MUNICIPALITY OF SANIKILUAQ

Operation & Maintenance Plan for Municipal Water Licence: Water Supply Facilities

August 2026

Document Control

Date	Document Title	Author	Details
July 15, 2011	Operation and Maintenance Manual: Water Truck Fill Station (Volume I & II)	exp Services Inc.	Original Document
August 27, 2026	Municipality of Sanikiluaq Operation & Maintenance Plan for Municipal Water Licence: Water Supply Facilities	Dillon Consulting Limited	Compilation of previous O&M plans into required template

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1.0 Site Description

Date this plan was prepared: 2026-08-27

1.1 Location of the Water Supply Facility (WSF)

Municipality:	Municipality of Sanikiluaq
Latitude:	56°32’28.43” N
Longitude:	79°13’26.95” W
Proximity to Town:	Located centrally at the edge of the community



Figure 1: Sanikiluaq Water Supply Facility and Surrounding Infrastructure. (Google Earth)

1.2 WSF Site Summary

Year of commissioning the WSF: 2008

Design life of the WSF: 20 years

1.2.1 Site History

The Municipality of Sanikiluaq is situated on the northern end of Flaherty Island within the Belcher Islands in Hudson Bay. The community has a typical Arctic Tundra climate, with average temperatures ranging from a high/low of 25.6°C / 3.3°C in July to -22.8°C / -42.8°C in January

The primary water source is Sanikiluaq Lake. Raw water is drawn through inclined intake pipes to a 98 m² single-story pre-engineered metal building constructed on steel pile. Treatment consists of cartridge filtration and chlorination. Potable water is distributed entirely via municipal water delivery trucks directly to household and commercial holding tanks.

The Municipality operates under Nunavut Water Board Water Licence No. 3BM-SAN2025 (Type "B", Municipal Undertaking), which replaced the previous expired Licence 3BM-SAN1520. The licence permits a maximum water draw of 55,000 cubic metres per year with a maximum daily withdrawal rate not to exceed 299 m³.

2.0 Staff

2.1 Senior **Administrative Officer**

Name: Rob Hadley

Phone: 867-266-7900

Email: sao@sanikiluaq.com

Responsibilities:

- Submission of the Annual Report for the Nunavut Water Board (NWB)
- The SAO manages the municipal staff to ensure that:
  - proper operation of the WSF is carried out
  - sampling and inspections are completed
  - information under the water licence monitoring program is provided to the Government of Nunavut Department of Community and Government Services (GN-CGS) for Annual Report preparation

2.2 Foreman

Name: Kenny Pearce

Phone: 867-266-7900

Email: publicworks@sanikiluaq.ca

Responsibilities:

- Daily operations and maintenance of the WSF the sampling program at the monitoring stations
- Maintaining signage at the WSF and monitoring stations
- Annual decanting of the lagoon effluent into the adjacent wetland treatment area

2.3 Water Truck Drivers

Name: Various

Phone: N/A

Email: N/A

Responsibilities: The water truck drivers deliver treated water to household and commercial tanks within the municipality.

3.0 Health and Safety

All personnel working within the WSF must follow the Nunavut Safety Act and be made aware of potential health hazards. This is imperative so individuals make a conscious effort to perform all necessary safety procedures to protect themselves, their co-workers and family members at home.

Specific safety protocols at the Sanikiluaq WSF include:

1. Chemical Handling: Calcium hypochlorite is shipped as a dry chemical in bags. Operators must wear full personal protective equipment—including safety boots, gloves, and protective eyewear—at all times when handling, opening, and mixing chlorine solutions.
2. Hygiene: Operating staff must wash hands frequently and thoroughly, particularly after chemical mixing and before meals. Work clothes must remain on-site and should not be worn home.
3. Vaccinations: Personnel must receive all standard municipal utility operator vaccinations and keep immunizations up-to-date.
4. Fish Protection: The raw water intake hoses must be equipped with an appropriately sized mesh screen to ensure local fish populations are not entrained, impinged, or otherwise harmed by suction forces.
5. First Aid: An emergency eyewash station (EW-01) with a tempered water mixer is located in the pump room. All injuries must be reported and treated at the Sanikiluaq Health Centre (867-266-8965).

Emergency Contact Information:

- Territorial 24-Hour Spill Line: 867-920-8130
- Health Centre (Sanikiluaq): 867-266-8965
- RCMP Detachment (Sanikiluaq): 867-266-0123
- GN Environment Health Office: 867-975-4817

4.0 Security and Control

Access Control of to the facility:

- Perimeter fencing around the lagoon
- Signage
- 450 m restricted land use development setback surrounding the WSF

5.0 Raw Water Sources

Raw water source fill system type: Direct Pumping (Direct to WTP with fill arm delivery to water trucks)

Alterations to the natural water source have occurred due to the WSF: Potable water is drawn via two inclined shaft water intake lines originally installed in 1977. These intakes consist of a 200 mm polyethylene main insulated with 50 mm polyurethane foam protected by steel cladding. Both lines are anchored securely to the granular beach by concrete blocks extending inland 30+ meters to prevent lateral shifts caused by winter sea ice forces.

5.1 Primary Source

Name of primary raw water source:	Sanikiluaq Lake
Type of raw water source:	Lake
Average annual quantity of water drawn:	Reported yearly in annual report
Maximum allowable withdrawal:	55,000 m3/year
Ice formation on the water source:	November
Ice breakup on the water source:	June

5.2 **Operations**

Overview of the operations process:

The following procedure is followed:

Water is pumped directly from Sanikiluaq Lake through multi-stage cartridge filters and inline chlorine injectors into the water trucks. Under normal operations, a driver aligns the truck under the fill arm spout, engages the exterior start switch to power the submersible intake pump, and manually stops the pump once filled.

Normal operation utilizes one pump yielding a flow rate of approximately 500 L/min (designed using single-phase submersible pumps rated at 450 L/min at 24 m of head). Community fire suppression flow utilizes a manual bypass switch inside the building to engage both pumps simultaneously to deliver 1,000 L/min. The water intake hoses are equipped with screens of an appropriate mesh size to ensure fish are not entrained or impinged during pumping operations

For fire protection, intake lines do not contain check valves, allowing the water column to drain completely back into the lake at the end of each pumping cycle. Casing pipes are wrapped with electric heat tracing controlled by internal temperature sensors, paired with 50 mm

polyurethane foam insulation. The truck fill arm drains back into the lake through supply piping aided by an automated piping vent valve.

5.3 Maintenance

The roadway and truck pad shall be maintained by snow clearing in the winter and grading in the summer and repaired as necessary. Ditches and drainage channels at the Water Supply Facility shall be inspected during the summer for erosion and repaired as necessary. The truckfill station and signage shall be inspected regularly and repaired or replaced as necessary. This facility is owned and operated by the Municipality, and any issues should be reported to the CAO immediately. The water delivery program is managed by the Municipality and issues identified by truck drivers should be reported to the CAO immediately.

6.0 Water Treatment Process

A brief overview of the water treatment process:

1. Filtration: Raw water undergoes primary mechanical filtration using a Harmsco filter configured in series with 20-micron, 5-micron, and 1-micron cartridges to meet Canadian drinking water turbidity limits (<1 NTU).
2. Disinfection: Uses dry calcium hypochlorite dry chemical. Operators mix the powder with water in an electrical mixing tank (LCP), decant the settled solution into a chemical storage tank, and dose the solution via Prominent Delta metering pumps (Model DLTA0730PVT2000UDG130EN0):
    - Pre-chlorination: Injected upstream of the filters to prevent bacteriological growth within the filter housings.
    - Post-chlorination: Injected downstream of the filters to establish a stable free chlorine residual in the delivery trucks and community holding tanks.
3. Fire Flow Bypass: In a fire emergency, the operator activates an internal override switch to engage both water pumps. This bypasses the cartridge filters to eliminate flow resistance and achieve the required 1,000 L/min rate. To compensate for the lack of filtration, a dedicated fire chlorination metering pump is energized to dose hypochlorite directly into the bypass line, doubling the chlorine dosage.
4. Inline Measurement: Inline Prominent Chlorine Analyzers continuously track residuals (pre-chlorine, post-chlorine, and fire bypass) and send 4-20mA feedback loops to the PLC to regulate dosing.

Operations and Maintenance:

The following documents are on site at the WTP:

- *Operation and Maintenance Manual: Water Truck Fill Station, Municipality of Sanikiluaq, Vol. I and II*, exp Services Inc., July 15, 2011.
- Nunavut Water Board Licence No: 3BM-SAN2025.

7.0 Monitoring

Regulatory Inspection:

The annual Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) inspection will take place accompanied by the licensee and/or with a licensee representative from GN-CGS. The inspection will be reviewed by a GN-CGS municipal engineer and submitted with the annual report.

Table 1: Licence Requirements Related to O&M of the Water Supply F**acilities**

Requirements	Reported
Monthly and annual quantities of fresh water obtained from all sources	Annual report submitted to NWB
A summary of modifications and/or major maintenance work carried out on the WSF	Annual report submitted to NWB
A list of spills and unauthorized discharges related to the WSF.	Annual report submitted to NWB
Volume of Potable Water Supply at Post River Monitoring Program Station SAN-1	Annual report submitted to NWB
A summary of any studies requested for the WTP and future planned studies planned	Annual report submitted to NWB

Planned Modifications or Upgrades:

Construction for a new water supply facility and associated infrastructure is planned to begin in 2026

8.0 Previous Reports

Operation and Maintenance Manual: Water Truck Fill Station, Municipality of Sanikiluaq, Vol. I and II, exp Services Inc., July 15, 2011.

As-Built Drawings

MOSHER ENGINEERING LTD.

Document Transmittal 186-71
Electronic Copy

Trow Associates Inc.
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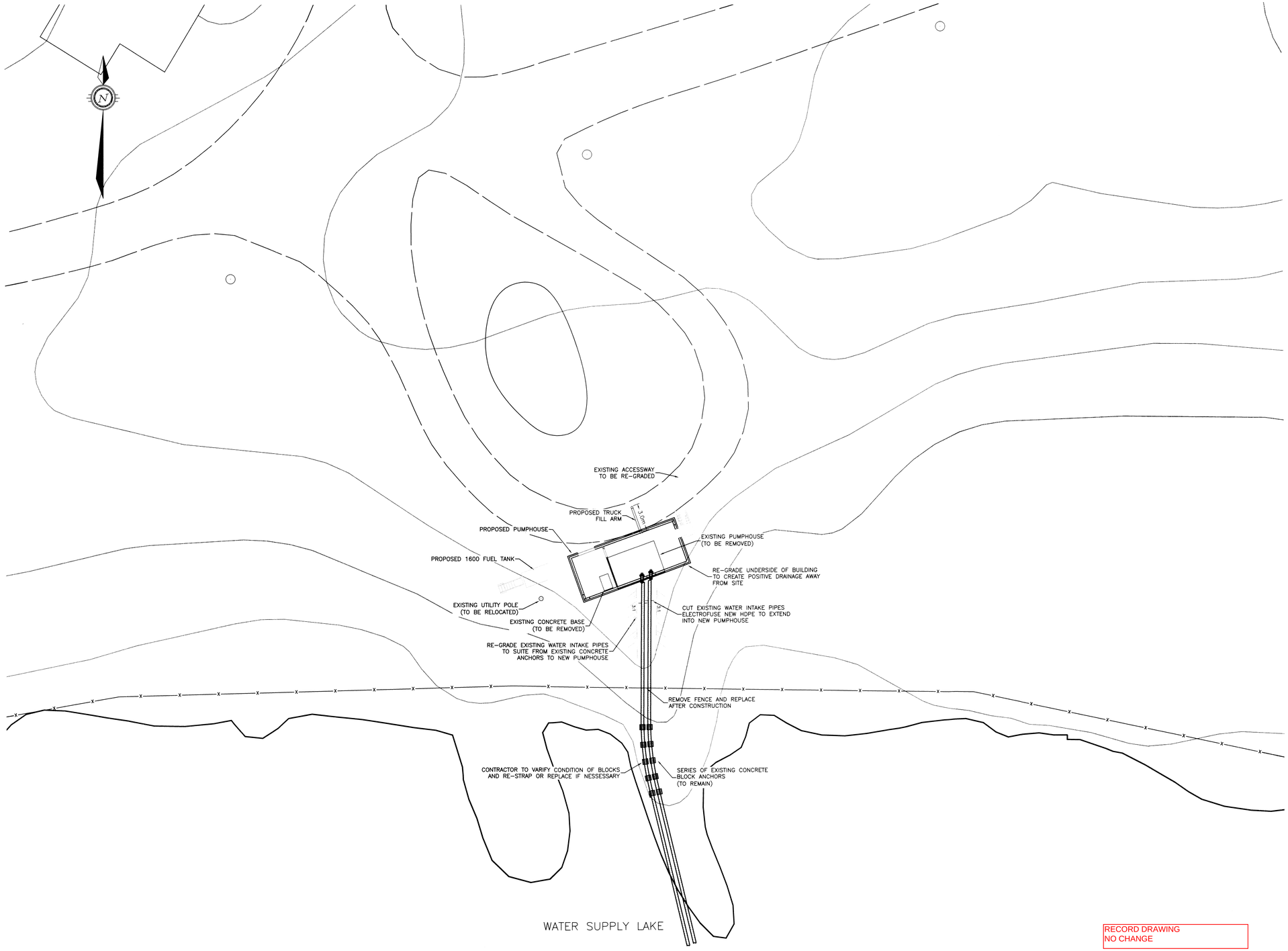
Contractor:
Mosher Engineering Ltd.
1869 Upper Water Street
Suite AH202,
Halifax, NS
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Tel: (902) 429-0272
Fax: (902) 429-7762
Contact: Marc Losier

Date Submitted :
December 23, 2010

Project Title :
Sanikiluaq New Water Truck Fill Station

DESCRIPTION	Section or Drawing	# of Sheets
Record Drawing Civil		4

Comments:



RECORD DRAWING
NO CHANGE

LEGEND

- EXISTING UTILITY POLE
- EXISTING EDGE OF ROAD
- EXISTING 250ø WATER INTAKE PIPE
- EXISTING CONCRETE ANCHOR
- PROPOSED BULLARD

Nunavut

NOTES:

1. CONTRACTOR TO REMOVE EXISTING CONCRETE PAD FOUNDATION AND DISPOSE OF OFF-SITE. GRANULAR BASE TO BE PLACE AND COMPACTED BENEATH PROPOSED STRUCTURE TO PROVIDE POSITIVE DRAINAGE AWAY FROM SITE.
2. EXISTING ACCESS WAY TO BE RE-GRADED USING 150mm GRANULAR 'A'.
3. COMPACTED GRANULAR BASE TO BE ESTABLISHED UNDER PROPOSED GRADE OF WATER INTAKE PIPES.

PERMIT OF PRACTICE
TROW ASSOCIATES INC.
Signature Steve Burden
Date April 14, 2010
PERMIT NUMBER: P184
The Association of Professional Engineers Geologists and Geophysicists of the NWT/NU

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HORIZONTAL 1:200

No.	DESCRIPTION	DATE	BY	APP'D
2	ISSUED FOR TENDER	14/04/10	MEB	SAD
1	ISSUED FOR 90% COMPLEATION	24/03/10	MEB	SAD
0	ISSUED FOR 75% COMPLEATION	23/02/10	MEB	SAD

R E V I S I O N S

REGISTERED PROFESSIONAL ENGINEER
S.L. BURDEN
LICENSEE
14/04/10
N.W.T.

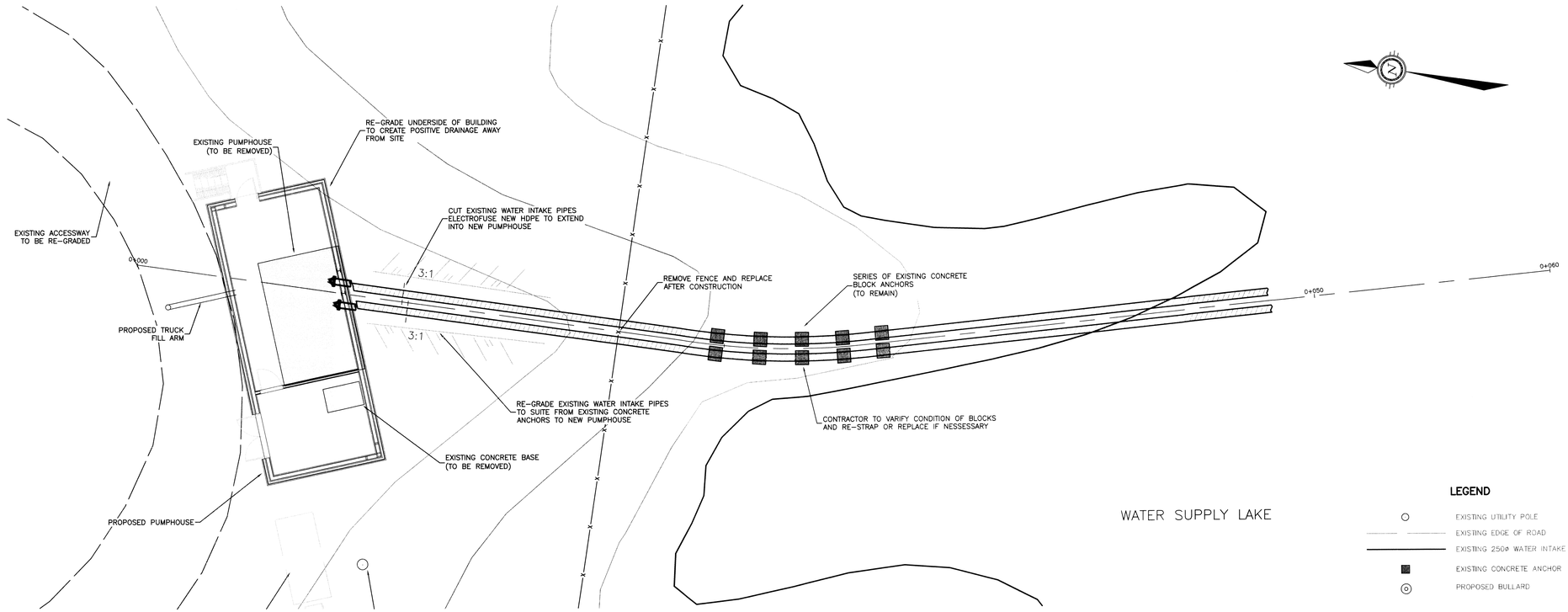
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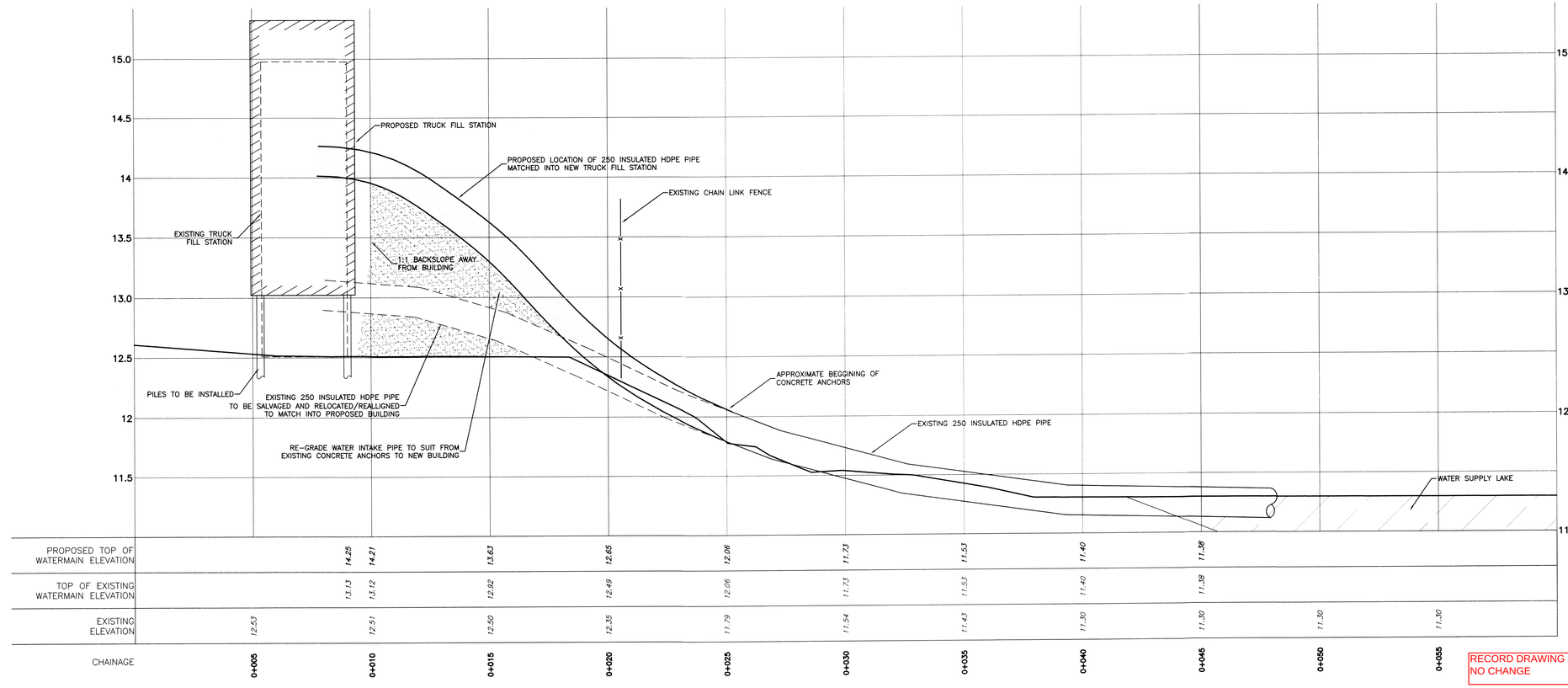
CLIENT
GOVERNMENT OF NUNAVUT
DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES

PROJECT
SANIKILUAQ, NUNAVUT
WATER TRUCK FILL STATION
PROJECT: 08-2019

TITLE
SITE PLAN

design by	S.A.D.	project no.	OTCD00020127A
drawn by	M.E.B.	drawing no.	C1
checked by			
date	FEB 2010		
scale	HORIZ 1:200		





PROPOSED TOP OF WATERMAIN ELEVATION			14.25	14.21	13.63	12.65	12.06	11.73	11.53	11.40	11.38	
TOP OF EXISTING WATERMAIN ELEVATION			13.13	13.12	12.92	12.49	12.06	11.73	11.53	11.40	11.38	
EXISTING ELEVATION	12.53		12.51		12.50	12.35	11.79	11.54	11.43	11.30	11.30	11.30	11.30
CHAINAGE	0+005		0+010		0+015	0+020	0+025	0+030	0+035	0+040	0+045	0+050	0+055

RECORD DRAWING
NO CHANGE

LEGEND

- EXISTING UTILITY POLE
- EXISTING EDGE OF ROAD
- EXISTING 250ø WATER INTAKE PIPE
- EXISTING CONCRETE ANCHOR
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REVISIONS

PROFESSIONAL ENGINEER
S.L. BURDEN
LICENSEE
N.W.T.

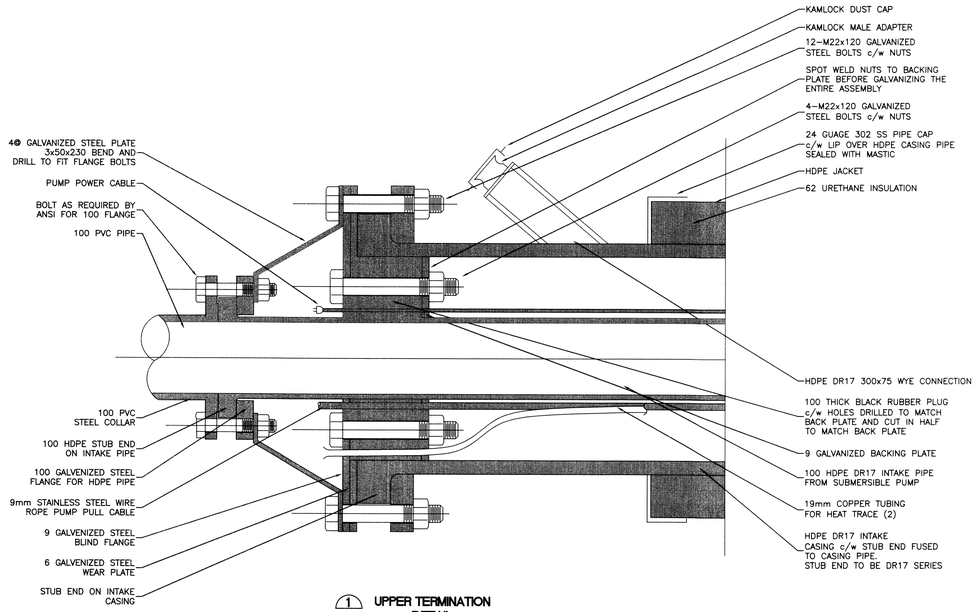
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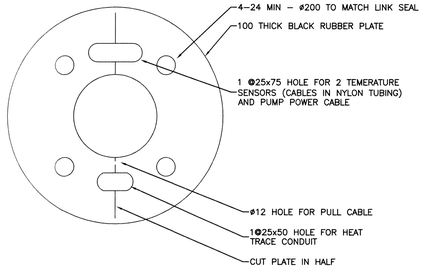
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WATER TRUCK FILL STATION
PROJECT: 08-2019

TITLE
PLAN & PROFILE
STA. 0+000 TO STA. 0+050

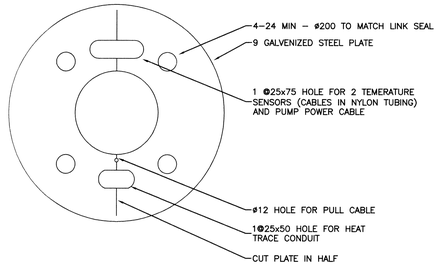
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checked by			
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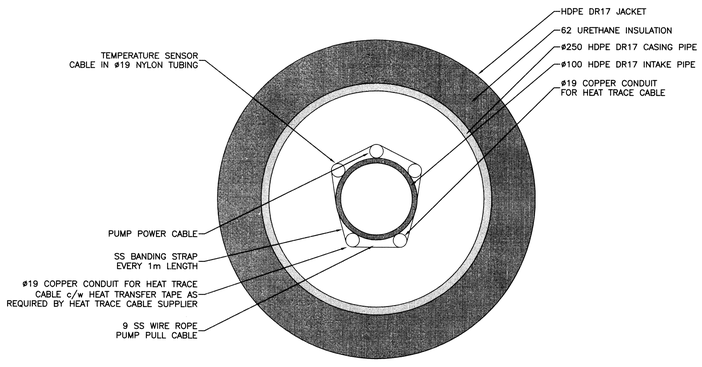
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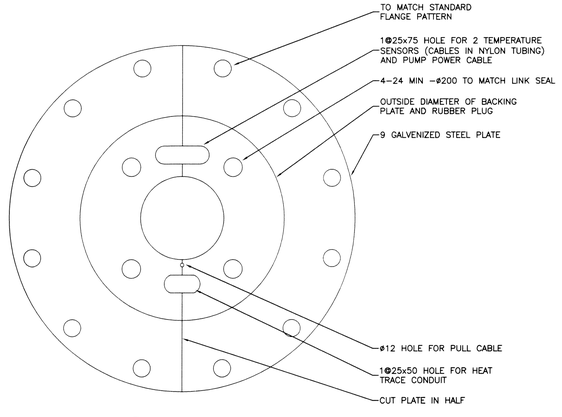
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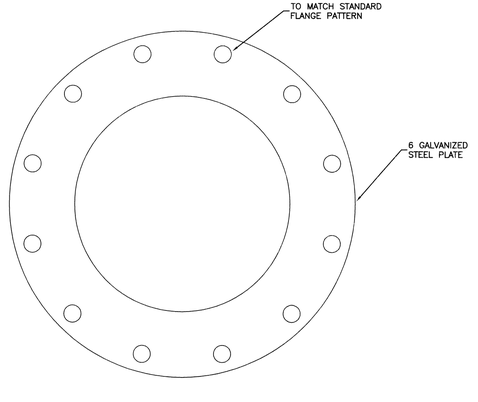
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4 **UPPER TERMINATION SECTION**



5 **BLIND FLANGE DETAIL**



6 **WEAR PLATE DETAIL**

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NO CHANGE

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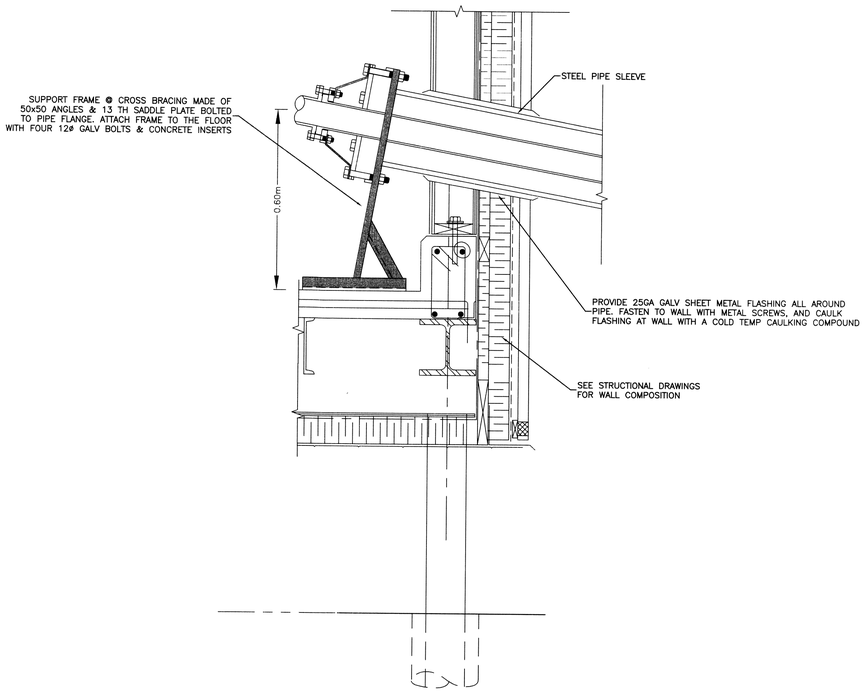
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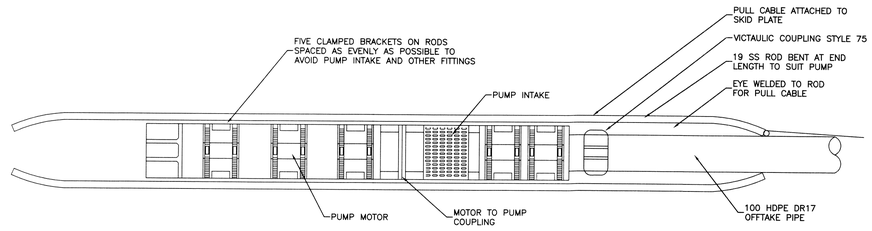
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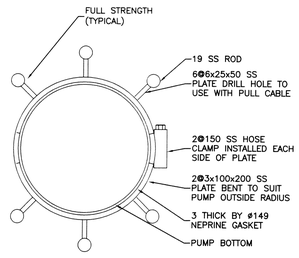
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checked by	
date	FEB 2010
scale	
project no.	OTCD00020127A
drawing no.	C3



1 FLOOR BRACE DETAIL



2 PUMP SKID DETAIL



3 PUMP SKID SECTION

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PROJECT
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PROJECT: 08-2019

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DETAILS

design by	S.A.D.	project no.	OTCD0002127A
drawn by	M.E.B.	drawing no.	C4
checked by			
date	FEB 2010		
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