

# KENOW WILDFIRE ASSESSMENT AND REMEDIATION

## WATERTON LAKES

### VARIOUS SITES

### ISSUED FOR TENDER

DRAWING INDEX	
DWG.	DESCRIPTION
176826-00-01	OVERALL SITE PLAN
176826-04-01	SITE 4 PARK ENTRANCE PROPOSED REMEDIATION, LOCATION: GATE HOUSE
176826-05-01	SITE 5 PARK ENTRANCE PROPOSED REMEDIATION, LOCATION: HEAVY EQUIPMENT
176826-06-01	SITE 6 CANYON CHURCH CAMP PROPOSED REMEDIATION, LOCATIONS: COOK RESIDENCE, DIRECTOR RESIDENCE, HOSPITAL, FEMALE WASHROOM AND CABINS
176826-07-01	SITE 7 WATERTON GOLF PROPOSED REMEDIATION, LOCATION: MAINTENANCE SHED

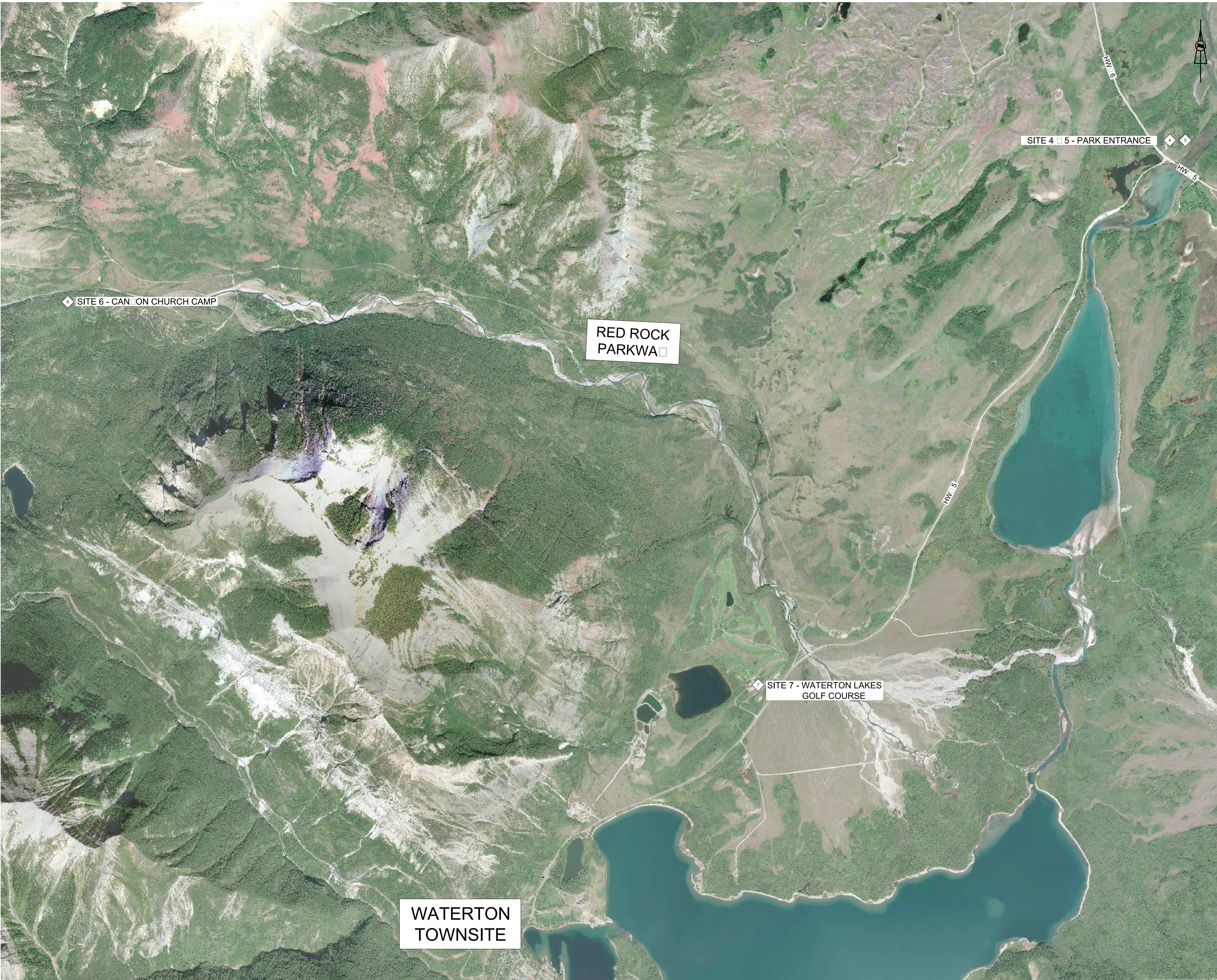


KE PLAN

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DILLON PROJECT: 176826  
DATE: 07/24/2018





- Notes
1. Hazardous material assessment of surface debris conducted between Dec. 19, 2017 and Jan. 19, 2018
  2. Shallow soil sampling assessment conducted from Dec.19, 2017 to Dec 23, 2017
  3. Additional debris sampling at Site 6 completed in May 2018.
  4. Additional shallow soil sampling conducted in June 2018 at Site 4.

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**KENOW WILDFIRE  
ASSESSMENT AND  
REMEDATION  
WATERTON LAKES**

Drawing title/Titre du dessin  
**OVERALL SITE PLAN**

Surveyed by/Arpenté par BDS	Drawn by/Dessiné par BDS	Date/Date 04/05/18
Designed by/Concept par AYS	Reviewed by/Revisé par MHI	Scale/Echelle 1:10000

PWSC Project Manager/Administrateur de Projets TPSGC

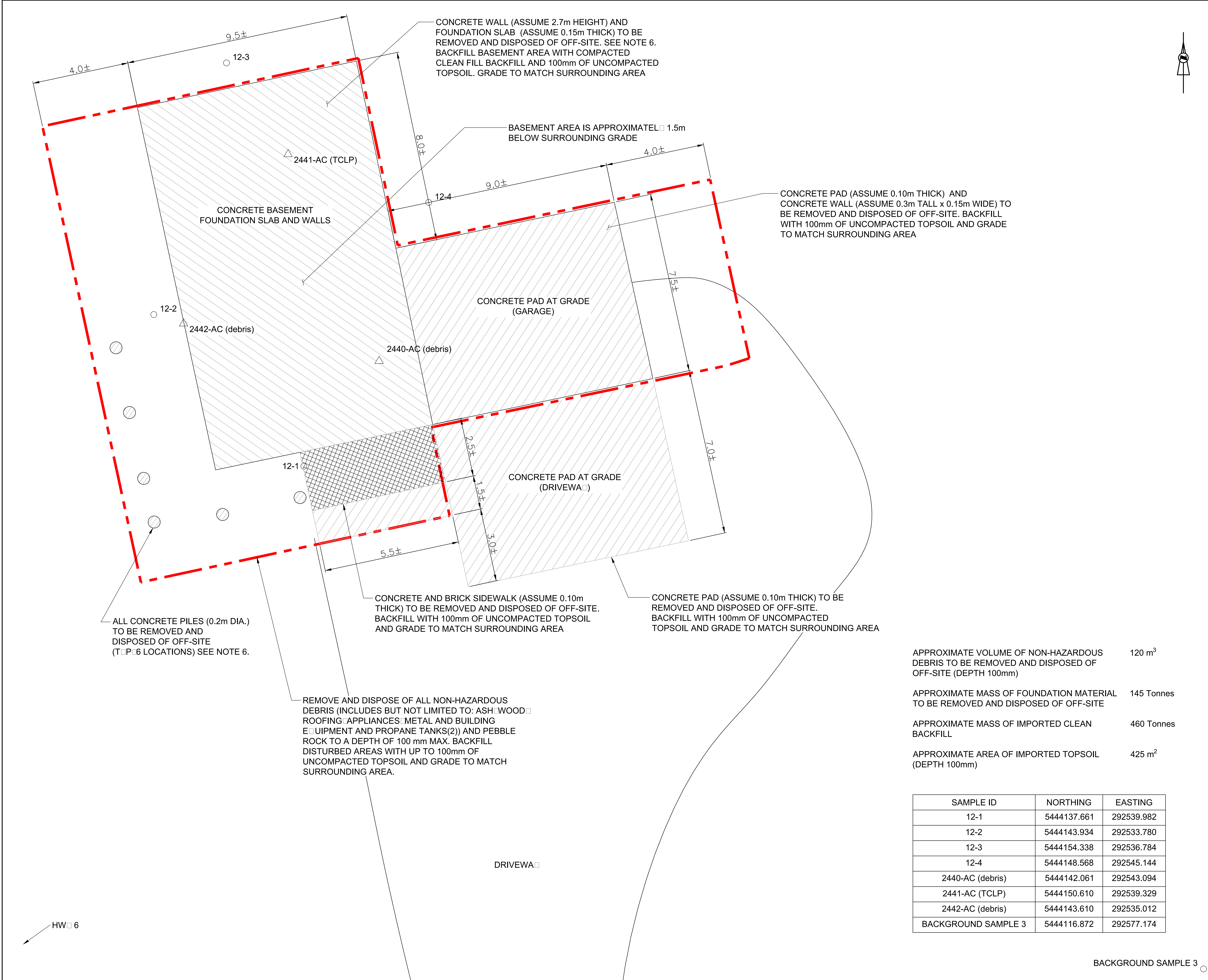
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Park Responsable Other/Responsable		PWSC Project Manager/Administrateur de Projets TPSGC

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Drawing Reference No./No. de référence du dessin  
**176826-00-01**

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**Legend**

- Soil Sample Location
- △ Debris Sample Location
- Soil Sample Exceeding Applicable Tier 2 Regulatory Guidelines
- ▲ Debris Sample Exceeding Regulatory Guidelines
- - - Contaminated Soils Excavation Boundary
- - - Non-Hazardous Surface Debris Boundary
- ▨ Concrete
- ▩ Brick

**Notes**

- All Dimensions are approximate
- All quantities are approximate. Contractor to verify quantities on-site
- No hazardous material detected in surface debris during hazardous material assessment
- Site is within 500m of a surface water source
- Site is within 500m of a water well
- Assume 2.7m (9') basement concrete wall (0.15m thick) and concrete foundation (0.15m thick) within west portion of Gate House. Buried portion of basement is 1.5m (5') below grade
- Assume concrete piles are 0.20m in area and 1m deep
- Contractor required to cap and mark locations of water and sewer services
- Heavy Equipment Area is approximately 25m northeast of site

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**KENOW WILDFIRE ASSESSMENT AND REMEDIATION WATERTON LAKES**

Drawing title/Titre du dessin  
**SITE 4 – PARK ENTRANCE PROPOSED REMEDIATION LOCATION: GATE HOUSE**

Surveyed by/Arpenté par	Drawn by/Dessiné par	Date/Date
BDS	BDS	04/05/18

Designed by/Concept par	Reviewed by/Revisé par	Scale/Echelle
AYS	MHI	1:50

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176826		

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**176826-04-01**

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APPROXIMATE VOLUME OF NON-HAZARDOUS DEBRIS TO BE REMOVED AND DISPOSED OF OFF-SITE (DEPTH 100mm) 120 m<sup>3</sup>

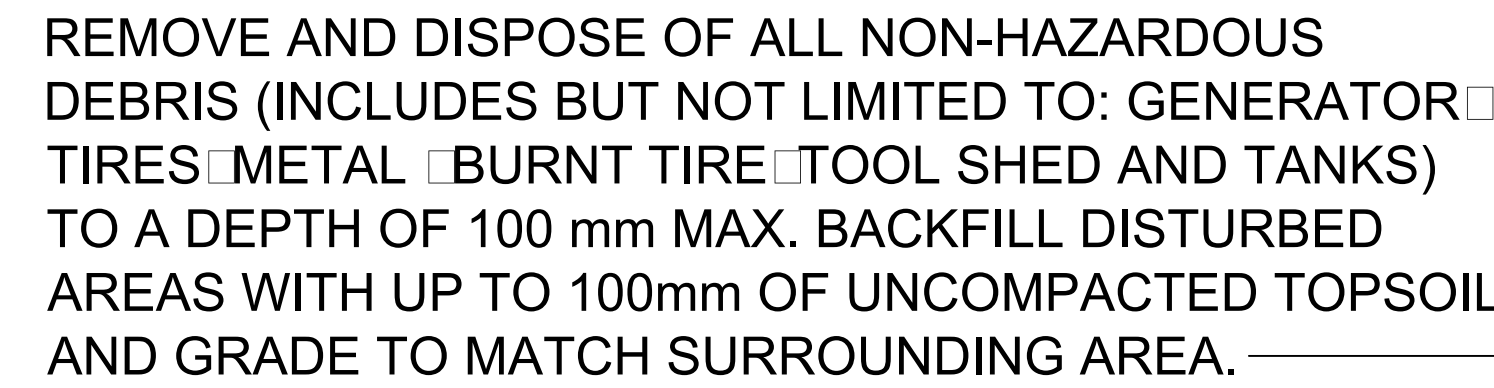
APPROXIMATE MASS OF FOUNDATION MATERIAL TO BE REMOVED AND DISPOSED OF OFF-SITE 145 Tonnes

APPROXIMATE MASS OF IMPORTED CLEAN BACKFILL 460 Tonnes

APPROXIMATE AREA OF IMPORTED TOPSOIL (DEPTH 100mm) 425 m<sup>2</sup>

SAMPLE ID	NORTHING	EASTING
12-1	5444137.661	292539.982
12-2	5444143.934	292533.780
12-3	5444154.338	292536.784
12-4	5444148.568	292545.144
2440-AC (debris)	5444142.061	292543.094
2441-AC (TCLP)	5444150.610	292539.329
2442-AC (debris)	5444143.610	292535.012
BACKGROUND SAMPLE 3	5444116.872	292577.174





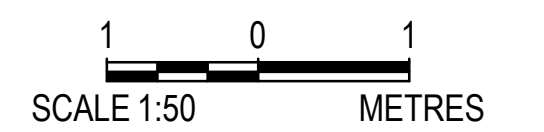
REMOVE AND DISPOSE OF ALL NON-HAZARDOUS DEBRIS TO A DEPTH OF 100 mm MAX. BACKFILL DISTURBED AREAS WITH UP TO 100mm OF UNCOMPACTED TOPSOIL AND GRADE TO MATCH SURROUNDING AREA.

— EXCAVATE CONTAMINATED SOIL TO APPROXIMATE  
DEPTH OF 300mm BELOW EXISTING GROUND SURFACE  
AND DISPOSE OF OFF-SITE. BACKFILL WITH 200mm OF  
CLEAN BACKFILL AND 100mm OF UNCOMPACTED TOP  
SOIL. GRADE TO MATCH SURROUNDING AREA



SAMPLE ID	NORTHING	EASTING
11-1	5444164.870	292575.916
11-2	5444175.360	292574.062
11-3	5444187.477	292578.132
11-4	5444169.078	292584.405
2468-AC (TCLP)	5444186.119	292573.784
2469-AC (debris)	5444190.342	292575.774
11-5	LOCATION APPROXIMATE	
11-6		
11-7		
11-8		
11-9		




1. All Dimensions are approximate
2. All Quantities are approximate.  
Contractor to verify quantities on-site
3. No hazardous material detected in surface debris during hazardous material assessment
4. Miscellaneous debris may exist within 10m immediately outside of Non-Hazardous Debris boundary. This debris shall be disposed of by the Contractor
5. Site is within 500m of a surface water source
6. Site is within 500m of a water well
7. Gate House is approximately 25m southeast of site



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Consultant's Name Nom de l'expert-consultant  <b>DILLON</b> CONSULTING	Eng. Stamp Sceau de l'ingénieur 
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Project title/Titre du projet

KENOW WILDFIRE  
ASSESSMENT AND  
REMEDICATION  
WATERTON LAKES

Drawing title/Titre du dessin

SITE 5 – PARK ENTRANCE  
PROPOSED REMEDIATION  
LOCATION: HEAVY EQUIPMENT

Surveyed by/Arpenté par BDS	Drawn by/Dessiné par BDS	Date/Date 04/05/18
Designed by/Concept par AYS	Reviewed by/Revisé par MMH	Scale/Echelle 1:50

<p>PWGSC Project Manager/Administrateur de Projets TPSGC</p>
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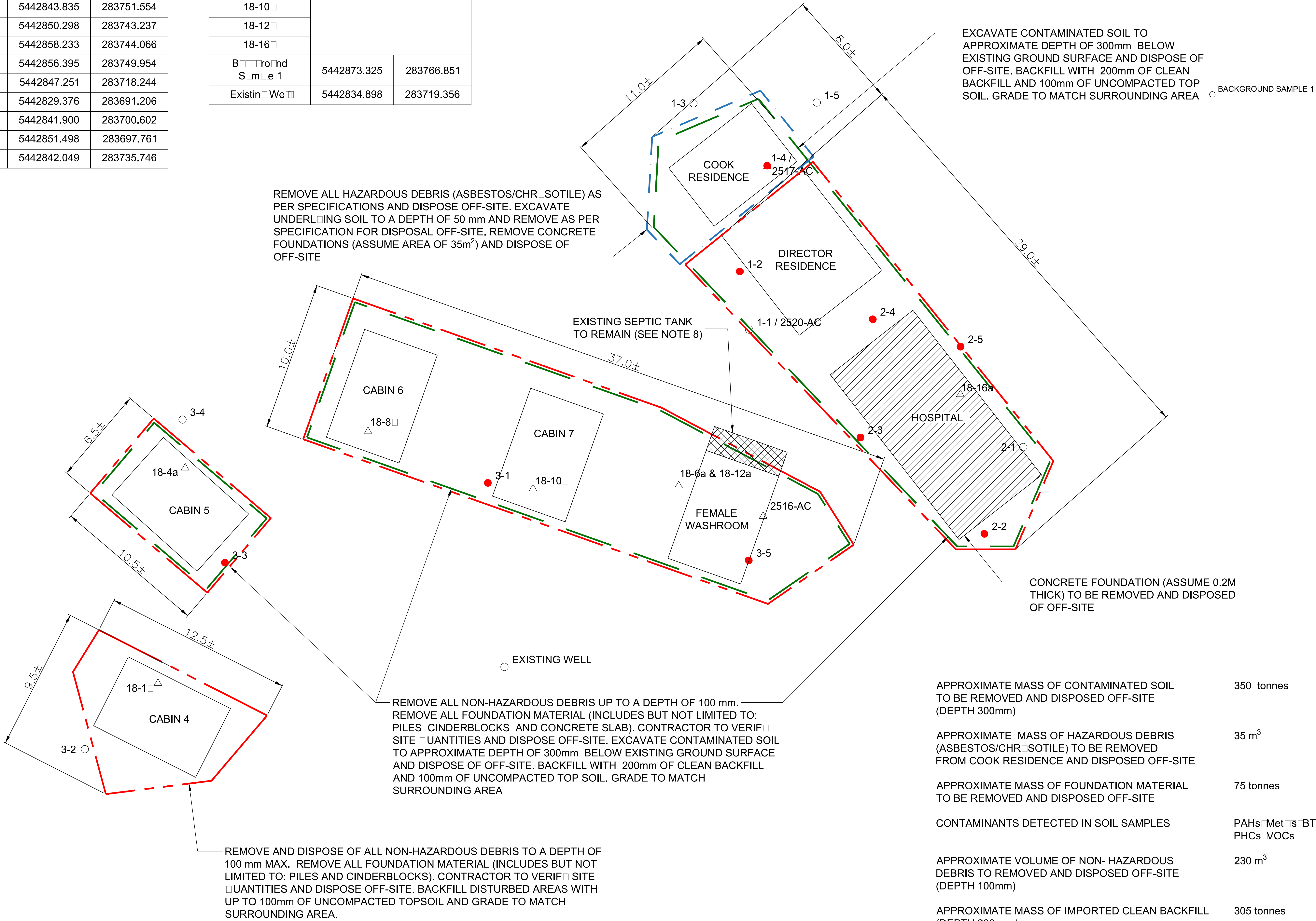
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Project No./No. du projet	Asset No./No. du bien	Sheet No./No. de la feuille	
176826			
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SAMPLE ID	NORTHING	EASTING
1-1	5442857.537	283735.772
1-2	5442861.441	283735.149
1-3	5442872.725	283732.039
1-4	5442868.546	283736.987
1-5	5442872.775	283740.311
2-1	5442849.655	283754.163
2-2	5442843.835	283751.554
2-3	5442850.298	283743.237
2-4	5442858.233	283744.066
2-5	5442856.395	283749.954
3-1	5442847.251	283718.244
3-2	5442829.376	283691.206
3-3	5442841.900	283700.602
3-4	5442851.498	283697.761
3-5	5442842.049	283735.746

2516-AC (debris)	5442845.089	283736.711
2517-AC ( debris)	5442868.546	283736.987
2520-AC (debris)	5442857.537	283735.772
18-1	LOCATION APPROXIMATE	
18-4		
18-6		
18-8		
18-10		
18-12		
18-16		
Background Sample 1	5442873.325	283766.851
Existing Well	5442834.898	283719.356



- Legend**
- Soil Sample Location
  - △ Debris Sample Location
  - Soil Sample Exceeding Applicable Tier 2 Regulatory Guidelines
  - ▲ Debris Sample Exceeding Regulatory Guidelines
  - - - Contaminated Soils Excavation Boundary
  - - - Non-Hazardous Debris Removal Boundary
  - - - Hazardous Debris Removal Boundary
  - ▨ Concrete

- Notes**
- All Dimensions are approximate
  - All Quantities are approximate. Contractor to verify quantities on-site
  - Asbestos (Chrysotile) detected in surface debris of only the Cook's Residence during hazardous material assessment. No asbestos was detected from any other building on-site
  - Site is within 500m of a surface water source
  - Site is within 500m from a water well except the Hospital
  - Assume all buildings on cinder block foundations that cover entire building footprint
  - Contractor to assess and abate dangers posed by burnt utility poles and hazard trees in work area prior to starting work
  - One concrete septic tank is located within the footprint of the Female Washroom. The tank is part of the septic system at the site which includes several underground lines and septic field. The system was undamaged by the fire. Contractor must take care not to damage any part of the septic system while completing the work
  - Site access via Canyon bridge only
  - Some sections of guardrail missing along Red Rock Parkway leading to site
  - Contractor required to cap and mark locations of water and sewer services

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Project title/Titre du projet	KENOW WILDFIRE ASSESSMENT AND REMEDATION WATERTON LAKES
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Drawing title/Titre du dessin		
SITE 6 - CANYON CHURCH CAMP PROPOSED REMEDIATION		
LOCATIONS: COOK RESIDENCE, DIRECTOR RESIDENCE, HOSPITAL, FEMALE WASHROOM AND CABINS		
Surveyed by/Arpenté par BDS	Drawn by/Dessiné par BDS	Date/Date 04/05/18
Designed by/Concept par AYS	Reviewed by/Revisé par MMH	Scale/Echelle 1:100

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APPROXIMATE MASS OF CONTAMINATED SOIL TO BE REMOVED AND DISPOSED OFF-SITE (DEPTH 300mm)	350 tonnes
APPROXIMATE MASS OF HAZARDOUS DEBRIS (ASBESTOS/CHRYSOITILE) TO BE REMOVED FROM COOK RESIDENCE AND DISPOSED OFF-SITE	35 m <sup>3</sup>
APPROXIMATE MASS OF FOUNDATION MATERIAL TO BE REMOVED AND DISPOSED OFF-SITE	75 tonnes
CONTAMINANTS DETECTED IN SOIL SAMPLES	PAHs:Metals:BTEX PHCs:VOCs
APPROXIMATE VOLUME OF NON- HAZARDOUS DEBRIS TO BE REMOVED AND DISPOSED OFF-SITE (DEPTH 100mm)	230 m <sup>3</sup>
APPROXIMATE MASS OF IMPORTED CLEAN BACKFILL (DEPTH 200 mm)	305 tonnes
APPROXIMATE AREA OF IMPORTED TOPSOIL (DEPTH 100 mm)	840 m <sup>2</sup>



APPROXIMATE MASS OF CONTAMINATED SOIL TO BE REMOVED AND DISPOSED OFF-SITE (DEPTH 300mm)

85 tonnes

CONTAMINANT DETECTED IN SOIL SAMPLE

PAHs

APPROXIMATE MASS OF FOUNDATION MATERIAL TO BE REMOVED AND DISPOSED OFF-SITE

105 tonnes

APPROXIMATE VOLUME OF NON- HAZARDOUS DEBRIS (CONTAINS VOCs) TO REMOVED AND DISPOSED OFF-SITE (EXCLUDES GOLF CARTS. SEE NOTE 7) (DEPTH 100mm)

270 m<sup>3</sup>

APPROXIMATE MASS OF IMPORTED CLEAN BACKFILL (DEPTH 200 mm)

75 tonnes

APPROXIMATE AREA OF IMPORTED TOPSOIL (DEPTH 100 mm)

610 m<sup>2</sup>

SAMPLE ID	NORTHING	EASTING
13-1	5439778.122	289319.820
13-2	5439786.391	289304.819
13-3	5439777.790	289295.684
2445-AC (VOC)	5439778.710	289310.367
2446-AC (debris)	5439769.259	289317.366
2447-AC (debris)	5439777.442	289312.931
2448-AC (TCLP)	5439781.080	289314.608
2449-AC (TCLP)	5439781.727	289299.370
2450-AC (debris)	5439780.784	289301.946
2452-AC (debris)	5439780.808	289297.788
2453-AC (VOC)	5439782.087	289301.884



CONCRETE PAD (ASSUME 0.15m THICK) AND CONCRETE WALL (0.3m TALL x 0.2m WIDE) TO BE REMOVED AND DISPOSED OF OFF-SITE. BACKFILL WITH 100mm UNCOMPACTED TOP SOIL. GRADE TO MATCH SURROUNDING AREA

REMOVE AND DISPOSE OF ALL NON-HAZARDOUS DEBRIS TO A DEPTH OF 100 mm MAX. BACKFILL DISTURBED AREAS WITH UP TO 100mm OF UNCOMPACTED TOPSOIL AND GRADE TO MATCH SURROUNDING AREA.

#### Legend

- Soil Sample Location
- △ Debris Sample Location
- Soil Sample Exceeding Applicable Tier 2 Regulatory Guidelines
- ▲ Debris Sample Exceeding Regulatory Guidelines
- - - Contaminated Soils Excavation Boundary
- - - Non-Hazardous Debris Removal Boundary
- ▨ Concrete

#### Notes

- All Dimensions are approximate
- All Quantities are approximate. Contractor to verify quantities on-site
- VOCs detected in surface debris during hazardous material assessment
- Site is within 500m of a surface water source
- Site is greater than 500m from a water well
- Contractor required to cap and mark locations of water and sewer services
- Approximately 40 burnt golf carts included with the debris. Majority of carts are gas powered, remainder are electric. Contractor is required to dispose of the carts as per applicable environmental regulations

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METRES

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Project title/Titre du projet
KENOW WILDFIRE ASSESSMENT REMEDATION WATERTON LAKES

Drawing title/Titre du dessin		
SITE 7 – WATERTON GOLF PROPOSED REMEDIATION LOCATION: MAINTENANCE SHED		
Surveyed by/Arpenté par BDS	Drawn by/Dessiné par BDS	Date/Date 04/05/18
Designed by/Concept par AYS	Reviewed by/Revisé par MMH	Scale/Echelle 1:50

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