x	WELL # 1 mg/L	diff x	WELL # 3 mg/L	diff x
1st	.34	.13	10.9	7.3	.4	.24
2nd	.05	.16	1.23	2.4	.34	.3
3rd	.055	.155	.58	3.0	.68	.04
4th	.39	.18	1.80	1.8	1.12	.48
	$mean_7 = .21$	$sum_7 = .63$	$mean_1 = 3.6$	$sum_1 = 14.5$	$mean_3 = .64$	$sum_3 = 1.2$

USING WELL # 7 AND WELL # 1

$$S_0 = \frac{(sum_7)^2 + (sum_1)^2}{n_1 + n_2 - 2}$$

$$= \frac{(.63)^2 + (14.5)^2}{6}$$

$$= \frac{.40 + 210.3}{6}$$

$$= 35.11$$

$$t = \frac{mean_7 - mean_1}{S_0 \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$= \frac{3.39}{35.11 \times .71}$$

$$= \frac{3.39}{24.94}$$

$$= .14$$

$.14 < 2.447$

USING # 7 AND WELL # 3

$$S_0 = \frac{(sum_7)^2 + (sum_3)^2}{n_1 + n_2 - 2}$$

$$= \frac{.40 + 1.12}{6}$$

$$= .25$$

$$t = \frac{mean_7 - mean_3}{S_0 \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$= \frac{.43}{.25 \times .71}$$

$$= \frac{.43}{.18}$$

$$= 2.39$$

$2.39 < 2.447$

ABC LABORATORIES, INC.

City of Walla Walla WWTP
Lab #: 33413-90

3/9/90

Sample Identifaction:	1	2	3	4
Arsenic, As, mg/L	<0.010	<0.010	<0.010	<0.010
Barium, Ba, mg/L	<0.25	<0.25	<0.25	<0.25
Cadmium, Cd, mg/L	<0.002	<0.002	<0.002	<0.002
Chromium, Cr, mg/L	0.055	<0.010	<0.010	0.127
Iron, Fe, mg/L	1.38	<0.05	0.05	0.38
Lead, Pb, mg/L	<0.010	0.027	0.036	0.059
Manganese, Mn, mg/L	0.048	0.010	0.010	0.023
Mercury, Hg, mg/L	<0.0010	0.0048	<0.0010	0.1750
Selenium, Se, mg/L	<0.005	<0.005	<0.005	<0.005
Silver, Ag, mg/L	0.027	0.010	<0.035	<0.010
Sodium, Na, mg/L	12.2	17.2	11.3	158.0
Copper, Cu, mg/L	0.024	0.027	<0.010	0.016
Zinc, Zn, mg/L	<0.010	0.056	0.015	0.025
[illegible]	[illegible]	0.015	[illegible]	[illegible]
[illegible], mg/L	36.05	59.45	30.25	34.01
[illegible], mg/L	6.1	7.7	6.6	7.1
[illegible], mg/L	0	0	0	0

[illegible]

Chloride, Cl-, mg/L	170	210	170	110
Fluoride, F-, mg/L	0.3	0.3	0.2	[illegible]
Sulfate, SO4, mg/L	46.6	64.4	40.0	[illegible]

Incl #6

ABC LABORATORIES, INC.

City of Walla Walla WWTP
Lab #: 33413-90

Sample Identification:	5	6	7	8
Arsenic, As, mg/L	<0.010	<0.010	<0.010	<0.010
Barium, Ba, mg/L	<0.25	<0.25	<0.25	<0.25
Cadmium, Cd, mg/L	<0.002	<0.002	<0.002	<0.002
Chromium, Cr, mg/L	<0.010	0.015	<0.010	<0.010
Iron, Fe, mg/L	0.11	0.12	0.17	0.92
Lead, Pb, mg/L	<0.010	<0.010	<0.010	0.081
Manganese, Mn, mg/L	<0.010	<0.010	<0.010	0.012
Mercury, Hg, mg/L	0.1750	<0.0010	0.0300	0.1500
Selenium, Se, mg/L	<0.005	<0.005	<0.005	<0.005
Silver, Ag, mg/L	<0.010	<0.010	<0.010	<0.010
Sodium, Na, mg/L	26.5	9.7	7.3	24.4
Copper, Cu, mg/L	<0.010	<0.010	<0.010	<0.010
Zinc, Zn, mg/L	0.356	<0.010	[illegible]	1.49
Nickel, Ni, mg/L	<0.010	0.014	<0.010	0.022
Magnesium, Mg, mg/L	29.3	22.21	1.38	43.35
Potassium, K, mg/L	7.3	6.0	3.5	8.2
Carbonate, CO3, mg/L	0	0	0	0
Total Metals:				
Chloride, Cl-, mg/L	37	49	2	81
Fluoride, F-, mg/L	0.2	0.2	0.3	0.2
Sulfate, SO4, mg/L	19.4	26.6	<1	47.8

Respectfully submitted,
ABC LABORATORIES, INC.

W. E. Burkhardt
Manager

Incl #6

CITY OF WALLA WALLA

GROUND-WATER MONITORING DATA

Well Location _____ Date 6-18-90

(Land Fill) (Spray Farm Wells) Gustafson Well

	#1	#2	#3	#4B	#5A	#6	#7	#8			#12	
Well Temperature	60	68	61	58	57		58	56				
Well Depth	28		28	41	41		47	66				
Conductivity	725	1225	650	[illegible]	625	475	127	800			240	2
Total Dissolved Solids	408	1011	548	[illegible]	482	464	116	660			169	[illegible]
Alkalinity	150	240	170	[illegible]	220	100	60	200			80	1
Total Coliform	0	0	0	0	0	0	0	0			2	0
Hardness, as $CaCo_3$	325	547	270	[illegible]	291	222	102	276			103	6
Turbidity, NTU	4.0	0.19	0.20	[illegible]	0.32	3.5	1.4	12.0			1.1	.
ph	7.2	7.2	8.0	7.0	7.3	7.4	7.6	7.0			7.1	7
BOD												
COD	2	0	3.7	0	0	0	0	0			0	0
Total Organic Carbon, TOC												
Nitrate, NO_3	8.75	11.41	8.66	[illegible]	12.27	7.55	1.99	11.64			4.10	5
Nitrite, NO_2	.110	.105	.125	[illegible]	.123	.110	.114	.129			.114	.1
Ammonia, NH_4	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1			<.1	<
Arsenic, As												
Barium, Ba												
Cadmium, Cd												
Chromium, Cr												
Iron, Fe												
Lead, Pb												
Manganese, Mn												
Mercury, Hg												
Selenium, Se												
Silver, Ag												
Sodium, Na												
Copper, Cu												
Zinc, Zn												
Chloride, Cl	99	176	[illegible]	[illegible]	[illegible]	57	14	196			6.2	
Fluoride, F												
Sulfate, SO_4												
Vinyl Chloride												
Nickel, Ni												
Phosphate, PO_4												
Magnesium, Mg												
Potassium, K												
Carbonate, CO_3												

CERTIFIED
Richard L. Gulkson
No. E 107
ENGINEERING GEOLOGIST

*Conductivity, micromhos/cm

**Chemicals in units of mg/l

Incl #

H[illegible]

AUG 1 4 1990

TORIES, INC.
IION AVENUE
'A 99212
-0161

This is the latest test results for the Walla Walla landfill wells / Dan

Report to: City of Walla
P.O. Box 478
Walla Walla, W

Lab #: 33727-90
Date: 7-20-90
Date Rec'd: 6-19-90
P.O.#: 3283

Attn.:

Description: Perform analyses as directed on eight submitted samples.

Test	#1	#2	#3	#4B
Biochemical Oxygen Demand, BOD, mg/L	5	6	5	5
Chemical Oxygen Demand, COD, mg/L	192	96	88	64
Total Organic Carbon, TOC, mg/L	1.80	2.27	2.25	1.43
Nitrate, NO3-N, mg/L	2.0	5.6	2.0	8.0
Nitrite, NO2-N, mg/L	<0.01	<0.01	<0.01	<0.01
Ammonia, NH3-N, mg/L	<0.05	<0.05	<0.05	<0.05
Arsenic, As, mg/L	<0.010	<0.010	<0.010	<0.010
Barium, Ba, mg/L	<0.25	<0.25	<0.25	<0.25
Cadmium, Cd, mg/L	0.004	0.005	0.004	0.005
Chromium, Cr, mg/L	0.086	<0.010	<0.010	<0.010
Iron, Fe, mg/L	1.32	0.05	0.08	0.12
Lead, Pb, mg/L	<0.010	<0.010	<0.010	<0.010
Manganese, Mn, mg/L	<0.010	<0.010	0.0[illegible]	<0.010
Mercury, Hg, mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Selenium, Se, mg/L	<0.005	<0.005	<0.005	<0.005
Silver, Ag, mg/L	<0.010	<0.010	<0.010	<0.010
Sodium, Na, mg/L	10.8	16.8	13.3	16.0
Copper, Cu, mg/L	0.010	0.024	<0.010	<0.010
Zinc, Zn, mg/L	0.016	0.044	0.020	0.023
Chloride, Cl, mg/L	120	150	95	37
Fluoride, F, mg/L	<0.2	<0.2	<0.2	<0.2
Sulfate, SO4, mg/L	58	86	48	54
Nickel, Ni, mg/L	0.165	0.030	0.015	0.028
Phosphate, PO4-P, mg/L	0.08	0.05	0.05	0.05
Magnesium, Mg, mg/L	31.7	58.7	31.5	29.4
Potassium, K, mg/L	6.05	8.32	5.69	5.7
Carbonate, CO3, mg/L	0	0	0	0

ABC LABORATORIES, INC.

Walla Walla
33727-90

	#5A	#6	#7	#8
Biochemical Oxygen Demand, BOD, mg/L	5	5	13	12
Chemical Oxygen Demand, COD, mg/L	32	96	64	64
Total Organic Carbon, TOC, mg/L	2.49	1.51	1.28	1.53
Nitrate, NO3-N, mg/L	1.8	1.86	0.4	4.6
Nitrite, NO2-N, mg/L	<0.01	<0.01	<0.01	<0.01
Ammonia, NH3-N, mg/L	<0.05	<0.05	<0.05	<0.05
Arsenic, As, mg/L	<0.010	<0.010	<0.010	<0.010
Barium, Ba, mg/L	<0.25	<0.25	<0.25	<0.25
Cadmium, Cd, mg/L	0.004	0.002	<0.002	0.004
Chromium, Cr, mg/L	<0.010	0.018	<0.010	<0.010
Iron, Fe, mg/L	0.07	0.15	0.18	6.0
Lead, Pb, mg/L	<0.010	<0.010	<0.010	<0.010
Manganese, Mn, mg/L	<0.010	<0.010	<0.010	0.094
Mercury, Hg, mg/L	0.0108	<0.0010	<0.0010	<0.0010
Selenium, Se, mg/L	<0.005	<0.005	<0.005	<0.005
Silver, Ag, mg/L	<0.010	<0.010	<0.010	<0.010
Sodium, Na, mg/L	18.2	7.9	5.7	23.3
Copper, Cu, mg/L	<0.010	<0.010	<0.010	<0.010
Zinc, Zn, mg/L	0.200	0.017	0.012	0.6
Chloride, Cl, mg/L	36	54	4.5	62
Fluoride, F, mg/L	<0.2	<0.2	<0.2	<0.2
Sulfate, SO4, mg/L	15	32	0.5	62
Nickel, Ni, mg/L	0.023	0.015	<0.010	0.023
Phosphate, PO4-P, mg/L	0.05	0.05	0.08	0.05
Magnesium, Mg, mg/L	27.2	19.1	1.00	30.8
Potassium, K, mg/L	5.93	5.13	2.73	8.48
Carbonate, CO3, mg/L	0	0	0	0

Respectfully Submitted,
ABC Laboratories, Inc.

W.E. Burkhardt
Manager

CITY OF
WALLA WALLA

CITY HALL - 15 N. 3RD AVE.
P.O. BOX 478
WALLA WALLA, WA 99362
FAX (509) 527-3745

May 4, 1993

Mike Hibbler
Department of Ecology
N. 4601 Monroe, Suite 100
Spokane, Washington 99205-1295

SUBJECT: Ground Water Monitoring Wells #5 and $9.

Dear Mike:

ON March 30, 1993, we collected samples from the ground water monitoring well's #1 through #9. Results showed detectable level of tetrachloroethane in wells five and nine. Well five level of contamination being greatest at 5.3 PPB. The level detected in well nine was 3.6 PPB. The MCL of tetrachloroethane is 5.0 PPB.

On April 13, we collected sample's again on well #5 and well #9. Results showed increasing levels of tetrachloroethane contamination in both wells. Well five's level increased from 5.3 to 7.1 PPB. Well nine increased from 3.6 to 4.1 PPB still under MCL. We also have another contaminate in the last sampling done on April 13, we picked up trichloroethane. The level of contamination found in both wells was 2.6 PPB. The MCL for this analyte is 5.0 PPL.

We will re-sample in mid May the following well's, numbers 4, 5, 8, 8A and 9, to determine the contaminate levels and possible migration.

Both chemicals are used as solvents for degreasing metals and in the dry cleaning industry.

I have attached data submitted by Michael Clark our chemist and data performed by Alchem Lab of Boise, Idaho. I also have attached my map showing the location of the wells. The contamination is coming in from the north east of the City property boundary.

If you have any questions, please give me a call.

Sincerely,

Al Prouty, Superintendent
Wastewater/Landfill
City of Walla Walla
P.O. Box 478
Walla Walla, Washington 99362

nc

ALCHEM LABORATORIES

Alchem Laboratories
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124

Water, Waste Water and Soil Analysis

LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 04/13/93
TIME COLLECTED: 14:00
DATE RECEIVED: 04/16/93
DATE REPORTED: 04/20/93

LAB NO.: 34299 SAMPLE TYPE: WATER COLLECTED BY: _____

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : WELL #5 (RECOLLECTION)

LABORATORY REPORT FOR—"VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	7.1	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	2.6	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 04/16/93

* ND = None Detected

Analyst: BRAD BROKER

ALCHEM LABORATORIES

Alchem Laboratories

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Waste Water and Soil Analysis

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	1.0	
Total THM's	1.0	1.0	100

UNREGULATED VOC's

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,3-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

CLIENT: WALLA WALLA TREATMENT PLANT / ATTN: AL PROUTY

ALCHEM LABORATORIES

Alchem Laboratories
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124
Water, Waste Water and Soil Analysis

LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 04/13/93
TIME COLLECTED: 14:00
DATE RECEIVED: 04/16/93
DATE REPORTED: 04/20/93

LAB NO.: 34300 SAMPLE TYPE: WATER COLLECTED BY: _____

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : WELL #9 (RECOLLECTION)

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	4.1	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	2.6	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 04/16/93

* ND = None Detected

Analyst: BRAD BROKER

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Boise, Idaho 83714
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COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	1.5	
Total THM's	1.0	1.5	100

UNREGULATED VOC'S

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,3-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

CLIENT: WALLA WALLA TREATMENT PLANT / ATTN: AL PROUTY

ALCHEM LABORATORIES

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Boise, Idaho 83714
Phone (208) 336-1172
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Water, Waste Wate and Soil Analysis

LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 03/30/93
TIME COLLECTED: 9:50
DATE RECEIVED: 04/02/93
DATE REPORTED: 04/08/93

LAB NO.: 33672 SAMPLE TYPE: WATER COLLECTED BY: MICHAEL CLARK

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : WELL #5

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	5.3	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	ND	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 04/07/93

* ND = None Detected

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Analyst: BRAD BROKER

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COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	ND	
Total THM's	1.0	ND	100

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
UNREGULATED VOC'S		
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,2-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

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LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 03/30/93
TIME COLLECTED: 9:00
DATE RECEIVED: 04/02/93
DATE REPORTED: 04/08/93

LAB NO.: 33674 SAMPLE TYPE: WATER COLLECTED BY: MICHAEL CLARK

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : WELL #9

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	3.6	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	ND	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 04/07/93

* ND = None Detected

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Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell, Laboratory Manager

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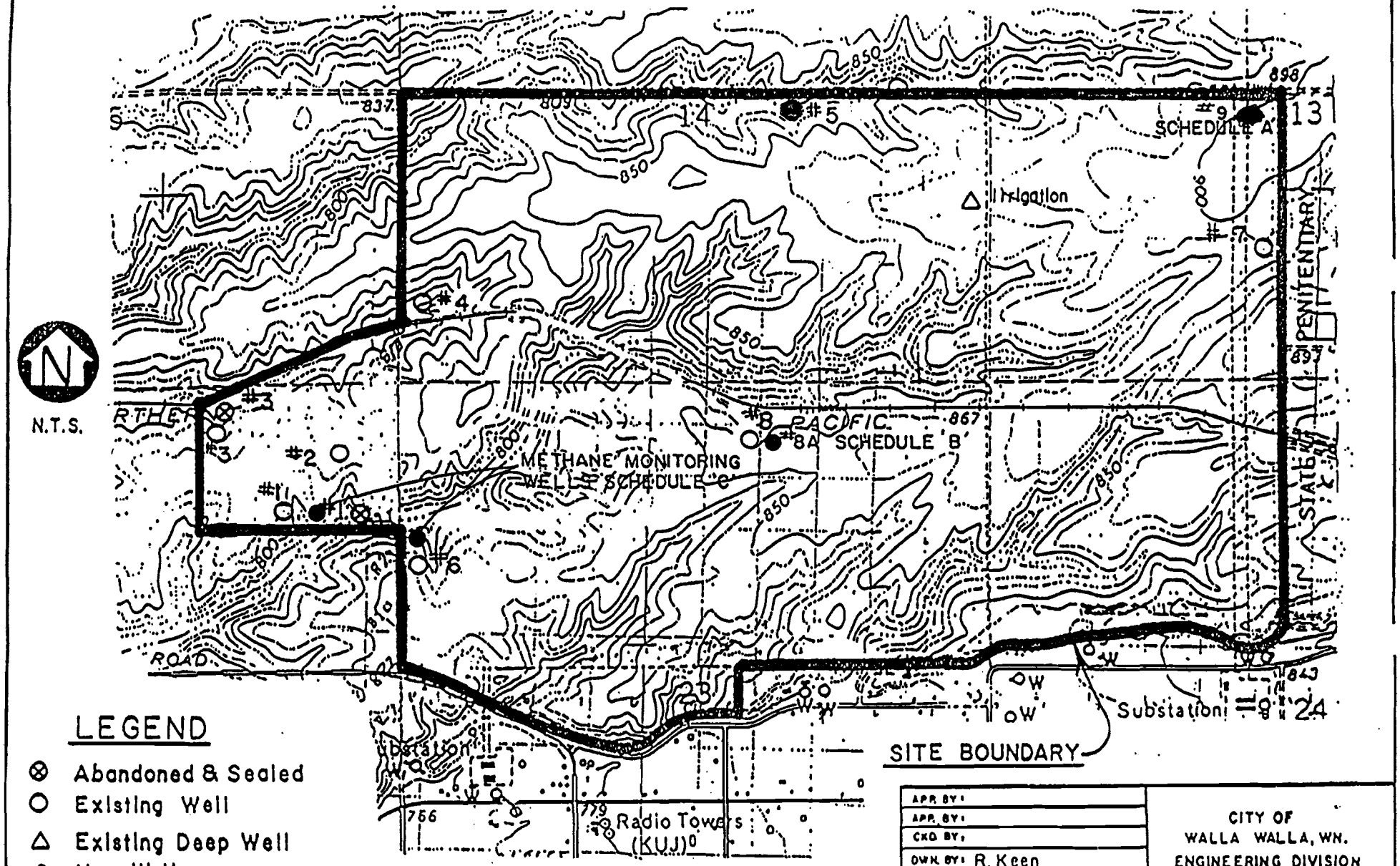
COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	ND	
Total THM's	1.0	ND	100

UNREGULATED VOC's COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,2-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected



APR. BY:	CITY OF WALLA WALLA, WN. ENGINEERING DIVISION DEPT. OF PUBLIC WORKS
APR. BY:	
CKD. BY:	
DWN. BY: R. Keen	
DSN. BY:	
DATE: 6-10-86	

WASTE DISPOSAL SITE
MONITORING WELL LOCATIONS

FILE NO.	PROJECT NO.	SHEET 1 OF 7

CITY OF
WALLA WALLA

CITY HALL - 15 N. 3RD AVE.
P.O. BOX 478
WALLA WALLA, WA 99362
FAX (509) 527-3745

September 30, 1993

Bud Muskgrove
Department of Ecology
N 4601 Monroe Suite 100
Spokane, Washington 99205

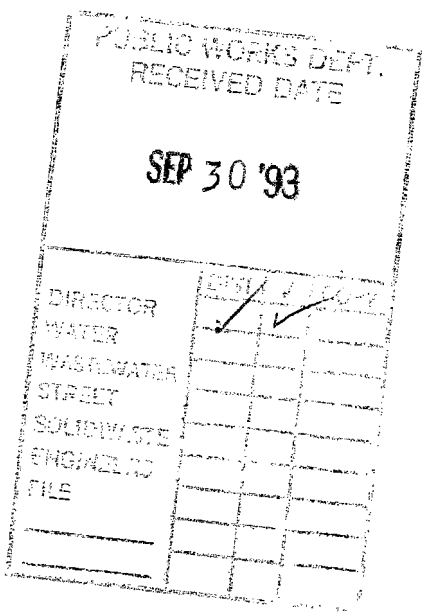
Dear Bud:

I have attached the analytical results for three quarters, of the wells that have shown hit's of VOC's contamination. Also a summary sheet for these wells, which should be helpful. We should be able to track travel time from well 5 and well 9 to down stream well 2 and well 8.

If you have any questions, please give me a call at 509-527-4509.

Sincerely,

Al Prouty, Superintendent
Wastewater/Landfill
City of Walla Walla
P.O. Box 478
Walla Walla, Washington 99362

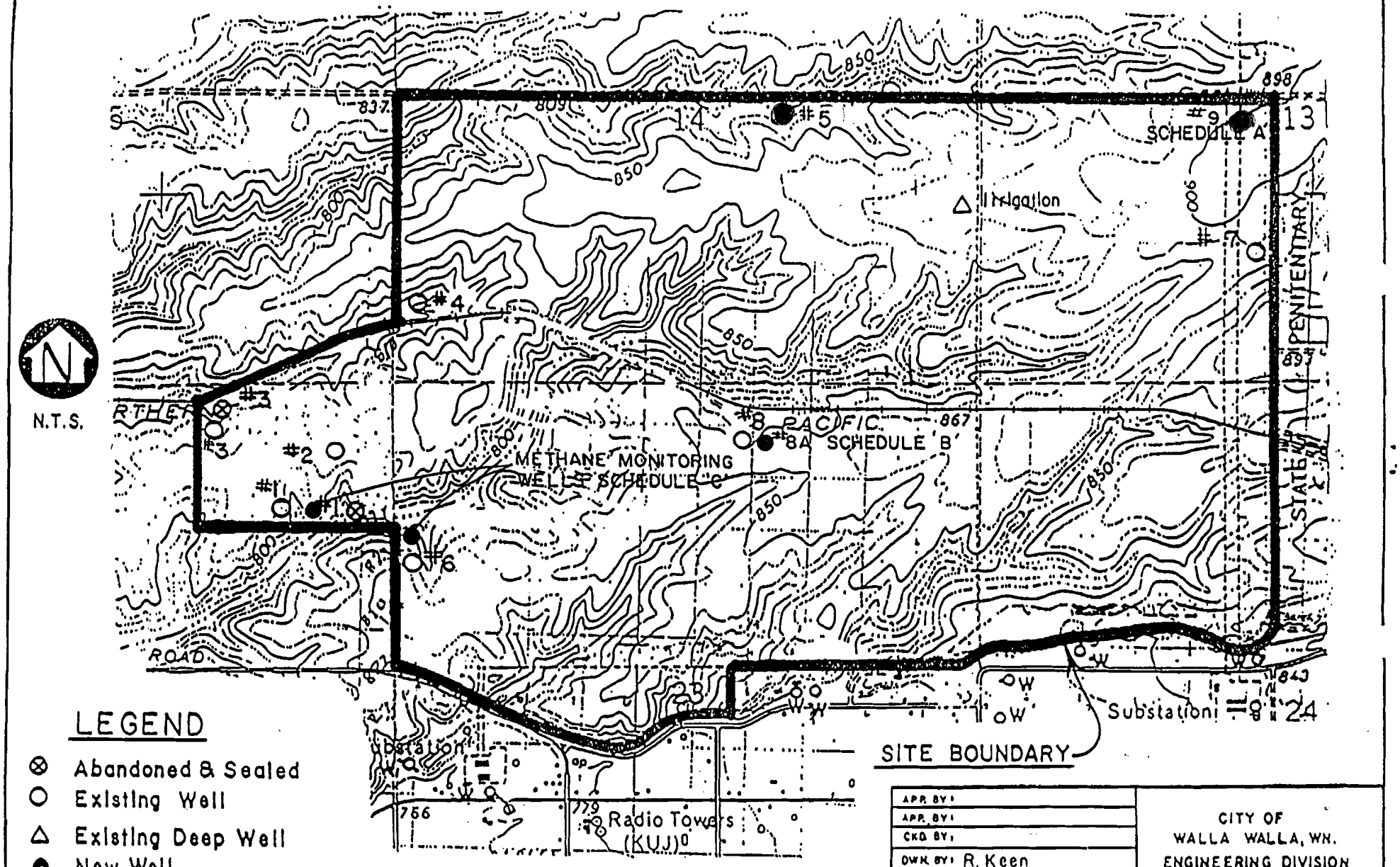


nc
cc: Dave Eaton
Duane Scroggins

CITY OF WALLA WALLA

Analytical results of Ground Water Monitoring Wells

Date Collected	First Well Number	Compound	Analytical Results (ug/l)
		FIRST QUARTER	
3-30-93	9	Tetrachloroethylene (PCE)	3.6
3-30-93 Recollected	5	Tetrachloroethylene (PCE)	5.3
4-13-93	9	Tetrachloroethylene (PCE)	4.1
4-13-93	9	Trichlorethylene	2.6
4-13-93	5	Tetrachloroethylene (PCE)	7.1
4-13-93	5	Trichlorethylene	2.6
		SECOND QUARTER	
6-14-93	9	Tetrachloroethylene	2.3
6-14-93	9	Trichlorethylene	1.7
6-14-93	5	Tetrachloroethylene (PCE)	6.5
6-14-93	5	Trichlorethylene	4.0
6-15-93	2	Tetrachloroethylene (PCE)	0.6
		THIRD QUARTER	
8-31-93	9	Tetrachloroethylene (PCE)	3.1
8-31-93	9	1,1,1,-Trichloroethane	0.6
8-31-93	9	Trichlorethylene	2.3
8-31-93	5	Tetrachloroethylene (PCE)	5.5
8-31-93	5	Trichlorethylene	3.7
8-31-93	2	Tetrachloroethylene (PCE)	0.7
8-31-93	8	Tetrachloroethylene (PCE)	0.6



APP. BY:	CITY OF WALLA WALLA, WN. ENGINEERING DIVISION DEPT. OF PUBLIC WORKS
APP. BY:	
CKD. BY:	
DWN. BY: R. Keen	
DSN. BY:	
DATE: 6-10-86	

WASTE DISPOSAL SITE
MONITORING WELL LOCATIONS

FILE NO.	PROJECT NO.	SHEET 1 OF 7

102

ALCHEM LABORATORIES

Alchem Laboratories

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
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Water, Waste Water and Soil Analysis

LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 09/01/93
TIME COLLECTED: 13:55
DATE RECEIVED: 09/03/93
DATE REPORTED: 09/13/93

LAB NO.: 41249 SAMPLE TYPE: WATER COLLECTED BY: _____

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : WELL #2

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l) (Drinking Water Limits)
REGULATED VOC's			
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	0.7	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	ND	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 09/10/93

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

ALCHEM LABORATORIES

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104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
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Water, Waste Water and Soil Analysis

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	0.7	
Total THM's	1.0	<1.0	100

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
UNREGULATED VOC's		
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,3-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

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Boise, Idaho 83714
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FAX (208) 336-7124
Water, Waste Water and Soil Analysis

LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 09/01/93
TIME COLLECTED: 12:20
DATE RECEIVED: 09/03/93
DATE REPORTED: 09/13/93

LAB NO.: 41250 SAMPLE TYPE: WATER COLLECTED BY: _____

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : WELL #5

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	5.5	5.0 . 8
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	3.7	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 09/10/93

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell, Lab

ALCHEM LABORATORIES

Alchem Laboratories

104 West 31st Street
Boise, Idaho 83714

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FAX (208) 336-7124

Water, Waste Water and Soil Analysis

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	0.9	
Total THM's	1.0	<1.0	100

UNREGULATED VOC's

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,3-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

CLIENT: WALLA WALLA TREATMENT PLANT / ATTN: AL PROUTY

ALCHEM LABORATORIES

Alchem Laboratories

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Waste Water and Soil Analysis

LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 08/31/93
TIME COLLECTED: 15:00
DATE RECEIVED: 09/03/93
DATE REPORTED: 09/13/93

LAB NO.: 41251 SAMPLE TYPE: WATER COLLECTED BY: _____

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : WELL #8

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	0.6	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	ND	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 09/10/93

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell, Laboratory Manager

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COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	1.3	
Total THM's	1.0	1.3	100

UNREGULATED VOC's

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,3-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

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LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 08/31/93
TIME COLLECTED: 12:35
DATE RECEIVED: 09/03/93
DATE REPORTED: 09/13/93

LAB NO.: 41253 SAMPLE TYPE: WATER COLLECTED BY: _____

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : WELL #9

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	3.1	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	0.6	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	2.3	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 09/10/93

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell, Laboratory Manager

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COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	1.3	
Total THM's	1.0	1.3	100

UNREGULATED VOC's

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,3-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

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COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	ND	
Total THM's	1.0	ND	100

UNREGULATED VOC's

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,3-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

CLIENT: WALLA WALLA TREATMENT PLANT / ATTN: AL PROUTY

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Water, Waste Water and Soil Analysis

LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 06/15/93
TIME COLLECTED:
DATE RECEIVED: 06/22/93
DATE REPORTED: 06/29/93

LAB NO.: 37162 SAMPLE TYPE: WATER COLLECTED BY: _____

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : MONITERING WELL 2

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	0.6	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	ND	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 06/28/93

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell

ALCHEM LABORATORIES

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Water, Waste Water and Soil Analysis

LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 06/14/93
TIME COLLECTED: 16:45
DATE RECEIVED: 06/22/93
DATE REPORTED: 06/29/93

LAB NO.: 37165 SAMPLE TYPE: WATER COLLECTED BY: _____

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : MONITERING WELL 5

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	6.5	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	4.0	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 06/28/93

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell, Laboratory Manager

ALCHEM LABORATORIES

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COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	1.0	
Total THM's	1.0	1.0	100

UNREGULATED VOC's

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,3-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

CLIENT: WALLA WALLA TREATMENT PLANT / ATTN: AL PROUTY

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Water, Waste Water and Soil Analysis

LABORATORY REPORT

WALLA WALLA TREATMENT PLANT
P.O. BOX 478
WALLA WALLA, WASHINGTON 99362

DATE COLLECTED: 06/14/93
TIME COLLECTED: 14:09
DATE RECEIVED: 06/22/93
DATE REPORTED: 06/29/93

LAB NO.: 37170 SAMPLE TYPE: WATER COLLECTED BY: _____

NAME OF PROJECT/SITE: WALLA WALLA TREATMENT PLANT

SAMPLE LOCATION : MONITERING WELL 9

LABORATORY REPORT FOR "VOLATILE ORGANIC COMPOUNDS"

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
REGULATED VOC's			(Drinking Water Limits)
Benzene	0.5	* ND	5.0
Carbon Tetrachloride	0.5	ND	5.0
Chlorobenzene	0.5	ND	100.0
p-Dichlorobenzene	0.5	ND	75.0
o-Dichlorobenzene	0.5	ND	600.0
1,2-Dichloroethane	0.5	ND	5.0
1,1-Dichloroethylene	0.5	ND	7.0
cis-1,2-Dichloroethylene	0.5	ND	70.0
trans-1,2-Dichloroethylene	0.5	ND	100.0
1,2-Dichloropropane	0.5	ND	5.0
Ethylbenzene	0.5	ND	700.0
Methylene Chloride	0.5	ND	5.0
Styrene	0.5	ND	100.0
Tetrachloroethylene (PCE)	0.5	2.3	5.0
Toluene	0.5	ND	1000.0
1,2,4-Trichlorobenzene	0.5	ND	9.0
1,1,1-Trichloroethane	0.5	ND	200.0
1,1,2-Trichloroethane	0.5	ND	5.0
Trichloroethylene	0.5	1.7	5.0
Vinyl Chloride	0.2	ND	2.0
Xylenes (total)	0.5	ND	10000.0

Date Analyzed: 06/28/93

* ND = None Detected

Analyst: BRAD BROKER

REPORT CONT. NEXT PAGE

Suzanne Howell, Laboratory Manager

ALCHEM LABORATORIES

Alchem Laboratories

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Water, Waste Water and Soil Analysis

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS	MAX. CONTAMINANT LEVEL (ug/l)
THM'S (TRIHALOMETHANES)			
Bromodichloromethane	0.2	* ND	
Chlorodibromomethane	0.5	ND	
Bromoform	1.0	ND	
Chloroform	0.2	ND	
Total THM's	1.0	ND	100

UNREGULATED VOC's

COMPOUND	METHOD DETECTION LEVEL (ug/l)	ANALYTICAL RESULTS (ug/l)
Bromobenzene	0.5	*ND
Bromochloromethane	0.5	ND
Bromomethane	2.0	ND
n-Butylbenzene	0.5	ND
sec-Butylbenzene	0.5	ND
tert-Butylbenzene	0.5	ND
Chloroethane	1.0	ND
Chloromethane	0.5	ND
2-Chlorotoluene	0.5	ND
4-Chlorotoluene	0.5	ND
1,2-Dibromo-3-Chloropropane	5.0	ND
1,2-Dibromoethane	1.5	ND
Dibromomethane	4.0	ND
1,3-Dichlorobenzene	0.5	ND
Dichlorodifluoromethane	0.5	ND
1,1-Dichloroethane	0.5	ND
1,3-Dichloropropane	0.5	ND
2,2-Dichloropropane	0.5	ND
1,1-Dichloropropene	0.5	ND
Hexachlorobutadiene	0.5	ND
Isopropylbenzene	0.5	ND
p-Isopropyltoluene	0.5	ND
Naphthalene	0.5	ND
n-Propylbenzene	0.5	ND
1,1,1,2-Tetrachloroethane	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,2,3-Trichlorobenzene	0.5	ND
Trichlorofluoromethane	0.5	ND
1,2,3-Trichloropropane	0.5	ND
1,2,4-Trimethylbenzene	0.5	ND
1,3,5-Trimethylbenzene	0.5	ND

* ND = None Detected

CLIENT: WALLA WALLA TREATMENT PLANT / ATTN: AL PROUTY

ABC LABORATORIES, INC.
EAST 4922 UNION AVENUE
SPOKANE, WA 99212
509-534-0161

Report to: City of Walla Walla
P.O. Box 478
Walla Walla, WA 99362

Attn.: Al Prouty

Lab #: 33413-90
Date: 5-8-90
Date Rec'd: 3-9-90
P.O.#: 2590

Description: Perform analyses as directed on submitted sample.

Test	Results			
Sample Identification:	**1**	**2**	**3**	**4**
Chemical Oxygen Demand, COD, mg/L	32	9.6	<5	<5
Total Organic Carbon, TOC, mg/L	3.34	5.54	2.65	5.53
Nitrate, NO3-N, mg/L	1.0	1.0	1.8	0.4
Nitrite, NO2-N, mg/L	0.005	0.001	0.001	0.022
Ammonia, NH3-N, mg/L	0.14	<0.05	<0.05	<0.05
Phosphates, PO4-P, mg/L	0.25	0.04	0.14	<0.02
Sample Identification:	**5**	**6**	**7**	**8**
Chemical Oxygen Demand, COD, mg/L	<5	12.8	16.0	12.8
Total Organic Carbon, TOC, mg/L	3.63	1.80	1.24	1.95
Nitrate, NO3-N, mg/L	1.0	1.4	0.3	3.2
Nitrite, NO2-N, mg/L	0.001	0.003	0.006	0.025
Ammonia, NH3-N, mg/L	<0.05	<0.05	<0.05	<0.05
Phosphates, PO4-P, mg/L	0.06	0.08	0.10	0.16

MEMORANDUM

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Dennis Rakestraw

FROM: Craig Schwyn

DATE: June 14, 2002

RE: MW-15 GROUNDWATER QUALITY
CITY OF WALLA WALLA, SUDBURY ROAD LANDFILL

In accordance with the Criteria for Municipal Solid Waste Landfills (Chapter 173-351 WAC) this memorandum is being submitted to the City of Walla Walla, Sudbury Road Landfill operating record to provide notice that nine constituents above background levels have been detected in downgradient monitoring well MW-15. The following constituents have shown statistically significant concentrations above the background levels established using the nonparametric prediction limit method as specified in WAC 173-351-420 (1) and (2a) and approved in the solid waste permit:

- Tetrachloroethene
- Trichlorofluoromethane
- Vinyl Chloride
- Chloroethane
- 1,1-Dichloroethane
- cis-1,2-Dichloroethene
- Calcium
- Sodium
- Bicarbonate and alkalinity
- Total Dissolved solids.

As discussed in the April 11, 2002 letter from Landau Associates to Mr. Hal Thomas of the City of Walla Walla, there are data present that document the presence of upgradient sources of volatile organic compounds and indicate that natural variation in inorganic parameter concentrations are common across the landfill site. However, due to the uncertainty that the concentrations in MW-15 that exceed the prediction limits are caused only by the upgradient sources an assessment monitoring program will be implemented. As agreed during the June 13, 2002 meeting between the City of Walla Walla, Walla Walla County-City Health Department, Washington State Department of Ecology, and others, the first sampling event of the program will commence during the September 2002 (third quarter) groundwater monitoring event.

CCS/djn
No. 470006.010
6/14/02 I:\470-City Walla\006-Emergency GW\wproc\Assessment Mont Notif.doc

CITY OF
WALLA WALLA

PUBLIC WORKS
SERVICE CENTER
55 Moore - P.O. Box 478
Walla Walla, WA 99362-0216

Administration	(509) 527-4463
Development Services	
Planning	(509) 527-4535
Building	(509) 527-4386
Code Enforcement	(509) 527-4386
Engineering	(509) 527-4537
Equipment Pool	(509) 527-4506
Sanitation	(509) 527-4479
Streets	(509) 527-4363
Water	(509) 527-4380
Fax	(509) 525-0845

June 24, 2002

Mr. Dave Eaton, R.S.
Director of Environmental Health Programs
Walla Walla County-City Health Department
310 West Poplar, Suite 102
Walla Walla, Washington 99362

Subject: City of Walla Walla Sudbury Landfill Water Quality Issues

Dear Mr. Eaton:

This letter will serve to document our discussions on June 6, 2002 with you, Bud Musgrove of Washington State Department of Ecology and Ms. Pam Jenkins of the Department of Corrections regarding the recently discovered ground water quality issues surrounding new well number 15 at the City's Sudbury Landfill. This issue was previously discussed and documented in our letters of January 23, 2002, February 21, 2002 and April 17, 2002 to you on this subject.

As a result of these discussions, it was agreed by all parties that the City of Walla Walla would begin an assessment monitoring program in accordance with WAC 173-351-440. As further agreed, it is our intent to begin the assessment phase effective September 2002 to determine the overall level of assessment and monitoring required and to chart a way ahead. This effort will initially be funded totally at the City's expense. A memorandum on the groundwater quality issues associated with monitoring well number 15 has been provided by our consultant, Landau Associates, and is provided as an attachment.

As discussed by all parties, there is sufficient historical information to validate that the State Maximum Security Penitentiary at Walla Walla and possibly other industrial sources to the east are potential contributory/potential liability parties to the groundwater contamination in this area. The Department of Corrections has agreed to coordinate and work with the Department of Ecology and the City of Walla Walla to assess the overall groundwater quality and any levels of contamination. This coordination and work effort will consist of the sharing of historical, current and future information on potential groundwater contamination sources and chemicals and providing future financial assistance to the City during the assessment phase.

The City has commenced work with our consultant to begin the assessment phase. We will provide you with information on this assessment as it becomes available. Please coordinate with Bud Musgrove of the Department of Ecology on this matter and advise us if further information is needed.

Our thanks to you and Mr. Musgrove for your assistance in resolving this issue to the satisfaction of all parties. If you have any questions, please contact the Landfill Supervisor, Dennis Rakestraw at 527- 4591 or the Public Works Director, Hal Thomas at 527-4463.

Sincerely,

Hal Thomas
Public Works Director

c: Pam Jenkins, Director, Environmental Services, DOC
Craig Schwyn, Landau Associates
Bud Musgrove, Department of Ecology

APPENDIX G

Historical Sequence of Events

Schwyn Environmental Services

HISTORICAL SEQUENCE OF EVENTS

1967
December 1967; Garver Well installed.
Sprayfarm and landfill property are being dry land farmed.

1970
November 9, 1970; Sprayfarm and landfill land purchase. (County Assessor records)

1972
Washington State Department of Ecology Regulation Relating to Minimum Functional Standards For Solid Waste Handling, Chapter 175-301 WAC. Adopted October 24, 1972, Effective November 27, 1972; becomes effective for the Tausick Way Landfill.

1973
June 1973; Comprehensive Solid Waste Management Plan for the County of Walla Walla.

September 19, 1973; Purchase of landfill parcel 350715440004, 9.09 acre parcel at northeast corner of landfill. (County Assessor)

1974
1974; Sprayfarm land lease. Mr. Christenson farming the land. (City Council Minutes)

1975
No relevant information.

1976
March 3, 1976; Letter from WWCCHD to City; Conforming permit for TWL declined due to the limited additional capacity. Nonconforming permit issued with expiration date of March 3, 1977.

September 23, 1976; City of Walla Walla, Sanitary Landfill Design Plans. City of Walla Walla WA. Engineering Division. Dept. of Publics Works. Project No. 76-803. Five sheets. Sheet 1: Vicinity Map. Sheet 2: Access Road Design.. Sheet 3: Topographic Map of Sanitary Landfill (Existing), Sheet 4: Typical X-Sections- Fill sequence. Sheet 5: Detail Sheet for Equipment Shed.

November and December 1976; MW-1A, MW-2 and MW-3A installed.

1977
January 1, 1977 to 1982; Five year agreement for City to accept County waste. (City file)

February 28, 1977; Conditional use permit to operate the Sudbury Road Landfill granted by the Walla Walla Regional Planning Board of Adjustment. (WWCCHD file)

1977 (continued)

March 18, 1977; Engineers Report City of Walla Walla Sanitary Landfill.

With Environmental Impact Statement (EIS), Department of Ecology Application for Disposal Site Permit, and General Plan of Operation. Stamped by Norman Skiles.

"The proposed landfill site is presently owned and has been annexed by the City of Walla Walla…. Zoning of the landfill site is for agriculture. A conditional use permit to operate the landfill has been granted by the Walla Walla Regional Planning Board of Adjustment. The Board of adjustment granted the permit at the February 28, 1977 Meeting. The site is presently used for wheat farming. Groundwater at the site was located by drilling three monitoring wells. Depth to groundwater in December was 27 to 75 feet or at an elevation of 757 ft MSL."

EIS Describes future closure of Tausick Way and trenching at Sudbury Road (10'feet and 8-10 ft wide). Future landfill site "is presently being farmed with a crop".

General Plan of Operation. Describes site preparation, landfill disposal procedures (trenching, fill, closure).

July 27, 1977; City of Walla Walla Wash., Sanitary Landfill. Project No. 76-803 Preliminary design plans for landfill roads trenches, and shop. 10 sheets, one showing pre-development topography. (City and WWCCHD file)

August 1977 through June 1978; monthly groundwater results for Landfill Site Test Wells. (WWCCHD file)

1978

January 13, 1978; City application for nonconforming site permit extension until July 1, 1978 for TWL, and new permit application for the Sudbury Road Landfill.

January 18, 1978; Permit for Sudbury Road Landfill for 1978, and Nonconforming Permit for TWL until July 1, 1978.

January 1978; Monthly groundwater results for Landfill Site Test Wells #1, 2 and 3.

July 10, 1978; "New City Landfill on Sudbury Road Opens" News Article.

1979

February 8, 1979; Ecology notice to landfill operators that improper disposal of hazardous waste is becoming recognized as a major problem at landfills. Recommends against accepting certain types of wastes. Recommends that operators begin screening incoming loads. (City file)

June 2, 1979; Topographic base map, two sheets.

June 7, 1979; City requests hazardous waste disposal information from WWCCHD for inclusion into the City policy and procedure manual and landfill disposal procedures.

August 16, 1979; City letter to Ecology requesting Ecology grant funding for a landfill water supply well. States that the City Contracted With Army Corps of Engineers for aerial mapping.

August 1979; Tausick Way Landfill use discontinued. (WWCCHD file)

1980
January 8, 1980; 1980 Landfill Permit Renewal.

December 12, 1980; Ecology Letter to WWCCHD that Sudbury Road Landfill needs to construct groundwater monitoring wells and prepare a Sampling and Analysis Plan.

December 22, 1980; Internal Memo to post notice that the landfill operator must be notified before disposal of extremely dangerous wastes can be landfilled. (City file)

1981
January 7, 1981; WWCCHD inspection letter and SRL permit to operate, signed by Dave Eaton.

1982
February 9, 1982; Landfill Permit renewal.

1983
January 12, 1983; Solid Waste Permit.

August-September 1983; MW-4, MW-5 installed.

November 8, 1983; Response letter from Burlington Northern Railroad regarding City inquiry to the availability and desire to acquire the BNSF right of way. No commitment to sale.

1984
January 11, 1984; WWCCHD permit renewal notes increase in chloride concentrations.

July 1984; Public notice of intent to issue a dangerous Waste Storage Permit.

1985
February 28, 1985; 1985 Landfill Operating permit. Notes that chloride and conductivity levels continue to rise.

May 15, 1985; Landfill placed under Al Prouty, Wastewater Superintendents direction.

July 24, 1985; Letter from WWCCHD to City. Recommends that asbestos wastes be accepted in accordance with the new EPA Asbestos Waste Management Guidelines, and not be disposed of directly in the landfill.

October 28, 1985; Chapter 173-30, Minimum Functional Standards For Solid Waste Handling. File date.

1986
August – October 1986; MW-1, MW-3, MW-6, MW-7 installed.

1987
February 1987; VOC samples from Wells 1, 2, 3, 6, & 7. All results nondetect.

July 1, 1987; User Fees: $10.55 to $13.35 per ton. Self haulers in cars and pickup trucks pay flat rate of $2.75 to 4.25 per load. $2.80 increase to fund Tausick Way closure. (Dahl 1987)

1987 (continued)

July 6, 1987; Sheet 8/8; Sudbury Trench detail (Area 6a trench) for Tausick Way Landfill Post Closure Maintenance. Indicates control elevation (deepest point) for trench is 793 MSL. Trench 100 ft wide, 1,150 ft long, 0.01ft/ft slope.

September 11, 1987; SEPA Determination of Non-Significance, with environmental checklist.

> " The Sudbury Road Landfill is an element of a 100 acre waste disposal site which may operate 300+ years."

December 1987; Dahl, Norman & Associates, Anderson-Perry & Associates, Inc. 1987. *Final Report, Sudbury Road Landfill Utilization Plan for City of Walla Walla*. December.

> Provides continued operation and future use plan, with topographic diagrams for "landfill disposal capacity 20 to 70 years into the future and beyond".
> Sequence of landfill disposal plan.
> Requirements and procedures for upgrading the closure and reclamation of the Tausick Way Landfill.

December 17,1987; City letter to BNSF, Letter indicating City interest to acquire BNSF right of way.

1988

January 27, 1988; *Groundwater Monitoring Status Report, City of Walla Walla Waste Management Site, Sudbury Road.* Draft internal report prepared for discussion purposes with D&K Frozen Foods, Inc. Describes sprayfarm issues and possible reasons and actions to correct groundwater impacts from sprayfarm.

February 24, 1988; City of Walla Walla Sudbury Road Landfill Operating Plan.

> "Area 1 and 2: Operated from 1977 to about 1980 with no compaction equipment on hand.
> Area 5ab: Operated 1978-79 and 1980-1986. Some reports of trench excavation uncontrolled.
> Area 5cd: Operation from 1986-1988. Temporary cover 1988-89.
> Area 4: Over lay 2 Asbestos disposal.
> Area 6: Trench dug in fall 1987. Bottom elevation raised based on groundwater elevation after stabilization from peziometric head."

April 14, 1988; Letter from WWCCHD to City: Notes changes to WAC 173-304 which will require a closure plan for the SRL.

June 2 1988; *Sudbury Road Operating Plan* Submittal to from City to WWCCHD. Cover letter notes that the two abandoned wells were sealed full depth with cement grout. Operations Plan indicates trenches will not be excavated closer than 20 ft from groundwater.

June 9, 1988; Letter from Flora Goldstein, Ecology to Mr. Dave Eaton, WWCCHD. Statistical analysis indicates that there is no significant difference in chloride and iron concentrations and conductivity from the upgradient and downgradient wells.

October 6, 1988; Class II Variance Application City to WWCCHD – regarding trench liner and cover needs, arid design, closure planning, and financial assurance. (City File)

1989

May 1989; Gullixson, Richard L., Certified Engineering Geologist. *Geohydrology Study, Waste Management Site, Sudbury Road, Walla Walla Washington.*

July 20, 1989; Letter from City to WWCCHD, request for Class II variance, regarding arid design.

September 25, 1989; Letter from Ecology to WWCCHD, review comments of Class II Variance Request.

October 1989; MW-8 installed.

1990

January 19, 1990; Permit Renewal; Letter from WWCCH to City.

November 28, 1990; Letter from Ecology to WWCCHD stating concern about MW-8 construction and requirement for abandonment. Also addresses soil cover requirements for closure.

Late 1990; Disposal in Area 5 trenches phased to Area 6.

1991

April 2 1991; Permit Renewal Letter from WWCCHD to City.

September 1991; Closure Plan 1988-1990 Area (Area 5).

October 1991; MW-8A, MW-9 installed.

October 9, 1991; U.S. EPA published Solid Waste Disposal Facility Criteria for municipal solid waste landfills (40 CFR Part 259) as required by Subtitle D of the Resource Conservation and Recovery Act of 1976 as amended.

October 16, 1991; Permit Renewal; Letter WWCCH to City.

November 1991; City Council authorized execution of an interlocal agreement with Walla Walla County to act as lead agency for Ecology Coordination Prevention Grant. One of the tasks was to update the Solid Waste Management Plan. Draft SWMPs prepared and reviewed in 1993 with final presented to City Council May, 26, 1994. (City File)

1992

January 1992; Medical Waste Acceptance test program.

May 13 1992; Permit Renewal Letter from WWCCHD to City.

April 3, 1992; Interim Closure plan for 1990-1995 Operations Area. Submitted by City to WWCCHD.

December 18, 1992 to December 18, 1995; National Pollution Discharge Elimination System and State Waste Discharge Baseline General Permit for Storm Water Discharges Associated With Industrial Activities. S03-001198.

1993
1993 billing tickets are available in the City file. Very limited information.

February 25, 1993; Proposal for Groundwater Monitoring System Evaluation, EMCON Northwest, Inc.

March 30, 1993; upgradient VOC detections reported.

April 29, 1993, EMCON Northwest, Inc. contracts with City.

May 1993; Draft Solid Waste Management Plan, Walla Walla County, R.W. Beck and Associates.

May 4, 1993; Letter from Al Prouty to Mike Hibbler at Ecology informing Ecology that tetrachloroethene and trichloroethene have been detected at the landfill in upgradient wells 5 and 9.

May 1993; Household Hazardous Waste Facility Permitted.

June 1993; Groundwater Sampling Results 1991 and 1992, Sudbury Road Landfill, EMCON.

August 4, 1993; Groundwater Report for SRL prepared by EMCON.

September 27, 1993; Solid Waste Permit issued under WAC 173-304 – Transition Permit to WAC 173-351. (City File)

September 30, 1993; Letter from Al Prouty to Bud Musgrove at Ecology presenting three quarters of VOC contamination in upgradient wells.

November 26, 1993; WAC 175-351 adopted.

December 1993; MW-10 installed.

1994
March 21, 1994; Transition Permit #1 issued.

April 9, 1994; Chapter 173-351 WAC, Criteria for Municipal Solid Waste landfills. Effective date.

May 1994; Household Hazardous Waste Operations Plan – Final Draft.

June 30, 1994; Adoption of Solid Waste Management Plan.

1995
January 31 1995; Hydrogeologic Report Work Plan for Area 7 Lateral Expansion submitted to Ecology by EMCON.

January 11, 1995; Meeting at Ecology Eastern Region Office: Propose that landfill expansion be permitted using arid design criteria.

February 1995; MW-11 and MW-12 installed.

February 27, 1995; Anderson Perry Sheet 1/1 Arial Mapping Control Survey, Ground El. In Eastern Area 6 Trench Base (deepest) 805' +- MSL.

1995 (continued)
March 30, 1995; Solid Waste Permit Application for Area 6 Sudbury Road Permit, EMCON With 12 Drawings for Area 6 Permitting.

June 29 1995; Hydrogeologic Report, Sudbury Road Landfill Area 7 Lateral Expansion, Walla Walla, Washington. Prepared by EMCON for the City of Walla Walla.

August 3, 1995; Transition Permit Renewal.

October 25, 1995; First and Second Quarter Groundwater Monitoring Report, Sudbury Road Landfill, City of Walla Walla, prepared by EMCON.

November 28, 1995; Letter from Ecology to WWCCHD. Hydrogeologic Report review meets requirements of WAC 173-351-490. (City File)

November 1995; 23 Drawings submitted for Area 6 and 7 permit application.

1996
1996; Tipping Fee $23.10.

June 3, 1996; Transition Permit Renewal.

October 17, 1996; Letter from Al Prouty to Mike Hibbler – Notification of upgraded VOC detections in MW-5.

November 22 1996; Sudbury Road Landfill Solid Waste Permit Application, EMCON.

1997
May 27 1997; Cell 1 (Area 7) Construction Drawings (subsequently revised), EMCON.

July 14, 1997; SRL Full Permit for Municipal Solid Waste Landfilling renewal.

1998
March 1998; Landau Associates obtains groundwater contract with City.

March 2, 1998; Small well installed. 100 ft deep. Static water level 41ft BTOC.

July 1, 1998; letter from WWCCHD to City, 1998-1999 municipal solid waste landfill permit, with nine permit conditions.

July 15, 1998; Illegal dumping of used oil and diesel in Medical Waste cell by Walt Johnston Septic Service.

August 14 1998; *revised* SRL Full Permit for Municipal Solid Waste Landfilling renewal.

December 14, 1998; Preliminary Hydrogeologic Evaluation, Construction Demolition Landfill, Washington State Penitentiary, Walla Walla Washington. Prepared for Washington State Department of Corrections by HWA GeoSciences, Inc.

1999

June 1999; Sudbury Road Landfill Site Contaminant Source Identification Assessment Report. Prepared under a Site Assessment Cooperative Agreement between the Washington State Department of Ecology and the U.S. Environmental Protection Agency.

June 26 1999; Application for Alternative Groundwater Monitoring Plan.

July 2, 1999; letter from WWCCHD to City, municipal solid waste landfill permit.

August 8, 1999; MW-14 installed.

December 13, 1999; Summary of MW-14 Monitoring Well, Installation – Letter from Landau Associates to Dennis Rakestraw

2000

Vertical expansion permitting for Area 6 begins.

June 15 2000; SRL Full Permit for Municipal Solid Waste Landfilling renewal.

November 18, 2000 to November 18 2005; Industrial Stormwater General Permit, Sudbury Road Landfill S03-001198.

2001

New site entrance station constructed.

January 8 2001; WWCCHD letter approval to use tarp for daily cover.

May 2001; New Daily Cover Tarp System employed.

June 15 2001; SRL Full Permit for Municipal Solid Waste Landfilling renewal.

July 17, 2001; MW-15 installed.

September 28, 2001; Letter from Landau Associates to City of Walla Walla, Summary of MW-15 installation.

September 2000; SRL Solid Waste Permit Application prepared by IT Group Issued for Permit renewal with plans and specifications.

September 2001; VOC and inorganic constituents detected in MW-15 at statistically significant levels.

October 2, 2001; Letter from Landau Associates on behalf of City to WWCCHD. Application for Alternative Groundwater Monitoring Plan – Add MW-15 and remove MW-3.

November 1, 2001; Ecology inspects Area 6 lysimeters – no leachate.

December 6, 2001; Letter from Ecology to WWCCHD. Review comments of the permit renewal application submitted September 26, 2001.

2002
January 7, 2002; Letter from WWCCHD to City. Approves application for alternative groundwater monitoring plan – Add MW-15 and remove MW-3.

February 14, 2002; Letter from Ecology to WWCCHD. Notification that assessment monitoring is required and that a liner with leachate collection will be required for landfill expansion.

June 6, 2002; Meeting with Pam Jenkins of Washington State Department of Corrections (DOC), WWCCHD, Ecology, and City. DOC agrees to coordinate and work with parties to assess groundwater quality.

June 13, 2002; Meeting between the City, WWCCHD, Ecology, and Landau Associates regarding groundwater contamination detected in MW-15.

June 13, 2002; SRL Full Permit For Solid Waste Landfilling issued by WWCCHD.

June 14, 2002; Memorandum from Landau Associates to City of Walla Walla Sudbury Road Landfill operating record. Notice that groundwater constituents above background levels have been verified in MW-15.

June 24, 2002; Letter from City to WWCCHD, documentation of June 6, 2002 meeting with DOC.

September 2002; Assessment monitoring program begins.

2003
June 9, 2003; Letter from WWCCHD to City, approves removal of Appendix III parameter sampling with exception of dichlorodifluoromethane and cyanide.

2004
January 22, 2004; Letter from Landau Associates on behalf of City to WWCCHD. Recommendation to append dichlorodifluoromethane and remove cyanide from the groundwater monitoring program.

February 5, 2004; Letter from WWCCHD to City. Approval to amended groundwater sampling schedule. Return to Appendix I and II parameters with addition of dichlorodifluoromethane. Cyanide sampling to continue in MW-14 during 2004.

February 13, 2004; Letter from City to Pam Jenkens, DOC, Summarizes February 5, 2004 meeting.

April 22, 2004; Remedial Investigation Work Plan, Prepared by Landau Associates for City.

November 4, 2004; City notification to Mark Small of Domestic Supply Water Quality.

2005
January 2005; Schwyn Environmental Services selected for City groundwater and environmental contract.

February 3, 2005; Notice of intent to cancel sprayfarm lease, Seneca Foods to City.

March 30, 2005; Schwyn Environmental Services letter to Mr. Dave Eaton (WWCCHD) and Mr. Cole Carter (Ecology). Request to remove cyanide from the groundwater monitoring program.

2005 (continued)
March 11, 2005; Area-Wide Groundwater Contamination Meeting; DOC, WWCCHD, Ecology, City, and Schwyn Environmental Services.

April 11, 2005; Letter from WWCCHD to Schwyn Environmental Services approves discontinuance of MW-14 cyanide sampling.

May 2005; Area 2 investigation conducted by City and Schwyn Environmental Services.

August, 2005; On-site remedial investigation started by Schwyn Environmental Services.

August 31, 2005; Monitoring well MW-16 installed.

September 2005; Area 7 Expansion Permit approved.

August through October 2005; Area 7 construction.