WERI

WATER SAMPLING PROTOCOL

1.0 INTRODUCTION

The purpose of this protocol is to provide standard methods and procedures for sampling groundwater from monitoring wells and Piezometer.

2.0 SAMPLE COLLECTION METHODS

All groundwater sampling will be carried out in accordance with the methods and procedures outlined in this protocol. Clean latex gloves will be worn between each sampling event.

2.1 Documentation

Record all pertinent information in a field note book or on a borehole log sheet. This information should include:

- level of groundwater in Piezometer (if water level measuring equipment is available);
- number of bails removed from the Piezometer;
- free product is present, collect a sample of it in a 40 ml vial and then lower the bailer back into the Piezometer;
- lower bailer to bottom of Piezometer and bring to surface;
- pour approximately 50 ml of groundwater sample into a clean 1 L graduated cylinder and rinse. Discard this water. Pour remaining sample into 1 L graduated cylinder;
- transfer sample from graduated cylinder into sample bottles ensuring no headspace in the bottle. Check by turning bottle upside down and look for air bubbles;
- once all sample bottles are filled, suspend dedicated Teflon ™ bailer in Piezometer above the expected water level;
- record water level (if measuring equipment is available);
- rinse out graduated cylinder immediately with de-ionized water;
- rinse off water level measuring equipment;
- label the sample containers with the appropriate identification. See section 2.8 for labeling information; and
- recap the Piezometer and secure cover.
- time and date of sampling;
- initials of person doing the sampling;
- color and/or odour of water;
- anecdotal observations (weather, condition of Piezometer, ground conditions, wildlife, people, machinery, etc.)

2.2 Sample Locations

The Piezometer locations are shown on attached diagrams.

2.3 Purging

Groundwater samples will be taken from Piezometers once they have been purged. This involves removing four Piezometer volumes or bailed until dry. Sampling will be

done within 48 hours of purging. Contaminated groundwater must be disposed of in an environmentally sound manner (i.e. the water must be disposed of in a water treatment facility). Uncontaminated groundwater may be dumped on the ground at a minimum of one meter down gradient from the Piezometer.

2.4 Sampling Equipment

Attach a 1 L Teflon ™ bailer to Piezometers using a cord strong enough to withstand the shock applied during the sampling event. The bailer will be stored inside the Piezometer with the top of the cord physically attached to the cap. Use an eye hook for this purpose.

The equipment required for sampling Piezometers are:

- 1 L bailers (already dedicated to each Piezometer);
- sample bottles (various sizes – provided by laboratory);
- water level measuring equipment (if available);
- Latex gloves;
- coolers for transporting samples to laboratory;
- ice packs in coolers to keep samples cool;
- field note book;
- 1 L graduated cylinder;
- de-ionized water (minimum 10 L);
- 20 L sealable container or barrel for collection of contaminated purge water; and
- site sketches showing the locations of Piezometers (details on sketched).

2.5 Sampling Procedure

The procedure for collecting the sample is as follows:

- wear clean latex gloves for each sampling event;
- remove cap from the Piezometer at the sampling location;
- record water level (if measuring equipment is available);
- untie the bailer cord so that it is free to drop the full length of the Piezometer;
- for the first bail, lower the bailer just below the surface of the water in the Piezometer. Bring this bail to the surface and inspect it for free product floating on the surface. If free product is present, collect a sample of it in a 40 ml vial and then lower the bailer back into the Piezometer;
- lower bailer to bottom of Piezometer and bring to surface;
- pour approximately 50 ml of groundwater sample into a clean 1 L graduated cylinder and rinse. Discard this water. Pour remaining sample into 1 L graduated cylinder;
- transfer sample from graduated cylinder into sample bottles ensuring no headspace in the bottle. Check by turning bottle upside down and look for air bubbles;
- once all sample bottles are filled, suspend dedicated Teflon ™ bailer in Piezometer above the expected water level;
- record water level (if measuring equipment is available);
- rinse out graduated cylinder immediately with de-ionized water;
- rinse off water level measuring equipment;

- label the sample containers with the appropriate identification. See section 2.8 for labeling information; and
- recap the Piezometer and secure cover.

2.6 Sampling Interval

Initial groundwater samples will be collected from the Piezometer with follow-up samples taken when remediation strategies are in place to assess the effectiveness of the remediation.

2.7 Sample Containers

The parameters for this sample event will only require one 1 L amber glass bottle and one 40 ml amber glass vial for each groundwater sample (attachment number 1).

2.8 Labeling

The label will have on it; (1) the date the sample was taken, (2) the site code, (3) the Piezometer number, (4) samplers initials. The letter(s) identify the site and the number is to identify the sample location. Record all information in the sample log. Samples provided to the laboratory are to be identified by sample number to limit bias.

2.9 Sample Preservation

All of the necessary preservations are added by the laboratory that supplies the bottles.

2.10 Sample Transit Form / Chain of Custody

Record all required information on a sample transit form (attachment number 2). The information is to include sample numbers and parameters to be measured. Use a separate sample transit form for each location, stating the site location under project (top right hand corner). The chain of custody, located at the bottom of the transit form, is to be completed from sample collection in the field to receipt of samples by the laboratory. Sign and date the form each time the sample is transported or shipped during transit from the field to the laboratory. Send the form along with the sample container and retain a copy of the form each time it is signed off for the project file.

3.0 SAMPLE STORAGE AND TRANSPORT

3.1 Storage

Protect the samples from prolonged exposure to light. Samples are to be stored at a constant 4°C in a dark refrigerator or walk-in cooler. Record the date and time when the samples are placed in interim or longer term storage.

3.2 Transport

The bottles must be packaged in such a way that they will sustain a drop from one meter onto a concrete floor without breakage. Individually wrap each sample container with bubble wrap, place cardboard between sample containers and pack samples in coolers. Place ice packs on the top of the samples. Ensure that each bottle is protected from

breakage and label damage. Address the coolers with the address of the laboratory, contents of cooler (e.g. glass jars containing environmental water samples) and mark the cooler with fragile and 'this way up' labels. Deliver or ship samples to the laboratory immediately after collection by the fastest and safest means possible. Samples can be shipped by Air Canada Cargo or Canadian Cargo. Notify the laboratory that the samples have been shipped and provide the waybill number. Fax the sample transit form with the analysis requested to the laboratory and then include sample transit/chain of custody form and analysis instructions in the cooler with the samples.

4.0 SAMPLE ANALYSIS

Samples will be submitted to a Canadian Association for Environmental Analytical Laboratories (CAEaL) accredited laboratory for analysis. Some common analyses are listed in Table 1.

Table 1: Parameters measured and laboratory procedures.

PARAMETER	MEDIUM	UNITS	TEST METHOD
BTEX	Water	mg/L	EPA 5030, 502.2, 503.1, 8020
TVH	Water	mg/L	EPA 5030, 502.2, 503.1, 8020
TEH	Water	mg/L	EPA 502.2, 503.1

5.0 QUALITY ASSURANCE (QA)/QUALITY CONTROL (QC)

5.1 Sample Blanks

Trip and field blanks are to be provided to the laboratory along with the samples collected at the site. One blank is to be prepared for every 20 samples collected (minimum of one per site).

Trip: - prepare by filling sample containers before going into the field

Field: - prepare by pouring de-ionized water from a clean container into a clean sample jar while in the field

5.2 Duplicate Samples

Duplicate samples are required to check on methods to obtain results. There will be one duplicate per site. Collect two samples from the same Piezometer but label the second one with a different number. Record all labeling information in the field notes. This will be used to check the laboratory results. There can be no indication to the laboratory of the actual Piezometer it came from or which sample it is duplicating.

6.0 ANALYTICAL LABORATORY

Samples will be analyzed by Enviro-Test Laboratories, a CAEAL accredited laboratory.

ATTACHMENTS

1. Containers required for groundwater sampling.
2. Sample transit/Chain of custody form.

ATTACHMENT 1
Containers Required for Groundwater Sampling

BTEX	*40 ml VOC vial
Total volatile hydrocarbons	*40 ml VOC amber vial, one Litre glass amber
Total semi-volatile hydrocarbons	*one Litre glass amber
Oil and Grease	**one Litre glass amber
Water Quality Samples	2-150 ml plastic for bacteria
	1 Litre plastic
	250 ml plastic with Nitric Acid preservative***
	250 ml plastic with H_2SO_4 preservative
	250 ml plastic with Zinc/Acetate preservative
	100 ml amber glass with $CuSO_4/H_3PO_4$ preservative

*only one 40 ml VOC vial needed for parameters

**only one 1 L glass amber bottle needed for parameters

**This bottle would not be necessary if you supplied one for the 27 element scan for the same sample.

*Always consult with Accredited CAEAL Lab to ensure that correct bottles are used.

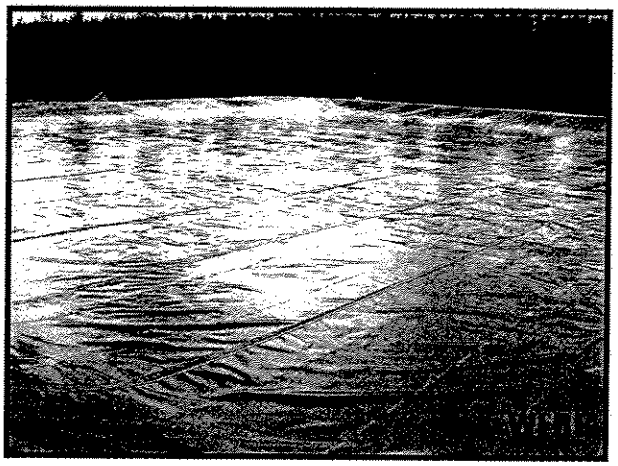
ATTACHMENT 2

Sample Transit/Chain of Custody Form		
Laboratory: Enviro-Test Laboratories 745 Logan Avenue Winnipeg, Manitoba R3E 3L5 Phone: (204) 345-3705 Fax: (204) 945-0763	Location:	Project:
	Project No:	Date:
	Sender:	

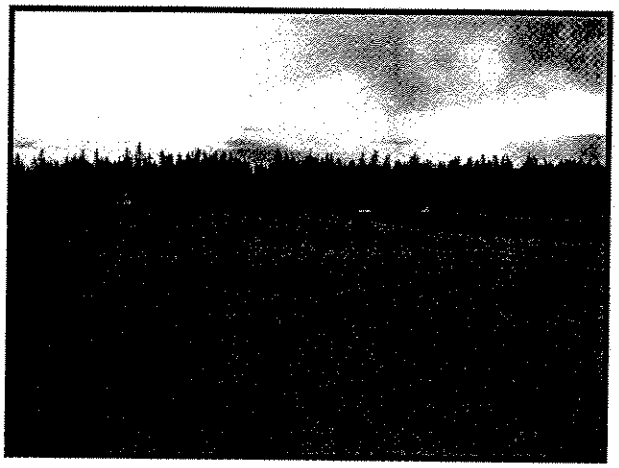
Sample ID	Description	Number & Type of Container	Analysis Required
Sent By:	Received By:	Comments:	

APPENDIX - II

CORPORATE PROFILE



Installed Liner in Land Treatment Unit



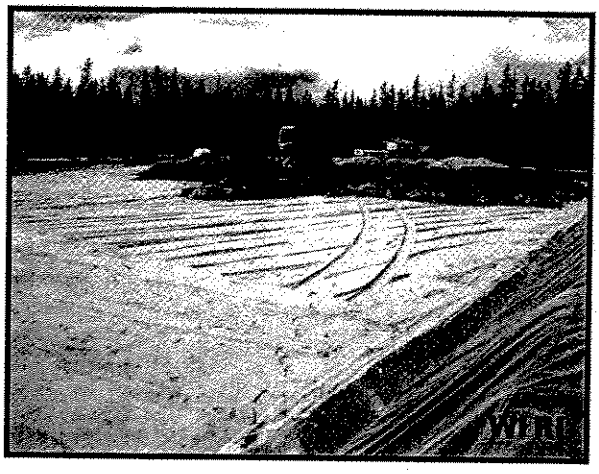
Preparing Sand Bed in Land Treatment Unit

Placing Sand Bed on Liner in Land Treatment Unit

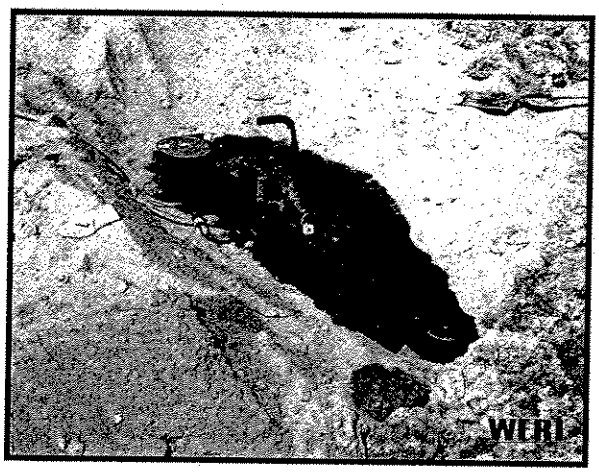
Excavating 8000 m^3 of Petroleum Hydrocarbon Contaminated Soil

Removing Large Boulders from Land Treatment Unit

Fencing Excavation

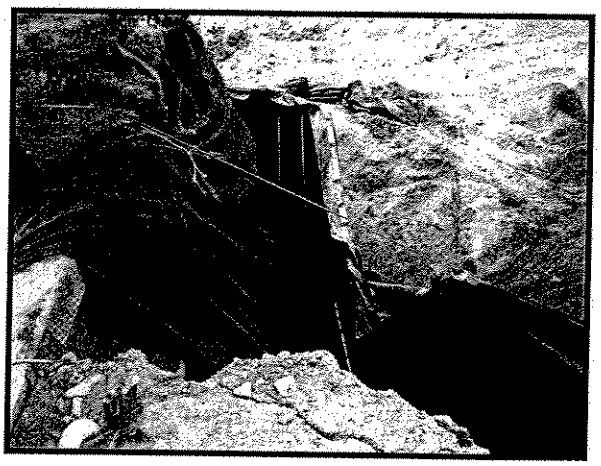


Dispersing Contaminated Soil in Land Treatment Unit

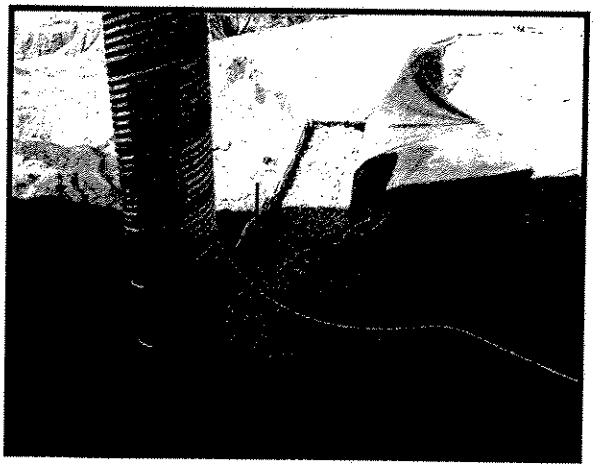


Patched Breach with Extrusion Welder

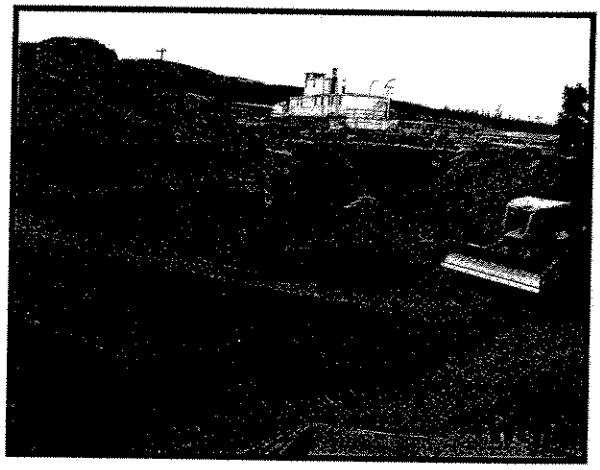
Extrusion Weld



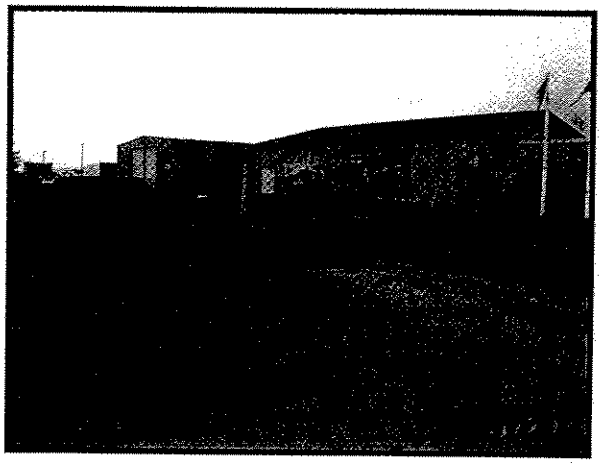
Installing Enviro Curtain Around Perimeter of Excavation



Installing Collection Pipe in French Drain

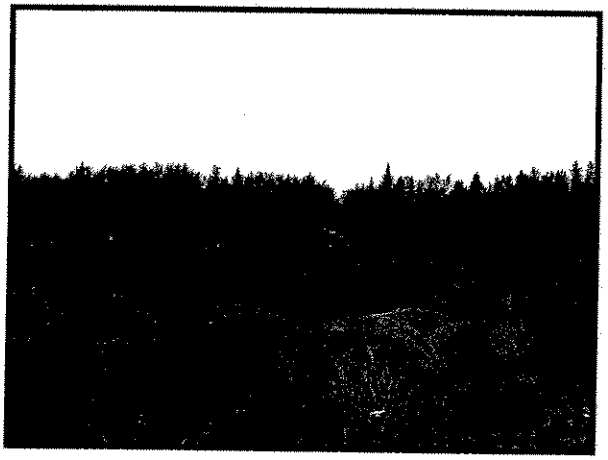


Backfilling Excavation

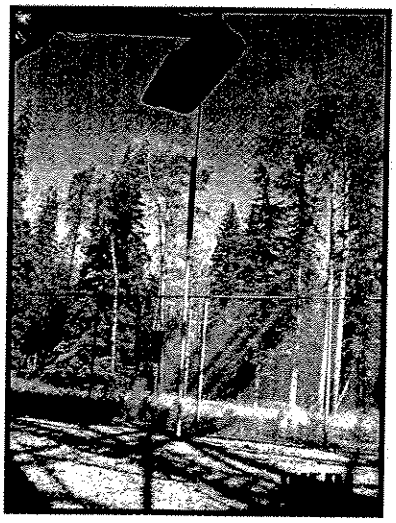


Compacting Backfill Material

Site Restoration



Turning Over Impacted Soil in Land Treatment Unit



Decommissioning Groundwater Monitoring Wells

PCB Abatement

APPENDIX – I

CURRICULA VITAE

MILES ANTONY
Project Manager/Site Supervisor

WERI

CURRENT POSITION

Winnipeg Environmental Remediations Incorporated
General Manager

ACTIVITIES

Mr. Antony has worked in the environmental construction and remediation field in various parts of Canada, including the territories, since 1990. He has been responsible for field operations, project management, client liaison, construction administration and technical activities on various environmental remediation projects. Mr. Antony is one of the principals who started Winnipeg Environmental Remediations Incorporated in 1995.

- Installed high density polyethylene (HDPE), polyvinyl chloride (PVC), Enviro, Arctic and polypropylene liners and covers
- Conducted more than 60 environmental drilling projects as head driller
- Participated as project manager for several petroleum hydrocarbon and PCB remediation projects in Ontario, Manitoba, Saskatchewan, Alberta, Northwest Territories and Nunavut
- Petroleum Technician in charge of bulk tank farm assessments in Ontario, Manitoba and Saskatchewan
- Installed environmental double walled tank farms in Ontario, Manitoba and Alberta
- Managed more than 100 heavy construction projects including excavations, concrete, asphalt and site restoration

CERTIFICATES

- Petroleum Technician
- Workplace Materials Hazardous Information System (WHMIS)
- Confined Space Entry
- Excavation/Trenching Safety
- Alternate Bio-Remediation Treatment Technologies for Petroleum Hydrocarbon Impacted Soil and Groundwater

PARTIAL PROJECTS LIST

1. Thompson Airport
   - Installed 250 gallon emergency generator fuel tank
   - Installed sewage system
   - Conducted a Phase II petroleum hydrocarbon drilling program
2. Canadian Forces Base Shilo
   - Removed an underground oil and glycol recovery system
   - Commissioned above ground system including spill containment
   - Excavated 1000 m^3 of contaminated soil
3. Oxford House, Manitoba
   - Decommissioned Manitoba Hydro Bulk Fuel Tank Farm
4. Saskatoon International Airport
   - Decommissioned an FTA
   - Commissioned an LTU
5. Winnipeg International Airport
   - Established PCB storage facility
   - Decommissioned a PCB storage site
   - Decommissioned the FTA
6. Churchill Airport
   - Excavated more than 19,000 m^3 of petroleum hydrocarbon impacted soil
   - Treated 200,000 L of petroleum hydrocarbon impacted water
   - Commissioned three LTUs for the treatment of impacted soil
7. PIC—Kipling, Saskatchewan
   - Installed agitation system in hog lagoon
   - Installed geomembrane liner in hog lagoon
   - Site restoration
   - Installed sewage extraction system
8. Yellowknife Airport
   - Treated petroleum hydrocarbon impacted water with an oil/water separator
   - Managed the LTU

DENNIS ANTONY, B.Sc., R.R.D.

Environmental Scientist

WERI

CURRENT POSITION

Winnipeg Environmental Remediations Incorporated
Business Manager; Environmental Scientist

ACADEMIC BACKGROUND

Bachelor of Science in Environmental Science
University of Winnipeg, May 1987

Renewable Resource Diploma
Kelsey Institute, May 1981

ACTIVITIES

- 10 years of environmental and resource management experience gained in the Northwest Territories and other remote northern communities
- Proficient in a wide variety of soil, water and biomass field sampling techniques
- Planned, organized, analyzed and recommended solutions on a variety of environmental and public safety concerns
- Designed and instructed informational programs for special interest groups and the general public
- Comprehensive knowledge of the general operating practices, procedures and policies of federal, provincial and territorial environmental programs
- Management of environmental remediation projects involving different substances including petroleum hydrocarbons, polychlorinated biphenyls (PCBs), asbestos and metals
- Developed management strategies for hazardous waste, ozone depleting substances (ODS), asbestos, PCBs, herbicides and lead paint
- Development and implementation of best management practices for erosion and sediment control
- Technical and regulatory research
- Environmental training and safety officer
- Decommissioning of landfills and Fire Training Areas (FTAs)

CERTIFICATES

- Certified Professional in Erosion and Sediment Control (CPESC)
- Winnipeg Police Service Supervisors Course
- Northern Affairs Program Fire Control Manager's Courses I-IV
- Association of Environmental Site Assessors in Canada (AESAC)
- Workplace Materials Hazardous Information System (WHMIS)
- Transportation of Dangerous Goods (TDG)
- Soil and Groundwater Remediation Technologies
- Basics of Supervising
- Canadian Coast Guard Oil Spill Training Course
- Northern Affairs Environmental Health & Safety Train-the-Trainer (80 hour course)
- Former St. John's Ambulance First Aid Trainer
- Confined Space Entry
- H_2S Safety Awareness
- Mould Awareness Training
- Renewable Resource Hazardous Materials Awareness (40 hour)
- Underwater Related Deaths Forensic Course (40 hours)
- Toronto Police Department Train-the-Trainer Ice Rescue Course (40 hour)

PARTIAL PROJECTS LIST

1. Silver Seven Mine Cleanup and Decommissioning, Watson Lake, Yukon Territory
   - Mine tailings and building decommissioning
2. Thompson Airport
   - Excavated and managed petroleum hydrocarbon impacted soil from the former FTA and other airport sites
   - Decommissioning of Land Treatment Unit (LTU)
   - Decommissioning of heavy metals landfill
   - Conducted PCB, asbestos and ODS survey
   - Conducted a Phase II ESI at various airport locations
3. Manitoba Hydro Winkler Substation
   - Remediated petroleum hydrocarbon and PCB impacted soil
   - Removed concrete foundations
4. Yellowknife Airport
   - Excavated petroleum hydrocarbon impacted soil
   - Conducted confirmatory soil sampling of soil in LTU
   - Decommissioned LTU
5. Resolute Bay Airport
   - Commissioned hydrocarbon LTU complete with geomembrane liner

ART BROWN
Site Supervisor/Foreman

WERI

CURRENT POSITION

Winnipeg Environmental Remediations Incorporated
Site Supervisor; Heavy Equipment Operator

ACTIVITIES

Mr. Brown has been involved in construction and demolition for more than thirty years. Over this period Mr. Brown has also participated in decommissioning and remediation activities at several petroleum hydrocarbon impacted sites in western Canada, including tank removal, building demolition and soil remediation. Mr. Brown has excavated more than 1 million m^3 of petroleum hydrocarbon impacted soil. Mr. Brown has extensive experience in the following:

- Petroleum tank removal and installation
- Petroleum hydrocarbon remediation with CON-PRO Industries, Paragon Industries and WERInc
- Asbestos abatement (small and large scale projects)
- Mould abatement
- Heavy equipment operation including track excavators, front-end loaders, skid steers, semi-trucks and tandem trucks
- Land Treatment Unit (LTU) construction
- Installing geomembrane liners and covers for LTUs and sewage lagoons

CERTIFICATES

- Asbestos Abatement
- Workplace Materials Hazardous Information System (WHMIS)
- Confined Space Entry
- First-aid
- Hazards and Control of Mould in Buildings

PARTIAL PROJECTS LIST

1. Bruce Brothers—Winnipeg
   - Excavated 20,000 m^3 of petroleum hydrocarbon impacted soil
   - Excavated 900,000 m^3 of earth as part of construction activities for the new TRIZEC building
2. British-American Petroleum-Gulf—Winnipeg
   - Decommissioned three underground petroleum storage tanks
   - Excavated 2000 m^3 of petroleum hydrocarbon impacted soil
3. Shell Bulk Station—Winnipeg
   - Decommissioned four 20,000 gallon underground petroleum storage tanks
   - Excavated 40,000 m^3 of petroleum hydrocarbon impacted soil
   - Excavated trenches and installed a vapour extraction system
4. Polo Park Demolition
   - Removed metal beams and roof of previous shopping mall to accommodate the expansion of a second storey
   - Supervised more than 100 personnel and oversaw project activities
5. PIC—Kipling, Saskatchewan
   - Installed agitation system in hog lagoon
   - Installed geomembrane liner in hog lagoon
   - Site restoration
   - Installed volatile organic compounds vapour extraction system
6. Churchill Airport
   - Excavated more than 19,000 m^3 of petroleum hydrocarbon impacted soil
   - Treated 200,000 L of petroleum hydrocarbon impacted water
   - Commissioned three LTUs for the treatment of impacted soil

CURRICULUM VITAE

CLARK D. HRYHORUK, M.Sc., P.Eng.
President
Geotechnical/Environmental Engineer

Executive Summary

Mr. Hryhoruk has worked in Geotechnical/Environmental Engineering in Manitoba since 1994. He has been responsible for the field operations, design works, report preparations, project management, client liaison and contract administration on numerous projects relating to both environmental and geotechnical engineering. Mr. Hryhoruk has also been involved in training field staff and office personal related to the above. In 1999, Mr. Hryhoruk was one of the Principals who started ENG-TECH Consulting Limited, and is the acting President of the company.

Experience

Outlined below are some of the environmental projects Mr. Hryhoruk has been involved in.

- Phase I Environmental Site Assessments
  Conducted over a 100 Phase I ESAs on various types of properties (residential, commercial and industrial) in many cities and towns throughout Manitoba and Ontario.
- Metal and Hydrocarbon Assessment at Winnipeg International Airport, Fire Training Area - Winnipeg, MB
  Planned and executed an assessment for petroleum hydrocarbon and metal impact to both soil and groundwater at the above location. The assessment involved the drilling of over 25 test hole and installation of monitoring wells for groundwater sampling. Upon completion an assessment of the results outlined in a report were completed.
- Metal and Hydrocarbon Assessment at MRM (Mandex) - Selkirk, M
  Planned and executed an extensive drilling, soil sampling and testing program, and assessment of soils impacted by both metals and hydrocarbons for Mandex. Evaluated the extent of the impact and recommended alternate remedial measures.
- Design of an Aboveground Tank Farm at Wasagamack First Nation - Wasagamack, MB
  Conducted a visual assessment and the test pitting requires to evaluate whether the underlain soils could be used as a base material for a proposed tank farm. Proposed a design for the base using the native soils, geomembrane and geocells.
- Solvent and Hydrocarbon Assessment - Winnipeg, MB, Thunder Bay, ON (1996)
  Conducted an extensive drilling and soil/groundwater sampling program, which included the installation of several groundwater monitoring wells, and assessed the extend of solvent and hydrocarbon impact at four (4) dry-cleaning sites in Winnipeg and one in Thunder Bay.
- Hydrocarbon Assessment at CN Wabowdon Yard - Wabowdon, MB
  Assessed the results from an extensive drilling, soil sampling and testing program, of both soils and groundwater impacted by hydrocarbons at CN's Wabowdon Yard. At this site dozens of test holes were put down and monitoring wells installed. The assessment involved evaluating both the field data and a significant number of soil and groundwater samples tested for hydrocarbons.
- Hydrocarbon Assessment at CN Neebing Yard - Thunder Bay, MB
  Assisted in writing an annual assessment report of the soil and groundwater conditions, and the operation performance of a diesel recovery system for the hydrocarbon impacted land located in CN's Neebing Yard.
- Waste Disposal Pit Assessment at Muskrat Dam First Nation - Muskrat Dam, ON (1997)
  Planned and executed a drilling, soil and groundwater sampling and monitoring well installation program to assess the impact on the surrounding soil and groundwater from 3 waste disposal pits located in Muskrat Dam. Also conducted/assisted in the assessment of the laboratory results and written report requirements.
- Hydrocarbon Assessment at CN's Atikokan and Fort Frances Yards - ON
  Planned and supervised an extensive test hole drilling and monitoring well installation program in order to assess the impact from diesel fuel spills at CN's Atikokan and Fort France Yards. Assisted the results and prepared the written draft report requirements for the projects.
- Hydrocarbon Assessment - Selkirk, MB (1996)
  Planned and executed the field sampling program, and assessed the results to determine whether or not all of the hydrocarbon impacted soil had been removed from a former concrete plant. In addition,

ARTHUR MAGRI, B.Sc.
Environmental Technician

WERI

CURRENT POSITION

2001-present
Winnipeg Environmental Remediations Incorporated
Environmental Technician

ACADEMIC BACKGROUND

Bachelor of Science in Environmental Science
University of Manitoba, May 2000

PREVIOUS POSITIONS

Alonsa Conservation District

- Supervision of staff and construction activities
- Assisted local producers with farming conservation plans including watershed management
- Involved in the planning and design of new conservation projects
- Improving heritage and tourism sites, including historical Aboriginal sites

ECOSTEM Limited

- Conducted field work in remote areas of Manitoba
- soil and biomass sampling
- collecting and recording biological data
- Processed biomass samples for laboratory analyses
- sorted and identified various plant species (bryophytes [mosses and lichens], vascular plants and tree saplings)

CERTIFICATES

- Workplace Materials Hazardous Information System (WHMIS)
- Transportation of Dangerous Goods (TDG)
- Hazards and Control of Mould in Buildings
- H_2S Awareness
- Radiation Safety; Gauge Operation; TDG—Class 7 Radioactive; Radioisotope Licenses and Other Regulatory Requirements; Emergency Procedures

PARTIAL PROJECTS LIST

1. Manitoba Model Forest—a research project analyzing the effects of various logging techniques on the health of a forest ecosystem.
2. Selkirk Hydro Plant—investigation and research project to determine the effects of emissions released from the operations of the hydro power plant on surrounding vegetation, oak trees in particular.
3. Alonsa Conservation District—watershed management including flood control and implementation of conservation practices to control flooding caused by beaver activity
4. Dog Creek School
   - installation of a geomembrane liner in the basement crawlspace as part of a mould abatement project
   - mould abatement in school gymnasium
5. Churchill Airport—ex-situ petroleum hydrocarbon remediation in soil and groundwater
6. Park Circle School—Phase I Environmental Site Assessment (ESA)
7. Standard Aero—Phase II Environmental Site Investigation (ESI) of a site impacted by petroleum hydrocarbons

Victor Lee **RESUME**

502 Basswood Place, Winnipeg, Manitoba R3G 2T2 T:(204)997-7871 F:(204)772-6294 vlee@sunarts.ca

PROFESSIONAL

CSLA	Canadian Society of Landscape Architects - Full Member
OALA	Ontario Association of Landscape Architects - Full Member
MALA	Manitoba Association of Landscape Architects – Full Member
CPESC	Certified Professional in Erosion and Sediment Control – Cert. #2683
NASECA	North American Stormwater & Erosion Control Association Manitoba - President
IECA	International Erosion Control Association Northern Plains Chapter – Vice President

PROFESSIONAL EXPERIENCE

Principal

Sunarts Design, Winnipeg, Toronto, 1998 - present

- Specialising in erosion and sediment control planning and site remediation
- first certified professional in erosion and sediment control (CPESC) consultant in Manitoba
- founding president of NASECA Manitoba
- landscape architecture and project management services
- strong working relationships with other consultants and contractors to provide clients comprehensive integrated environmental solutions

Senior Project Manager/Office Manager/Landscape Architect

Myers Schmalenberger Meisner Inc., Cincinnati, OH 1996 - 98

- set up and managed office including some staff development and training
- responsible for all aspects of all major projects; proposal/report writing, concept development, planning, budgeting, construction documents, construction observation
- project managed several multimillion dollar urban projects including the Newport Millenium Tower and Newport Downtown Development, a private/public initiative
- local project manager and construction detailing for University of Cincinnati courtyard by George Hargreaves Associates (budget: $4.5M US)

Landscape Architect

Scatliff and Associates, Landscape Architects, Winnipeg, Manitoba 1995

- responsible for all aspects of project development from conception to detailing

Assistant Professor - Landscape Architecture & Architecture

North Dakota State University, School of Landscape Architecture, Fargo ND 1992-93

- Course taught: Site Planning, Landscape Construction, Housing Studio and Regional Planning Studio as well as senior thesis projects

Landscape Designer and Computer Facilities Manager

NAK Design Group, Landscape Architects, Toronto, Ontario 1989-1992

- managed several large infrastructure parks and planning projects in the Toronto area
- many of the projects managed involved multidisciplinary teams and a variety of government agencies including: municipal governments, MOE, MNR, MRTCA and DFO
- responsible for setting up and managing computer facilities, and all of the firm's CAD work

Victor Lee **RESUME**

502 Basswood Place, Winnipeg, Manitoba R3G 2T2 C:(204)997-7871 F:(204)772-6294 sunarts@mts.net

PUBLIC SERVICE

Panel Member - Commissioner

Residential Tenancies Commission (Manitoba Department of Consumer and Corporate Affairs)

- Member of a tribunal that adjudicates on residential tenancy appeals

EDUCATION

Master of Landscape Architecture *University of Guelph*, Guelph, Ontario, Canada 1991

- Hough Stansbury Award 1986

Bachelor of Science (4 year), *University of Winnipeg*, Winnipeg, Manitoba, Canada 1986

- Double Major: Environmental Studies and Physical Geography

Additional Courses

- Certified Professional in Storm Water Quality, Minneapolis, MN
- Certified Professional in Erosion and Sediment Control, Spokane, WA
- Erosion and Sediment Control for Construction Sites, Winnipeg, MB
- Geomembrane Clay Liner Seminar – Terrafix/Bentofix, Winnipeg, MB
- Phase I Environmental Site Assessments – AESAC, Vancouver, BC
- Mould Abatement for Contractors – Pinchin Environmental, Winnipeg, MB
- Rain Bird Irrigation Systems, Cincinnati Ohio
- Architectural Drafting I – Red River Community College, Winnipeg, MB
- Business Management Forum 25, Business Development Bank of Canada, Winnipeg, MB
- Communications I – Human Service Community, Guelph, ON
- WHIMIS, Toronto, ON

conducted the assessment and outlined the results in a formal report.

- Hydrocarbon Assessment - Neepawa, MB (1996)
  Assessed the laboratory results from a drilling and soil sampling program at a former bulk plant.
- Chromium Contamination - Winnipeg, MB
  Conducted an extensive drilling and soil sampling program inside a building to assess the impact of chromium.
- PCB Storage Facilities - MB
  Documented the conditions at several temporary PCB storage facilities at several locations in Manitoba for a major department store.
- Hydrocarbon Remediation - Crystal City, MB
  Supervised the removal of soil classified as hazardous waste from a former gas station, and conducted the field sampling and assessment requirements.
- Hydrocarbon Remediation - Kenora, MB (1994)
  Supervised the excavation of contaminated soil overlain bedrock, and conducted an assessment of the laboratory and field results of the remaining soils.
- Groundwater Seepage Modelling for the Deacon Reservoirs - Winnipeg, MB
  Modelled groundwater seepage through the Deacon Reservoirs using SEEP/W (a finite element software product for analysing groundwater seepage) to establish emergency and operating drawdown rates of the reservoirs for the City of Winnipeg. Modelling involved establishing both the soil parameters and boundary conditions that would adequately resemble recorded groundwater levels under various reservoir drawdown rates.
- Goetechnical Modelling and Evaluation for the Jones Road Waste Disposal Grounds - Kenora, ON. (2000)
  Planned and executed the geotechnical program for the above project, which consisted of (1) installation and monitoring of pneumatic piezometers; (2) evaluation of the underlain soil (peat and very soft clay) properties and strengths; (3) modelling the stability of the waste and underlain soils in order to establish landfill placement rates and development sequence. Porewater pressure monitoring will be required to evaluate stability during landfilling.

Professional Publication

Hryhoruk C.D., D.H. Shields, A.B. Sparling, D.M. McCartney and P. Janzen. 1994. In-Situ Bioremediation of Diesel Fuel in Northern Manitoba. Presented in the Canadian Society of Civil Engineering Conference, Winnipeg, Manitoba.

Professional Memberships and Affiliations

Association of Professional Engineers and Geoscientists of Manitoba

Association of Professional Engineers Ontario

Canadian Geotechnical Society