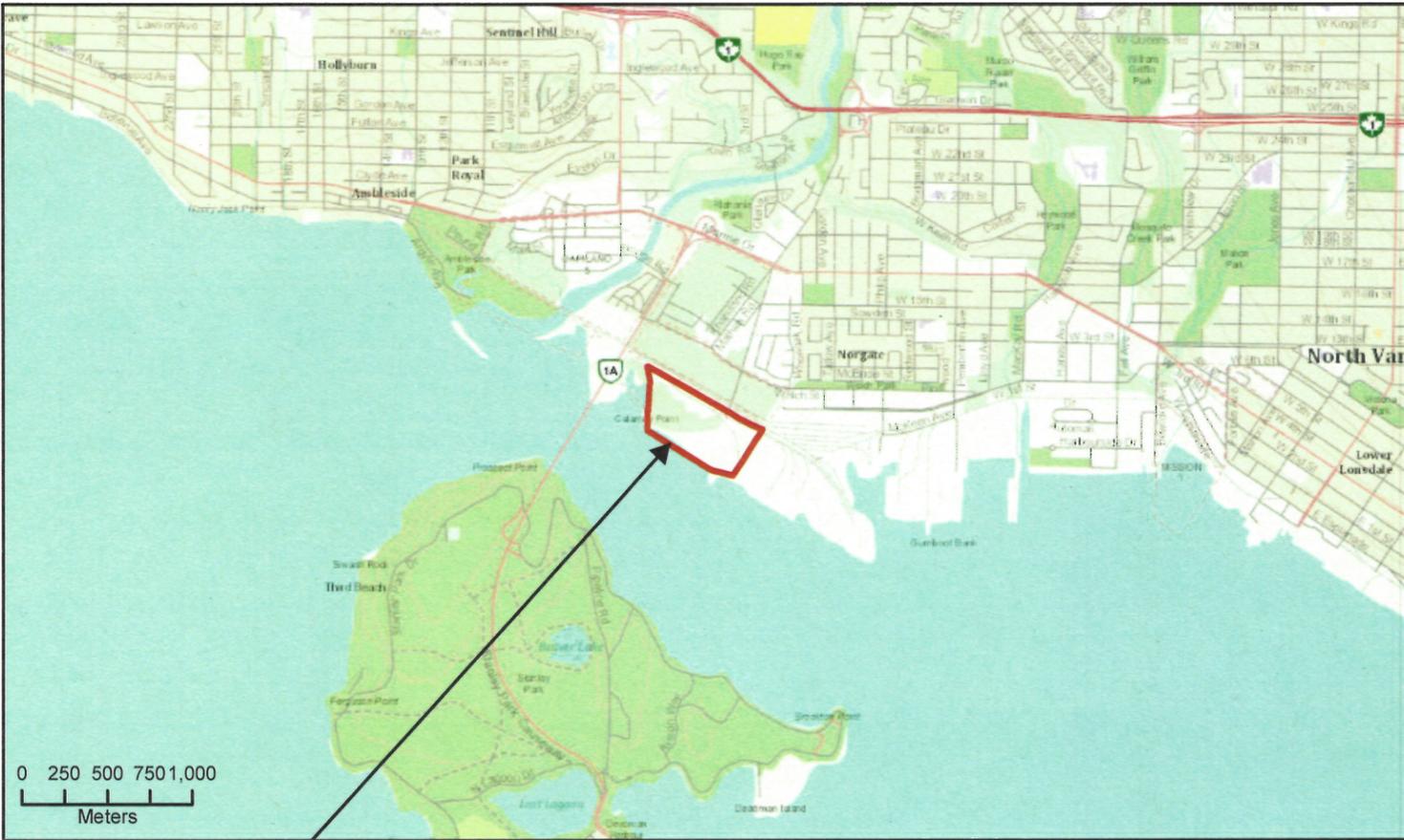


DRAWINGS



Site Location

Site Location
(Source: Esri - 1:50,000)



Aerial View 1:10,000
(ESRI)

PROFESSIONAL
Y. D. LIN
32207
OCT 9, 2014
ENGINEER



FORMER HEEDE CRANE AREA INTERIM REMEDIATION
Pacific Environment Centre Site (PEC), West Vancouver, BC

SITE LOCATION

CLIENT:
 ENVIRONMENT CANADA

PROJECT No. 457-002.44

October 2014

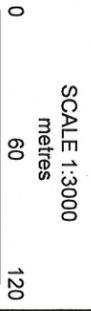
FIGURE 1

NOTES:

1. The Contractor may use the east room of the PEC Site office for general meetings and project co-ordination
2. If the Contractor requires additional office facilities, including meeting/project management space, phone and fax facilities, the Contractor shall supply and maintain temporary site office facilities adjacent to the Site Support Zone.
3. The Contractor may use the existing personnel decontamination facility. If the Contractor requires additional decontamination facilities the Contractor shall supply and maintain it at a location adjacent to the Site Support Zone.
4. The Contractor may use the existing portable toilet facilities. If the Contractor requires additional toilet facilities the Contractor shall supply and maintain temporary toilet facilities adjacent to the Contractors support facilities.
5. A temporary water connection is available on the PEC Site. Contractors are to review the connection to determine suitability for use. Contractors are responsible for water supply requirements for the duration of the project and shall not impact Environment Canada's water supply requirements.
6. Electrical power is available to the PEC Site via primary overhead electrical transmission lines that are located along the MV right of way. There is a 30 amp service at the proposed contractor location and a 15 amp service at the alternate contractor location available for Contractor to use. Contractor is responsible for modification to the existing services to meet their needs. Alternatively, Contractor may supply their own generators.
7. Location of proposed site facilities mentioned above shall be discussed with Environment Canada before commencing. Environment Canada may restrict the location for Contractor work areas (e.g. location of field offices).
8. The Contractor shall maintain the existing wheel wash in a condition (by controlling water level, water quality and sediment accumulation) to the satisfaction of the Department Representative such that it performs adequately and prevents contamination outside of the containment area. The Contractor must completely clean the wheel wash at the project completion. Wheel wash sediments and wastewater must be managed by the Contractor and be disposed of at an approved treatment/disposal facility..
9. The existing gravel/cobble stockpiles on-site are not available for Contractor use.
10. The Contractor shall supply and operate a water truck/mobile street washer (or equivalent) for the purposes of dust suppression and control.

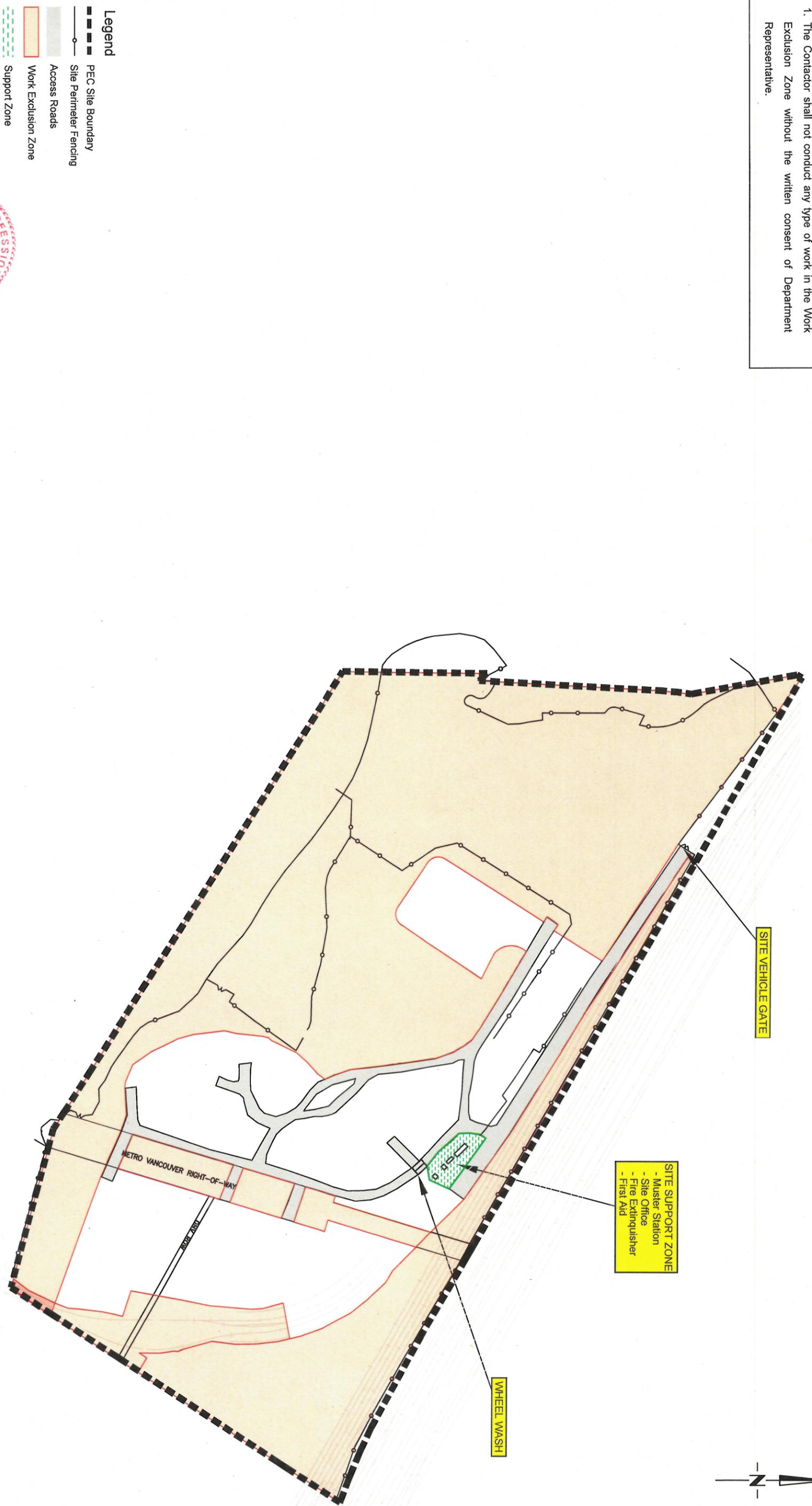
Legend

- PEC Site Boundary
- Site Perimeter Fencing
- Access Roads
- New Pavement Area
- Support Zone



		CLIENT: ENVIRONMENT CANADA	
FORMER HEEDE CRANE AREA INTERIM REMEDIATION PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC		PROJECT No. 457-002.44	
PEC SITE ROAD ROUTING AND HEALTH & SAFETY FEATURES		October 2014	
Figure 2		Figure 2	

NOTES:
 1. The Contactor shall not conduct any type of work in the Work Exclusion Zone without the written consent of Department Representative.



- Legend**
- PEC Site Boundary
 - - - Site Perimeter Fencing
 - Access Roads
 - Work Exclusion Zone
 - Support Zone

Professional Engineer
 Y. BELIN
 # 35257
 OCT 9, 2014

SCALE 1:3000
 metres
 0 60 120

CLIENT:

HEMMERA
 ENVIRONMENT CANADA

FORMER HEEDE CRANE AREA INTERIM REMEDIATION
 PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

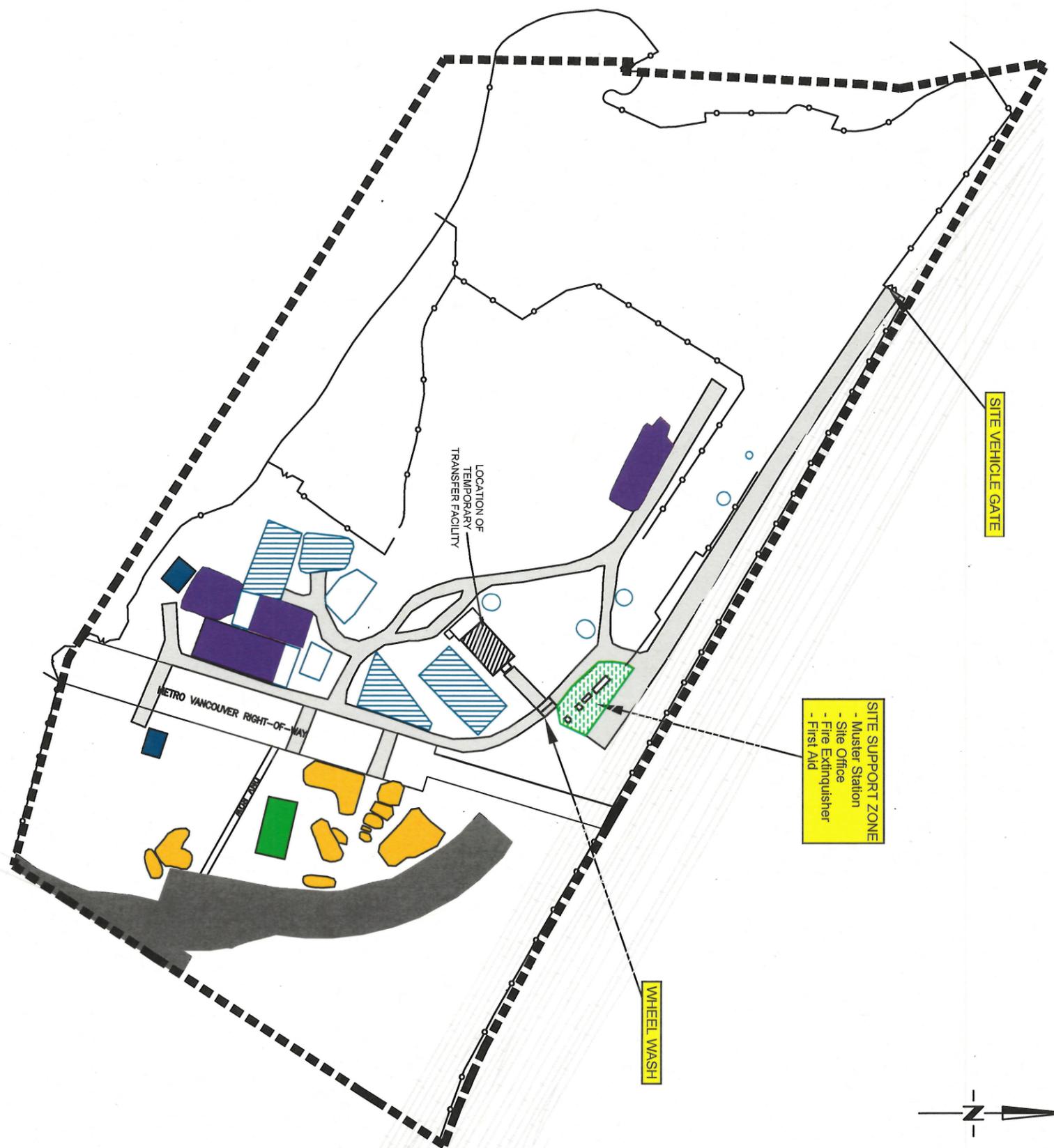
SITE CONTROL ZONES

PROJECT No. 457-002.44 October 2014 Figure 3

NOTES:

1. There are four empty storage cells and one temporary transfer facility available for the Contractor to store excavated soils with an approximate total capacity of 10,500 m³
2. The Contractor must inspect the condition of the storage cells and repair the storage cells prior to usage, if damaged. The storage cells must meet the following requirements:
 - A berm 0.75 metre in height is to be maintained using suitable clean material.
 - The base of the containment cell shall be graded such that the positive drainage of water/sludge to one low area will occur. The low area shall contain a sump with a slotted pipe such that drained water can be pumped from the containment cell.
 - The storage cell liners shall be replaced with 30 mil LLDPE or approved equivalent, if damaged.
 - The liner is to extend up and over the containment berm, covering 75% of the downward slope.
 - A suitable layer of bedding sand (150 mm thick) shall be placed in the containment cell.
 - The storage cells shall include a suitably sized cover of 20 mil woven polyethylene (WPE) or approved equivalent and materials (ropes, tires, sandbags or approved equivalent) to secure the cover. Additionally, soil must be placed around the base of the storage cell to further secure the cover.
 - An access ramp shall be constructed to allow excavator and tandem axle dump truck access.
3. Other wastes (asphalt, concrete, wood, metal and general waste) excavated shall be stockpiled by the Contractor in designated areas approved by Department Representative.
 - The Contractor shall supply any additional products required for the repair of the storage cells, including but not limited to any materials required for securing the cell cover.

- Legend**
- PEC Site Boundary
 - - - Site Perimeter Fencing
 - Access Roads
 - New Pavement Area
 - Gravel/Cobbles/Soil/Debris Stockpiles
 - Lysimeter Pad
 - Water Holding Cell
 - Gravel/Cobble Stockpile
 - Metals Contaminated Soil Stockpile
 - Empty Storage Cell



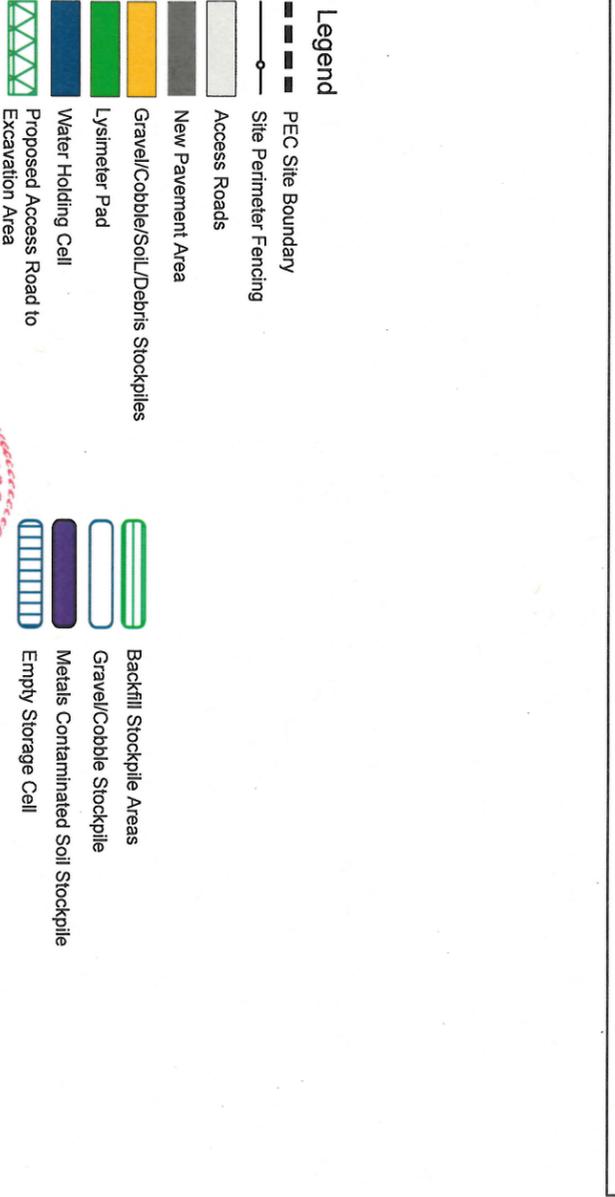
SCALE 1:3000
metres
0 60 120

CLIENT: **HEMMERA**
ENVIRONMENT CANADA

PROJECT NO. 457-002.44
October 2014
STOCKPILE MAP
FORMER HEEDE CRANE AREA INTERIM REMEDIATION
PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC
Figure 4

- NOTES:
1. Whenever possible, the access roads shall be constructed around the existing stockpiles to minimize relocation of existing stockpiles.
 2. There are two right-of-ways crossing the PEC Site. A Metro Vancouver Right-of-Way (ROW) containing two water mains is present from the northern property boundary to the southern shoreline along Burrard Inlet. A District of North Vancouver (DNV) ROW, containing one water main runs from the Metro Vancouver water main to the eastern property boundary. To mitigate potential damage to the water main pipes, heavy equipment movement is limited across the ROWs, parking or storage of materials over top of the ROWs is prohibited, and excavations anywhere within or across the ROWs are prohibited. The Contractor shall also maintain 24 hour access to the Metro Vancouver ROW. The Contractor is to ascertain and abide by all DNV and Metro Vancouver requirements for work in and around the ROWs. This project shall not include any excavation within the GVRD or DNV right of ways.
 3. The material excavated will be handled as suspect waste soil, suspect hazardous waste soil, asphalt waste, concrete waste, wood waste, metal waste, and general waste.
 4. The excavated soil will be transported to the designated screening area and mechanically screened.
 5. The screened soil shall be stockpiled into storage cells as directed by the Department Representative.
 6. The gravel/cobble material shall be stockpiled in the designated area on-site.
 7. Whenever possible, the Contractor shall segregate the asphalt waste, concrete waste, wood waste, metal waste, and general waste from the soils prior to mechanical screening. The asphalt waste, concrete waste, wood waste, metal waste, and general waste shall be placed in separate stockpiles in an on-site area approved by the Department Representative.
 8. The Contractor shall provide measures to prevent water that may drain from the excavated soil from adversely impacting the PEC Site or to directly enter open watercourses.
 9. The imported backfill must be river sand or well graded sand and gravel complying with CCME Canadian Soil Quality Guidelines for Residential Land Use (or approved equivalent).
 10. The imported backfill total silt and clay content must not exceed 15% by mass.
 11. The Contractor shall stockpile imported backfill in designated areas as directed by the Department Representative.

- Work by Others**
- A. The Department Representative will engage a surveyor to survey the soil storage cells before and after material is transferred into them to determine the volume of material in each stockpile. The surveyor will be a member of the Association of BC Land Surveyors. The Contractor has the right to conduct own surveys using a member of the Association of BC Land Surveyors. In the event in a discrepancy between the Department Representative's survey and the Contractor's survey, the results of both surveys will be forwarded to a member of the Association of BC Land Surveyors acceptable to both parties, whose decision will be binding.
- Transfer Facility Reloading**
1. The Contractor is required to reload the transfer facility with soil from on-site stockpiles when requested by the Department Representative.
 2. Reloading of the transfer facility may be required after the completion of the excavation work and any time prior to March 31, 2015.
 3. The Contractor is responsible for removing and re-securing on-site stockpile covers at the end of each reloading event.
 4. The approximate capacity of the transfer facility is 2,200 m³ and the contractor will be required to load the transfer facility to full capacity.



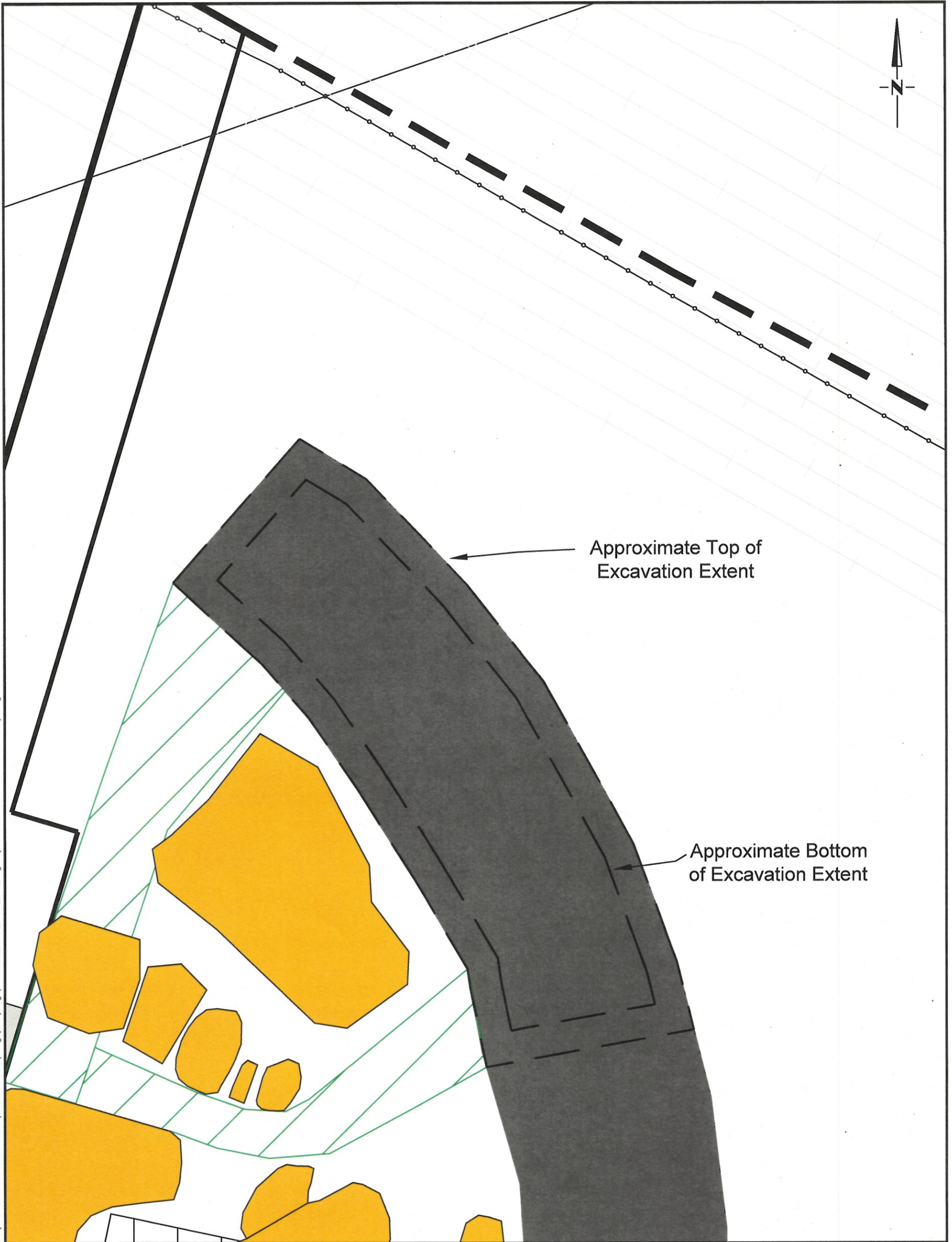
- Legend**
- PEC Site Boundary
 - Site Perimeter Fencing
 - Access Roads
 - New Pavement Area
 - Gravel/Cobble/Soil/Debris Stockpiles
 - Lysimeter Pad
 - Water Holding Cell
 - Proposed Access Road to Excavation Area
 - Backfill Stockpile Areas
 - Gravel/Cobble Stockpile
 - Metals Contaminated Soil Stockpile
 - Empty Storage Cell

PROFESSIONAL ENGINEER
 COLUCCI
 # 32367
 OCT 9, 2014

SCALE 1:3000
 metres
 0 60 120

CLIENT: **HEMMERA**
 ENVIRONMENT CANADA

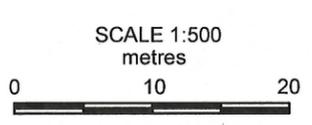
PROJECT No. 457-002.44
 October 2014
 SITE LAYOUT
 FORMER HEEDE CRANE AREA INTERIM REMEDIATION
 PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC
 Figure 5



O:\457\Environment\Canada\002\PilotSampling\44\dwg\141008_457_002_44_Fig00(HeedeCraneAreaRemediation).dwg

Legend

-  PEC Site Boundary
-  Site Perimeter Fencing
-  New Pavement Area
-  Gravel/Cobble/Soil/Debris Stockpiles
-  Proposed Access Road to Excavation Area

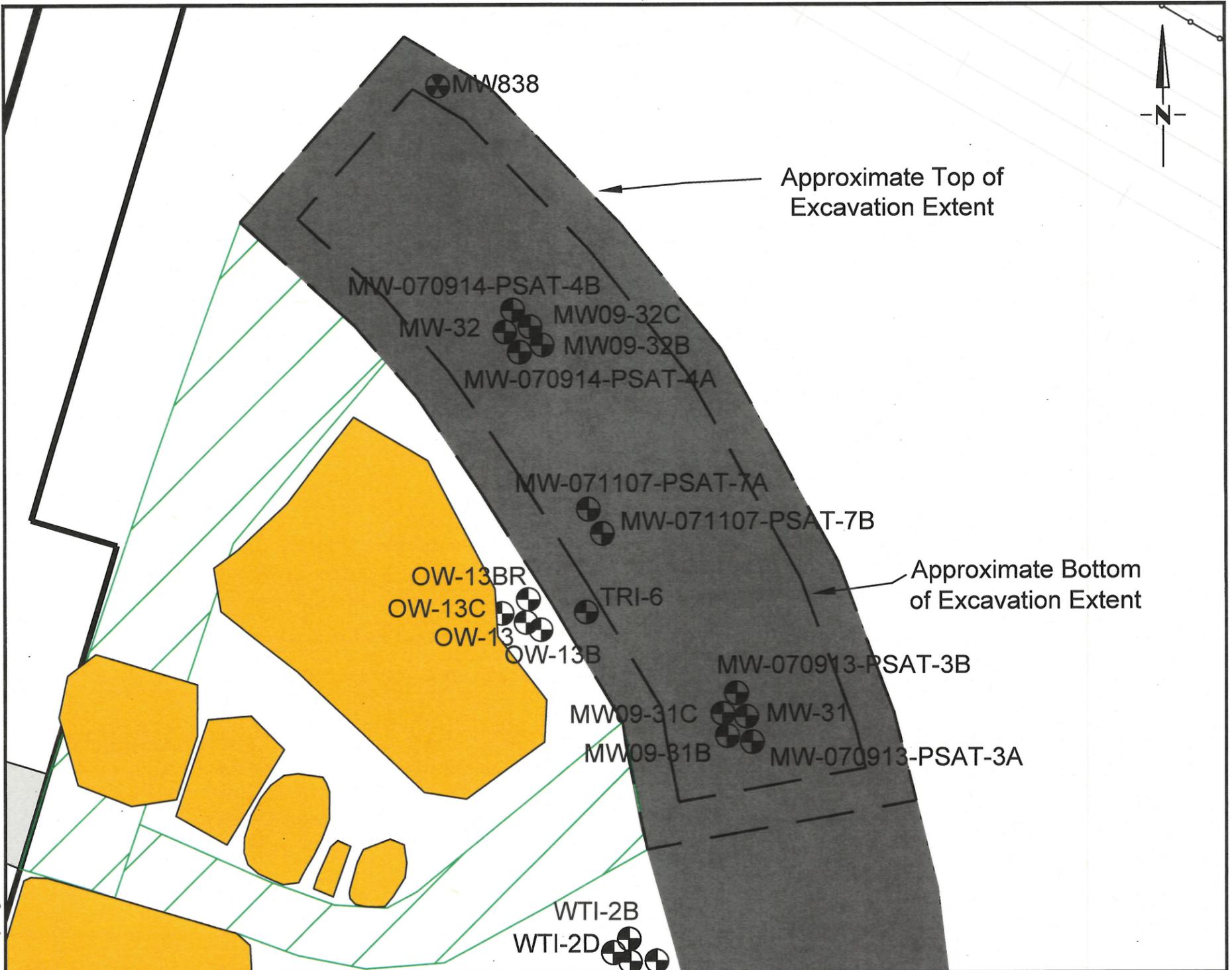


CLIENT:  ENVIRONMENT CANADA

FORMER HEEDE CRANE AREA INTERIM REMEDIATION
PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

EXCAVATION DETAIL

PROJECT No.	457-002.44	October 2014	Figure 6
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NOTES:

1. The depth of excavation from the existing grade to the groundwater table is approximately 3.5 m below grade.
2. The excavation walls must be sloped 1 horizontal (H) to 1 Vertical (V).
3. Monitoring wells within the proposed excavation footprint shall be persevered.
4. Other wastes (asphalt, concrete, wood, metal and general waste) excavated shall be stockpiled by the Contractor in designated areas approved by the Department Representative.
5. Utility lines which are abandoned and not in use may be removed during excavation activities.
6. More than 100 groundwater-monitoring wells (MWs) have been installed on-site, including within and near the work areas. The Contractor must make all reasonable efforts to maintain the integrity of the MWs located within the excavation footprint (13 MWs located within the excavation footprint) and outside of the excavation footprint. If necessary, the Contractor may cut and cap the MWs polyvinyl chloride (PVC) well pipes as the excavation progresses. The Contractor is responsible for the cost of repairs necessary to the MWs in the event they are damaged during their activities. An effort has been made to identify and mark the MWs on-site; however, extreme caution must be exercised during the moving of equipment, placing of materials, foot traffic, etc.
7. Currently there are no known recorded archaeological deposits within the proposed excavation area. If, while conducting the excavation, the Contractor finds anything of an unusual nature within the fill that cannot be identified, and which they have any reason to suspect may be an archaeological deposit, work must be stopped. The Contractor is responsible for informing the Department Representative of the situation. In such cases, an archaeologist may be required to inspect the site, and advise of appropriate measures to be taken prior to the resumption of work on-site.
8. Any schedule changes, work plan changes or additional costs related to archaeological interruptions shall be approved by the Department Representative prior to undertaking alterations to the work plan or schedule.
9. The excavation of material shall continue until the limits of the excavation are reached based on visual observation of groundwater table by the Department Representative. Soil analytical chemistry results for the proposed excavation area are attached for reference purposes only (see **Appendix B, Table 1**). A limited quantity of hazardous waste and suspect hazardous waste soils will be removed as part of the excavation program. The suspect hazardous waste soils must be segregated from the waste soils during excavation and stockpiled in a designated soil storage cell determined by the Department Representative. Borehole logs from the excavation area are attached for reference purposes only (see **Appendix C**).

10. The Contractor's excavator will be required to retrieve soils for sampling activities conducted by the Department Representative. It is expected that the Contractor is aware that the progress of the remedial excavation may be slower than typical construction excavations on sites where contaminated soils are not anticipated to be present. A minimum of two excavation floor confirmatory soil samples will be collected from within a grid of 10 m increments. The time required to retrieve samples using the excavator shall be built into the Contractor's excavation and management costs in the Schedule of Items and Prices.

13. Slope protection of excavated areas shall not proceed until approved by the Department Representative.

14. Groundwater and surface water may be encountered during the proposed excavation. This water shall be collected and stored on-site by the Contractor on an as needed basis as determined by the Department Representative. The water will be sampled by the Department Representative and analyzed at the PESC laboratory. The laboratory turnaround time for water samples is anticipated to be four working days. The workday immediately following the date the samples are submitted is considered to be day number one. If required by the Department Representative, the water will be removed from the site for treatment and disposal by the Contractor. Groundwater analytical chemistry results from the proposed excavation area are provided for reference purposes only (see **Appendix B, Table 2**).

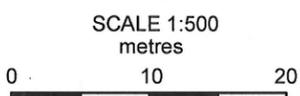
15. Active dewatering for the purposes of lowering the water table during excavation is not part of the project, however occasional dewatering may be required as a result of heavy precipitation events and if required by the Department Representative.

Work by Others

- A. The Department Representative will be on-site during the excavation program to verify and document the excavation procedures, confirm the Contractor's adherence to their construction plans and their methods to limit overall excavated soil volumes, maintain project quality assurance/quality control (QA/QC), and other Department Representative requests. PWGSC will be in contact with the Department Representative to monitor and address any issues that may impact the budget, schedule and technical aspect of the project. Any potential changes to the contract will be discussed for recommendation and final approval by PWGSC in consultation with the Department Representative.
- B. The Department Representative will identify suspect waste, and suspect hazardous waste soils requiring segregation during the excavation and stockpiling of excavated soil.

Legend

- PEC Site Boundary
- Site Perimeter Fencing
- New Pavement Area
- Gravel/Cobble/Soil/Debris Stockpiles
- ⊕ Monitoring Well
- ▭ Proposed Access Road to Excavation Area



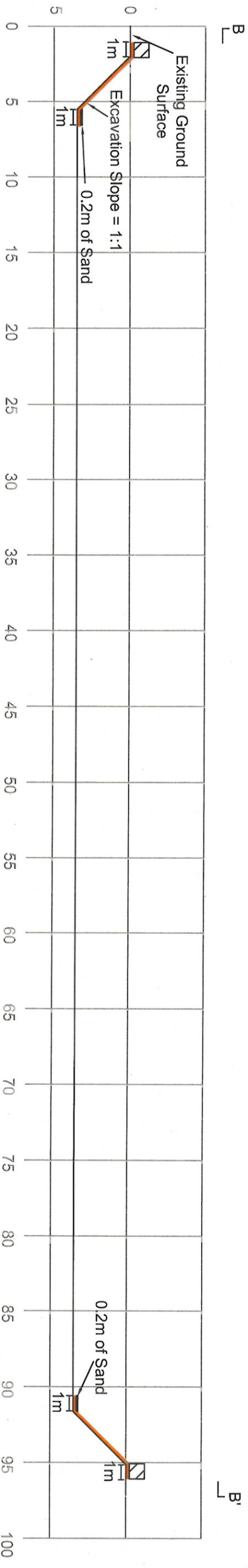
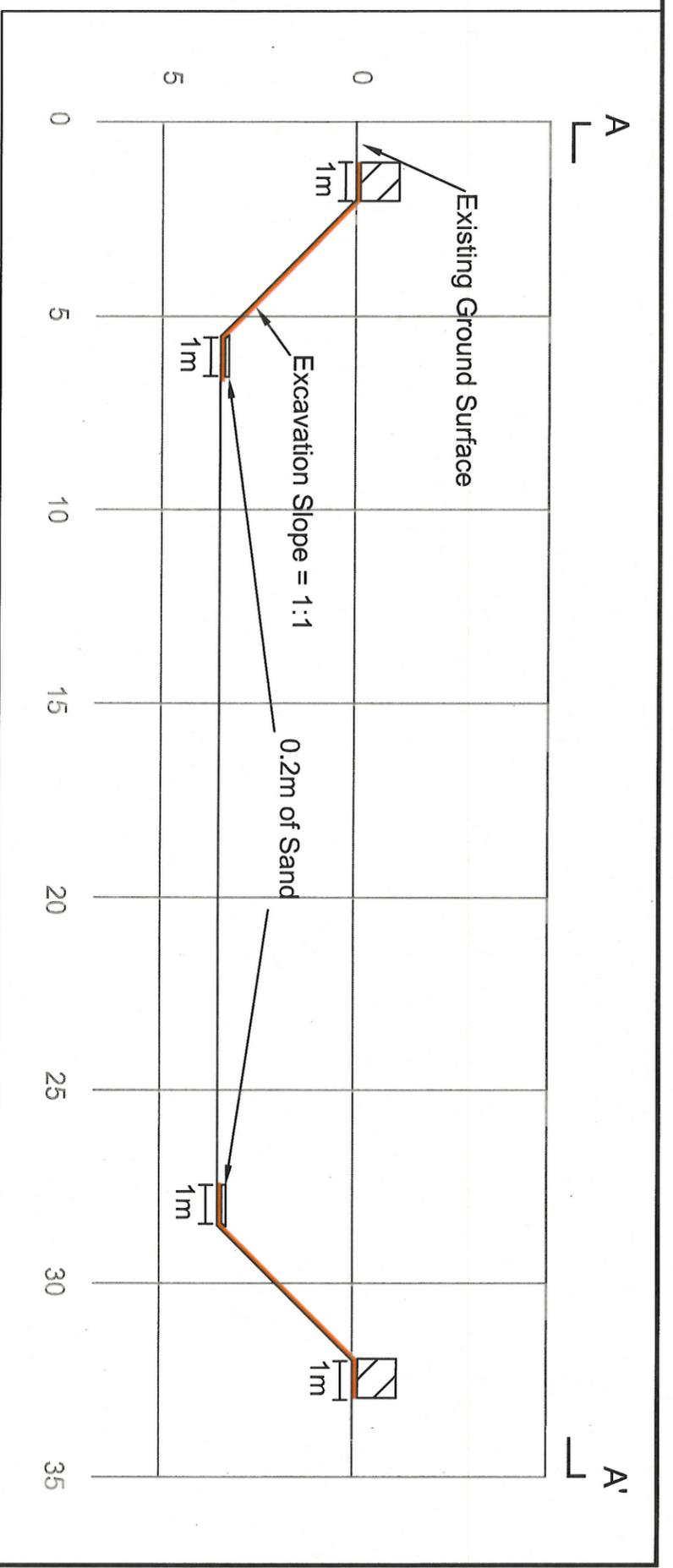
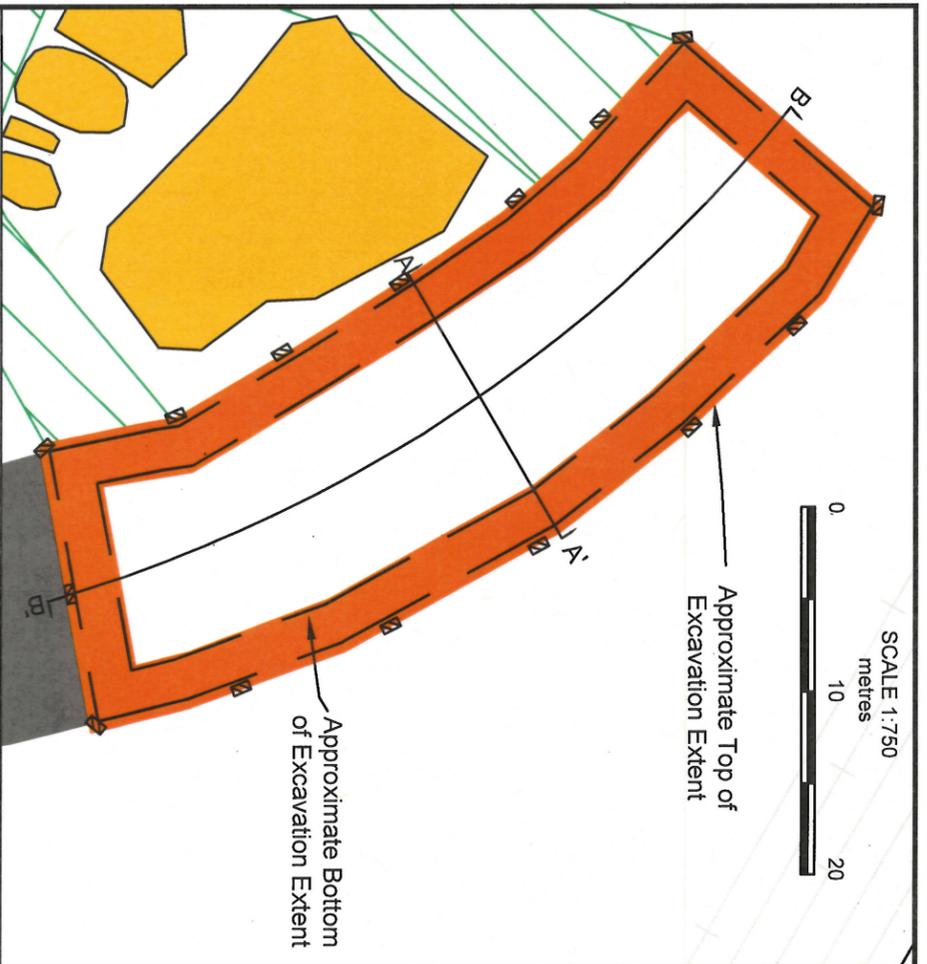
CLIENT: ENVIRONMENT CANADA

FORMER HEEDE CRANE AREA INTERIM REMEDIATION
PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

EXCAVATION DETAIL WITH MONITORING WELLS

PROJECT No. 457-002.44 October 2014 Figure 7

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Legend

- PEC Site Boundary
- Site Perimeter Fencing
- New Pavement Area
- Gravel/Cobble/Soil/Debris Stockpiles
- Proposed Access Road to Excavation Area
- 20 mil LLDPE Liner (Plan view)
- 20 mil LLDPE Liner (Cross Section)
- Lock Block
- Sand

PROFESSIONAL ENGINEER
 B. LIN
 OCT 9 2014

- NOTES:**
1. The excavation will not be backfilled and the excavation walls should be protected with 20 mil LLDPE or approved equivalent.
 2. The liner is to extend approximately 1.0 m onto the excavation floor and existing ground surface.
 3. The liner must be secured by placing lock blocks (approximately 16 blocks) on the ground surface and sand or approved equivalent of approximately 0.2m thick within the excavation floor.
 4. A ladder or approved equivalent should be installed to provide access to the excavation floor.

HEMMERA
 CLIENT: ENVIRONMENT CANADA

FORMER HEEDE CRANE AREA INTERIM REMEDIATION
 PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

CROSS SECTION VIEW OF
 POST-EXCAVATION AREA LAYOUT

PROJECT No. 457-002.44 October 2014 Figure 8

NOTES:

1. The Contractor may use the east room of the PEC Site office for general meetings and project co-ordination
2. If the Contractor requires additional office facilities, including meeting/project management space, phone and fax facilities, the Contractor shall supply and maintain temporary site office facilities adjacent to the Site Support Zone.
3. The Contractor may use the existing personnel decontamination facility. If the Contractor requires additional decontamination facilities the Contractor shall supply and maintain it at a location adjacent to the Site Support Zone.
4. The Contractor may use the existing portable toilet facilities. If the Contractor requires additional toilet facilities the Contractor shall supply and maintain temporary toilet facilities adjacent to the Contractors support facilities.
5. A temporary water connection is available on the PEC Site. Contractors are to review the connection to determine suitability for use. Contractors are responsible for water supply requirements for the duration of the project and shall not impact Environment Canada's water supply requirements.
6. Electrical power is available to the PEC Site via primary overhead electrical transmission lines that are located along the MV right of way. There is a 30 amp service at the proposed contractor location and a 15 amp service at the alternate contractor location available for Contractor to use. Contractor is responsible for modification to the existing services to meet their needs. Alternatively, Contractor may supply their own generators.
7. Location of proposed site facilities mentioned above shall be discussed with Environment Canada before commencing. Environment Canada may restrict the location for Contractor work areas (e.g. location of field offices).
8. The Contractor shall maintain the existing wheel wash in a condition (by controlling water level, water quality and sediment accumulation) to the satisfaction of the Department Representative such that it performs adequately and prevents contamination outside of the containment area. The Contractor must completely clean the wheel wash at the project completion. Wheel wash sediments and wastewater must be managed by the Contractor and be disposed of at an approved treatment/disposal facility..
9. The existing gravel/cobble stockpiles on-site are not available for Contractor use.
10. The Contractor shall supply and operate a water truck/mobile street washer (or equivalent) for the purposes of dust suppression and control.

Legend

-  PEC Site Boundary
-  Site Perimeter Fencing
-  Access Roads
-  New Pavement Area
-  Support Zone
-  Open Excavation



SCALE 1:3000
metres
0 60 120

HEMMERA
ENVIRONMENT CANADA

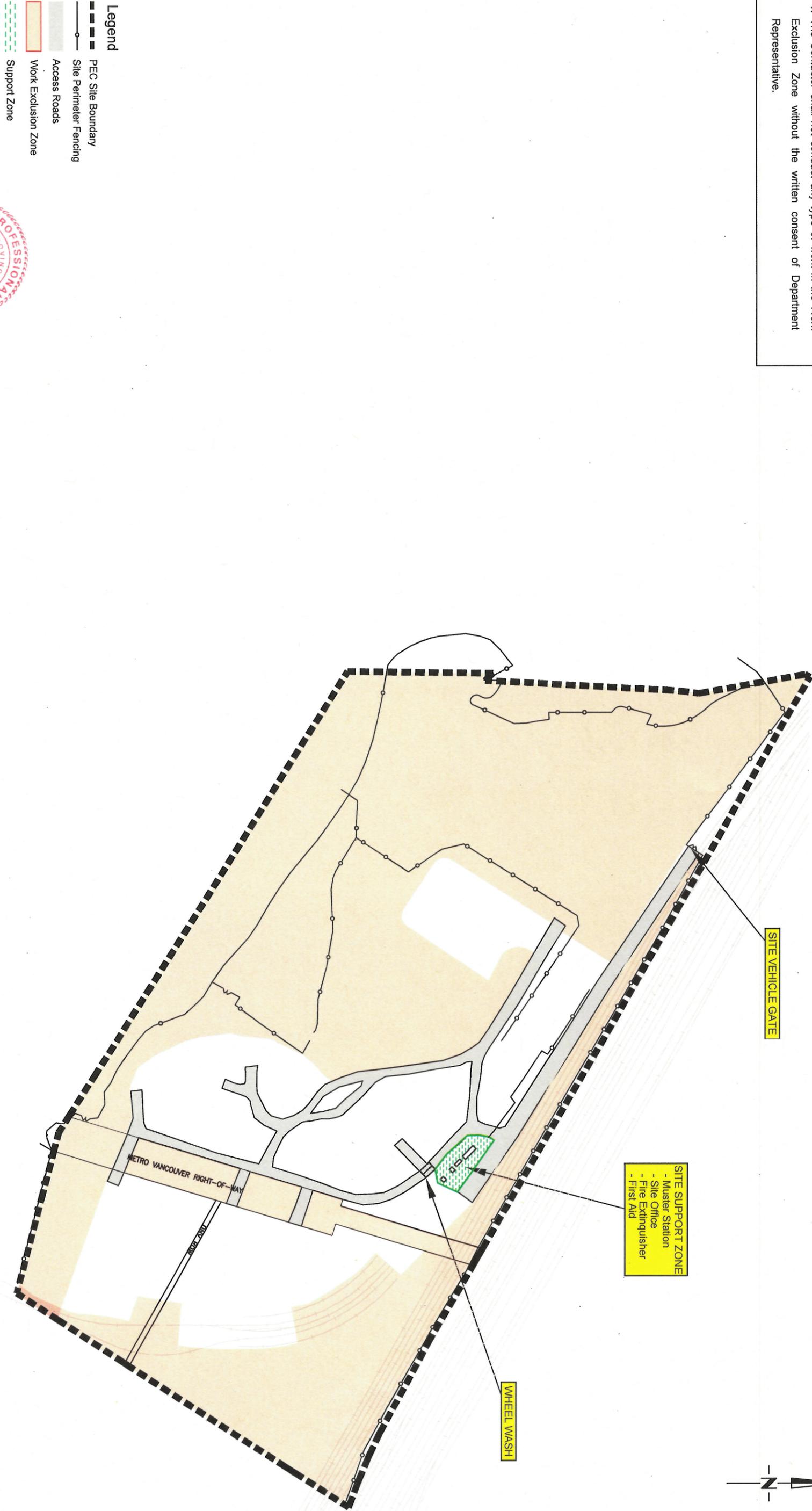
FORMER HEEDE CRANE AREA INTERIM REMEDIATION
PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

PEC SITE ROAD ROUTING AND HEALTH & SAFETY FEATURES - OPTIONAL WORK

PROJECT No. 457-002.44 October 2014 Figure 9



NOTES:
 1. The Contactor shall not conduct any type of work in the Work Exclusion Zone without the written consent of Department Representative.



- Legend**
- PEC Site Boundary
 - - - Site Perimeter Fencing
 - Access Roads
 - Work Exclusion Zone
 - Support Zone

PROFESSIONAL ENGINEER
 B. LIN
 2014
 OCT 9 2014

SCALE 1:3000
 metres
 0 60 120

CLIENT:
HEMMERA
 ENVIRONMENT CANADA

FORMER HEEDE CRANE AREA INTERIM REMEDIATION
 PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

SITE CONTROL ZONES - OPTIONAL WORK

PROJECT No. 457-002.44 October 2014 Figure 10

NOTES:

1. There are four empty storage cells and one temporary transfer facility available for the Contractor to store excavated soils with an approximate total capacity of 10,500 m³
2. The Contractor must inspect the condition of the storage cells and repair the storage cells prior to usage, if damaged. The storage cells must meet the following requirements:
 - A berm 0.75 metre in height is to be maintained using suitable clean material.
 - The base of the containment cell shall be graded such that the positive drainage of water/sludge to one low area will occur. The low area shall contain a sump with a slotted pipe such that drained water can be pumped from the containment cell.
 - The storage cell liners shall be replaced with 30 mil LLDPE or approved equivalent, if damaged.
 - The liner is to extend up and over the containment berm, covering 75% of the downward slope.
 - A suitable layer of bedding sand (150 mm thick) shall be placed in the containment cell.
 - The storage cells shall include a suitably sized cover of 20 mil woven polyethylene (WPE) or approved equivalent and materials (rope, tires, sandbags or approved equivalent) to secure the cover. Additionally, soil must be placed around the base of the storage cell to further secure the cover.
 - An access ramp shall be constructed to allow excavator and tandem axle dump truck access.
3. Other wastes (asphalt, concrete, wood, metal and general waste) excavated shall be stockpiled by the Contractor in designated areas approved by Department Representative.
 - The Contractor shall supply any additional products required for the repair of the storage cells, including but not limited to any materials required for securing the cell cover.

- Legend**
- PEC Site Boundary
 - - - Site Perimeter Fencing
 - Access Roads
 - New Pavement Area
 - Gravel/Cobble/Soil/Debris Stockpiles
 - Lysimeter Pad
 - Water Holding Cell
 - Open Excavation
 - Backfill Stockpile
 - Gravel/Cobble Stockpile
 - Metals Contaminated Soil Stockpile
 - Empty Storage Cell



SCALE 1:3000
metres
0 60 120

CLIENT: **HEMMERA**
ENVIRONMENT CANADA

FORMER HEEDE CRANE AREA INTERIM REMEDIATION
PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

PROJECT No. 457-002.44
October 2014

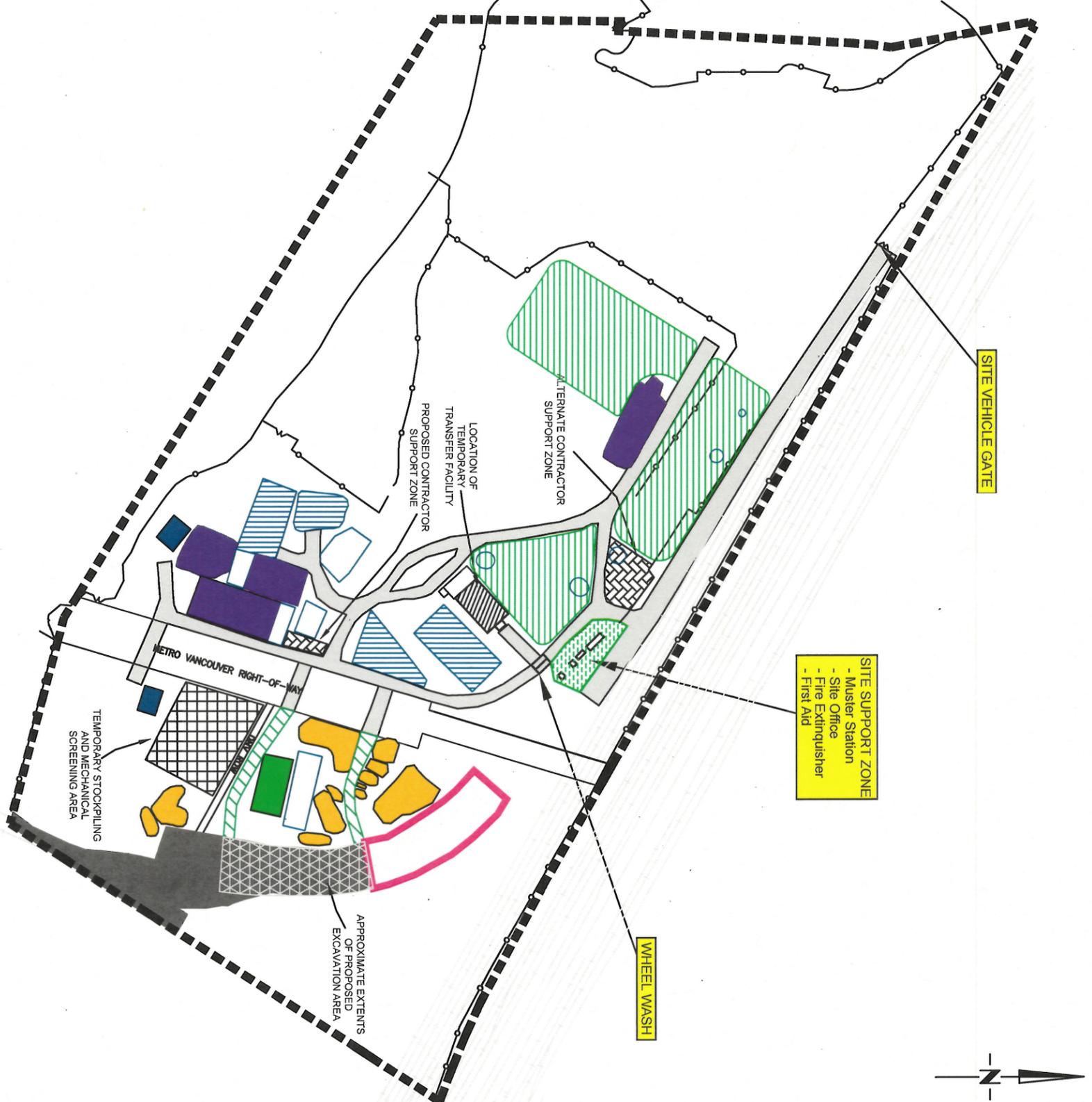
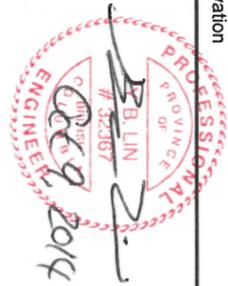
STOCKPILE MAP - OPTIONAL WORK
Figure 11

NOTES:

1. Wherever possible, the access roads shall be constructed around the existing stockpiles to minimize relocation of existing stockpiles.
 2. There are two right-of-ways crossing the PEC Site. A Metro Vancouver Right-of-Way (ROW) containing two water mains is present from the northern property boundary to the southern shoreline along Burrard Inlet. A District of North Vancouver (DNV) ROW, containing one water main runs from the Metro Vancouver water main to the eastern property boundary. To mitigate potential damage to the water main pipes, heavy equipment movement is limited across the ROWs, parking or storage of materials over top of the ROWs is prohibited, and excavations anywhere within or across the ROWs are prohibited. The Contractor shall also maintain 24 hour access to the Metro Vancouver ROW. The Contractor is to ascertain and abide by all DNV and Metro Vancouver requirements for work in and around the ROWs. This project shall not include any excavation within the GVRD or DNV right of ways.
 3. The material excavated will be handled as suspect waste soil, suspect hazardous waste soil, asphalt waste, concrete waste, wood waste, metal waste, and general waste.
 4. The excavated soil will be transported to the designated screening area and mechanically screened.
 5. The screened soil shall be stockpiled into storage cells as directed by the Department Representative.
 6. The gravel/cobble material shall be stockpiled in the designated area on-site.
 7. Whenever possible, the Contractor shall segregate the asphalt waste, concrete waste, wood waste, metal waste, and general waste from the soils prior to mechanical screening. The asphalt waste, concrete waste, wood waste, metal waste, and general waste shall be placed in separate stockpiles in an on-site area approved by the Department Representative.
 8. The Contractor shall provide measures to prevent water that may drain from the excavated soil from adversely impacting the PEC Site or to directly enter open watercourses.
 9. The imported backfill must be river sand or well graded sand and gravel complying with CME Canadian Soil Quality Guidelines for Residential Land Use (or approved equivalent).
 10. The imported backfill total silt and clay content must not exceed 15% by mass.
 11. The Contractor shall stockpile imported backfill in designated areas as directed by the Department Representative.
- Work by Others**
- A. The Department Representative will engage a surveyor to survey the soil storage cells before and after material is transferred into them to determine the volume of material in each stockpile. The surveyor will be a member of the Association of BC Land Surveyors. The Contractor has the right to conduct own surveys using a member of the Association of BC Land Surveyors. In the event in a discrepancy between the Department Representative's survey and the Contractor's survey, the results of both surveys will be forwarded to a member of the Association of BC Land Surveyors acceptable to both parties, whose decision will be binding.
- Transfer Facility/Reloading**
1. The Contractor is required to reload the transfer facility with soil from on-site stockpiles when requested by the Department Representative.
 2. Reloading of the transfer facility may be required after the completion of the excavation work and any time prior to March 31, 2015.
 3. The Contractor is responsible for removing and re-securing on-site stockpile covers at the end of each reloading event.
 4. The approximate capacity of the transfer facility is 2,200 m³ and the contractor will be required to load the transfer facility to full capacity.

- Legend**
- PEC Site Boundary
 - Site Perimeter Fencing
 - Access Roads
 - New Pavement Area
 - Gravel/Cobble/Soil/Debris Stockpiles
 - Lysimeter Pad
 - Water Holding Cell
 - Proposed Access Road to Excavation Area
 - Open Excavation

- Backfill Stockpile
- Gravel/Cobble Stockpile
- Metals Contaminated Soil Stockpile
- Empty Storage Cell



SCALE 1:3000
metres
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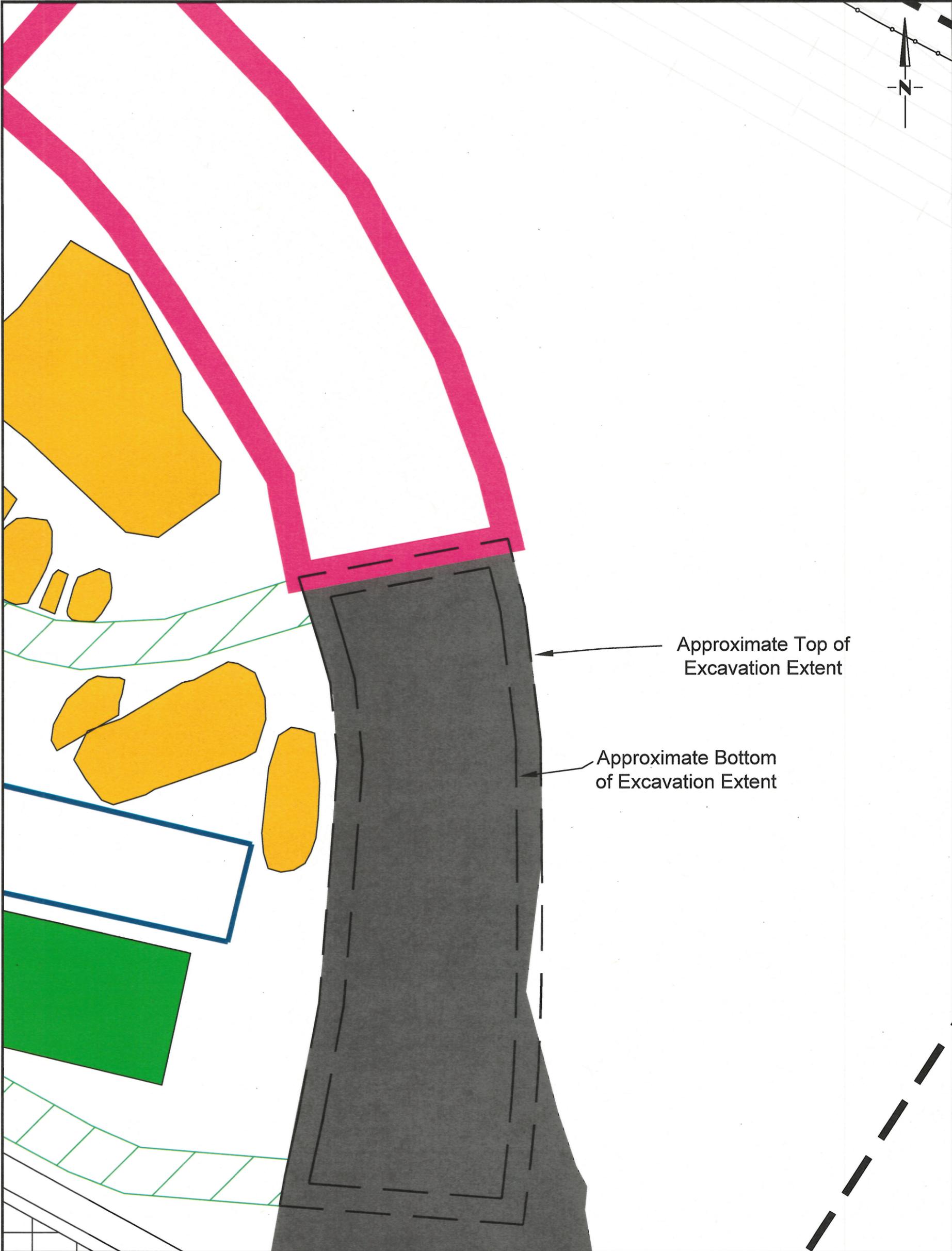
CLIENT: **HEMMERA** ENVIRONMENT CANADA

PROJECT No. 457-002.44
October 2014
Figure 12

**FORMER HEEDE CRANE AREA INTERIM REMEDIATION
PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC**

SITE LAYOUT - OPTIONAL WORK

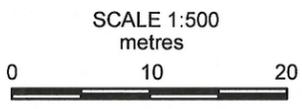
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Legend

- PEC Site Boundary
- Site Perimeter Fencing
- New Pavement Area
- Lysimeter Pad
- Gravel/Cobble/Soil/Debris Stockpiles
- ▨ Proposed Access Road to Excavation Area

- Open Excavation
- Gravel/Cobble Stockpile

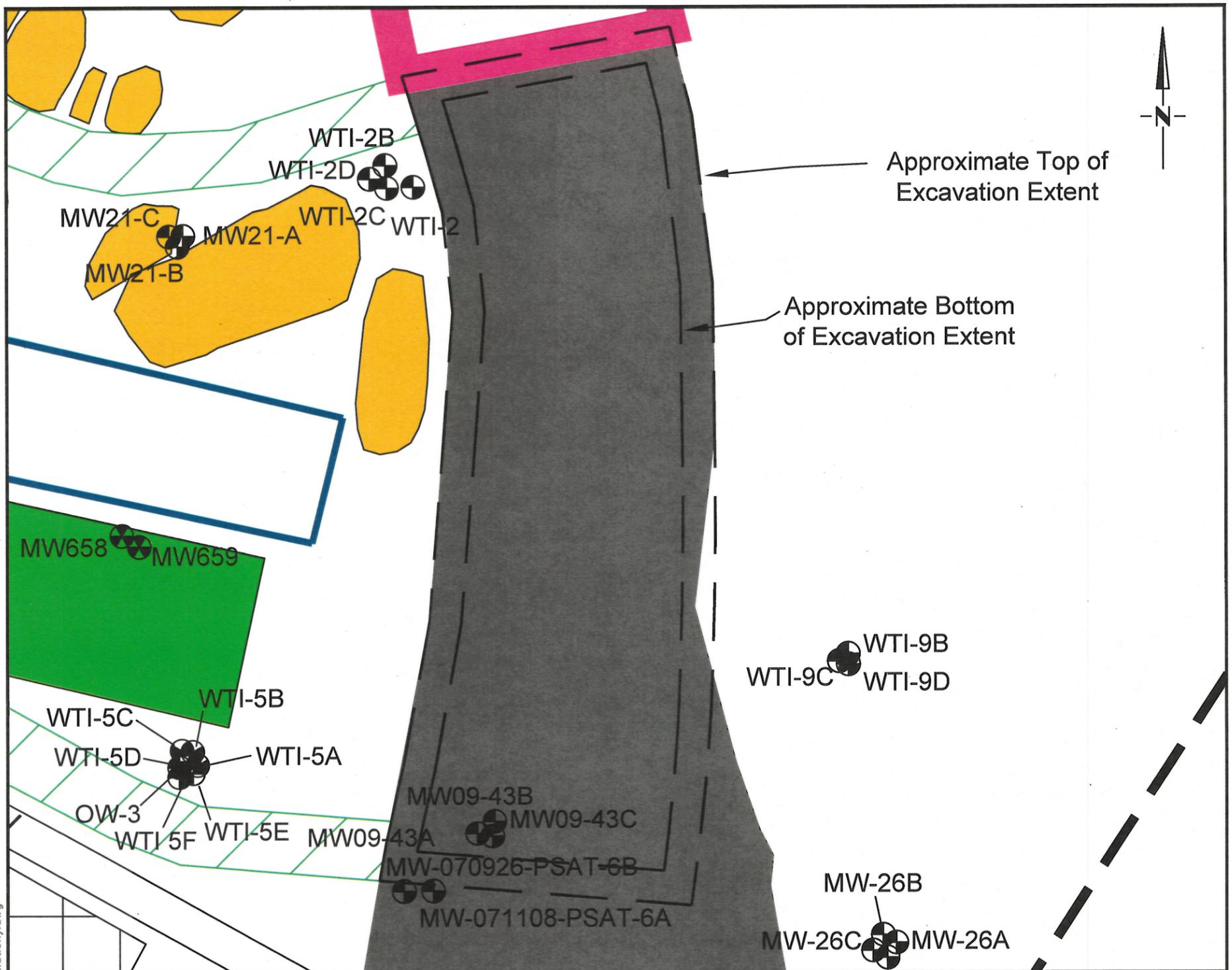


CLIENT:
 ENVIRONMENT CANADA

FORMER HEEDE CRANE AREA INTERIM REMEDIATION
 PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

EXCAVATION DETAIL - OPTIONAL WORK

PROJECT No.	457-002.44	October 2014	Figure 13
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NOTES:

- The depth of excavation from the existing grade to the groundwater table is approximately 3.5 m below grade.
- The excavation walls must be sloped 1 horizontal (H) to 1 Vertical (V).
- Monitoring wells within the proposed excavation footprint shall be persevered.
- Other wastes (asphalt, concrete, wood, metal and general waste) excavated shall be stockpiled by the Contractor in designated areas approved by the Department Representative.
- Utility lines which are abandoned and not in use may be removed during excavation activities.
- More than 100 groundwater-monitoring wells (MWs) have been installed on-site, including within and near the work areas. The Contractor must make all reasonable efforts to maintain the integrity of the MWs located within the excavation footprint (13 MWs located within the excavation footprint) and outside of the excavation footprint. If necessary, the Contractor may cut and cap the MWs polyvinyl chloride (PVC) well pipes as the excavation progresses. The Contractor is responsible for the cost of repairs necessary to the MWs in the event they are damaged during their activities. An effort has been made to identify and mark the MWs on-site; however, extreme caution must be exercised during the moving of equipment, placing of materials, foot traffic, etc.
- Currently there are no known recorded archaeological deposits within the proposed excavation area. If, while conducting the excavation, the Contractor finds anything of an unusual nature within the fill that cannot be identified, and which they have any reason to suspect may be an archaeological deposit, work must be stopped. The Contractor is responsible for informing the Department Representative of the situation. In such cases, an archaeologist may be required to inspect the site, and advise of appropriate measures to be taken prior to the resumption of work on-site.
- Any schedule changes, work plan changes or additional costs related to archaeological interruptions shall be approved by the Department Representative prior to undertaking alterations to the work plan or schedule.
- The excavation of material shall continue until the limits of the excavation are reached based on visual observation of groundwater table by the Department Representative. Soil analytical chemistry results for the proposed excavation area are attached for reference purposes only (see **Appendix B, Table 1**). A limited quantity of hazardous waste and suspect hazardous waste soils will be removed as part of the excavation program. The suspect hazardous waste soils must be segregated from the waste soils during excavation and stockpiled in a designated soil storage cell determined by the Department Representative. Borehole logs from the excavation area are attached for reference purposes only (see **Appendix C**).

10. The Contractor's excavator will be required to retrieve soils for sampling activities conducted by the Department Representative. It is expected that the Contractor is aware that the progress of the remedial excavation may be slower than typical construction excavations on sites where contaminated soils are not anticipated to be present. A minimum of two excavation floor confirmatory soil samples will be collected from within a grid of 10 m increments. The time required to retrieve samples using the excavator shall be built into the Contractor's excavation and management costs in the Schedule of Items and Prices.

13. Slope protection of excavated areas shall not proceed until approved by the Department Representative.

14. Groundwater and surface water may be encountered during the proposed excavation. This water shall be collected and stored on-site by the Contractor on an as needed basis as determined by the Department Representative. The water will be sampled by the Department Representative and analyzed at the PESC laboratory. The laboratory turnaround time for water samples is anticipated to be four working days. The workday immediately following the date the samples are submitted is considered to be day number one. If required by the Department Representative, the water will be removed from the site for treatment and disposal by the Contractor. Groundwater analytical chemistry results from the proposed excavation area are provided for reference purposes only (see **Appendix B, Table 2**).

15. Active dewatering for the purposes of lowering the water table during excavation is not part of the project, however occasional dewatering may be required as a result of heavy precipitation events and if required by the Department Representative.

Work by Others

- The Department Representative will be on-site during the excavation program to verify and document the excavation procedures, confirm the Contractor's adherence to their construction plans and their methods to limit overall excavated soil volumes, maintain project quality assurance/quality control (QA/QC), and other Department Representative requests. PWGSC will be in contact with the Department Representative to monitor and address any issues that may impact the budget, schedule and technical aspect of the project. Any potential changes to the contract will be discussed for recommendation and final approval by PWGSC in consultation with the Department Representative.
- The Department Representative will identify suspect waste, and suspect hazardous waste soils requiring segregation during the excavation and stockpiling of excavated soil.

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Legend

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- Site Perimeter Fencing
- New Pavement Area
- Gravel/Cobble/Soil/Debris Stockpiles
- ▨ Proposed Access Road to Excavation Area
- Lysimeter Pad
- Open Excavation
- Monitoring Well
- Gravel/Cobble Stockpile

SCALE 1:500
metres



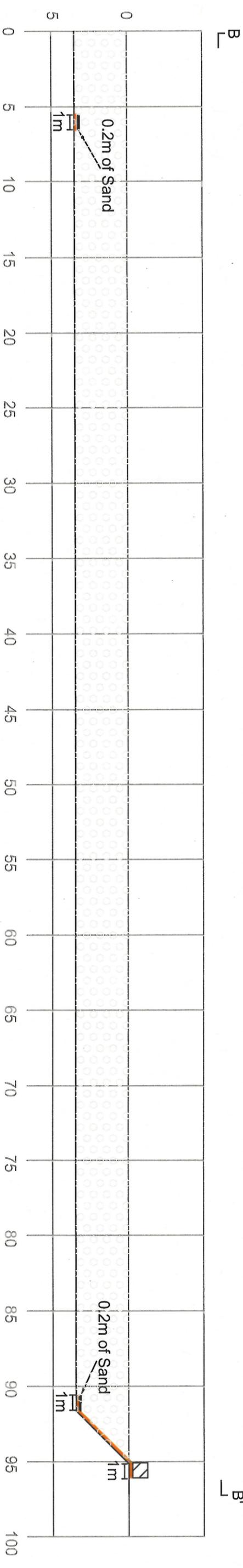
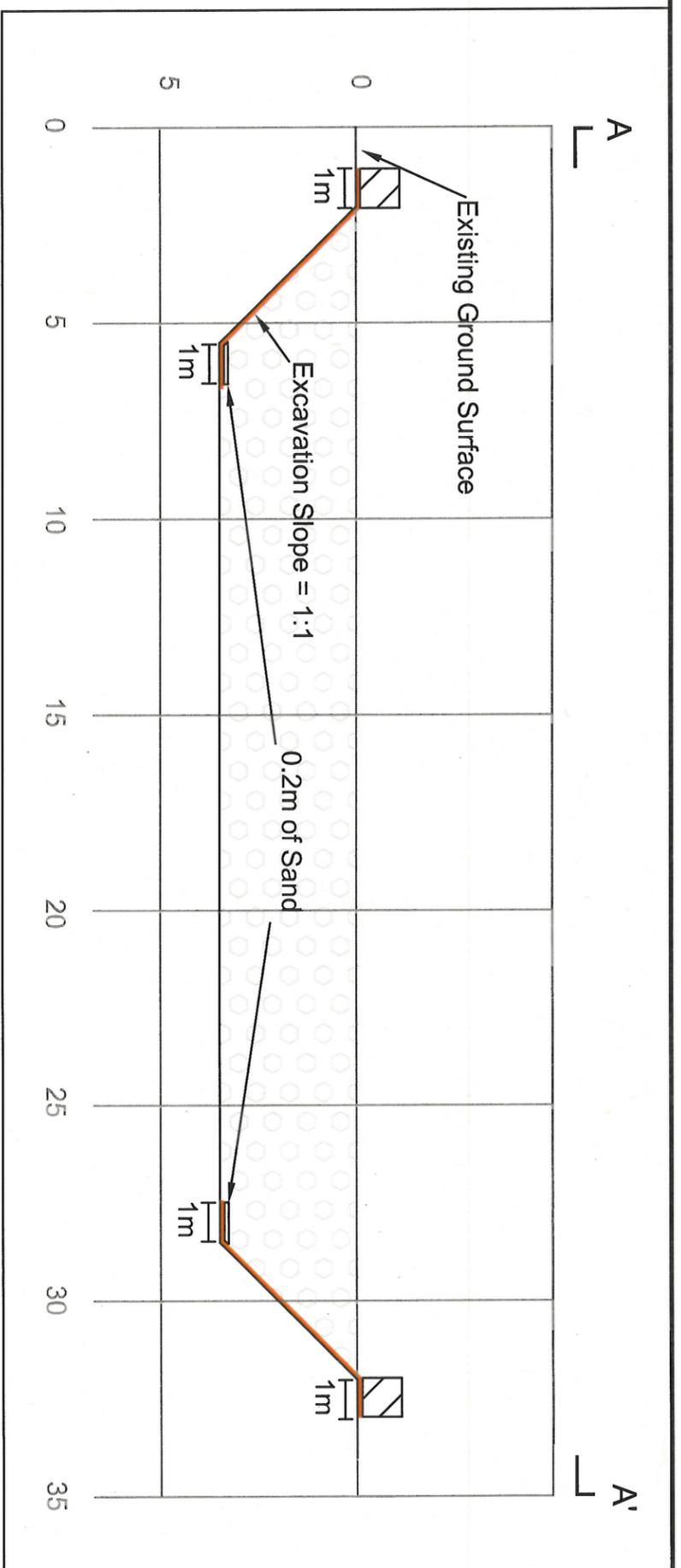
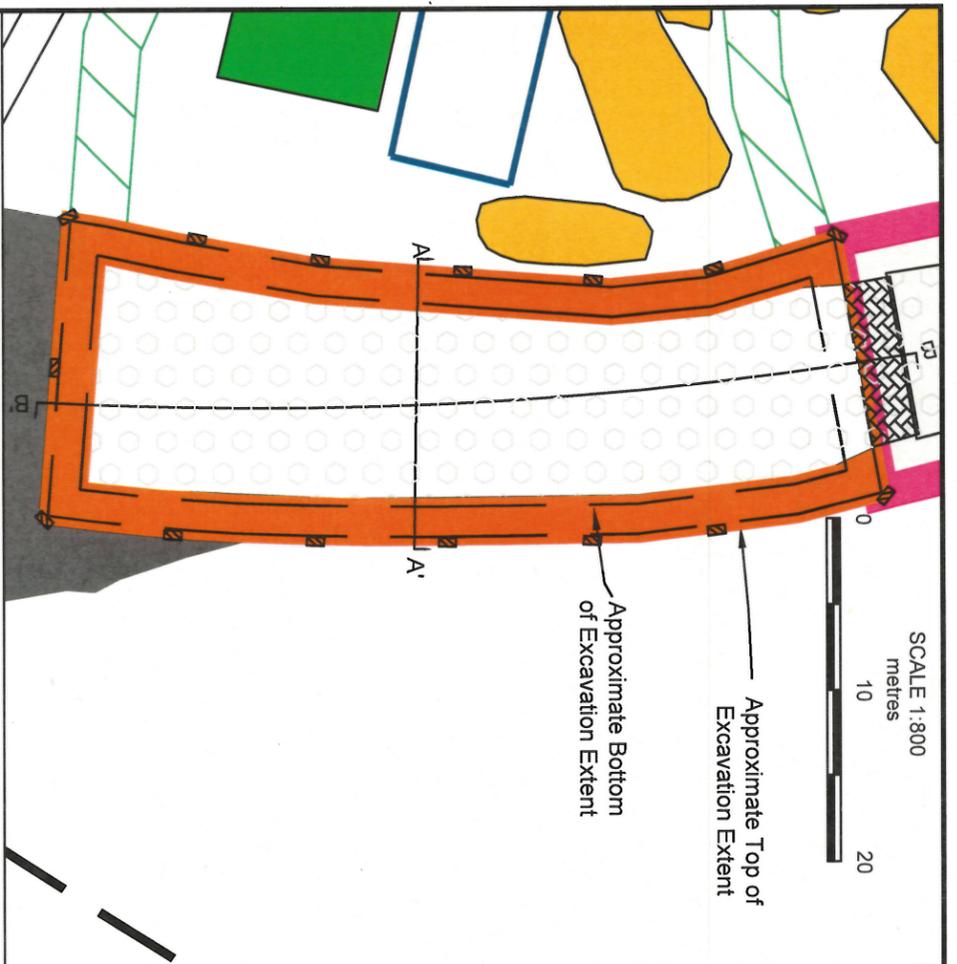
CLIENT:
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FORMER HEEDE CRANE AREA INTERIM REMEDIATION
 PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

EXCAVATION DETAIL WITH MONITORING
 WELLS - OPTIONAL WORK

PROJECT No. 457-002.44 October 2014 Figure 14

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- Legend**
- PEC Site Boundary
 - Site Perimeter Fencing
 - New Pavement Area
 - Gravel/Cobble/Soil/Debris Stockpiles
 - Proposed Access Road to Excavation Area
 - Liner to be cut and removed
 - Lysimeter Pad
 - Gravel/Cobble Stockpile
 - 20 mil LLDPE Liner (Plan view)
 - 20 mil LLDPE Liner (Cross Section)
 - Lock Block
 - Backfill

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 OCT 9 2014

- NOTES:**
1. The Contractor is required to backfill both excavations to pre-excavation surface elevations using backfill materials available onsite.
 2. The backfill should be compacted in place in controlled lifts not exceeding 0.45 metres in thickness. Compaction should be done using large ride-on compaction equipment.
 3. The backfill materials shall be placed to a minimum of 95 percent of their Modified Proctor Maximum Dry Density (ASTM D1557) while at a moisture content within 2 percent of optimum for compaction
 4. The Department Representative shall coordinate third party density testing services to provide quality assurance of the work.

HEMMERA
 ENVIRONMENT CANADA

CLIENT: ENVIRONMENT CANADA

PROJECT No. 457-002.44

FORMER HEEDE CRANE AREA INTERIM REMEDIATION
 PACIFIC ENVIRONMENT CENTRE SITE, WEST VANCOUVER, BC

CROSS SECTION VIEW OF
 POST-EXCAVATION AREA LAYOUT - OPTIONAL WORK

October 2014

Figure 15