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TRANSMITTAL

TRANSMITTAL No. **10-0434-04-00010**

PROJECT : 10-0434-04 2010 Environmental Activities - CN Hornepayne Yard

TO : Mr. Kirk Crosson
Ministry of the Environment
289 Bay Street
3rd Floor
Sault Ste. Marie ON P6A 1W7

FROM : Nick Tropea
KGS Group

SAULT STE. MARIE
MINISTRY OF ENVIRONMENT
NOV 29
RECEIVED

DATE : November 28, 2012

SUBJECT : MOE Final Report CN Hornepayne Yard

SUBMITTED FOR : ☐ Approval ☑ Your Use ☐ As Requested ☐ Review and Comment

SENT VIA :

ITEM	DESCRIPTION	STATUS
RPT_MOE	Title: Min of Environment CN Hornepayne 2010 (RPT_MOE), Revision: (B, Nov 28, 2012)	Issued for Use

REMARKS : As per the request of Nick Tropea, 1 hard copy of the MOE Final Report regarding CN Hornepayne Yard will be sent to you via Purolator courier.

Regards,

Stacy Allison
Document Control

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November 28, 2012

File No. 10-0434-04

Canadian National
MacMillan Yard
4 Welding Way
Concord, Ontario
L4K 1B9

ATTENTION: Mr. Alexandre Borges
Environmental Officer

RE: CN Hornepayne Yard – 2010 Final Report for the Ministry of Environment
2010 Environmental Program – Hornepayne, Ontario

Dear Mr. Borges:

Please find enclosed one (1) hard copy and one (1) electronic copy of the Final Report for the above noted site. For your convenience, an electronic copy of the final report has been forwarded to both Ms. Seble Afework and Mr. Marc Grenier-Savard. Also, one (1) hard copy of the final report has been forwarded to Mr. Kirk Crosson of the Ministry of Environment.

KGS Group sincerely appreciates the opportunity to have been of service on this project. If you have any further questions regarding this report, please contact Mr. Nick Tropea or the undersigned.

Yours truly,

Tony Gallo, M.Sc.
Project Manger

TG/sla
/Enclosure

cc: Ms. Seble Afework, P.Eng. Environmental Engineer, CN Environment
Mr. Marc Grenier-Savard, Environmental Coordinator, CN Environment
Mr. Kirk Crosson, Sr. Environmental Officer, Ministry of the Environment

Canadian National
Hornepayne Yard
Hornepayne, Ontario
2010 Environmental Program
Ministry of the Environment

November 2012

Privileged and Confidential

Prepared By

Nick Tropea, B.Sc.
Environmental Technologist

Reviewed By

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Project Manager

Approved By

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Manager, Environmental Services

KGS Group
Thunder Bay, Ontario

EXECUTIVE SUMMARY

Kontzamanis Graumann Smith MacMillan Inc. (KGS Group) was retained by Canadian National (CN) to provide environmental and engineering services for the 2010 Environmental Program at the CN Hornepayne Yard, located in Hornepayne, Ontario. This report details the operation and maintenance activities associated with remedial activities at the Yard. The Hornepayne Yard operates under the Amended Certificate of Approval (C of A) No. 3528–83LQWT.

West End Diesel Recovery System

The West End Diesel Recovery System (DRS) continues to function as per design, passively collecting Light Non-Aqueous Phase Liquids (LNAPL) from the fuelling stand area and preventing the off-site migration of LNAPL. Approximately 3,007 L of LNAPL was collected during the 2010 operating year. Since commissioning in the fall of 1998, the system has recovered approximately 168,317 L.

In 2010, the diesel recovery system was inspected weekly from May to November, and monthly diesel recovery system effluent samples met all criteria outlined in the C of A.

East End Environmental Protection System

Lagoon No.2 Containment and Former Pump House System

The Lagoon No.2 Containment and Former Pump House System continues to prevent the off-site migration of LNAPL from the Lagoon No.2 and Former Pump House areas to the Little Jackfish River.

The horizontal extent of the LNAPL plume has not changed from previous years, although the measured LNAPL thickness in monitoring wells fluctuates between years. The Lagoon No.2 Containment and Former Pump House System recovered approximately 1,182 L of LNAPL in 2010. Since 1998, approximately 19,124 L of LNAPL has been collected from this area.

Effluent sampled from the Lagoon No.2 outlet met all criteria outlined in the C of A. Lagoon No.2 continues to adequately attenuate impacted effluent from various Yard operations.

Former Shop Track Fuelling Area Diesel Recovery System

The Former Shop Track Fuelling (FSTF) area DRS did not operate in 2010, as CN could not place a tanker car at the Waste Oil Transfer Facility (WOTF). KGS Group and local CN personnel placed approximately 1,468 L of waste oil within the waste oil tank from various Yard activities. Since 2004, approximately 10,110 L of LNAPL/Waste Oil has been collected at the facility.

Waste Oil Transfer Facility

The WOTF did not operate in 2010, as a tanker car could not be placed at the site. Approximately 43,000 L of total fluids, collected by KGS Group led operations, were taken directly off-site for processing.

Surface Water

The surface water program continues to show that Yard effluent/surface water discharge is not having a measurable or visible effect on off-site surface water, namely the Little Jackfish River.

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1.0 INTRODUCTION

Kontzamanis Graumann Smith MacMillan Inc. (KGS Group) was retained by Canadian National (CN) to provide environmental and engineering services for the 2010 Environmental Program at the CN Hornepayne Yard, located in Hornepayne, Ontario (Figure 1). This report details the operation and maintenance activities associated with both the West End Fuelling Stand System and East End Environmental Protection Systems (PIN # 1000/ONPR/100586, PIN # 1000/ONPR/100587, and PIN # 1000/ONPR/100591), and also details the results of the groundwater and surface water monitoring and sampling program conducted during the 2010 operating year. The East and West End systems operate under the Amended Certificate of Approval (C of A) No. 3528--83LQWT, which was issued on April 29, 2010 (Appendix A).

1.1 SYSTEM DESCRIPTIONS

1.1.1 West End Fuelling Stand System

The location of the West End Diesel Recovery System (DRS) (PIN # 1000/ONPR/100587) within the Hornepayne Yard is shown on Figure 2, while the DRS components are shown on Figure 3. The DRS was originally constructed in 1998 and was composed of eleven (11) underdrains, each at various elevations within the subsurface. Only ten (10) underdrains remain. Underdrain No.7 was destroyed in 1998 during construction of the diesel recovery lagoon (DRL). The underdrains discharge total fluids into the DRL. A skimmer unit, located within the Skimmer Building at the west end of the DRL, collects LNAPL floating on the surface of the water within the DRL. Collected LNAPL is transferred by gravity to a 25,000 L waste oil recovery tank. Effluent from the DRL is discharged to a discharge trench. At the downstream end of the discharge trench is a concrete control structure, through which effluent is discharged to the Little Jackfish River. Flow through the structure is controlled using a manual butterfly valve.

1.1.2 East End Environmental Protection System

Lagoon No.2 Containment System

Figure 4 shows the location of the Lagoon No. 2 containment system relative to the Yard. The general components of the containment system are shown on Figure 5. The containment system consists of a bentonite cut-off wall and ten (10) recovery wells. Six (6) of the recovery

wells were installed in 2006 as part of the containment system upgrade (PW-5 to PW-10). Pumping well PW-1 was damaged during the system upgrade. This pumping well is no longer used as a recovery well, but accumulated LNAPL (when present) is bailed from the well during each system inspection. Five (5), top loading, AP4 pneumatic pumps are utilized to collect total fluids from selected pumping wells. These pneumatic pumps are configured to pump total fluids to a 45 L per minute oil / water separator (OWS). The pneumatic pumps can be transferred between the pumping wells as dictated by both fluctuating water table and LNAPL levels, respectively. LNAPL collected in the OWS is gravity drained to a 4,560 L double walled waste oil tank. Effluent from the OWS gravity drains to Lagoon No.2, which ultimately, discharges to the Little Jackfish River.

Former Shop Track Fuelling Area Diesel Recovery System

The location of the Former Shop Track Fuelling area (FSTF) (PIN # 1000/ONPR/100591) is shown on Figure 6, while the general FSTF components are shown on Figure 7. The FSTF DRS consists of a rock filled recovery trench, collection sump and a skimmer unit, located within the Skimmer Building. A Myers ½ horsepower sump pump is used to depress the water table within the sump. Groundwater is pumped directly to the 227 L per minute OWS, located at the Waste Oil Transfer Facility. Effluent from the OWS, gravity discharges to a manhole within the area of the system. Effluent from the manhole gravity discharges to Lagoon No.2 and ultimately, to the Little Jackfish River. The skimmer belt collects LNAPL floating on the surface of the water within the sump. Collected LNAPL is then transferred by gravity to a 5,000 L waste oil recovery tank.

Waste Oil Transfer Facility

The location of the Waste Oil Transfer Facility (WOTF) (PIN # 1000/ONPR/100591) is shown on Figure 8. The WOTF system components are shown on Figure 9. To the south of the WOTF are drip trays, which drain to a sump equipped with a Myers ½ horsepower sump pump. Any potential spills within the drip trays are pumped from the sump to the 227 L per minute OWS separator situated within the WOTF. A 45,400 L holding tank is located to the west of the WOTF. All collected LNAPL is placed in the waste oil tank and processed through the OWS. Clean water is discharged to Lagoon No.2. Remaining LNAPL is transferred via a Loading Arm to a nearby Tanker car, stationed at the drip trays.

2.0 OPERATION AND MAINTENANCE

2.1 WEST END FUELLING STAND SYSTEM

2.1.1 Operations and Inspections

KGS Group personnel started the skimmer unit on April 29, 2010. Local personnel adjusted the skimmer belt and increased / decreased the blade tension on the skimmer belt on an as required basis during 2010. The skimmer unit was shutdown and winterized on November 10, 2010 by KGS Group personnel.

Monthly and weekly inspections were conducted by KGS Group and local personnel at the West End DRS during the 2010 operating year. KGS Group personnel conducted monthly inspections from May to November, while local personnel conducted weekly inspections from May to November. Inspections were conducted to assess the operation of the DRS, to measure the collection of LNAPL, and to visually inspect the final discharge location. KGS Group personnel also collected an effluent sample from the final discharge location on a monthly basis. Weekly inspection forms for the 2010 operating year can be provided upon request.

2.1.2 Operation and Maintenance Issues

The skimmer unit operated from May to November without any operational interruptions, with the exception of a system shutdown experienced from August 10 to August 17, 2010, due to a high level shutdown in the waste oil tank. Enviro-West of Thunder Bay removed the contents of the waste oil tank on August 18, 2010, after which the skimmer unit was restarted by KGS Group personnel. The contents of the waste oil tank were transferred to the holding tank, located at the Waste Oil Transfer Facility.

2.1.3 Collected LNAPL

The West End DRS recovered a total of approximately 3,007 L of LNAPL during the 2010 operating year (Figure 10). Since the commissioning of the system in the spring of 1998, the West End DRS has collected approximately 168,317 L of LNAPL (Figure 11).

2.2 EAST END ENVIRONMENTAL PROTECTION SYSTEM

2.2.1 Lagoon No.2 and Former Pump House Operations and Inspections

KGS Group personnel installed the system components in April 2010 and started system operation. Monthly and weekly inspections were conducted by KGS Group and local personnel during the 2010 operating year. KGS Group personnel conducted monthly inspections from May to November, while local personnel conducted weekly inspections from May to November. Inspections were conducted to assess the operation of the Lagoon No.2 Containment System, to measure the collection of LNAPL, and to visually inspect the final discharge location. KGS Group personnel also collected an effluent sample from the final discharge location on a monthly basis. Weekly inspection forms for the 2010 operating year can be provided upon request.

The recovery trench and compressor operated within normal parameters throughout the 2010 operating year. The pneumatic pumps were located within five (5) of the recovery wells in 2010 (PW-2, PW-3, PW-7, PW-8, and PW-9). Pumping Wells PW-4, PW-5, PW-6, and PW-10 were not utilized due to insignificant thickness of LNAPL present and low water table levels. LNAPL from within these four (4) pumping wells was manually bailed during each inspection, when present.

2.2.2 Lagoon No.2 and Former Pump House Operation and Maintenance Issues

The Lagoon No.2 Containment and Former Pump House System operated throughout the year without any interruptions. Iron precipitate fouling of the discharge lines was removed on a timely basis by either KGS Group or local personnel, and did not affect system operation in 2010.

2.2.3 Lagoon No.2 Collected LNAPL

The Lagoon No.2 Containment and Former Pump House System recovered a total of approximately 1,882 L of LNAPL during the 2010 operating year (Figure 12). Since LNAPL recovery began in the spring of 1998, the Lagoon No.2 Containment System, in it various forms, has collected approximately 19,124 L of LNAPL (Figure 13).

2.2.4 Former Shop Track Fuelling Area Diesel Recovery System Operations and Inspections

As there was no tanker car placed at the WOTF in 2010 (a requirement for operating both the Former Shop Track Fuelling area DRS and the WOTF), and as such, the remedial system was not operated in 2010.

Although the remedial system did not operate in 2010, the system components, namely the waste oil tank, were inspected on a monthly basis, as KGS Group and local CN personnel still use the tank to store waste oil from Yard activities.

Monthly and weekly inspections were conducted by KGS Group and local personnel during the 2010 operating year. KGS Group personnel conducted monthly inspections from May to November, while local personnel conducted weekly inspections from May to November. Inspections were conducted to measure the collection of LNAPL placed in the waste oil tank. Weekly inspection forms for the 2010 operating year can be provided upon request.

2.2.5 Former Shop Track Fuelling Area Diesel Recovery System Operation and Maintenance Issues

There were no operation or maintenance issues to report for the FSTF area DRS in 2010.

2.2.6 Former Shop Track Fuelling Area Diesel Recovery System Collected LNAPL

The FSTF DRS did not operate in 2010; therefore, the system did not recover any subsurface LNAPL during the 2010-operating year. Both KGS Group and local CN personnel placed approximately 1,468 L of waste oil, from various Yard operations, in the waste oil tank. A summary of LNAPL collection for 2010 can be found on Figure 14. Since its commissioning in the spring of 2004, system and manual collection of waste oil has recovered approximately 10,110 L of LNAPL / waste oil. A summary of the historical collection can be found on Figure 15.

2.2.7 Waste Oil Transfer Facility Operations and Inspections

As there was no tanker car placed at the WOTF in 2010 (a requirement for operating both the FSTF area DRS and the WOTF), the remedial system was not operated in 2010.

Although the WOTF system did not operate in 2010, the system components, namely the waste oil holding tank, were inspected on a monthly basis as part of the monthly tank and outfall inspections. Level measurements were also recorded as KGS Group and local CN personnel used the holding tank to store waste oil generated from Yard activities.

Monthly and weekly inspections were conducted by KGS Group and local personnel during the 2010 operating year. KGS Group personnel conducted monthly inspections from May to November, while local personnel conducted weekly inspections from May to November. Inspections were conducted to measure the collection of LNAPL placed in the waste oil holding tank. Weekly inspection forms for the 2010 operating year can be provided upon request.

2.2.8 Waste Oil Transfer Facility Operation and Maintenance Issues

There were no operation or maintenance issues to report for the WOTF in 2010.

2.2.9 Waste Oil Transfer Facility Collected LNAPL

The WOTF did not operate in 2010; therefore, the system did not recover any subsurface LNAPL during the 2010-operating year. 0 L of total fluids was processed through the WOTF. Enviro-West of Thunder Bay processed approximately 43,000 L of total fluids (collected from various LNAPL collection systems in the Yard) off-site. Waste Manifest Forms are provided in Appendix B.

3.0 EFFLUENT SAMPLING

3.1 WEST END FUELLING STAND SYSTEM

As per the requirements of the C of A, effluent samples were collected from the outlet to the Little Jackfish River (Hor-013-05) from May through November 2010. The effluent sampling locations are presented on Figure 16. KGS Group personnel collected effluent samples during each monthly inspection visit or as part of the surface water-sampling program. Effluent samples were submitted to Maxxam Analytics Inc. in Mississauga, Ontario for the laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), total purgeable hydrocarbons (TPH), total extractable hydrocarbons (TEH), petroleum hydrocarbon fractions (PHC) F1 to F4, methyl-t-butyl-Ether (MTBE), pH, alkalinity, hardness, and lead. The effluent samples were submitted to the laboratory accompanied with pre-filled chain of custody (COC) forms supplied by CN via the SAP program.

Laboratory results show that all parameter concentrations in the submitted samples were below the applicable C of A criterion. Surface water quality analysis results for parameters sampled during the 2010 operating year are presented in Table 1. Laboratory certificates of analysis can be provided upon request.

Due to pre-established laboratory reporting protocols between CN and Maxxam Analytics, monthly effluent laboratory results were reported as TPH and TEH, and not as PHC fractions F1 to F4. The discrepancy in reporting could not be rectified in time for the 2010 operating period.

3.2 EAST END ENVIRONMENTAL PROTECTION SYSTEM

Effluent samples from the Lagoon No.2 discharge to the Little Jackfish River (Hor-002-05) were taken on a monthly basis from May to November 2010. The effluent sampling locations are presented on Figure 16. KGS Group personnel collected effluent samples during each monthly inspection visit or as part of the surface water-sampling program. Effluent samples were submitted to Maxxam Analytics Inc. in Mississauga, Ontario for the laboratory analysis of BTEX, TPH, TEH, PHC fractions F1 to F4, MTBE, pH, alkalinity, hardness, and lead. The effluent samples were submitted to the laboratory accompanied with pre-filled chain of custody (COC) forms supplied by CN via the SAP program.

Laboratory results show that all parameter concentrations in the submitted samples were below the applicable C of A criterion. Surface water quality analysis results for parameters sampled during the 2010 operating year are presented in Table 1. Laboratory certificates of analysis can be provided upon request.

Due to pre-established laboratory reporting protocols between CN and Maxxam Analytics, monthly effluent laboratory results were reported as TPH and TEH, and not as PHC fractions F1 to F4. The discrepancy in reporting could not be rectified in time for the 2010 operating period.

4.0 GROUNDWATER

4.1 GROUNDWATER FLOW

4.1.1 West End

Representative contours for the June and October monitoring events are shown on Figures 17 and 18, respectively.

Groundwater elevations ranged from an elevation of 323.116 m (IMW-4) to 326.118 (MW-120) in the spring, and from 323.392 (IMW-4) to 326.187 m (MW-120) in the fall. The groundwater table fluctuated at the site, decreasing from approximately 0.07 m (MW-120) to 0.28 m (IWW-4) from spring to fall.

Interpreted groundwater flow direction was to the north/northeast, with local flow varying in the area of the DRS due to the influence of the underground drains and the recovery lagoon.

The average hydraulic gradient in the spring was 0.032 m/m, with local variations ranging from 0.01 to 0.04 m/m in the spring, while the average hydraulic gradient in the fall was 0.034 m/m, with local variations ranging from 0.01 to 0.05 m/m. Based on an estimated hydraulic conductivity of 10^{-8} m/s for silty clay and an effective porosity of 0.25, the estimated groundwater velocity local to the DRS in 2010 ranged from 0.01 to 0.05 m/year in the spring and from 0.01 to 0.06 m/year in the fall.

4.1.2 East End

Groundwater monitoring data for the East End is presented in Table 2. Representative contours for the June and October monitoring events are shown on Figures 19 and 20, respectively.

Former Pump House Area

Groundwater elevations in the Former Pump House area ranged from an elevation of 321.470 m (MW-43) to 322.496 m (MW-108) in the spring and from 321.766 m (MW-43) to 323.782 m (MW-108) in the fall. The groundwater table fluctuated at the site, increasing from approximately 0.30 m (MW-43) to 1.29 m (MW-108) from spring to fall.

Interpreted groundwater flow direction was to the north/northeast, generally towards the Little Jackfish River. Hydraulic gradients were variable and the estimated groundwater velocities through the silty sands ranged between 1 m/year to 3 m/year.

LNAPL was not measured in any of the monitoring wells in the Former Pump House area in 2010. Detailed results are presented in Table 2.

Lagoon No.2 Area

Groundwater elevations in the Lagoon No.2 area ranged from an elevation of 320.925 m (MW-103) to 321.230 (MW-52) in the spring, and from 321.198 (OW 5-3) to 321.804 m (MW-40) in the fall. The groundwater table fluctuated at the site, decreasing from approximately 0.12 m (MW-21) to 0.63 m (MW-40) from spring to fall.

Interpreted groundwater flow direction was to the north / northeast, with local flow varying in the area of Lagoon No.2 due to the influence of underground infrastructure and the lagoon. The average hydraulic gradient in the spring was 0.015 m/m, with local variations ranging from 0.014 to 0.017 m/m in the spring, while the average hydraulic gradient in the fall was 0.025 m/m, with local variations ranging from 0.016 to 0.039 m/m. Based on an estimated hydraulic conductivity of 10^{-6} m/s for silt / silty sands and an effective porosity of 0.30, the estimated groundwater velocity local to Lagoon No.2 in 2011 ranged from 1.47 to 1.79 m/year in the spring and from 1.68 to 4.10 m/year in the fall.

LNAPL was measured in four (4) monitoring wells in 2010 (monitoring well MW-21 – 0.51 m, monitoring well MW-51 – 0.04 m, monitoring well MW-101 – 0.29 m, and monitoring well OW 5-2 – 0.03 m). Detailed results are presented in Table 2.

Former Shop Track Fuelling Area

Groundwater elevations ranged from an elevation of 321.833 m (MW-114) to 322.965 m (MW-126) in the spring and from 322.239 m (MW-114) to 323.818 m (MW-126) in the fall. The groundwater table fluctuated at the site, increasing from approximately 0.68 m (OW3-2) to 1.35 m (MW-126) from spring to fall.

Interpreted groundwater flow direction was to the north/northeast towards Lagoon No.2 and the Little Jackfish River. Groundwater flow appears to be locally influenced by the underground sewer networks. The average hydraulic gradients in the spring and fall were variable, with local variations ranging from 0.01 m/m to 0.025 m/m. Based on an estimated hydraulic conductivity of 10^{-6} m/s for silty sands and an effective porosity of 0.30, the estimated groundwater velocity local to the FSTF area in 2010 ranged from 1 to 3 m/year in the spring and fall.

LNAPL was measured in two (2) monitoring wells in 2010 (monitoring well MW-126 – 1.34 m, and monitoring well OW 3-2 – 0.15 m). Detailed results are presented in Table 2.

Roundhouse Area

Interpreted groundwater flow for June and October are shown on Figures 19 and 20, respectively. Groundwater flow was to the north/northwest. Groundwater gradients were variable, with an estimated groundwater velocity of 1 to 3 m/year through the sandy silts/silts.

LNAPL was not measured within the Roundhouse area in 2010. Detailed results are presented in Table 2.

4.2 GROUNDWATER SAMPLING RESULTS

Groundwater sampling events were conducted on June 22 (spring) and October 6 and 7 (fall), 2010. Groundwater samples were obtained using dedicated polyethylene tubing and foot valves. Each monitoring well was purged dry to ensure a representative sample was obtained from the aquifer. Groundwater samples were collected when 40% to 50% of the initial volume had recharged. Each sample was then placed into the appropriate sample bottle and shipped in cooler chests with ice to Maxxam Analytics Inc., an accredited analytical testing facility, in Mississauga, Ontario.

Figure 21 highlights the monitoring wells which were sampled during the 2010 groundwater monitoring and sampling program as per C of A requirements. Laboratory results for samples collected during the groundwater monitoring and sampling program are presented on Table 3, while general groundwater field chemistry results are presented on Table 4.

4.2.1 Former Pump House Area

BTEX and PHC fraction F1 to F4 concentrations in groundwater were sampled from three (3) monitoring wells (MW-20, MW-43, and MW-46) in 2010. Low concentrations were detected for benzene, ethylbenzene, and total xylenes at monitoring well MW-20, but were well below Ministry of Environment (MOE) Table 9 Criteria. BTEX concentrations were not detected at either MW-43 or MW-46. PHC fraction F2 concentrations in groundwater were detected at monitoring well MW-43, which exceeded Table 9 Criteria. PHC fractions F2 and F3 concentrations exceeded Table 9 Criteria at monitoring well MW-20.

Groundwater sampled from all wells within the FPH area, with the exception of MW-46, was impacted to some degree, making comparisons for trends in field chemistry difficult. However, the data does generally show that DO concentrations are slightly lower, and more reduced conditions exist in wells at this location, compared to other locations in the Yard where groundwater is not impacted. These results indicate increased biological activity is occurring within the FPH area.

4.2.2 Lagoon No.2 Area

BTEX and PHC fraction F1 to F4 concentrations in groundwater were sampled from five (5) monitoring wells (MW-40, MW-52, OW5-1, OW5-2, and OW5-3) in 2010. Low concentrations were detected for benzene, toluene, ethylbenzene, and total xylenes at monitoring well MW-52, and for benzene at monitoring well OW5-3, but were well below MOE Table 9 Criteria.

PHC fraction F1 was detected in monitoring well OW 5-2 at concentrations exceeding MOE Table 9 Criteria. PHC Fraction F2 to F4 concentrations in groundwater generally exceeded MOE Table 3 Criteria where detected in groundwater samples collected from the Lagoon No.2 area in 2010, with the exception of monitoring well MW-40.

Field chemistry results show a definite trend of low dissolved oxygen and increased reducing conditions in groundwater from impacted wells as compared to non-impacted wells. The data suggests that there is increased biological activity within impacted areas

Former Shop Track Fuelling Area

Five (5) monitoring wells were sampled in the FSTF area in October 2010 (MW-49, MW-114, MW-115, MW-126, and OW 3-2). PHC Fraction F2 to F4 concentrations in groundwater exceeded MOE Table 3 Criteria where detected in groundwater samples collected from the FSTF area in 2010, with the exception of monitoring well MW-115.

Field chemistry results show lower dissolved oxygen concentrations and more reduced conditions in groundwater sampled form impacted areas versus non-impacted areas. The data suggest increased biological activity in impacted areas.

Roundhouse Area

Groundwater was sampled from monitoring well MW-24 in 2010 and showed no measurable PHC concentrations.

5.0 CONCLUSIONS

The following conclusions are made based on the 2010-operating year:

5.1 WEST END

- The West End DRS continues to function as per design, passively collecting LNAPL from the fuelling stand area and preventing the off-site migration of LNAPL.
- The skimmer unit operated for one hundred and eighty-nine (189) out of a possible one hundred and ninety-six (196) days throughout the 2010-operating year. LNAPL was removed as required from the DRL.
- Approximately 3,007 L of LNAPL was collected during the 2010-operating year. Since commissioning in the fall of 1998, the system has recovered approximately 168,317 L.
- Target parameter concentrations in monthly effluent samples were below their applicable C of A criterion.
- Due to pre-established laboratory reporting protocols between CN and Maxxam Analytics, monthly effluent laboratory results were reported as TPH and TEH, and not as PHC fractions F1 to F4. The discrepancy in reporting could not be rectified in time for the 2010 operating period.
- Weekly inspections were conducted throughout the operating year, which lasted from May 1, 2010 to November 9, 2010.

5.2 EAST END

5.2.1 Lagoon No.2 and Former Pump House Operation and Maintenance

- The Lagoon No.2 containment system continues to prevent the off-site migration of LNAPL from the Lagoon No.2 area to the Jackfish Creek.
- A total of 1,882 L of LNAPL was collected in 2010. Since 1998, approximately 19,124 L of LNAPL has been collected.
- LNAPL was measured in four (4) monitoring wells in 2010 (monitoring well MW-21 – 0.51 m, monitoring well MW-51 – 0.04 m, monitoring well MW-101 – 0.29 m, and monitoring well OW 5-2 – 0.03 m).
- Groundwater from this area was sampled in 2010 and analyzed based on the C of A Criterion. Laboratory analysis showed the continued presence of target parameters in exceedance of applicable MOE Criteria.
- Field chemistry results show a definite trend of low dissolved oxygen and increased reducing conditions in groundwater from impacted wells as compared to non-impacted

wells. The data continues to suggest that there is increased biological activity within impacted areas.

- Target parameter concentrations in monthly effluent samples were below their applicable C of A criterion.

- Due to pre-established laboratory reporting protocols between CN and Maxxam Analytics, monthly effluent laboratory results were reported as TPH and TEH, and not as PHC fractions F1 to F4. The discrepancy in reporting could not be rectified in time for the 2010 operating period.

- Weekly inspections were conducted throughout the operating year, which lasted from May 1, 2010 to November 9, 2010.

5.2.2 Former Shop Track Fuelling Area

- The FSTF DRS did not operate in 2010. Approximately 10,110 L of LNAPL has been collected since 2004.

5.2.3 Waste Oil Transfer Facility

- Enviro-West of Thunder Bay processed 43,000 L of total fluids, collected from various Yard LNAPL recovery systems, off-site due to the non-operation of the WOTF.

5.2.4 Surface Water

- No hydrocarbon sheen was observed on any of the surface water samples taken in 2010. The 2010 data showed that the Yard activities or discharges are not having any measurable or visible effects on adjacent surface water quality of the Little Jackfish River.

6.0 THIRD PARTY USE AND STATEMENT OF LIMITATIONS

6.1 THIRD PARTY USE OF REPORT

This report has been prepared for Canadian National Railway and any use by a third party of this report, or any reliance on or decisions made based on it, are the responsibility of such third parties. KGS Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions undertaken based on this report.

6.2 STATEMENT OF LIMITATIONS

KGS Group prepared the environmental conclusions and recommendations for this report in a professional manner using the degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants. As the report is based on the available information, some of its conclusions could be different if the information upon which it is based is determined to be false, inaccurate or contradicted by additional information. KGS Group makes no representation concerning the legal significance of its findings or the value of the property investigated.

TABLES

TABLE 1
SURFACE WATER QUALITY ANALYSIS
CN HORNEPAYNE YARD, HORNEPAYNE, ONTARIO

Sample [1]	Date	Parameter (mg/L)																		Comments
		Benzene	Toluene	Ethyl-benzene	Xylene (-o)	Xylenes (-m,-p)	MTBE	F1 (C_6-C_{10})	F2 (C_{10}-C_{16})	F3 (C_{16}-C_{34})	F4 (C_{34}-C_{50})	T.P.H. (<C_{10})	T.E.H. (C_{10}-C_{24})	Oil & Grease	Mineral Oil & Grease	pH	Alkalinity	Hardness	Lead	
HOR 002 05 (Lagoon No.2)	Nov-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	0.54	<0.5	<0.5	7.9	-	380	<0.05	[4]
	Oct-10	0.0003	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	0.45	<0.5	<0.5	8.1	362	400	<0.05	[4]
	Sep-10	0.0003	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	0.37	<0.5	<0.5	8.0	366	390	<0.05	[4]
	Aug-10	<0.0002	0.0002	<0.0002	<0.0002	<0.0004	<0.0001	-	-	-	-	<0.1	0.39	1.2	<0.5	7.9	272	250	<0.05	[4]
	Jul-10	<0.0002	0.0002	<0.0002	<0.0002	<0.0004	<0.0001	-	-	-	-	<0.1	1.50	1.9	<0.5	7.8	363	330	<0.05	[3]
	Jun-10	0.0006	<0.0002	0.0002	<0.0002	<0.0004	<0.0004	-	-	-	-	0.15	4.80	4.3	<0.5	7.6	382	360	<0.05	[3]
	May-10	<0.0005	<0.01	<0.0005	<0.0005	<0.0005	<0.01	-	-	-	-	<0.1	1.80	<0.5	<0.5	7.8	393	410	<0.05	[3]
HOR 004 05 (Jackfish River, Down Stream)	Nov-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	8.0	-	100	<0.005	
	Oct-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	0.90	<0.5	8.0	98	110	<0.005	
	Oct-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	8.1	102	110	<0.005	Field Dup.
	Sep-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	7.7	98	100	<0.005	
	Aug-10	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	8.0	121	120	<0.005	Field Dup.
	Aug-10	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	8.0	122	120	<0.005	
	Jul-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	0.80	<0.5	7.9	123	130	<0.005	
	Jun-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	7.9	109	110	<0.005	Field Dup.
	Jun-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	0.80	<0.5	7.9	107	110	<0.005	
	May-10	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	8.1	98	100	<0.005	
HOR 005 05 (Jackfish River, Mid-Stream)	Nov-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	7.8	-	110	<0.005	
	Oct-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	0.70	<0.5	7.9	102	110	<0.005	
	Sep-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	7.8	98	100	<0.005	
	Aug-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	8.0	122	120	<0.005	
	Jul-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	1.10	<0.5	7.9	123	120	<0.005	
	Jun-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	-	-	-	-	<0.1	<0.1	0.70	<0.5	7.8	107	110	<0.005	
	May-10	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	-	-	-	-	<0.1	<0.1	<0.5	<0.5	8.1	102	110	<0.005	
HOR 013 05 (West End)	Nov-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.004	-	-	-	-	<0.1	0.34	<0.5	<0.5	7.9	-	350	<0.005	
	Oct-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.001	-	-	-	-	<0.1	0.28	2.60	<0.5	8.0	278	310	<0.005	
	Sep-10	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.005	-	-	-	-	<0.1	0.23	3.40	<0.5	8.1	229	250	<0.005	
	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry
	Jul-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry
	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dry
	May-10	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	-	-	-	-	<0.1	0.50	<0.5	<0.5	8.1	238	260	<0.005	[4]
Certificate of Approval [1]																				
C of A Criteria		5	0.8	2.4	40	32	200	1,000		1,000		-	-	-	-	6.5-8.5	-	-	[2]	-

Notes:
"-" = No Data
T.P.H. = Total Purgeable Hydrocarbons
T.E.H. = Total Extractable Hydrocarbons
MTBE = Methyl-t-butyl-Ether

1. Certificate of Approval No. 3528-83LQWT issued for the Yard sets the effluent criteria as listed above.
2. The limit for Lead shall be determined based on the hardness of water. If the hardness is less than 30 mg/L, then the limit is 1 ug/L. If the hardness is between 30 mg/L and 80 mg/L, then the limit is 3 ug/L. When hardness is greater than 80 mg/L, then the limit is 5 ug/L.
3. Due to the level of petroleum hydrocarbon compounds beyond the appropriate range, the sample required dilution. Detection limits were adjusted accordingly.
4. Due to foaming, the sample required dilution. Detection limits were adjusted accordingly.

BOLD - Exceedance of C of A Criteria

TABLE 2
EAST END GROUNDWATER MONITORING DATA
CN HORNEPAYNE YARD, HORNEPAYNE, ONTARIO

Well No.	Date	Top of Pipe Elev. (m)	Depth to Water (m)	Depth to LNAPL (m)	LNAPL Thickness (m)	GW Elev. (m)	Corrected GW Elev. [1] (m)	Comments
EAST END								
MW-20	5-Oct-10	324.575	1.752	-	-	322.823	-	
	22-Jun-10	324.575	2.179	-	-	322.396	-	
MW-21	5-Oct-10	324.475	3.705	3.193	0.512	320.770	321.282	
	22-Jun-10	324.475	3.822	3.435	0.387	320.653	321.040	
MW-24	5-Oct-10	325.870	1.838	-	-	324.032	-	
	22-Jun-10	325.870	2.295	-	-	323.575	-	
MW-40	5-Oct-10	324.140	2.336	-	-	321.804	-	
	22-Jun-10	324.140	2.961	-	-	321.179	-	
MW-43	5-Oct-10	323.695	1.929	-	-	321.766	-	
	22-Jun-10	323.695	2.225	-	-	321.470	-	
MW-46	5-Oct-10	324.385	2.022	-	-	322.363	-	
	22-Jun-10	324.385	2.366	-	-	322.019	-	
MW-49	5-Oct-10	325.260	1.664	-	-	323.596	-	
	22-Jun-10	325.260	2.370	-	-	322.890	-	
MW-51	5-Oct-10	324.235	2.903	2.865	0.038	321.332	321.370	
	22-Jun-10	324.235	3.171	3.165	0.006	321.064	321.070	
MW-52	5-Oct-10	323.575	2.050	-	-	321.525	-	
	22-Jun-10	323.575	2.345	-	-	321.230	-	
MW-101	5-Oct-10	324.120	2.879	2.697	0.182	321.241	321.423	
	22-Jun-10	324.120	3.242	2.957	0.285	320.878	321.163	
MW-102	5-Oct-10	324.160	2.730	-	-	321.430	-	
	22-Jun-10	324.160	3.024	-	-	321.136	-	
MW-103	5-Oct-10	323.570	2.150	-	-	321.420	-	
	22-Jun-10	323.570	2.645	-	-	320.925	-	
MW-104	5-Oct-10	323.910	2.490	-	-	321.420	-	
	22-Jun-10	323.910	2.761	-	-	321.149	-	
MW-106	5-Oct-10	323.900	2.035	-	-	321.865	-	
	22-Jun-10	323.900	2.426	-	-	321.474	-	
MW-107	5-Oct-10	324.010	1.863	-	-	322.147	-	
	22-Jun-10	324.010	2.322	-	-	321.688	-	
MW-108	5-Oct-10	324.870	1.088	-	-	323.782	-	
	22-Jun-10	324.870	2.374	-	-	322.496	-	
MW-109	5-Oct-10	325.480	2.498	-	-	322.982	-	
	22-Jun-10	325.480	2.935	-	-	322.545	-	
MW-114	5-Oct-10	325.410	3.171	-	-	322.239	-	
	22-Jun-10	325.410	3.577	-	-	321.833	-	
MW-115	5-Oct-10	325.910	2.530	-	-	323.380	-	
	22-Jun-10	325.910	3.037	-	-	322.873	-	
MW-126	5-Oct-10	325.815	2.840	1.997	0.843	322.975	323.818	
	22-Jun-10	325.815	4.188	2.850	1.338	321.627	322.965	
OW 3-2	5-Oct-10	325.340	2.255	2.108	0.147	323.085	323.232	
	22-Jun-10	325.340	2.938	2.835	0.103	322.402	322.505	
OW 5-1	5-Oct-10	324.365	2.766	-	-	321.599	-	
	22-Jun-10	324.365	3.258	-	-	321.107	-	
OW 5-2	5-Oct-10	323.600	2.138	-	-	321.462	-	
	22-Jun-10	323.600	2.405	2.374	0.031	321.195	321.226	
OW 5-3	5-Oct-10	323.675	2.477	-	-	321.198	-	
	22-Jun-10	323.675	2.708	-	-	320.967	-	

Notes:
"-" = No Data
1. Density correction applied to groundwater elevation for wells where free product exists.

TABLE 3
EAST END GROUNDWATER LABORATORY RESULTS
CN HORNEPAYNE YARD, HORNEPAYNE, ONTARIO

Well No.	Date	Parameter [1]								Comments
		Benzene	Toluene	Ethyl-benzene	Xylenes (o,-m,-p)	F1 (C_6-C_{10})	F2 (C_{10}-C_{16})	F3 (C_{16}-C_{34})	F4 (C_{34}-C_{50})	
MW-20	7-Oct-10	-	-	-	-	-	**3,000**	**1,700**	<100	
	22-Jun-10	0.50	<0.2	0.9	2.7	110	**2,600**	**1,100**	<100	
MW-40	7-Oct-10	-	-	-	-	-	<100	<100	<100	
	22-Jun-10	<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	
MW-43	7-Oct-10	-	-	-	-	-	**600**	170	<100	
	22-Jun-10	<0.2	<0.2	<0.2	<0.4	<100	**740**	400	<100	
MW-46	7-Oct-10	-	-	-	-	-	<100	<100	<100	
	7-Oct-10	-	-	-	-	-	<100	<100	<100	Field Dup.
	22-Jun-10	<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	
MW-52	7-Oct-10	-	-	-	-	-	**600**	150	<100	
	22-Jun-10	2.90	0.40	24	2.0	<100	**570**	<100	<100	Field Dup.
	22-Jun-10	2.60	0.30	22	2.1	<100	**600**	<100	<100	
OW 5-1	7-Oct-10	-	-	-	-	-	**800**	**800**	<100	
	22-Jun-10	-	-	-	-	-	**1,200**	**1,000**	<100	Lab Dup.
	22-Jun-10	<0.2	<0.2	<0.2	<0.4	<100	**1,200**	**670**	<100	
OW 5-2	7-Oct-10	-	-	-	-	-	**720,000**	**280,000**	**<10000**	[4]
	22-Jun-10	<0.2	<0.2	<0.2	<0.4	**18,000**	**3,000,000**	**1,200,000**	**33,000**	[4]
OW 5-3	7-Oct-10	-	-	-	-	-	**3,200**	**1,900**	<100	
	22-Jun-10	0.60	<0.2	<0.2	<0.4	<100	**10,000**	**4,400**	<100	
MW-21	7-Oct-10	-	-	-	-	-	**1,600,000**	**610,000**	**11,000**	[4]
MW-24	7-Oct-10	-	-	-	-	<100	<100	<100	-	
MW-49	07-Oct-10	-	-	-	-	**1,500**	**1,200**	<100	-	
MW-51	7-Oct-10	-	-	-	-	-	**230,000**	**96,000**	**5,500**	[4]
MW-101	7-Oct-10	-	-	-	-	-	**1,800,000**	**620,000**	**13,000**	[4]
MW-102	7-Oct-10	-	-	-	-	-	**1,700**	**760**	<100	
MW-103	7-Oct-10	-	-	-	-	-	100	190	<100	
MW-104	7-Oct-10	-	-	-	-	-	**17,000**	**4,600**	<100	
MW-106	7-Oct-10	-	-	-	-	-	**220,000**	**79,000**	210	
MW-107	7-Oct-10	-	-	-	-	-	**43,000**	**19,000**	<100	
MW-108	7-Oct-10	-	-	-	-	-	**1,600**	400	<100	
MW-109	7-Oct-10	-	-	-	-	**42,000**	**14,000**	<100	-	
MW-114	7-Oct-10	-	-	-	-	**87,000**	**37,000**	**1,100**	-	
MW-115	7-Oct-10	-	-	-	-	<100	<100	<100	-	
MW-126	7-Oct-10	-	-	-	-	**690,000**	**260,000**	**21,000**	-	
OW 3-2	7-Oct-10	-	-	-	-	**1,000,000**	**390,000**	**11,000**	-	
Travel Blank	7-Oct-10	<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	
Travel Blank	22-Jun-10	<0.2	<0.2	<0.2	<0.4	<100	<100	<100	<100	
Table 3 [2]		(430) 44	(18,000) 18,000	(2,300) 2,300	(4,200) 4,200	(750) 750	(150) 150	(500) 500	(500) 500	-
Table 9 [3]		44	14,000	1,800	3,300	420	150	500	500	-

Notes:
"-" = No Data

1. All concentrations in micrograms per litre (µg/L).
2. MOE 2011 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property) Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition ( ) - Criterion value in brackets applies to medium and fine textured soils.
3. MOE 2011 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property) Table 9 - Non-Potable Groundwater
4. Due to the high concentration of target analytes, the sample required dilution. The reporting limits were adjusted accordingly.

BOLD = Parameter exceeds MOE Table 3 Criteria
BOLD = Parameter exceeds MOE Table 9 Criteria

TABLE 4
EAST END GENERAL GROUNDWATER FIELD CHEMISTRY
CN HORNEPAYNE YARD, HORNEPAYNE, ONTARIO

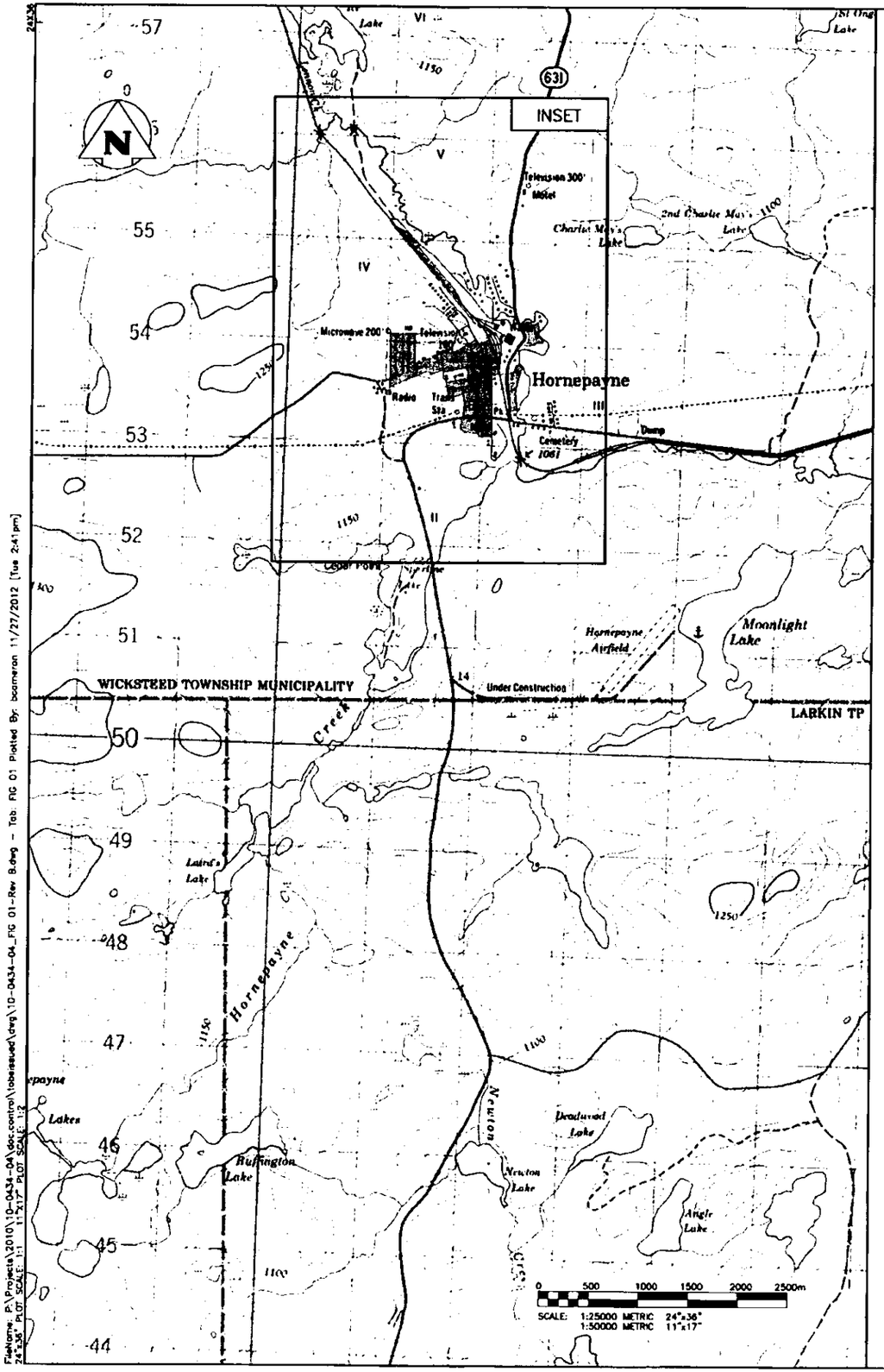
Well No.	Date	pH (units)	E.C. (µS/cm)	D.O. (mg/L)	Temp. (°C)	O.R.P. (mV)	Colour	Turbidity	Sheen	Odour	Comments
EAST END											
MW-20	7-Oct-10	6.88	827.0	2.93	15.8	-84	yellow	turbid	none	h/c odour	
	22-Jun-10	6.86	569.0	4.91	9.4	-76	black	turbid	none	h/c odour	
MW-21	7-Oct-10	7.29	590.0	1.51	16.7	under range	clear	clear	h/c sheen	h/c odour	
MW-24	7-Oct-10	7.45	690.0	4.63	15.7	-20	clear	clear	none	none	
MW-40	7-Oct-10	7.09	914.0	2.58	15.1	-45	white	turbid	none	none	
	22-Jun-10	7.07	504.0	7.49	10.6	115	beige	slightly turbid	none	h/c odour	
MW-43	7-Oct-10	7.21	807.0	2.15	14.0	-76	beige	turbid	h/c sheen	h/c odour	
	22-Jun-10	7.08	430.0	3.22	8.6	-51	beige	turbid	none	none	
MW-46	7-Oct-10	7.23	901.0	3.39	14.9	-77	beige	turbid	none	none	
	22-Jun-10	6.92	561.0	7.48	12.5	-25	grey	turbid	none	none	
MW-49	7-Oct-10	6.87	984.0	2.36	15.7	14	yellow	clear	h/c sheen	h/c odour	
MW-51	7-Oct-10	6.94	1,113.0	1.40	15.6	-28	light grey	turbid	h/c sheen	h/c odour	
MW-52	7-Oct-10	6.95	929.0	1.72	14.6	-74	beigr	turbid	none	h/c odour	
	22-Jun-10	6.96	258.0	6.22	9.9	-93	clear	slightly turbid	none	h/c odour	
MW-101	7-Oct-10	7.02	1,203.0	0.93	15.8	-88	clear	clear	h/c sheen	h/c odour	
MW-102	7-Oct-10	7.15	1,085.0	1.65	13.7	-45	dark grey	turbid	h/c sheen	h/c odour	
MW-103	7-Oct-10	6.91	1,046.0	1.65	15.6	-42	clear	slightly turbid	none	none	

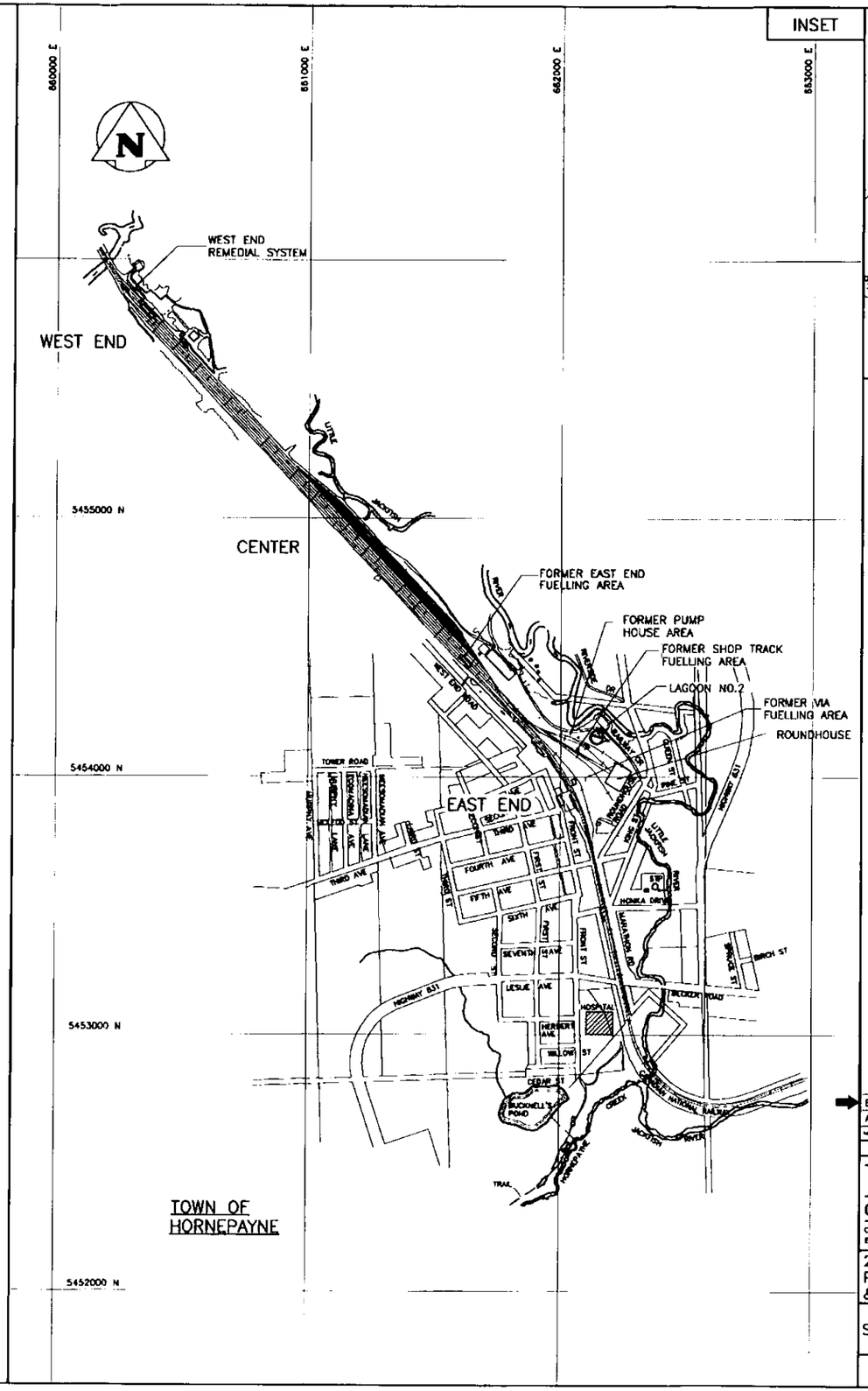
TABLE 4
EAST END GENERAL GROUNDWATER FIELD CHEMISTRY
CN HORNEPAYNE YARD, HORNEPAYNE, ONTARIO

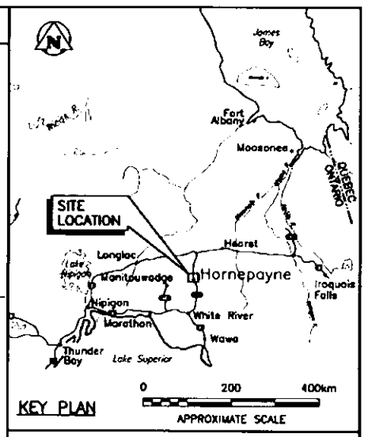
Well No.	Date	pH (units)	E.C. (µS/cm)	D.O. (mg/L)	Temp. (°C)	O.R.P. (mV)	Colour	Turbidity	Sheen	Odour	Comments
EAST END											
MW-104	7-Oct-10	6.81	994.0	2.71	16.2	-32	yellow	turbid	h/c sheen	h/c odour	
MW-106	7-Oct-10	6.84	945.0	1.39	14.7	-64	clear	turbid	h/c sheen	h/c odour	
MW-107	7-Oct-10	6.91	900.0	2.74	14.9	-49	light grey	turbid	h/c sheen	h/c odour	
MW-108	7-Oct-10	6.53	1,575.0	1.98	15.1	-31	grey	turbid	h/c sheen	h/c odour	
MW-109	7-Oct-10	6.88	1,073.0	1.86	13.9	-65	clear	clear	h/c sheen	h/c odour	
MW-114	7-Oct-10	7.22	990.0	2.60	15.4	-81	dark grey	turbid	h/c sheen	h/c odour	
MW-115	7-Oct-10	6.74	1,926.0	3.48	17.2	40	yellow	turbid	h/c sheen	h/c odour	
MW-126	7-Oct-10	6.86	874.0	2.33	16.6	-54	clear	clear	h/c sheen	h/c odour	
OW 3-2	7-Oct-10	6.83	993.0	2.26	16.9	-53	clear	clear	h/c sheen	h/c odour	
OW 5-1	7-Oct-10	7.21	837.0	2.11	13.4	-82	yellow	turbid	none	none	
	22-Jun-10	7.26	459.0	3.66	9.9	-46	beige	slightly turbid	h/c sheen	h/c odour	
OW 5-2	7-Oct-10	6.82	1,030.0	1.57	15.5	61	clear	clear	none	none	
	22-Jun-10	7.52	617.0	3.09	11.1	-118	beige	slightly turbid	h/c sheen	h/c odour	
OW 5-3	7-Oct-10	7.14	836.0	1.51	14.4	-52	dark grey	turbid	h/c sheen	h/c odour	
	22-Jun-10	6.97	629.0	5.52	9.8	-73	beige	turbid	none	none	

Notes:
"-" = No Data
D.O. = Dissolved Oxygen
E.C. = Electrical Conductivity
O.R.P. = Oxidation Reduction Potential

FIGURES







NOTES:

1. LOCATION OF INSET-PLAN IN RELATION TO COORDIATES IS APPROXIMATE

REFERENCE:

BASE MAP: 1:50,000 NTS MAP 42 F/2 (HORNEPAYNE), NAD 1927, EDITION 2, PUBLISHED 1979

NO	YY/MM/DD	DESCRIPTION	BY
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KGS GROUP CONSULTING ENGINEERS

CANADIAN NATIONAL

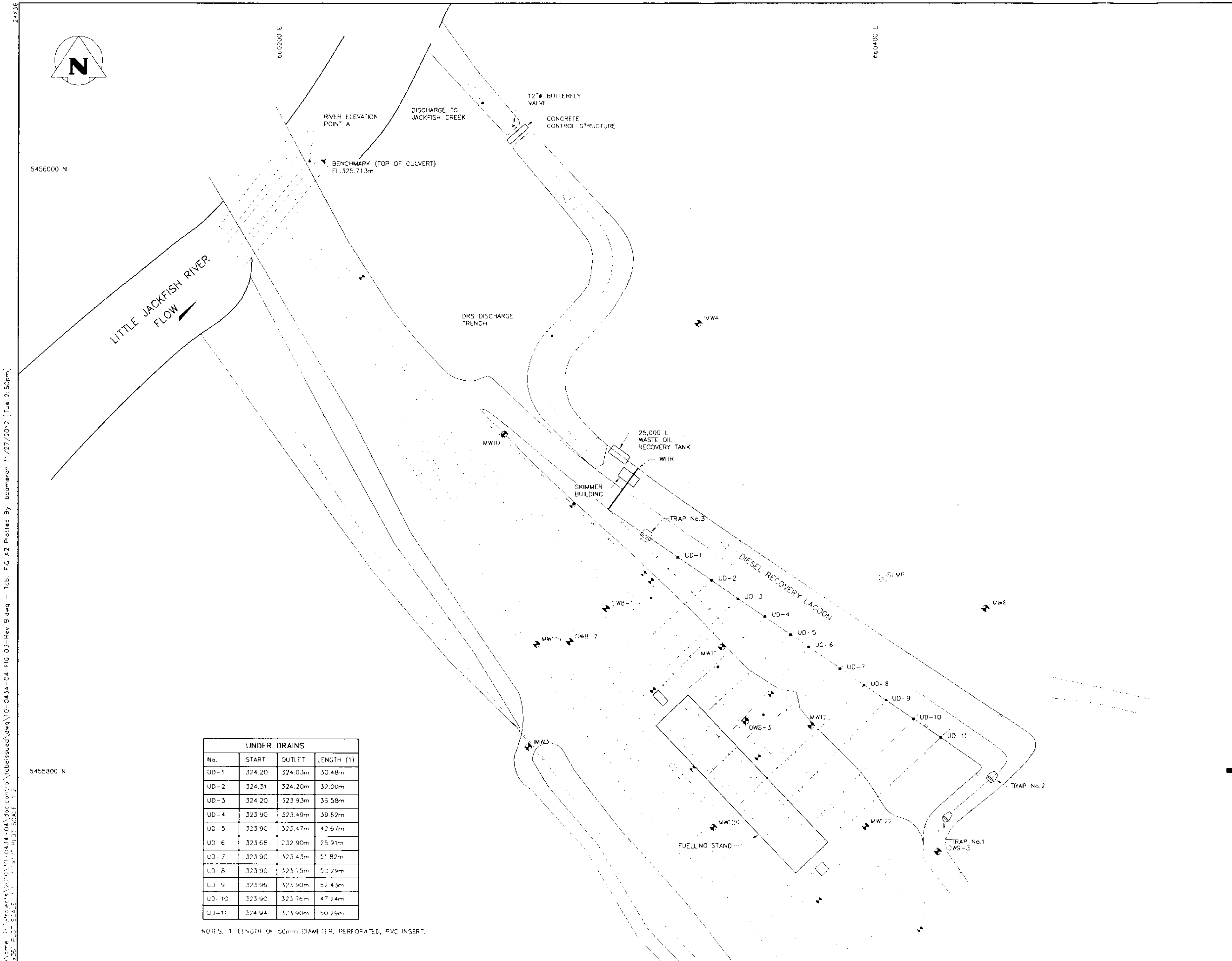
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100586, 100587 & 100591 – HORNEPAYNE YARD, ON

SITE LOCATION PLAN

NOVEMBER 2012 | FIGURE 01 | REV B

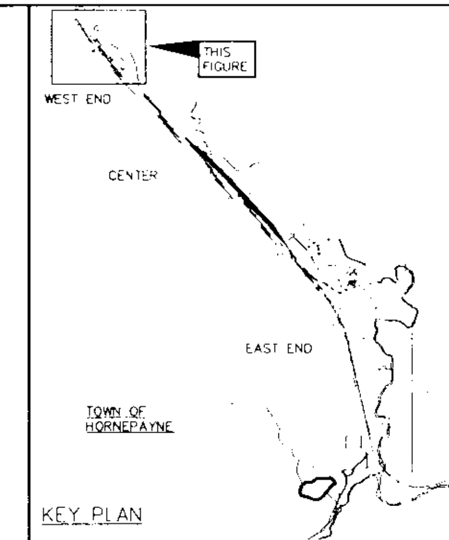
FileName: P:\Projects\2010\10-0434-04\doc control\Issued\dwg\10-0434-04_FIG 01-Rev B.dwg – Tab: FIG 01 Plotted By: bcameron 11/27/2012 [Tue 2:41 pm]
24"x36" PLOT SCALE: 1:1 11"x17" PLOT SCALE: 1:2

001240



UNDER DRAINS			
No.	START	OUTLET	LENGTH (1)
UD-1	324.20	324.03m	30.48m
UD-2	324.31	324.20m	32.00m
UD-3	324.20	323.93m	36.58m
UD-4	323.90	323.49m	39.62m
UD-5	323.90	323.47m	42.67m
UD-6	323.68	232.90m	25.91m
UD-7	323.90	323.43m	51.82m
UD-8	323.90	323.75m	50.29m
UD-9	323.96	323.90m	57.43m
UD-10	323.90	323.76m	47.24m
UD-11	324.94	323.90m	50.29m

NOTES: 1. LENGTH OF 50mm DIAMETER, PERFORATED, PVC INSERT.



KEY PLAN

LEGEND:

- BERM
- CENTERLINE OF DITCH
- FENCE
- BURIED ELECTRICAL CABLE
- BENCHMARK
- MW117 MONITORING WELL (INSTALLED BY KGS) (MW117-MW133, MW140-MW147)
- MW20 MONITORING WELL (INSTALLED BY OTHERS) (ALL OTHER WELLS)
- RWB-1 RECOVERY WELL
- SUMP SUMP WELL
- RAILROAD TRACKS
- UNDERGROUND DRAIN
- DESTROYED

NOTES:

1. SITE PLAN BASED ON AUTOCAD FILE PROVIDED BY CN.

0 12 24 36 48 60m

SCALE: 1:600 METRIC 24"x36"
1:1200 METRIC 11"x17"

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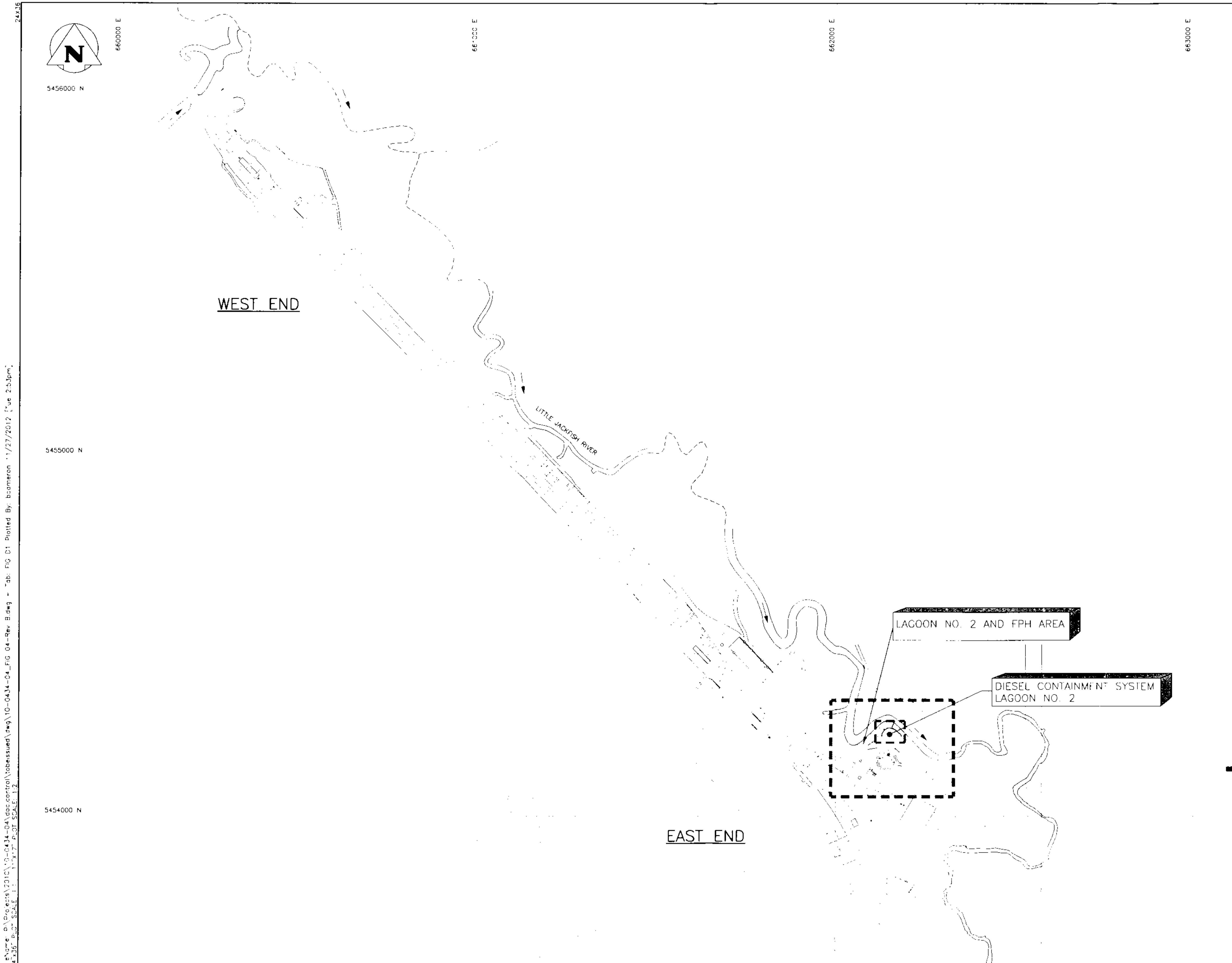
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100587
WEST END, HORNEPAYNE YARD, ON

2010 WEST END SITE PLAN AND DIESEL RECOVERY SYSTEM COMPONENTS

NOVEMBER 2012 | FIGURE 03 | B

001241



LEGEND

PLAN LIMITS

DIESEL RECOVERY SYSTEM DETAIL PLANS

0 100 200 300 400 500m

SCALE: 1:5000 METRIC 24"x36"
1:10000 METRIC 11"x17"

B	12/11/28	ISSUED WITH FINAL REPORT	TG
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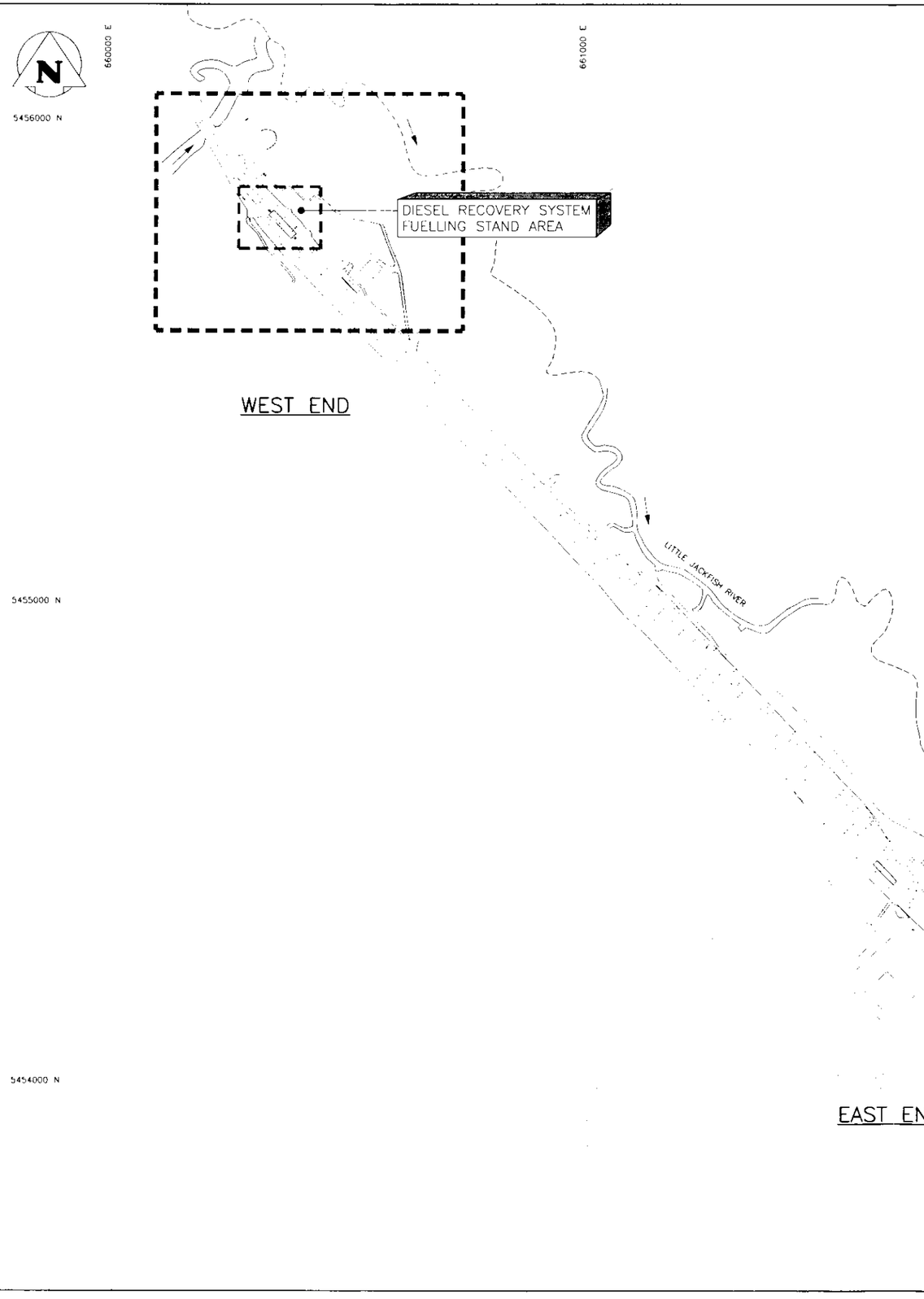
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100591
HORNEPAYNE YARD, ON

LAGOON No.2 SITE PLAN

NOVEMBER 2012 | FIGURE 04 | B

001242



LEGEND

- PLAN LIMITS
- DIESEL RECOVERY SYSTEM DETAIL PLANS
- RIVER FLOW DIRECTION

0 100 200 300 400 500m

SCALE: 1:5000 METRIC 24"x36"
1:10000 METRIC 11"x17"

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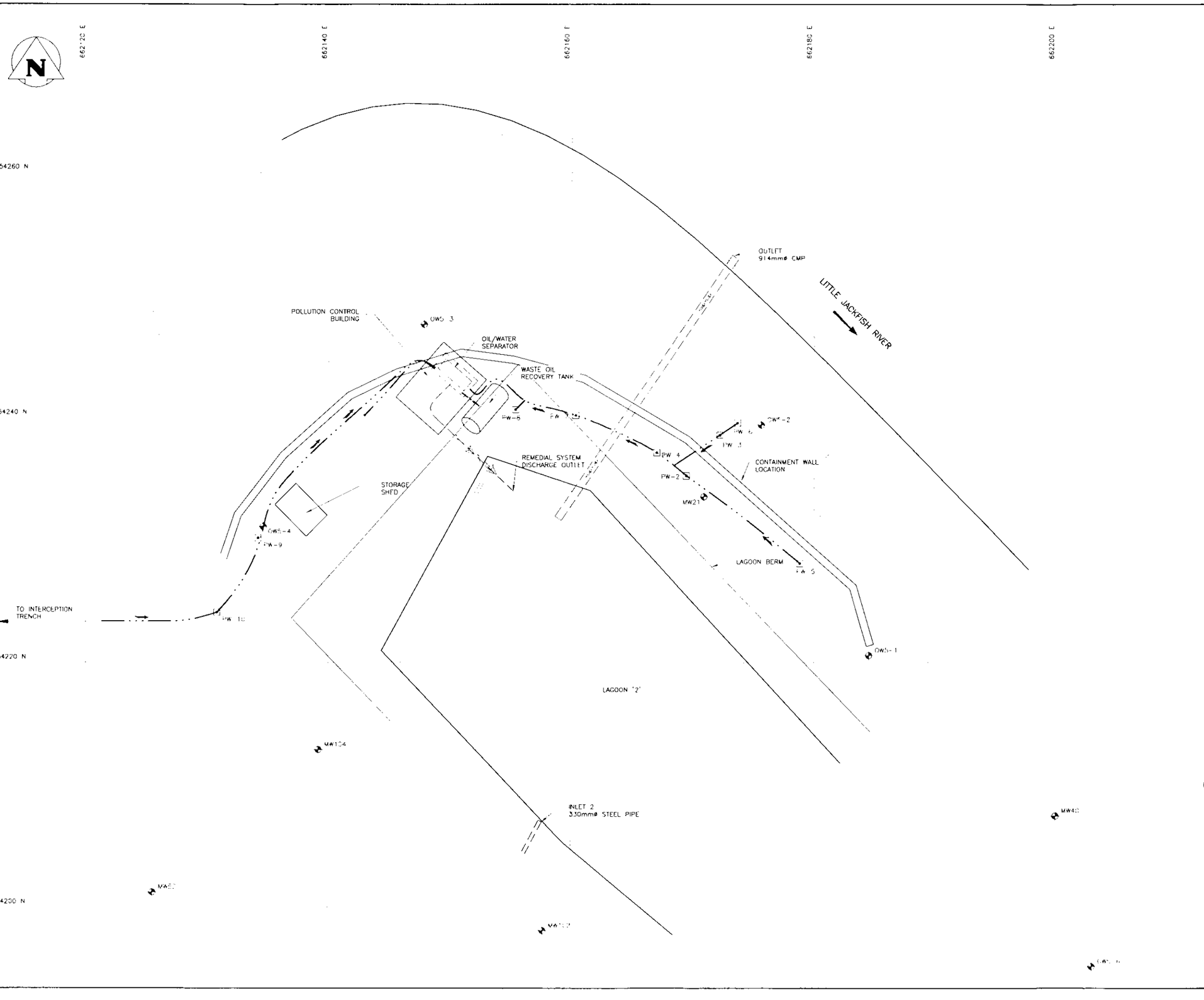
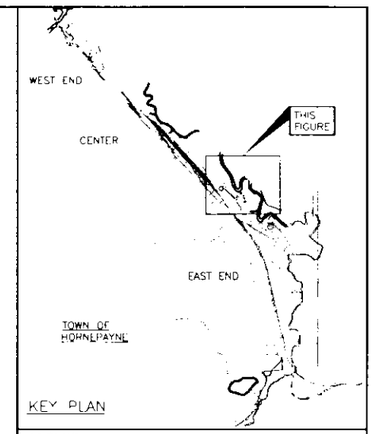
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100587
WEST END, HORNEPAYNE YARD, ON

WEST END YARD PLAN

NOVEMBER 2012 | FIGURE 02 | B





LEGEND

- APPROXIMATED LIMITS OF TREED AREA
- EDGE OF WATER
- CULVERT
- DISCHARGE LINE
- MW117 — MONITORING WELL (INSTALLED BY KGS) (MW117–MW133, MW140–MW147)
- MW70 — MONITORING WELL (INSTALLED BY OTHERS) (ALL OTHER WELLS)
- PW-1 — PUMPING WELL
- [ ] — CATCHBASIN
- TOTAL FLUIDS FLOW DIRECTION
- LPH FLOW DIRECTION
- WATER FLOW DIRECTION
- SURFACE WATER FLOW DIRECTION
- DESTROYED

NOTES:

1. DRAWING BASED ON BIOGENIE ENVIRONMENTAL CN AUTO CAD FILE.

0 3 6 9 12 15m

SCALE: 1:150 METRIC 24"x36"
1:300 METRIC 11"x17"

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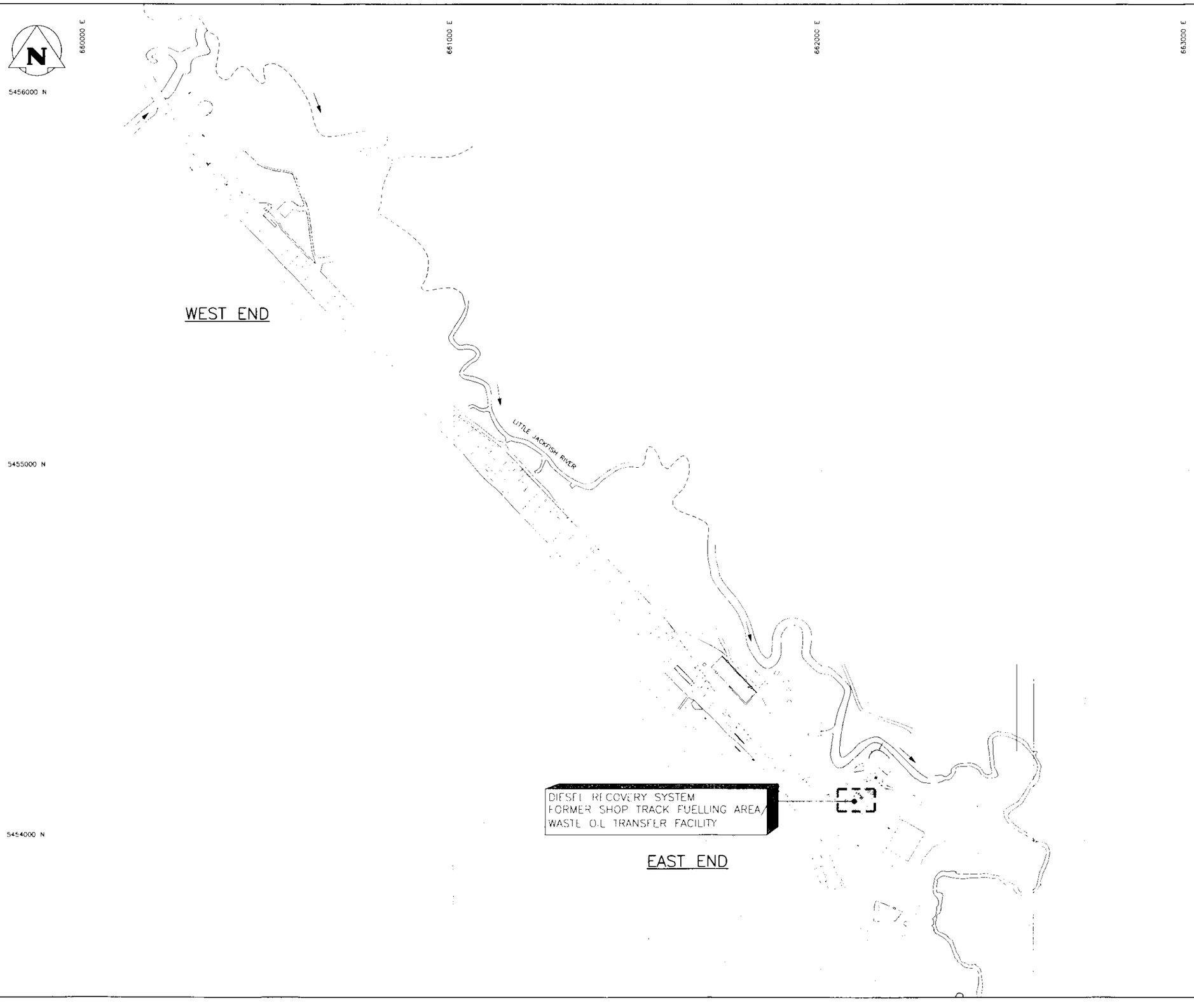
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100591
HORNEPAYNE YARD, ON

LAGOON NO.2
DIESEL CONTAINMENT SYSTEM
COMPONENTS

NOVEMBER 2012 | FIGURE 05 | B



LEGEND

DIESEL RECOVERY SYSTEM DETAIL PLANS

0 100 200 300 400 500m

SCALE: 1:5000 METRIC 24"x36"
1:10000 METRIC 11"x17"

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		DESCRIPTION	

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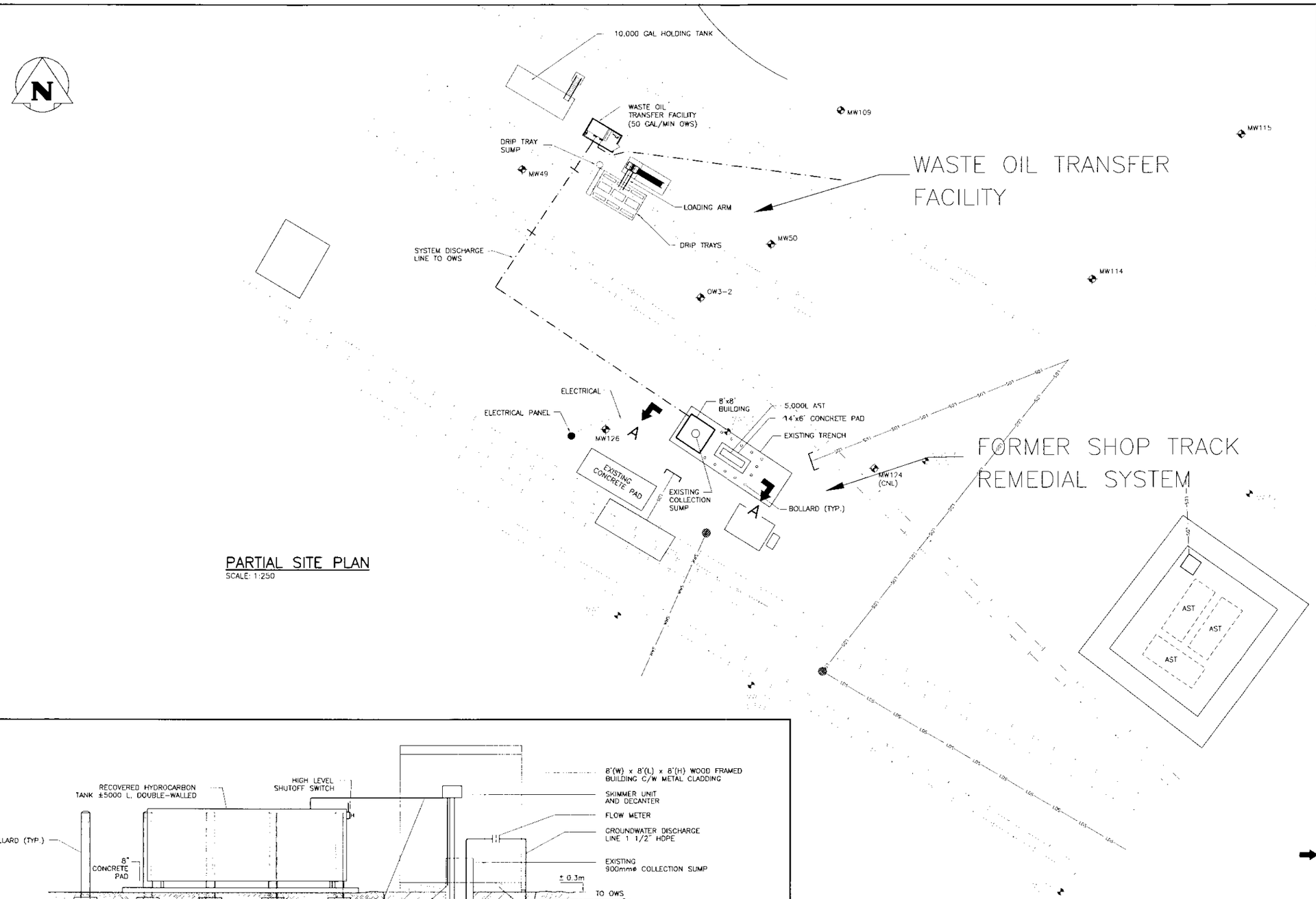
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100591
HORNEPAYNE YARD, ON

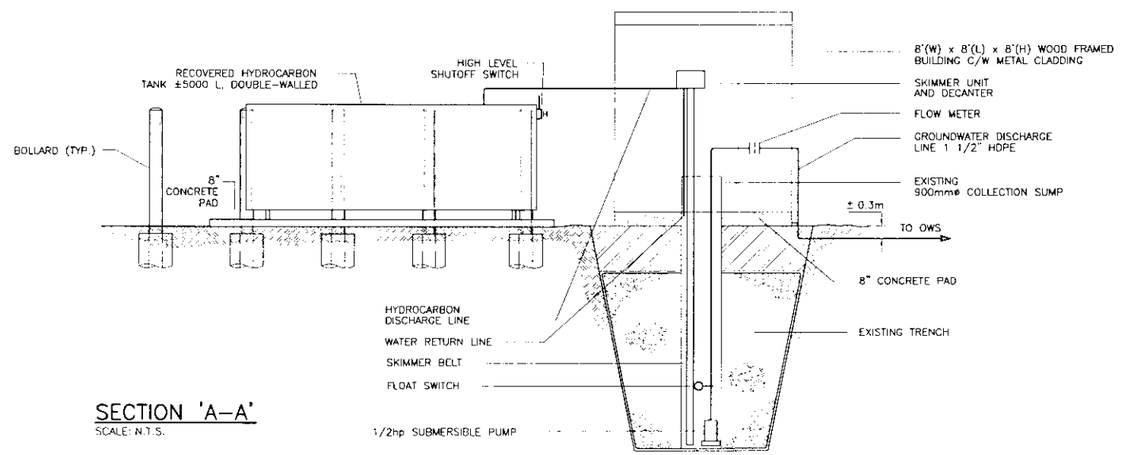
FORMER SHOP TRACK FUELLING AREA SITE PLAN

NOVEMBER 2012 | FIGURE 06 | B

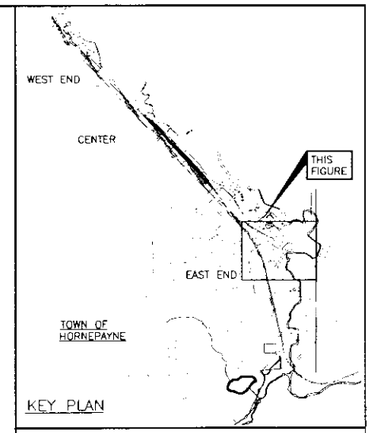
001245



PARTIAL SITE PLAN
SCALE: 1:250



SECTION 'A-A'
SCALE: N.T.S.



KEY PLAN

LEGEND

- RAILROAD TRACK
- SANITARY SEWER
- STORM SEWER
- DISCHARGE LINE
- MW117 — MONITORING WELL (INSTALLED BY KGS) (MW117–MW133, MW140–MW147)
- MW20 — MONITORING WELL (INSTALLED BY OTHERS) (ALL OTHER WELLS)
- (CNL) — COULD NOT LOCATE
- DESTROYED
- MANHOLES

0 5 10 15 20 25m

SCALE: 1:250 METRIC 24"x36"
1:500 METRIC 11"x17"

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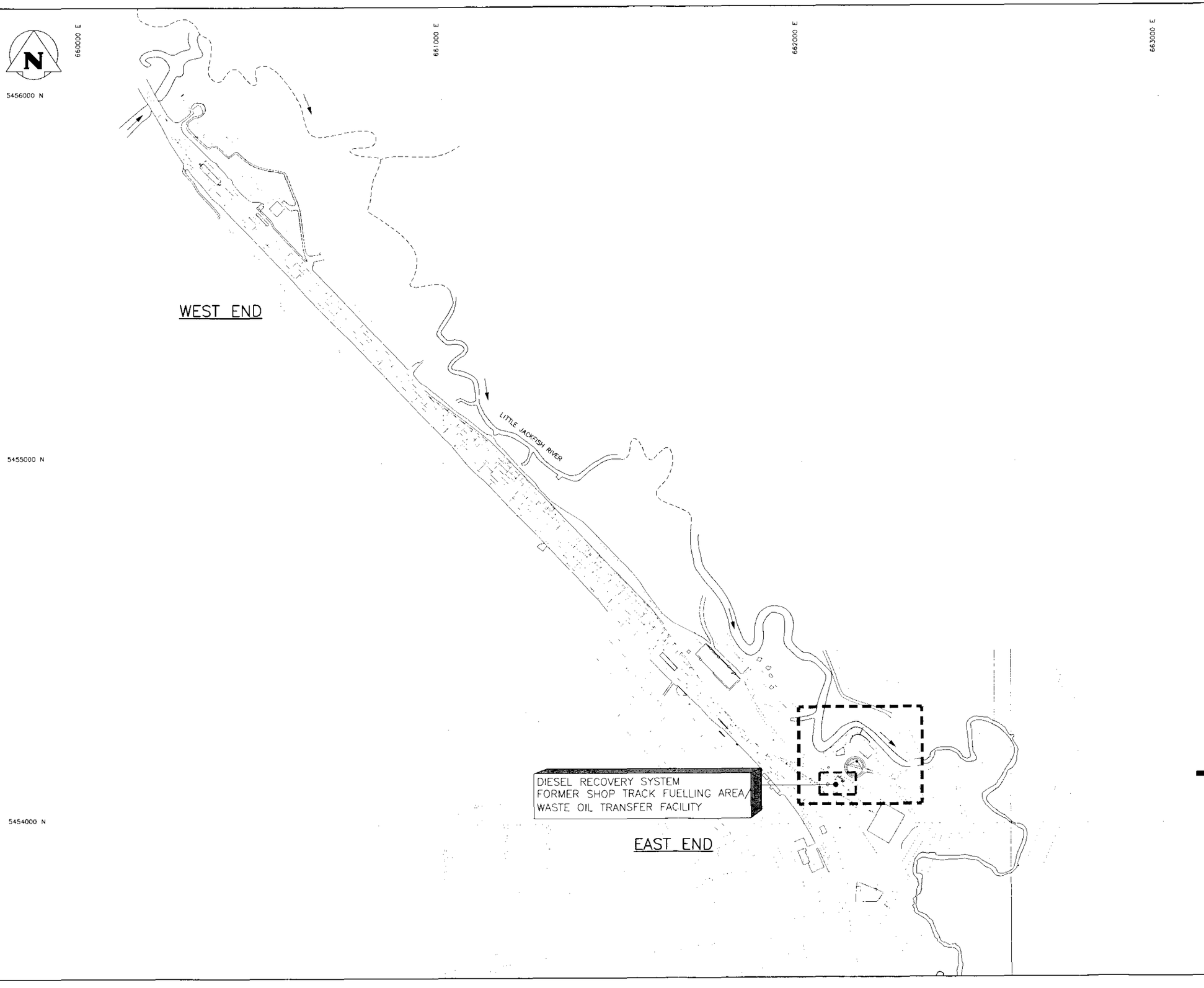
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100591
HORNEPAYNE YARD, ON

FORMER SHOP TRACK FUELLING AREA SYSTEM COMPONENTS

NOVEMBER 2012 | FIGURE 07 | REV. B



LEGEND

- PLAN LIMITS
- DIESEL RECOVERY SYSTEM DETAIL PLANS

0 100 200 300 400 500m

SCALE: 1:5000 METRIC 24"x36"
1:10000 METRIC 11"x17"

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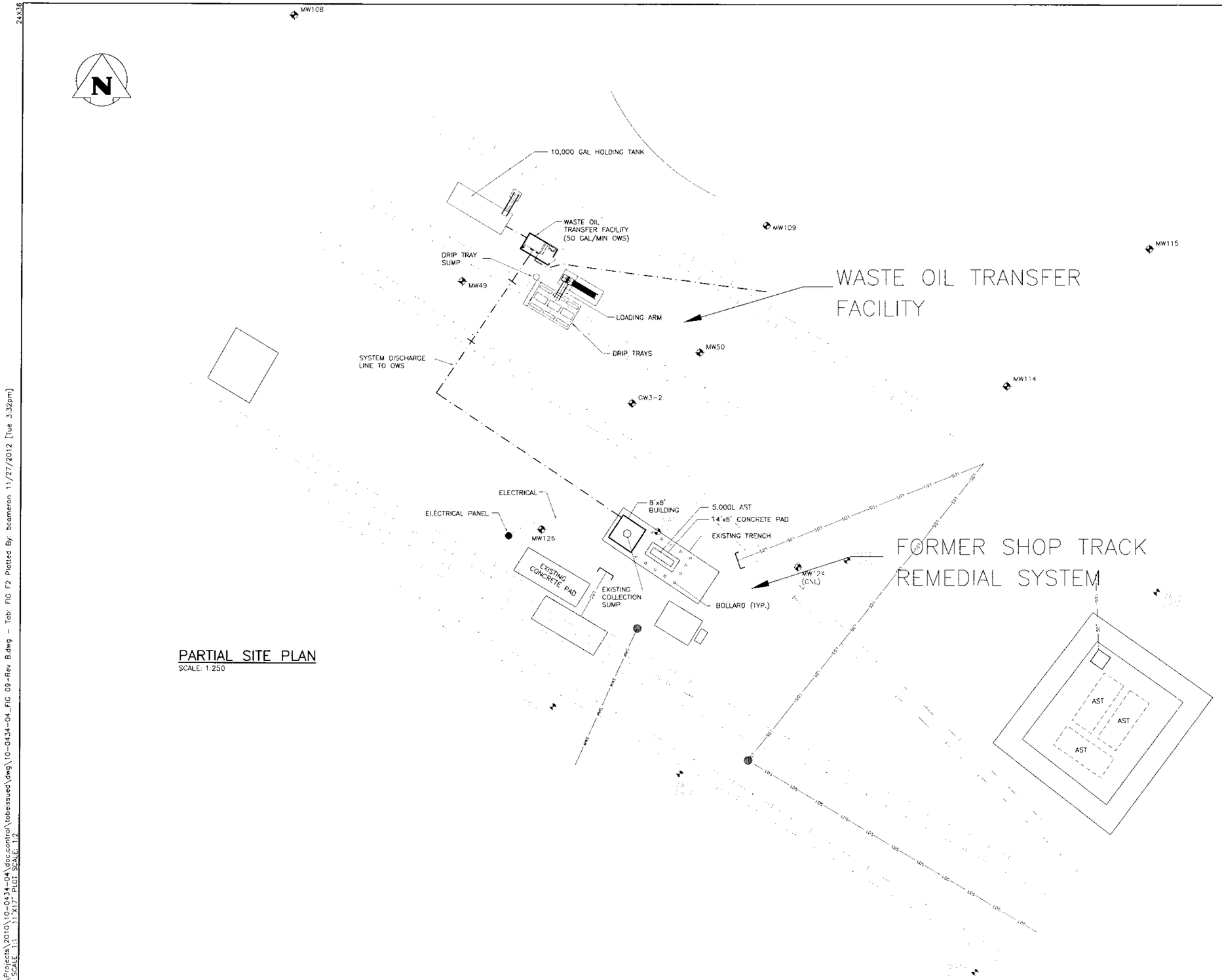
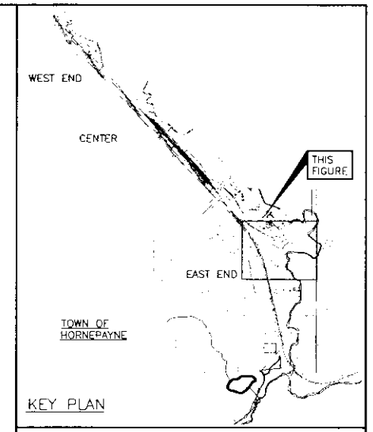
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100591
HORNEPAYNE YARD, ON

WASTE OIL TRANSFER FACILITY
SITE PLAN

NOVEMBER 2012 | FIGURE 08 | REV B



PARTIAL SITE PLAN
SCALE: 1:250



KEY PLAN

LEGEND

- RAILROAD TRACK
- SANITARY SEWER
- STORM SEWER
- DISCHARGE LINE
- MW117 — MONITORING WELL (INSTALLED BY KGS) (MW117–MW133, MW140–MW147)
- MW20 — MONITORING WELL (INSTALLED BY OTHERS) (ALL OTHER WELLS)
- (DNL) — COULD NOT LOCATE
- DESTROYED
- MANHOLES

0 5 10 15 20 25m

SCALE: 1:250 METRIC 24"x36"
1:500 METRIC 11"x17"

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CANADIAN NATIONAL

2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100591
HORNEPAYNE YARD, ON

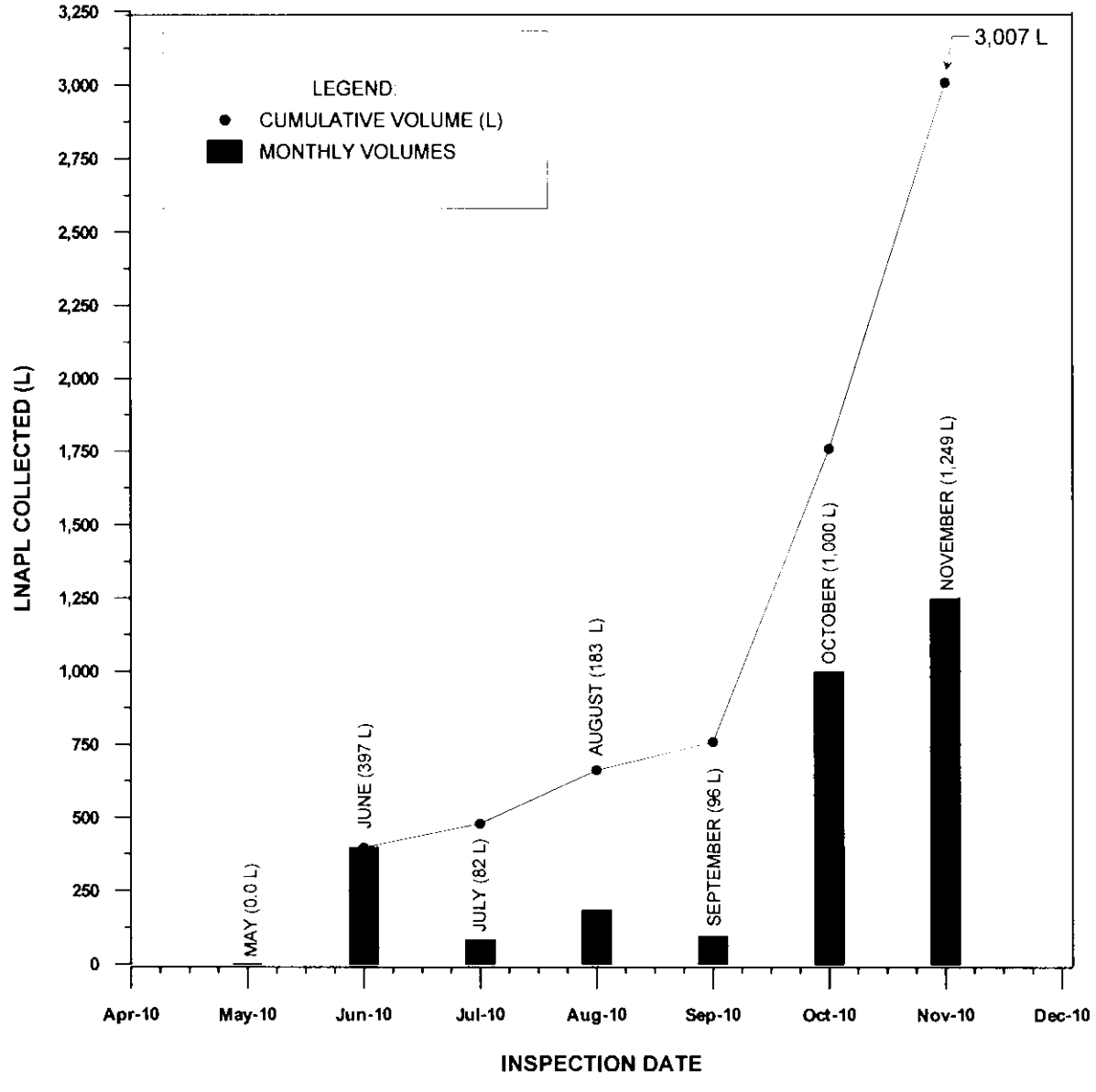
WASTE OIL TRANSFER FACILITY
SYSTEM COMPONENTS

NOVEMBER 2012 | FIGURE 09 | REV. B

24"x36"

FileName: P:\Projects\2010\10-0434-04\doc control\tobeissued\dwg\10-0434-04_FIG 09-Rev B.dwg — Tab: FIG F2 Plotted By: bcameron 11/27/2012 [Tue 3:32pm]
24"x36" PLOT SCALE: 1:1; 11"X17" PLOT SCALE: 1:2

001248



NOTES: 3,007 L OF LNAPL WAS COLLECTED IN 2010 AT LAGOON No. 5

April
- Skimmer belt was installed on April 29 and the system was started.
- Skimmer unit operated within normal parameters.

May
-Skimmer unit operated within normal parameters
- 0 L of LNAPL collected

June
- Skimmer unit operated within normal parameters.
- 397 L of LNAPL collected.

July
- Skimmer unit operated within normal parameters.
- Minor blockage within the skimmer unit discharge line was removed.
- 82 L of LNAPL collected.

August
- Skimmer unit experienced automatic shutdown due to high level in the waste oil tank.
- Enviro-West removed the contents of the waste oil tank and an additional 500 L from Lagoon No. 5 on August 18.
- Skimmer unit was started and operated within normal parameters.
- 183 L of LNAPL was collected.

September
- Skimmer unit operated within normal parameters.
- 96 L of LNPAL collected.

October
- Enviro-West removed 1,000L of LNAPL from Lagoon No. 5 on October 6.
- Skimmer unit operated within normal parameters.
- 1,000 L of LNAPL was collected.

November
- Enviro-West removed 1,200L of LNAPL from Lagoon No. 5 on November 10.
- Skimmer unit shutdown and winterized.
- 1,249 L of LNAPL collected.

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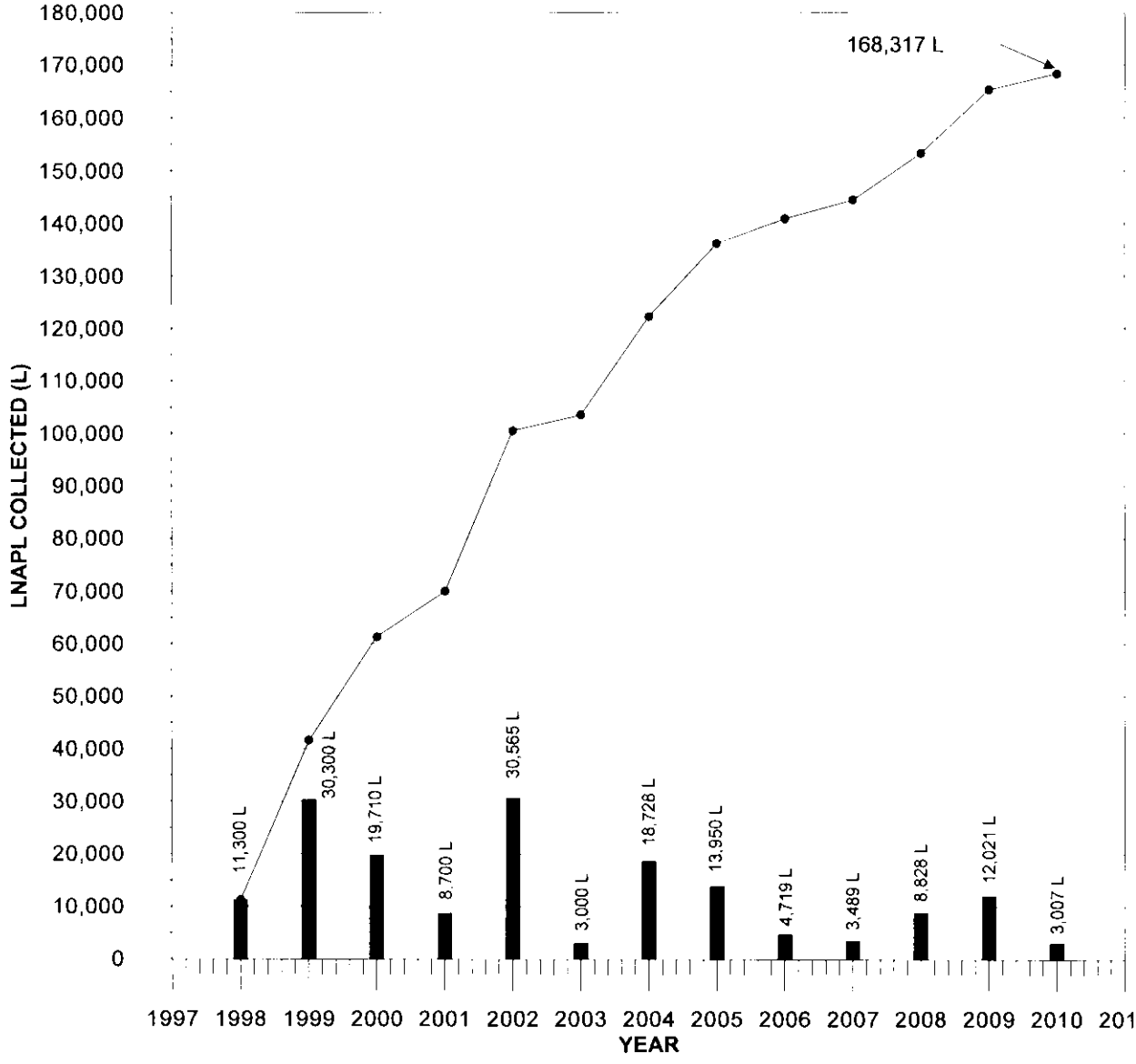
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100587, 100586
AND 100591 HORNEPAYNE YARD, ON.

2010 LNAPL COLLECTION DATA
WEST END

NOV 2012 | FIGURE 10 | REV B

P:\Projects\2010\10-0434-04\gen\docs\ 2010 grapher\FIG 10



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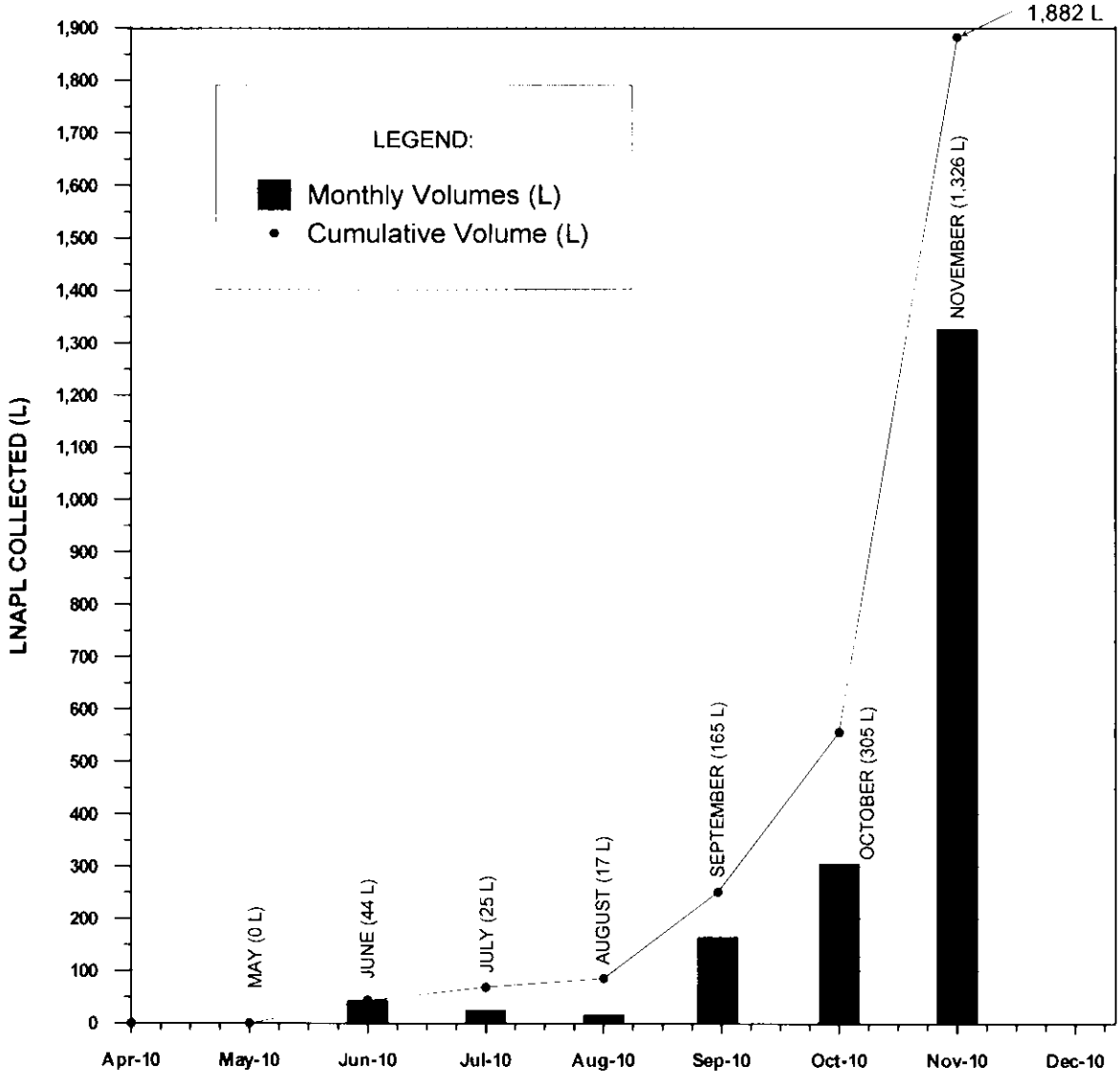
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100587, 100586
AND 100591 HORNEPAYNE YARD, ON.

2010 HISTORICAL LNAPL COLLECTION DATA - WEST END

NOV 2012 | FIGURE 11 | REV B

P:\Projects\2013\13-0434-04\gen\doc\2010 grapher\FIG 11



NOTES:
1,882 L of LNAPL was collected in 2010 at Lagoon No. 2

April 2010

- System started with three groundwater pumps
- System operated within normal parameters

May 2010

- Fourth groundwater pump installed
- System operated within normal parameters
- 0 L of LNAPL collected

June 2010

- Enviro-West skimmed LNAPL from Lagoon No.2 and cleaned the OWS
- System operated within normal parameters
- 44 L of LNAPL collected

July 2010

- System shutdown for maintenance.
- Maintenance completed and system activated with four groundwater pumps.
- System operated within normal parameters.
- 25 L of LNAPL collected.

August 2010

- Enviro-West removed 500 L of fluids from the OWS and Lagoon No.2
- System operated within normal parameters.
- 17 L of LNAPL collected
- System shutdown on August 25 due to high level alarm.
- Local personel emptied the transfer tank and re-started the system on August 27.

September 2010

- System operated within normal parameters.
- 165 L of LNAPL collected.

October 2010

- System shutdown for maintenance.
- Enviro-West removed 300 L of LNAPL from the OWS and Lagoon No.2
- System activated with four grooundwater pumps.
- System operated within normal parameters.
- 305 L of LNAPL collected.

November 2010

- Enviro-West removed 1,326 L of LNAPL from the OWS and Lagoon No. 2.
- System shutdown and winterized.
- 1,326 L of LNAPL collected.

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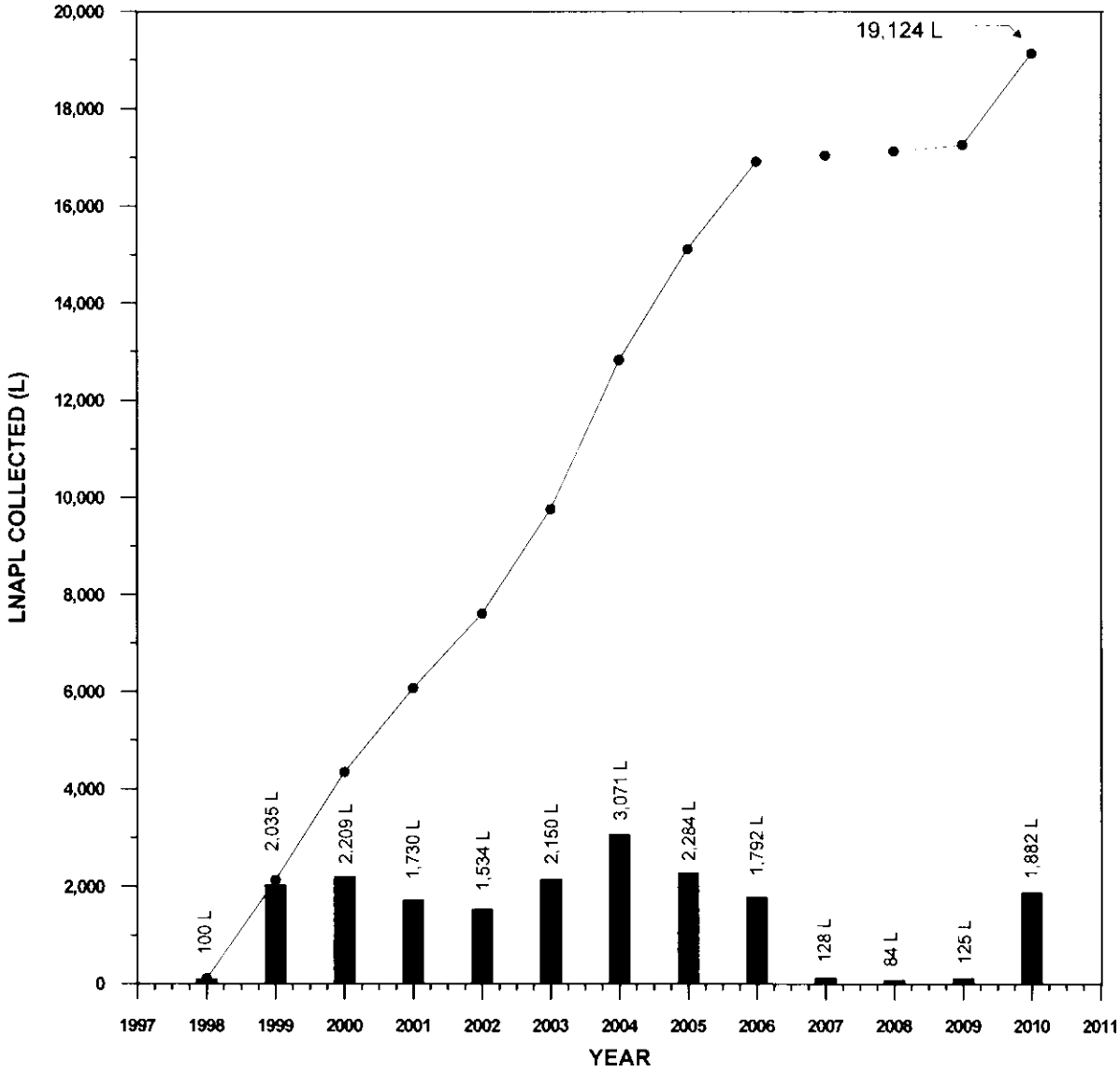
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100587, 100586
AND 100591 HORNEPAYNE YARD, ON.

2010 LAGOON No.2 LNAPL
COLLECTION DATA

NOV 2012	FIGURE 12	REV B

P:\Projects\2010\10-0434-04\gen\doc\2010 grapher\FIG 12



LEGEND:
- CUMULATIVE VOLUME (L)
- YEARLY VOLUMES

NO	DATE	DESCRIPTION	BY
9	12/11/16	ISSUED WITH MOE FINAL REPORT	TG

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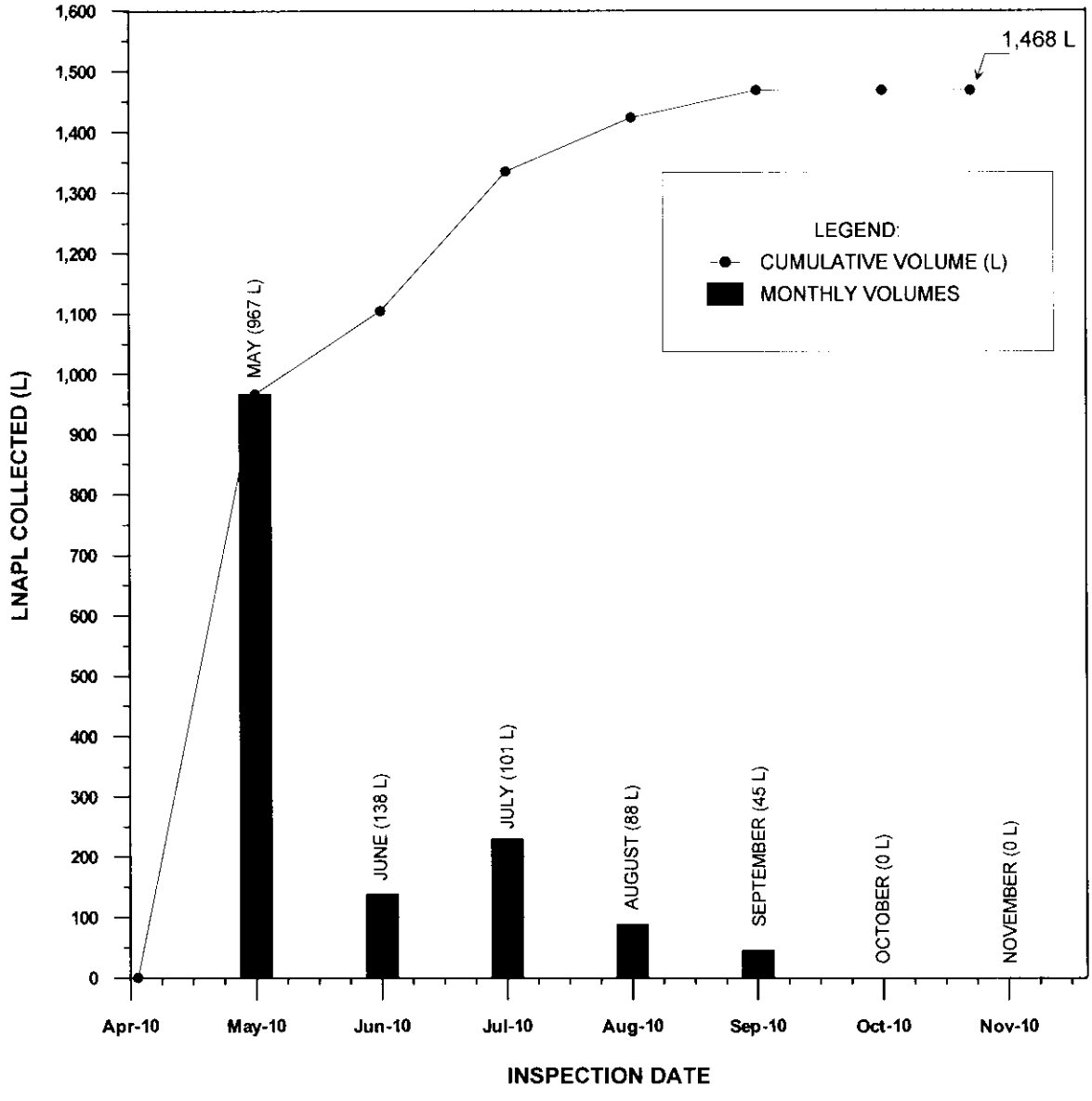
HISTORICAL LNAPL COLLECTION DATA
LAGOON No.2

NOV 2012 | FIGURE 13 | REV B

P:\Projects\2010\10-0404-04\gw\dcc\2010 grapher\FIG 13



NOTES: 1,468 L of LNAPL was manually collected by KGS Group and local CN personnel in 2010 at the Former Shop Track Fuelling Area.

May
- **System not activated due to CN tank car not being placed.**
- **967 L of LNAPL collected by CN forces in 2010**

June
- **System not activated, 0 L of LNAPL collected**
- **138 L of LNAPL placed in waste oil tank.**

July
- **System not activated, 0 L of LNAPL collected**
- **230 L of LNAPL placed in waste oil tank.**

August
- **System not activated, 0 L of LNAPL collected**
- **88 L of LNAPL placed in the waste oil tank.**

September
- **System not activated, 0 L of LNAPL collected.**
- **45L of LNAPL placed in the waste oil tank.**

October
- **System not activated 0 L of LNAPL collected**

November
- **System not activated, 0 L of LNAPL collected**
- **Enviro-West removed 2,000 L of total fluids.**

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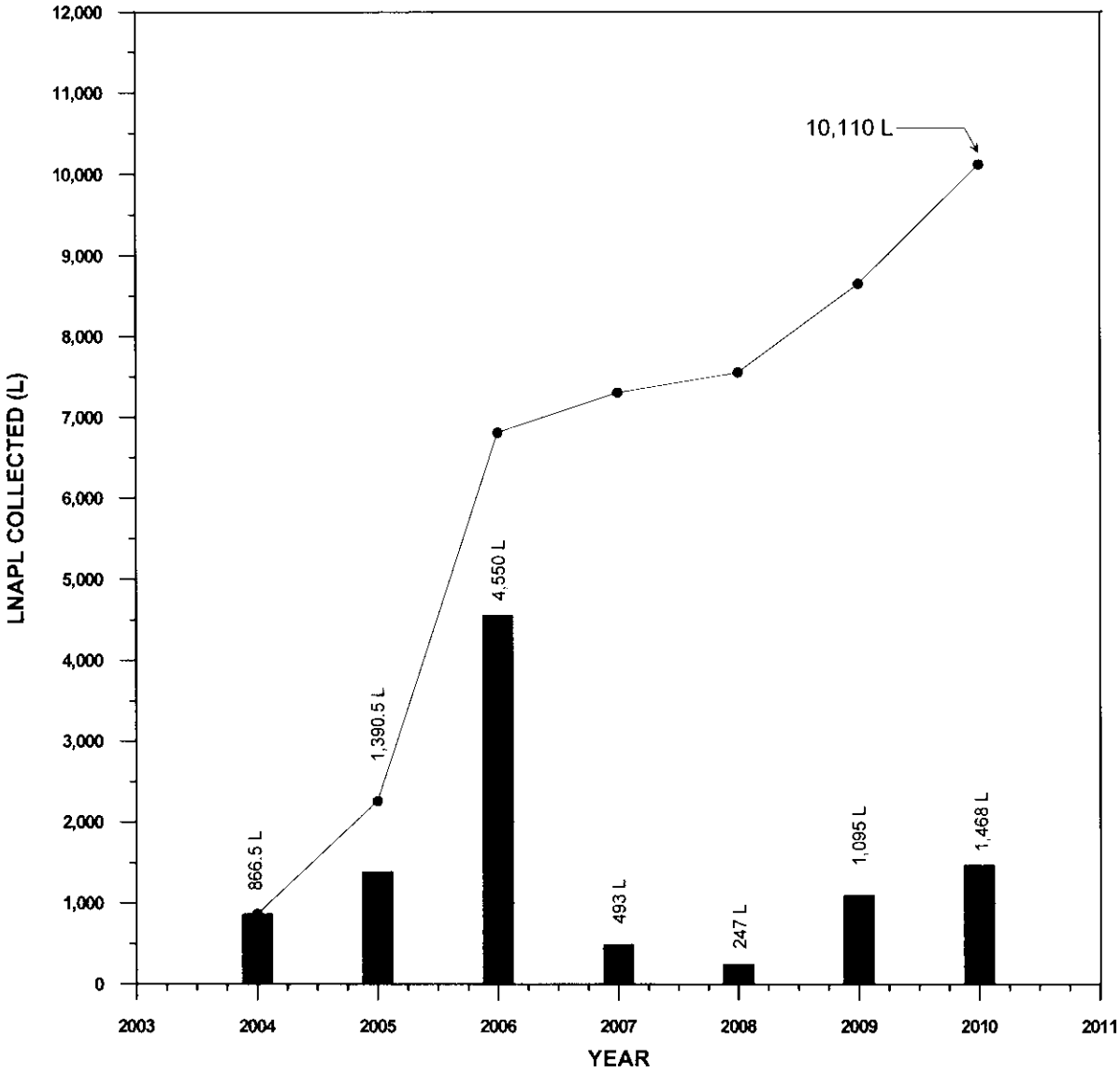
2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100587, 100586
AND 100591 HORNEPAYNE YARD, ON.

2010 FORMER SHOP TRACK FUELLING AREA LNAPL COLLECTION DATA

NOV 2012	FIGURE 14	REV B

P:\Projects\2010\10-0434-04\gen\doc\ 2010 grapher\FIG 14



NO	YY/MM/DD	DESCRIPTION	BY
B	12/11/26	ISSUED WITH MOE FINAL REPORT	TG

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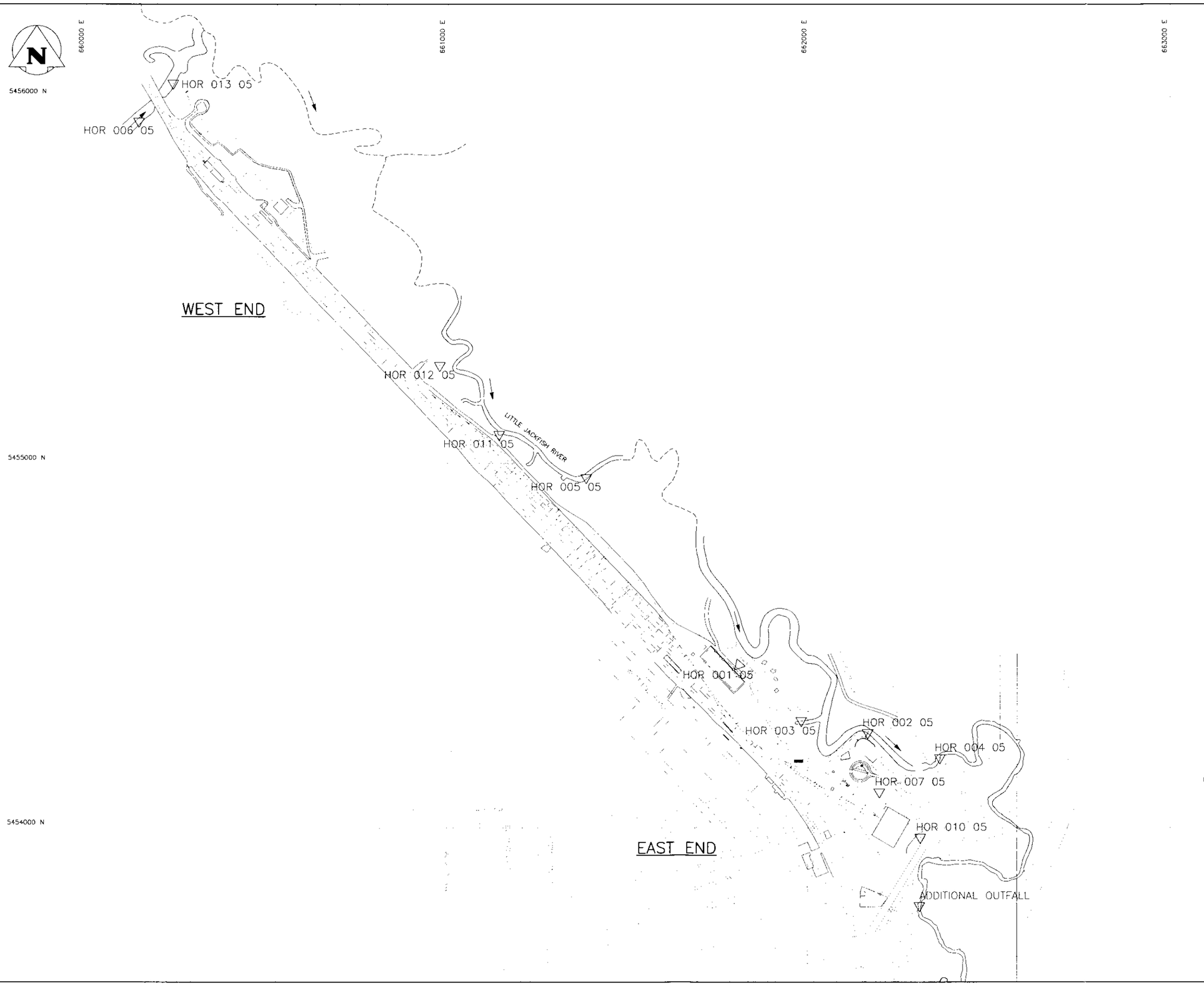
PIN# 1000/ONPR/100587, 100586
AND 100591 HORNEPAYNE YARD, ON.

HISTORICAL LNAPL COLLECTION DATA
FORMER SHOP TRACK FUELLING AREA

NOV 2012	FIGURE 15	REV B

P:\Projects\2010\10-0434-04\gen\doc\2010 grapher\FIG 15



LEGEND

▽ SURFACE WATER SAMPLING LOCATION

HOR 013 05

0 100 200 300 400 500m

SCALE: 1:5000 METRIC 24"x36"
1:10000 METRIC 11"x17"

B	12/11/28	ISSUED WITH FINAL REPORT	TG
A	12/11/16	ISSUED WITH MOE DRAFT REPORT	TG
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2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100587, 100586
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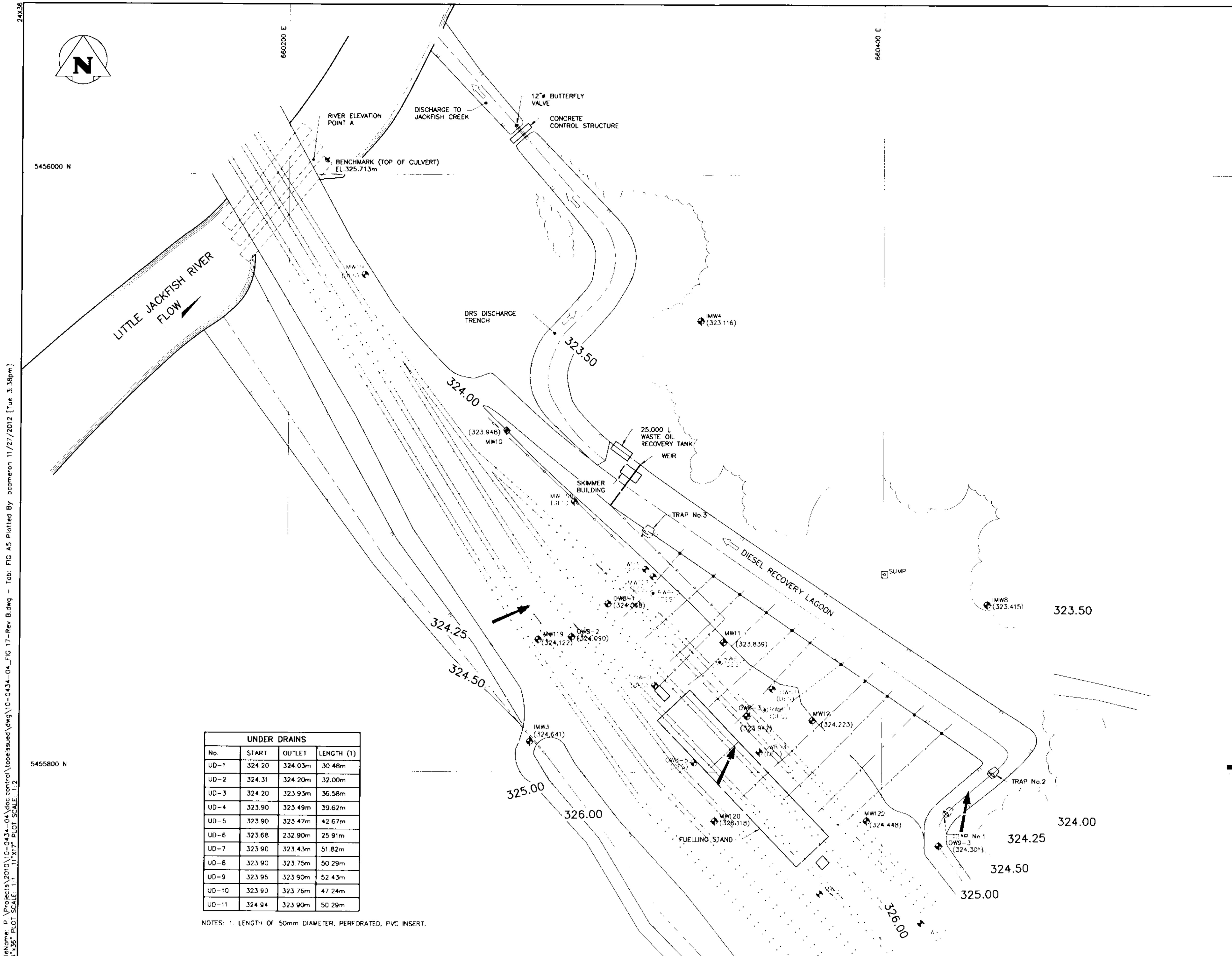
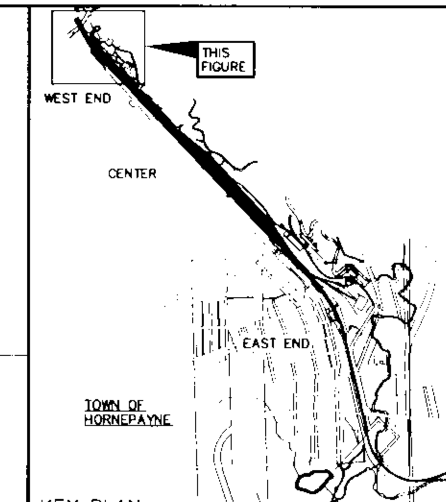
SURFACE WATER SAMPLING LOCATIONS

NOVEMBER 2012 | FIGURE 16 | REV. B



UNDER DRAINS			
No.	START	OUTLET	LENGTH (1)
UD-1	324.20	324.03m	30.48m
UD-2	324.31	324.20m	32.00m
UD-3	324.20	323.93m	36.58m
UD-4	323.90	323.49m	39.62m
UD-5	323.90	323.47m	42.67m
UD-6	323.68	232.90m	25.91m
UD-7	323.90	323.43m	51.82m
UD-8	323.90	323.75m	50.29m
UD-9	323.96	323.90m	52.43m
UD-10	323.90	323.76m	47.24m
UD-11	324.94	323.90m	50.29m

NOTES: 1. LENGTH OF 50mm DIAMETER, PERFORATED, PVC INSERT.



KEY PLAN

LEGEND:

- BERM
- CENTERLINE OF DITCH
- FENCE
- BURIED ELECTRICAL CABLE
- BENCHMARK
- MW117 MONITORING WELL (INSTALLED BY KGS) (MW117-MW133, MW140-MW147)
- MW20 MONITORING WELL (INSTALLED BY OTHERS) (ALL OTHER WELLS)
- RW8-1 RECOVERY WELL
- SUMP SUMP WELL
- RAILROAD TRACKS
- UNDERGROUND DRAIN
- DES DESTROYED
- GEODETIC GROUNDWATER CONTOUR (m)
- GROUNDWATER FLOW DIRECTION
- CNL COULD NOT LOCATE

NOTES:

1. SITE PLAN BASED ON AUTOCAD FILE PROVIDED BY CN.

0 12 24 36 48 60m

SCALE: 1:600 METRIC 24"x36"
1:1200 METRIC 11"x17"

NO	YY/MM/DD	DESCRIPTION	BY
B	12/11/28	ISSUED WITH FINAL REPORT	TG
A	12/11/16	ISSUED WITH MOE DRAFT REPORT	TG

REVISIONS / ISSUE

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CANADIAN NATIONAL

2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100587
WEST END, HORNEPAYNE YARD, ON

GROUNDWATER SURFACE CONTOURS
WEST END JUNE 2010

NOVEMBER 2012 | FIGURE 17 | REV. B

24X36

660200 E

660400 E

5456000 N

5455800 N

RIVER ELEVATION POINT A

DISCHARGE TO JACKFISH CREEK

12"ø BUTTERFLY VALVE

CONCRETE CONTROL STRUCTURE

BENCHMARK (TOP OF CULVERT) EL.325.713m

LITTLE JACKFISH RIVER FLOW

MW19 (DES)

DRS DISCHARGE TRENCH

MW4 (323.392)

324.00

(324.197) MW10

25,000 L WASTE OIL RECOVERY TANK

WEIR

SKIMMER BUILDING

MW1 (DES)

TRAP No.3

324.25

DIESEL RECOVERY LAGOON

SUMP

MW8 (323.561)

OW8-1 (324.285)

MW12 (DES)

RW8-3 (DES)

MW19 (324.360)

OW8-2 (324.329)

MW11 (324.049)

RW8-2 (DES)

OW8-4 (DES)

MW12 (324.447)

OW8-3 (324.105)

OW8-5 (DES)

RW8-1 (DES)

324.00

324.50

325.00

IMW3 (324.830)

TRAP No.2

324.25

326.00

MW20 (326.187)

FUELLING STAND

MW22 (324.642)

TRAP No.1

324.50

OW9-3 (324.535)

325.00

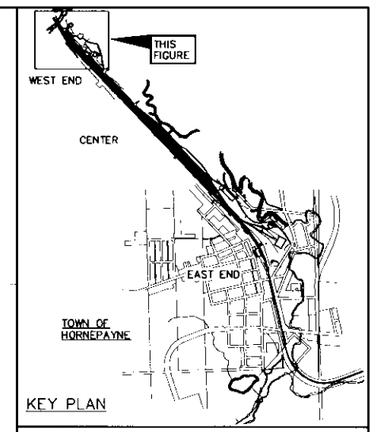
MW21 (DES)

OW9-1 (DES)

326.00

UNDER DRAINS			
No.	START	OUTLET	LENGTH (1)
UD-1	324.20	324.03m	30.48m
UD-2	324.31	324.20m	32.00m
UD-3	324.20	323.93m	36.58m
UD-4	323.90	323.49m	39.62m
UD-5	323.90	323.47m	42.67m
UD-6	323.68	232.90m	25.91m
UD-7	323.90	323.43m	51.82m
UD-8	323.90	323.75m	50.29m
UD-9	323.96	323.90m	52.43m
UD-10	323.90	323.76m	47.24m
UD-11	324.94	323.90m	50.29m

NOTES: 1. LENGTH OF 50mm DIAMETER, PERFORATED, PVC INSERT.



KEY PLAN

LEGEND:

- BERM
- CENTERLINE OF DITCH
- FENCE
- P — BURIED ELECTRICAL CABLE
- BENCHMARK
- MW117 — MONITORING WELL (INSTALLED BY KGS) (MW117-MW133, MW140-MW147)
- MW20 — MONITORING WELL (INSTALLED BY OTHERS) (ALL OTHER WELLS)
- (324.447) — GROUNDWATER ELEVATION
- RW8-1 — RECOVERY WELL
- SUMP — SUMP WELL
- RAILROAD TRACKS
- UNDERGROUND DRAIN
- DES — DESTROYED
- GEODETIC GROUNDWATER CONTOUR (m)
- GROUNDWATER FLOW DIRECTION
- CNL — COULD NOT LOCATE

NOTES:

1. SITE PLAN BASED ON AUTOCAD FILE PROVIDED BY CN.

0 12 24 36 48 60m

SCALE: 1:600 METRIC 24"x36"
1:1200 METRIC 11"x17"

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CN CANADIAN NATIONAL

2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100587
WEST END, HORNEPAYNE YARD, ON

GROUNDWATER SURFACE CONTOURS
WEST END OCTOBER 2010

NOVEMBER 2012 | FIGURE 18 | REV B

FileName: P:\Projects\2010\10-0434-04\doc control\tablesissued\dwg\10-0434-04_FIG 18-Rev B.dwg - Tab: FIG A6 Plotted By: bcameron 11/28/2012 [Wed 8:19am]
24"x36" PLOT SCALE: 1:1 11"x17" PLOT SCALE: 1:2

001257

24X36

662000 E

662200 E

N

5454200 N

OUTLET - LAGOON NO. 2
EFFLUENT SAMPLING LOCATION
900 mmø CMP

POLLUTION CONTROL BUILDING

OIL/WATER SEPARATOR

WASTE OIL TANK

STORAGE SHED

OW5-3 (320.957)

PW-1 (NM)

PW-3 (NM)

OW5-2 (321.226)

PW-2 (NM)

PW6 (NM)

MW2 (321.040)

OW5-4 (321.100)

REMEDIAL SYSTEM DISCHARGE OUTLET

CONCRETE MANHOLE

PW5 (NM)

900 mmø CSP "L" PIPE

OW5-1 (321.107)

PW9 (NM)

MW104 (321.149)

LAGOON #2

PW10 (NM)

MW52 (321.230)

INLET 2
STORM WATER DISCHARGE
330 mmø STEEL PIPE

MW40 (321.179)

OW5-6 (321.152)

INTERCEPTION TRENCH SUMP

MW102 (321.136)

ROUNDHOUSE DISCHARGE
900 mmø CMP

MW43 (321.470)

MW101 (321.163)

MW103 (320.925)

MW45 (322.019)

MW20 (322.396)

MW106 (321.474)

DITCH

MW107 (321.688)

MW51 (321.070)

MW108 (322.496)

SOIL CONTAINMENT CELL

RAMP

WASTE OIL TRANSFER FACILITY
FIGURE 5

MW109 (322.545)

MW115 (322.873)

MW49 (323.890)

MW50 (322.827)

OW3-2 (322.505)

MW114 (321.833)

SHOP TRACK LNAPL COLLECTION SYSTEM
FIGURE 5

MW26 (322.965)

MW24 (323.575)

ROUNDHOUSE

FROM ROUNDHOUSE

LITTLE JACKFISH RIVER

321.00
321.50
322.00
322.50
323.00
323.50

WEST END
CENTER
EAST END
THIS FIGURE
TOWN OF HORNEPAYNE

KEY PLAN

LEGEND

- RAILROAD TRACK
- CULVERT
- CENTERLINE OF DITCH
- SANITARY SEWER
- STORM SEWER
- FENCE
- DISCHARGE LINE
- TREES/ SHRUBS
- MANHOLES
- SURFACE WATER FLOW DIRECTION
- MW117 — MONITORING WELL (INSTALLED BY KGS) (MW117-MW133, MW140-MW147)
- MW20 — MONITORING WELL (INSTALLED BY OTHERS) (ALL OTHER WELLS)
- PW-1 — PUMPING WELL
- 323.00 — GEODETIC GROUNDWATER CONTOUR (m)
- GROUNDWATER FLOW DIRECTION
- (321.200) GROUNDWATER ELEVATION AT WELL
- (DES) DESTROYED
- (NM) NOT MONITORED

NOTE:

1. REFERENCE JACQUES WHITFORD ENVIRONMENTAL LIMITED PROJECT 31004, DRAWING NO. 2, 1996.
2. ELEVATIONS ARE ADJUSTED FOR PRESENCE OF LNAPL.

0 10 20 30 40 50m

SCALE: 1:500 METRIC 24"x36"
1:1000 METRIC 11"x17"

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REVISIONS / ISSUE

KGS GROUP CONSULTING ENGINEERS

CANADIAN NATIONAL

2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100591
HORNEPAYNE YARD, ON

GROUNDWATER SURFACE CONTOURS
EAST END JUNE 2010

NOVEMBER 2012 | FIGURE 19 | REV A

FileName: P:\Projects\2010\10-0434-04\doc control\tobeissued\dwg\10-0434-04_FIG 19-Rev B.dwg - Tab: FIG 05 Plotted By: bcameron 11/28/2012 [Wed 8:22am]
24"x36" PLOT SCALE: 1:1
11"x17" PLOT SCALE: 1:2

001258

662000 E

662200 E

N

OUTLET - LAGOON NO. 2
EFFLUENT SAMPLING LOCATION
900 mmø CMP

POLLUTION CONTROL BUILDING

OIL/WATER SEPARATOR

WASTE OIL TANK

STORAGE SHED

OW5-3 (321.198)

PW8 (NM)

PW7 (NM)

PW-3 (NM)

OW5-2 (321.462)

PW-4 (NM)

PW-2 (NM)

PW6 (NM)

MW21 (321.282)

CONCRETE MANHOLE

PW T (DES)

OW5-4 (321.280)

REMEDIAL SYSTEM DISCHARGE OUTLET

PW5 (NM)

900 mmø CSP "L" PIPE

OW5-1 (321.599)

PW9 (NM)

MW104 (321.420)

LAGOON #2

PW10 (NM)

MW40 (321.804)

INLET 2
STORM WATER DISCHARGE
330 mmø STEEL PIPE

MW52 (321.525)

INTERCEPTION TRENCH SUMP

MW102 (321.430)

OW5-6 (321.793)

MW43 (321.766)

ROUNDHOUSE DISCHARGE
900 mmø CMP

MW46 (322.363)

MW20 (322.823)

MW101 (321.423)

MW106 (321.865)

MW103 (321.420)

MW107 (322.147)

DITCH

SOIL CONTAINMENT CELL

MW51 (321.370)

MW108 (323.782)

RAMP

WASTE OIL TRANSFER FACILITY
FIGURE 5

MW109 (322.982)

MW115 (323.380)

MW49 (323.596)

MW50 (323.530)

MW114 (322.239)

OW3-2 (323.232)

SHOP TRACK LNAPL COLLECTION SYSTEM
FIGURE 5

MW126 (323.818)

MW117 (DES)

MW113 (DES)

MW124 (DES)

MW55 (DES)

MW125 (DES)

MW24 (323.032)

FROM ROUNDHOUSE

ROUNDHOUSE

LITTLE JACKFISH RIVER

5454200 N

321.50

322.00

322.50

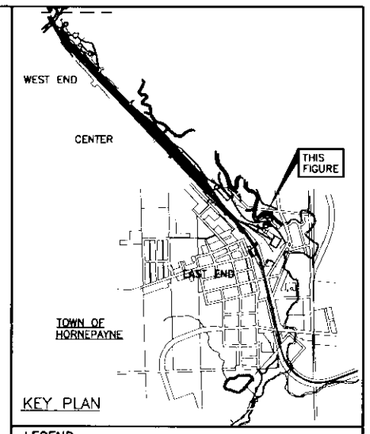
322.75

323.00

323.50

324.00

KEY PLAN



LEGEND

- RAILROAD TRACK
- CULVERT
- CENTERLINE OF DITCH
- SANITARY SEWER
- STORM SEWER
- FENCE
- DISCHARGE LINE
- TREES/ SHRUBS
- MANHOLES
- SURFACE WATER FLOW DIRECTION
- MW117 MONITORING WELL (INSTALLED BY KGS) (MW117-MW133, MW140-MW147)
- MW20 MONITORING WELL (INSTALLED BY OTHERS) (ALL OTHER WELLS)
- PW-1 PUMPING WELL
- 323.00 GEODETIC GROUNDWATER CONTOUR (m)
- GROUNDWATER FLOW DIRECTION
- (324.16) GROUNDWATER ELEVATION AT WELL
- (DES) DESTROYED

NOTE:

1. REFERENCE JACQUES WHITFORD ENVIRONMENTAL LIMITED PROJECT 31004, DRAWING NO. 2, 1996.
2. ELEVATIONS ARE ADJUSTED FOR PRESENCE OF LNAPL.

0 10 20 30 40 50m

SCALE: 1:500 METRIC 24"x36"
1:1000 METRIC 11"x17"

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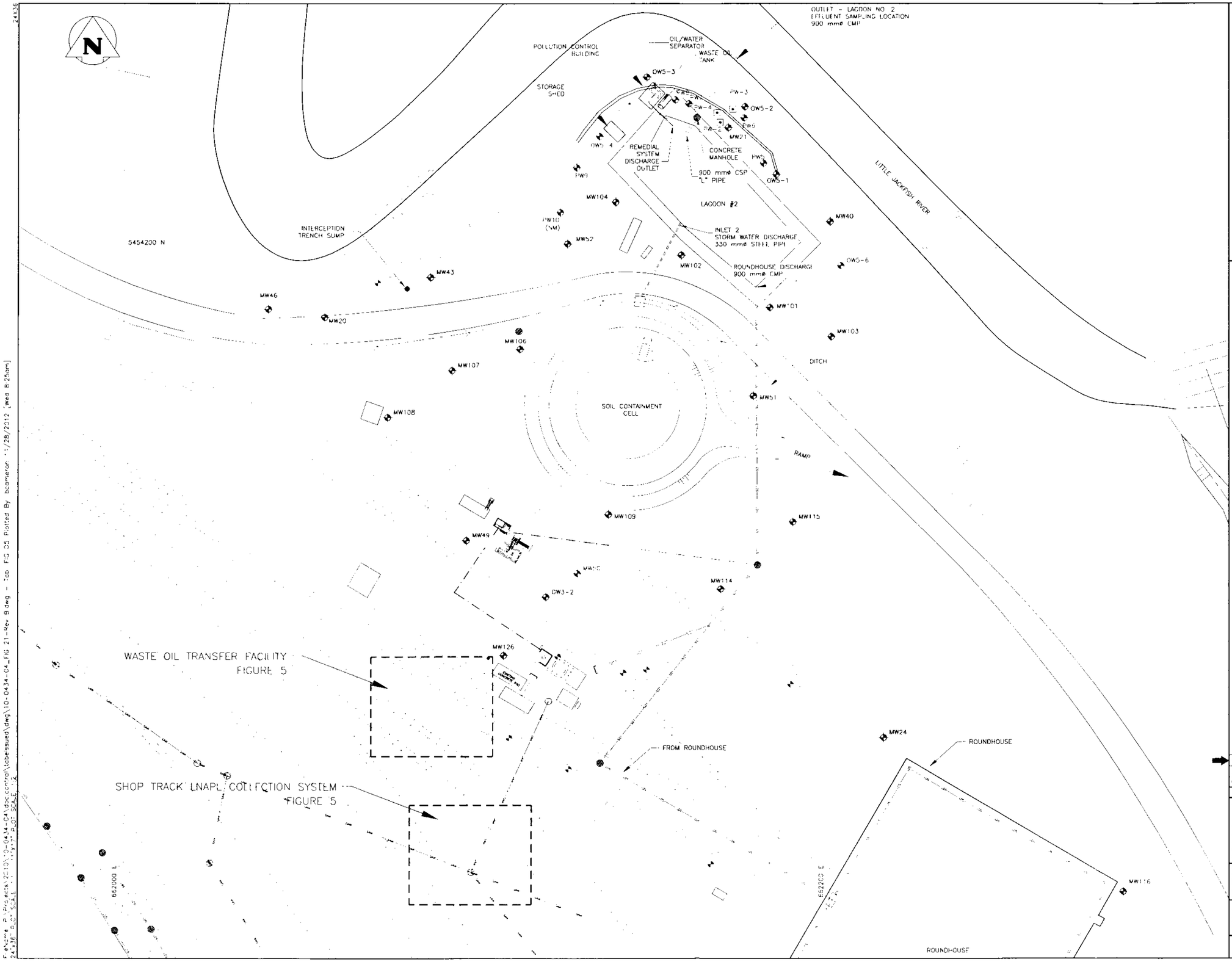
CANADIAN NATIONAL

2010 REMEDIAL OPERATIONS
PIN# 1000/ONPR/100591
HORNEPAYNE YARD, ON

GROUNDWATER SURFACE CONTOURS
EAST END OCTOBER 2010

NOVEMBER 2012 | FIGURE 20 | REV B



APPENDICES

APPENDIX A
CERTIFICATE OF APPROVAL
No. 3528-83LQWT

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
INDUSTRIAL SEWAGE WORKS
NUMBER 3528-83LQWT
Issue Date: April 29, 2010

Canadian National Railway Company
1 Administration Road
PO Box, No. 1000, Concord, Ontario L4K 1B9

Site Location: 58 Front Street - Hornepayne Yard
East and West End Systems
Hornepayne Township, District of Algoma, ON P0M 1Z0

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

the establishment of sewage works for the collection, transmission, treatment and disposal of stormwater, contact stormwater runoff from the CN Hornepayne Yard and industrial sewage generated from the Lagoon Light Non-Aqueous Phase Liquid (LNAPL) Containment System, the Shop Track LNAPL Recovery System, the Waste Oil Transfer Facility and melt water/seepage from the soil contaminated cell, discharging to Little Jackfish River, consisting of the following:

EAST END ENVIRONMENTAL PROTECTION SYSTEM

- A Lagoon System to provide quantity and quality controls for both stormwater runoff, off-site discharge of petroleum hydrocarbon spills and industrial sewage. The lagoon consists of:

  - a rectangular lagoon with an impermeable liner for a total capacity of approximately 1,936 m^3, discharging to a 600 mm diameter corrugated steel pipe with an outlet at an elevation of 322.74 m, equipped with a 900 mm diameter concrete manhole acting as an settling basin for hydrocarbon and suspendid solids.

  - an increase in the lagoon berm height by 0.8 m, including 0.3 m of freeboard, to increase the volumetric capacity 835 m^3 for a total capacity of 2,771 m^3, and slopes changes from 3:1 to 4:1.

- A Containment Recovery and Collection System to contain and recover local subsurface LNAPL identified in the area, consisting of:

  - A bentonite / concrete cut-off wall at the northwest corner of the lagoon to prevent the off-site migration of LNAPL into the Little Jackfish River, equipped with ten (10) pumping wells and an interception trench with 4.5 m depth, width of 0.6 to 1.1 m and 78.5 m in length, all located between the former Pump House area and the Little Jackfish River (upgradient and downgradient from the cut-off wall), and discharging into

the oil/water separator.

- An oil/water separator (fiberglass Parkson Model SRM6 OWS, or approved equivalent) located at the Pollution Control Building and discharging into the lagoon, equipped with:

- A transfer tank with a total capacity of 171 L, a transfer pump directing sewage from the transfer tank to a 4,560 L double walled waste oil tank located adjacent to the Pollution Control Building, prior to treatment at the Oil Transfer Facility.

- A Shop Track LNAPL Recovery System to contain and recover local subsurface LNAPL identified in the area, consisting of:

  - An oil skimmer, Abinaki Model 8 Oil Grabber, used to collect LNAPL draining to the Recovery Trech.

  - A rock filled Recovery Trench (20 m long, 5 m wide and 5 m depth) with a non woven geotextile to collect groundwater and LNAPL to be pumped through a 38 mm diameter HDPE discharge line to the oil water separator located at the waste oil transfer facility. This System is equipped with a collection sump located within the Pollution Control Building, transferring collected LNAPL, by gravity, to the oil recovey tank.

  - An oil recovey tank, double walled with a capacity of 5,000 L.

- A Waste Oil Transfer Facility to process petroleum hydrocarbons collected from all LNAPL collection systems within the Yard, as well as waste oil generated from both Yard and remote site operations, consisting of a waste oil holding tank of 38 m^3 double walled discharging to the oil water separator and an oil water separator.

- A Soil Containment Cell to contain hydrocarbon impacted soils generated from former and future spills within the Yard and at remote rail locations, consisting of a circular cell with a non permeable liner with a holding capacity of 13,600 m^3, equipped with a rubber tire excavator to treat top soil at 0.3 to 0.5 m depth.

All other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works.

WEST END FUELLING STAND SYSTEM

These works include the West End Fuelling Stand at the Hornepayne Yard and included in Certificate 5146-7F2H6J issued on June 17, 2008, consisting of the following:

- Approximately eleven (11) 50 mm diameter perforated pipe underdrains installed under the trackage adjacent to the West End Fuelling Platform and the contaminated soil stockpile, discharging to the retention lagoon;

- One (1) retention lagoon with a storage capacity of approximately 960 m^3 (at the maximum operating water elevation of 324.4 m), including a sheet pile weir and belt oil skimmer seasonally operated

(normally April to November) with product recovery storage tank, discharging to the lined drainage ditch;

- One (1) polyvinyl chloride lined drainage ditch extending from the retention pond to the Little Jackfish River, including the relocation of the existing concrete discharge control structure;

All other controls, electrical equipment, instrumentation, piping, valves and appurtenances essential for the proper operation of the aforementioned sewage works

All in accordance with the following submitted supporting documents:

1. Application for Approval of Industrial Sewage Works submitted by Alexandre Borges, CN Environment Officer of Canadian National Railway Company dated August 4, 2009;

2. Application's appendix A to H prepared by KGS Group Consulting Engineers, dated August 10, 2009.

3. Application for the Approval of Industrial Sewage Works submitted by Mr. Erwin Waldinsperger dated January 1998 and attachments and associated drawings, all prepared by KGS Group Consulting Engineers.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"Certificate" means this entire certificate of approval document, issued in accordance with Section 53 of the *Ontario Water Resources Act* , and includes any schedules;

"Director" means any Ministry employee appointed by the Minister pursuant to section 5 of the *Ontario Water Resources Act* ;

"District Manager" means the District Manager of the Thunder Bay District Office of the Ministry;

"Ministry" means the Ontario Ministry of the Environment;

"Regional Director" means the Regional Director of the Northern Region of the Ministry;

"Source Protection Plan" means a drinking water source protection plan prepared under the *Clean Water Act, 2006* ;

"Owner" means Canadian National Railway Company and includes its successors and assignees; and

"works" means the sewage works described in the Owner's application, this certificate and in the supporting documentation referred to herein, to the extent approved by this certificate.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITION

(1) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the works in accordance with the description given in this Certificate, the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this Certificate.

(2) Where there is a conflict between a provision of any submitted document referred to in this Certificate and the Conditions of this Certificate, the Conditions in this Certificate shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

2. CHANGE OF OWNER

(1) The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within 30 days of the change occurring:

(a) change of Owner or operating authority, or both;

(b) change of address of Owner or operating authority or address of new owner or operating authority;

(c) change of partners where the Owner or operating authority is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Partnerships Registration Act* ;

(d) change of name of the corporation where the Owner or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" (Form 1, 2 or 3 of O. Reg. 189, R.R.O. 1980, as amended from time to time), filed under the *Corporations Information Act* shall be included in the notification to the District Manager;

(2) In the event of any change in ownership of the works, the Owner shall notify in writing the succeeding owner of the existence of this certificate, and a copy of such notice shall be forwarded to the District Manager.

(3) The Owner shall ensure that all communications made pursuant to this condition will refer to this certificate's number.

3. CHANGES IN PROCESSES OR PROCESS MATERIALS

The Owner shall give written notice to the District Manager of any plans to change the processes or process materials in the Owner's enterprise serviced by the works where the change may significantly

alter the quantity or quality of the influent to or effluent from the works, and no such change(s) shall be made unless with the written concurrence or approval of the District Manager.

4. OPERATIONS MANUAL

(1) The Owner shall prepare an operations manual prior to the commencement of operation of the sewage works, that includes, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the works;

(b) inspection programs, including frequency of inspection, for the works and the methods or tests employed to detect when maintenance is necessary;

(c) repair and maintenance programs, including the frequency of repair/maintenance;

(d) contingency plans and procedures for dealing with potential spill, bypasses and any other abnormal situations and for notifying the District Manager; and

(e) complaint procedures for receiving and responding to public complaints.

(2) The Owner shall maintain the operations manual up to date through revisions undertaken from time to time and retain a copy at the location of the sewage works. Upon request, the Owner shall make the manual available for inspection and copying by Ministry personnel.

5. EFFLUENT LIMITS

(1) The Owner shall design, construct and operate the works that discharge to the Little Jackfish River such that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the works.

Table 2 - Effluent Limits

Effluent Parameter	Concentration Limit (mg/L)
Column 1	Column 2
Petroleum Hydrocarbons (F1+F2)	1000
Petroleum Hydrocarbons (F3+F4)	1000
Benzene	5
Toluene	0.8
Ethylbenzene	2.4
m&p-Xylene	32
o-Xylene	40
Methyl-t-butyl-Ether (MTBE)	200
Lead	See subsection 2
pH of the effluent maintained between 6.5 to 8.5, inclusive, at all times	

(2) The limit for Lead shall be determined based on the hardness of the water. If the hardness is less than 30 mg/L, the limit is 1 µg/L. If the hardness is between 30 mg/L and 80 mg/L, inclusive, the limit is 3 µg/L. If the hardness is greater than 80 mg/L, the limit is 5 µg/L.

(3) For the purposes of determining compliance with and enforcing subsection (1):

(a) non-compliance with respect to a Concentration Limit is deemed to have occurred when any single sample analyzed for a parameter named in Column 1 of subsection (1) is greater than the corresponding maximum concentration set out in Column 2 of subsection (1);

(b) non-compliance with respect to pH is deemed to have occurred when any single measurement is outside of the indicated range.

6. EFFLUENT - VISUAL OBSERVATIONS

Notwithstanding any other condition in this certificate, the Owner shall ensure that the effluent from the works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen or foam on the receiving waters.

7. EFFLUENT MONITORING - SURFACE WATER

(1) All samples and measurements taken for the purposes of this certificate are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(2) Samples shall be collected and analyzed at the following sampling point(s), at the sampling frequencies and using the sample type specified for each parameter listed:

Table 3 - Effluent Monitoring - Surface Water

Sample Points: To be established to the satisfaction of the District Manager prior to commencement of operations of the works. Sampling includes estimated flows. Sampling locations at a minimum to include (as per Drawing No. 09-0434-01 H1, Rev. A, Appendix H of the Application package dated August 2009, prepared by KGS Group):

1. Effluent from Discharge Control Gate;
2. Little Jackfish River: HOR 005 05 (mid stream); and HOR 004 05 (down stream)
3. Yard discharge: HOR 002 05 (Lagoon No.2), at the end of the discharge culvert.

Frequency	Once each month (April to November) in ice-free conditions
Sample Type	Grab
Parameters	Petroleum Hydrocarbons (F1+F2), Petroleum Hydrocarbons (F3+F4), Benzene, Toluene, Ethylbenzene, m&p-Xylene, o-Xylene, Methyl-t-butyl-Ether (MTBE), Lead, pH, hardness, alkalinity, Total Purgeable Hydrocarbons, Total Extractable Hydrocarbons, Total Oil and Grease, and Mineral Oil and Grease

(3) The Owner shall supplement the monitoring program in subsection (1) with visual inspections which shall include, but not be limited to the following:

(a) A weekly inspection (April to November) of the effluent from the Discharge Control Gate and the river during discharge of treated wastewater for any visible oil sheens, colour and odours; and

(b) A weekly inspection (April to November) of the level of material in the recovered product storage tank.

(4) The methods and protocols for sampling, analysis, toxicity testing, and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (August 1994), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;

(b) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition) as amended from time to time by more recently published editions; and,

(c) the Environment Canada publications "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" (July 1990) and "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna" (July 1990);

(5) The measurement frequencies specified in subsection (2) in respect of any parameter are minimum requirements which may, after twelve (12) months of monitoring in accordance with this Condition, be modified by the District Manager in writing from time to time.

(6) A continuous flow measuring device(s) or an alternate method approved by the District Manager shall be installed and maintained to measure the flowrate of the effluent from the sewage works, with an accuracy to within plus or minus twenty per cent (20%) of the actual flowrate for the entire design range of the flow measuring device and the Owner shall measure, record and calculate the flowrate for each effluent stream on each day of sampling.

8. EFFLUENT MONITORING - GROUNDWATER

(1) All samples and measurements taken for the purposes of this certificate are to be taken at a time and in a location characteristic of the quality and quantity of the groundwater over the time period being monitored.

(2) Samples shall be collected and analyzed at the following sampling point(s), at the sampling frequencies, including groundwater levels and thickness of any light non-aqueous phase liquids (LNAPLs) using an interface probe (IP) at all monitoring wells:

Table 3 - Effluent Monitoring - Groundwater Sample Points: Sampling locations as per Drawing No. 09-0434-01 G1, Rev. A, Appendix G of the Application package dated August 2009, prepared by KGS Group).		
Effluent Parameter	**Frequency**	**Sample Location**
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), and Hydrocarbon fraction F1	Monitored and sampled once per year	Wells: MW-20, MW-40, MW-43, MW-46, MW-52, OW 5-1, OW 5-2 and OW 5-3
Hydrocarbon fraction F2 to F4	Monitored twice per year (Spring and Fall)and Sampled once per year	Wells: MW-21, MW-24, MW-49, MW-51, MW-52, MW-101, MW-102, MW-103, MW-104, MW-106, MW-107, MW-108, MW-109, MW-114, MW-115, MW-126, and OW 3-2
Hydrocarbon fraction F2 to F4	Monitored and sampled twice per year (Spring and Fall)	Wells: MW-20, MW-40, MW-43, MW-46, MW-52, OW 5-1, OW 5-2 and OW 5-3

Note: Duplicate groundwater samples shall be taken for field monitoring of Dissolved Oxygen, pH, Conductivity, Temperature and Oxidation-reduction potential.

(3) The methods and protocols for sampling, analysis, toxicity testing, and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (August 1994), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions.

(b) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition) as amended from time to time by more recently published editions.

(5) The measurement frequencies specified in subsection (2) in respect of any parameter are minimum requirements which may, after twelve (12) months of monitoring in accordance with this Condition, be modified by the District Manager in writing from time to time.

9. REPORTING

(1) The Owner shall report to the District Manager or designate, any exceedance of any parameter specified in Condition 6 orally, as soon as reasonably possible, and in writing within seven (7) days of the exceedance.

(2) In addition to the obligations under Part X of the *Environmental Protection Act* , the Owner shall, within 10 working days of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

(4) The Owner shall prepare and submit a performance report to the District Manager on an annual basis within thirty (30) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 5, including an overview of the success and adequacy of the sewage works;

(b) a description of any operating problems encountered and corrective actions taken;

(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the sewage works;

(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;

(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;

(f) a site plan illustrating the location of all site infrastructure, environmental protection system components, monitoring wells and surface water monitoring stations;

(g) a location map illustrating the site relative to nearby potentially sensitive groundwater/surface water features (i.e., lakes, streams, wells);

(h) a water level contour map for each monitoring event carried out during the previous year;

(i) stratigraphic cross-sections which clearly illustrate the subsurface distribution of geological materials;

(j) boreholes logs for all monitoring wells;

(k) tables illustrating historical chemistry and water level data;

(l) graphs illustrating historical water quality trends for hydrocarbon parameters at key monitoring wells;

(m) an assessment of monitoring data to evaluate system effectiveness and compliance with the applicable water quality protection criteria;

(n) recommendations for future monitoring and/or further remedial actions;

(o) a section detailing the field sampling protocols and QA/QC measures;

(p) a copy of the Certificate of Approval and any amendments;

(q) copies of laboratory reports for all sampling events in that year; and

(r) all monitoring and sampling data should also be submitted in an electronic format (i.e. a Microsoft Excel spreadsheet).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Certificate and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that the Ministry records are kept accurate and current with respect to approved works and to ensure that subsequent owners of the works are made aware of the certificate and continue to operate the works in compliance with it.

3. Condition 3 is included to ensure that the works is operated in accordance with the information submitted by the owner relating to the process and materials which are served by the works, and to ensure that any contemplated changes in them which could potentially affect the characteristics of effluent from the works will be properly reviewed and approved.

4. Condition 4 is included to ensure that a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the owner and made available to the Ministry. Such a manual is an integral part of the operation of the works. Its compilation and use should assist the owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the owner's operation of the work.

5. Conditions 5 and 6 are imposed to ensure that the effluent discharged from the works to the Little Jackfish River meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver.

6. Conditions 7 and 8 are included to require the owner to demonstrate on a continual basis that the quality and quantity of the effluent from the approved works is consistent with the design and effluent limits specified in the certificate and that the approved works does not cause any impairment to the receiving

watercourse.

7. Condition 9 is included to provide a performance record for future references and to ensure that the Ministry is made aware of problems as they arise, so that the Ministry can work with the Owner in resolving the problems in a timely manner.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 5146-7F2H6J issued on June 17, 2008.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act , R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 29th day of April, 2010

Mansoor Mahmood, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

ET/

c: District Manager, MOE Sault Ste. Marie Area Office
Tony Gallo, Kontzamanis Graumann Smith MacMillan Inc.

APPENDIX B
WASTE MANIFEST FORMS

MOVEMENT DOCUMENT / MANIFEST
DOCUMENT DE MOUVEMENT / MANIFESTE

HY27110-2

This Movement document/manifest conforms to all federal and provincial transport and environmental legislation
Ce document de mouvement manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport

Movement Document / Manifest Reference No.
N° de référence du document de mouvement/manifeste

A Generator / consignor — Producteur / expéditeur
Registration No. / Provincial ID No. — N° d'immatriculation / d'id. provincial
Company name / Nom de l'entreprise
Mailing address / Adresse postale — City / Ville — Province — Postal code / Code postal
E-mail / Courrier électronique — Tel. No. / N° de tél. ( )
Shipping site address / Adresse du lieu de l'expédition
City / Ville — Province — Postal code / Code postal

Intended Receiver / consignee — Réceptionnaire destinataire prévu
Registration No. / Provincial ID No. — N° d'immatriculation / d'id. provincial
Mailing address / Adresse postale — City / Ville — Province — Postal code / Code postal
E-mail / Courrier électronique — Tel. No. / N° de tél. ( )
Receiving site address / Adresse du lieu de l'expédition
City / Ville — Province — Postal code / Code postal

B Carrier — Transporteur
Registration No. / Provincial ID No. — N° d'immatriculation / d'id. provincial
Company name / Nom de l'entreprise
Mailing address / Adresse postale — City / Ville — Province — Postal code / Code postal
E-mail / Courrier électronique — Tel. No. / N° de tél. ( )

Vehicle / Véhicule	Registration No. / N° d'immatriculation	Prov.
Trailer - Rail car No. 1 / 1er remorque - wagon		
Trailer - Rail car No. 2 / 2e remorque - wagon		

Port of entry / Point d'entrée — Port of exit / Point de sortie

Carrier Certification: I certify that I have received waste or recyclable material from the generator / consignor for delivery to the receiver / consignee as set out in Part A and that the information contained in Part B is complete and correct.
Attestation du transporteur: J'atteste avoir reçu les déchets ou matières recyclables du producteur / expéditeur en vue de leur livraison au réceptionnaire / destinataire, tels qu'ils figurent à la partie A et que les renseignements inscrits à la partie B sont exacts et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie) — Tel. No. / N° de tél. ( )
Year / Année — Month / Mois — Day / Jour — Signature

Reference Nos. of other movement documents/manifest(s) used / N° de référence des autres documents de mouvement/manifestes utilisés

C Receiver / consignee — Réceptionnaire / destinataire
Registration No. / Provincial ID No. — N° d'immatriculation / d'id. provincial
Receiver / consignee information same as in Part A / Les renseignements du réceptionnaire / destinataire est la même qu'à la Partie A
☐ Yes / Oui ☐ No, complete the box below / Non remplir la case ci-dessous
Company name / Nom de l'entreprise
Mailing address / Adresse postale
City / Ville — Province — Postal code / Code postal
E-mail / Courrier électronique — Tel. No. / N° de tél. ( )
Receiving site address / Adresse du lieu de destination
Date received / Date de réception: Year / Année — Month / Mois — Day / Jour — Time / Heure ☐ A.M. ☐ P.M.
If waste or recyclable material to be transferred, specify intended company name / Si les déchets ou matières recyclables doivent être transférés, préciser le nom du destinataire
Registration No./Provincial ID No. / N° d'immatriculation/d'id provincial

	Prov. code / Code prov.	Shipping name / Appellation réglementaire	Class / Classe Sub. class(es) / Classe(s) sub.	UN No. / N° NU	Packing / risk gr. / Gr. d'emballage/ de risque	Quantity shipped / Quantité expédiée	Units L or / ou Kg / Unités	Packaging/Contenant No. / N°	Codes Int - ext	Phys. state / État ph.	Quantity received / Quantité reçue	Units L or / ou kg / Unités	Comments / Commentaires	Handling Code / Code de manutention	Shipment / Envoi Accepted / Accepté	Refused / Refusé	Decont. Pack. / Cont.	Veh. / Vét.
(i)																		
(ii)																		
(iii)																		
(iv)																		

	Notice No. / N° de notification	Notice Line No. / N° de ligne de la notification	Shipment / Envoi	Of / De	D or R code / Code E ou R	C code / Code C	Basel Annex VIII or OECD Code / Annexe VIII de Bâle ou Code OCDE	H code / Code H	Y code / Code Y	National code in country of / Code du pays Export / Exportation	Import / Importation	Customs code(s) / Code(s) de douanes
(i)												
(ii)												
(iii)												
(iv)												

If handling code "Other" (specify) / Si code de manutention « autre » (spécifier)

Receiver / consignee certification: I certify that the information contained in Part C is correct and complete. / **Attestation du réceptionnaire / destinataire:** J'atteste que tous les renseignements à la partie C sont exacts et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractère d'imprimerie)
Signature — Tel. No. / N° de tél. ( )

Special handling / Manutention spéciale ☐ Attached / Ci-joint ☐ As follows / Ci-contre

Generator / consignor certification: I certify that the information contained in Part A is correct and complete.
Attestation du producteur / expéditeur: J'atteste que tous les renseignements à la partie A sont exacts et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractère d'imprimerie) — Signature — Tel. No. / N° de tél. ( )
Date shipped / Date d'expédition: Year / Année — Month / Mois — Day / Jour — Time / Heure ☐ A.M. ☐ P.M.
Scheduled arrival date / Date d'arrivée prévue: Year / Année — Month / Mois — Day / Jour

001276

MOE 04-1917 (07-(

Retained by Consignor (Generator) / ...ardée par l'expéditeur

Copy / Cop... (green / verte)

MOVEMENT DOCUMENT / MANIFEST
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal and provincial transport and environmental legislation
Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport

HY13807-9

001277

Movement Document / Manifest Reference No.
N° de référence du document de mouvement/manifeste

A Generator / consignor
Producteur / expéditeur

Registration No. / Provincial ID No.
N° d'immatriculation - d'id. provincial

Company name / Nom de l'entreprise

Mailing address / Adresse postale | City / Ville | Province | Postal code / Code postal

E-mail / Courriel électronique | Tel. No. / N° de tél.

Shipping site address / Adresse du lieu de l'expédition

City / Ville | Province | Postal code / Code postal

Intended Receiver / consignee
Réceptionnaire / destinataire prévu

Registration No. / Provincial ID No.
N° d'immatriculation - d'id. provincial

Mailing address / Adresse postale | City / Ville | Province | Postal code / Code postal

E-mail / Courriel électronique | Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de réception

City / Ville | Province | Postal code / Code postal

B Carrier
Transporteur

Registration No. / Provincial ID No.
N° d'immatriculation - d'id. provincial

Company name / Nom de l'entreprise

Mailing address / Adresse postale | City / Ville | Province | Postal code / Code postal

E-mail / Courriel électronique | Tel. No. / N° de tél.

Vehicle / Véhicule	Registration No. / N° d'immatriculation	Prov.
Trailer - Rail car No. 1 1re remorque - wagon		
Trailer - Rail car No. 2 2e remorque - wagon		

Port of entry / Point d'entrée | Port of exit / Point de sortie

Carrier Certification : *I certify that I have received waste or recyclable materials from the generator / consignor for delivery to the receiver / consignee as set out in Part A and that the information contained in Part B is complete and correct.*
Attestation du transporteur : *J'atteste avoir reçu les déchets ou matières recyclables du producteur / expéditeur en vue de leur livraison au réceptionnaire / destinataire, tels qu'ils figurent à la partie A et que les renseignements inscrits à la partie B sont exacts et complets.*

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie) | Tel. No. / N° de tél.

Year / Année | Month / Mois | Day / Jour | Signature

C Receiver / consignee
Réceptionnaire / destinataire

Registration No. / Provincial ID No.
N° d'immatriculation - d'id. provincial

Reference Nos. of other movement document(s)/manifest(s) used /
N° de référence des autres documents de mouvement/manifestes utilisés

Receiver / consignee information same as in Part A
Les renseignements du réceptionnaire / destinataire est la même que la Partie A

☐ Yes / Oui ☐ No, complete the box below / Non, remplir la case ci-dessous

Company name / Nom de l'entreprise

Mailing address / Adresse postale

City / Ville | Province | Postal code / Code postal

E-mail / Courriel électronique | Tel. No. / N° de tél.

Receiving site address / Adresse du lieu de destination

Date received / Date de réception: Year / Année | Month / Mois | Day / Jour

Time / Heure: ☐ A.M. ☐ P.M.

If waste or recyclable material to be transferred, specify intended company name / Si les déchets ou matières recyclables doivent être transférés, préciser le nom du destinataire

Registration No. / Provincial ID No.
N° d'immatriculation / d'id. provincial

Prov. code Code prov.	Shipping name Appellation réglementaire	Class / Classe Sub class(es) Classe(s) sub	UN / NA No. N° NU	Packing / risk gr. Gr. d'emballage/ de risque	Quantity shipped Quantité expédiée	Units L or / ou Kg Unités	Packaging / Contenant No. / N° Codes In - ext	Phys. state Etat phys.
(c)								
(d)								
(e)								
(f)								

Quantity received Quantité reçue	Units L or / ou Kg Unités	Comments Commentaires	Handling Code / Code de manutention	Shipment / Envoi Accepted / Accepté	Shipment / Envoi Refused / Refusé	Decont. / Décont. Pack. / Emb.	Decont. / Décont. Veh. / Véh.

If handling code "Other" (specify) / Si code de manutention « autre » (spécifier)

Notice No. N° de notification	Notice Line No. N° de ligne de la notification	Shipment Envoi	Or / De	D or R code Code D ou R	C code Code C	Basel Annex VIII or OECD Code Annexe VIII de Bâle ou Code OCDE	H code Code H	Y code Code Y	National code in country of / Code du pays Export Exportation	 Import Importation	Customs code(s) Code(s) de douanes
(c)											
(d)											
(e)											
(f)											

Receiver / consignee certification : *I certify that the information contained in Part C is correct and complete.*
Attestation du réceptionnaire / destinataire : *J'atteste que tous les renseignements à la partie C sont exacts et complets.*

Name of authorized person (print) / Nom de l'agent autorisé (caractère d'imprimerie)

Signature | Tel. No. / N° de tél.

Special handling / Manutention spéciale

☐ Attached / Ci-joint ☐ As follows / Ci-contre

Generator / consignor certification : *I certify that the information contained in Part A is correct and complete.*
Attestation du producteur / expéditeur : *J'atteste que tous les renseignements à la partie A sont exacts et complets.*

Name of authorized person (print) / Nom de l'agent autorisé (caractère d'imprimerie) | Signature | Tel. No. / N° de tél.

Date shipped / Date d'expédition: Year / Année | Month / Mois | Day / Jour

Time / Heure: ☐ A.M. ☐ P.M.

Scheduled arrival date / Date d'arrivée prévue: Year / Année | Month / Mois | Day / Jour

MOE 04-1917 (07/07)

Retained by Consignor (Generator) - C[illegible]dée par l'expéditeur

Copy / Copie [illegible]green / verte)

MOVEMENT DOCUMENT / MANIFEST
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal and provincial transport and environmental legislation
Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport.

HY13929-1

001279

Movement Document / Manifest Reference No
N° de référence du document de mouvement/manifeste

A Generator / consignor — Producteur / expéditeur

Registration No / Provincial ID No. — N° d'immatriculation - d'id. provincial

Company name / Nom de l'entreprise

Mailing address / Adresse postale | City / Ville | Province | Postal code / Code postal

E-mail / Courrier électronique | Tel. No. / N° de tél. ( )

Shipping site address / Adresse du lieu de l'expédition

City / Ville | Province | Postal code / Code postal

Intended Receiver / consignee — Réceptionnaire / destinataire prévu (2)
Registration No / Provincial ID No. — N° d'immatriculation - d'id. provincial

Mailing address / Adresse postale | City / Ville | Province | Postal code / Code postal

E-mail / Courrier électronique | Tel. No. / N° de tél. ( )

Receiving site address / Adresse du lieu de l'expédition

City / Ville | Province | Postal code / Code postal

B Carrier — Transporteur (3)

Registration No / Provincial ID No. — N° d'immatriculation - d'id. provincial

Company name / Nom de l'entreprise

Mailing address / Adresse postale | City / Ville | Province | Postal code / Code postal

E-mail / Courrier électronique | Tel. No. / N° de tél. ( )

Vehicle / Véhicule	Registration No. / N° d'immatriculation	Prov. (24)
Trailer - Rail car No. 1 / 1e remorque - wagon		
Trailer - Rail car No. 2 / 2e remorque - wagon		

Port of entry / Point d'entrée | Port of exit / Point de sortie (25)

Carrier Certification : *I certify that I have received waste or recyclable material from the generator / consignor for delivery to the receiver / consignee as set out in Part A and that the information contained in Part B is complete and correct.*
***Attestation du transporteur** : J'atteste avoir reçu les déchets ou matières recyclables du producteur / expéditeur en vue de leur livraison au réceptionnaire / destinataire, tels qu'ils figurent à la partie A et que les renseignements inscrits à la partie B sont exacts et complets.* (26)

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie) | Tel. No. / N° de tél. ( )

Year / Année | Month / Mois | Day / Jour | Signature

C Receiver / consignee — Réceptionnaire / destinataire (8)

Registration No / Provincial ID No. — N° d'immatriculation - d'id. provincial

Receiver / consignee information same as in Part A
Les renseignements du réceptionnaire / destinataire est la même qu'à la Partie A
☐ Yes / Oui ☐ No, complete the box below / Non, remplir la case ci-dessous

Company name / Nom de l'entreprise

Mailing address / Adresse postale

City / Ville | Province | Postal code / Code postal

E-mail / Courrier électronique | Tel. No. / N° de tél. ( )

Receiving site address / Adresse du lieu de destination

Reference Nos. of other movement document(s)/manifest(s) used / N° de référence des autres documents de mouvement/manifeste utilisés (27)

Date received / Date de réception (29): Year / Année | Month / Mois | Day / Jour
Time / Heure: ☐ A.M ☐ P.M

If waste or recyclable material to be transferred, specify intended company name / Si les déchets ou matières recyclables doivent être transférés, préciser le nom du destinataire (30)
Registration No. Provincial ID No. / N° d'immatriculation/d'id provincial

Prov. code / Code prov. (4)	Shipping name / Appellation réglementaire (5)	Class / Classe Sub. class(es) / Classe(s) sub (6)	UN No. / N NU (7)	Packing Insp. / G. d'emballage/ de risque (8)	Quantity shipped / Quantité expédiée (9)	Units / Unités L or / ou Kg	Packaging/Contenant No. / N°	Packaging/Contenant Codes Int. ext.	Phys. state / Etat phys. (10)
(i)									
(ii)									
(iii)									
(iv)									

Quantity received / Quantité reçue	Units / Unités L or / ou Kg (31)	Comments / Commentaires (32)	Handling Code / Code de manutention (33)	Shipment / Envoi Accepted / Accepté (34)	Shipment / Envoi Refused / Refusé (34)	Decont. Pack. / Cont. (35)	Decont. Veh. / Véh. (35)

If handling code "Other" (specify) / Si code de manutention « autre » (specifier) (36)

Notice No / N° de notification (11)	Notice Line No. / N° de ligne de la notification (11)	Shipment / Envoi (12)	Or / De (12)	D or R code / Code D ou R (13)	C code / Code C (14)	Basel Annex VIII or OECD Code / Annexe VIII de Bâle ou Code OCDE (15)	H code / Code H (16)	Y code / Code Y (17)	National code in country of / Code du pays: Export / Exportation (18)	Import / Importation (18)	Customs code(s) / Code(s) de douanes (19)
(i)											
(ii)											
(iii)											
(iv)											

Receiver / consignee certification : *I certify that the information contained in Part C is correct and complete.*
Attestation du réceptionnaire / destinataire : *J'atteste que tous les renseignements à la partie C sont exacts et complets.*

Name of authorized person (print) / Nom de l'agent autorisé (caractère d'imprimerie) (37)

Signature | Tel. No. / N° de tél. ( )

Special handling / Manutention spéciale (38)
☐ Attached / Ci-joint ☐ As follows / Ci-contre

Generator / consignor certification : *I certify that the information contained in Part A is correct and complete.*
Attestation du producteur / expéditeur : *J'atteste que tous les renseignements à la partie A sont exacts et complets.*

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie) | Signature | Tel. No. / N° de tél. ( ) (20)

Date shipped / Date d'expédition (21): Year / Année | Month / Mois | Day / Jour
Time / Heure: ☐ A.M ☐ P.M

Scheduled arrival date / Date d'arrivée prévue: Year / Année | Month / Mois | Day / Jour

MOE 04-1917 (07/07)

Retained by Consignor (Generator) · ardée par l'expéditeur

Copy / Copie (green / verte)