

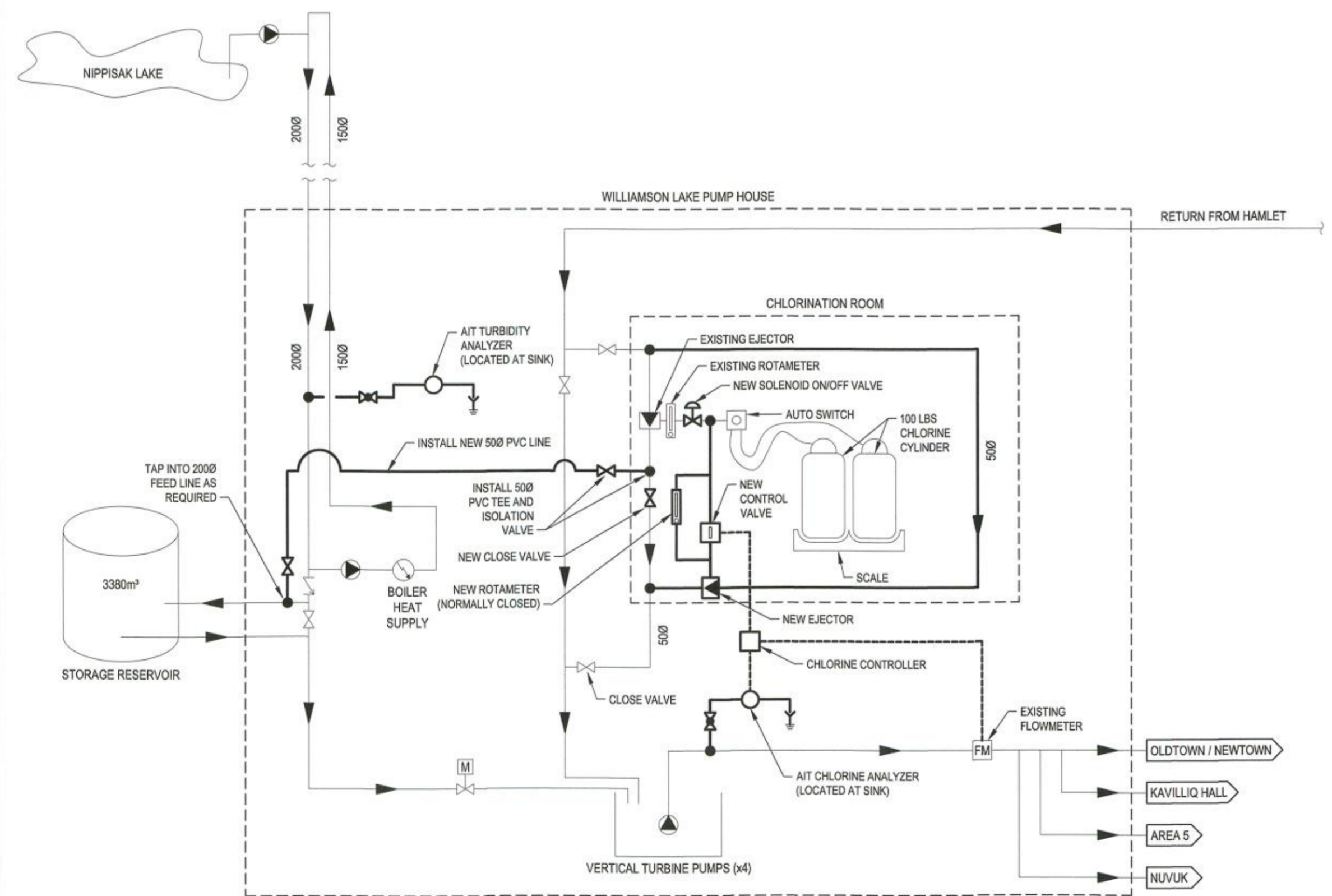
FLOOR PLAN

CHLORINE WATER LINE

- 1. SCOPE OF SUPPLY FOR THE CONTRACTOR IS TO INCLUDE THE SUPPLY AND INSTALLATION OF A SECOND CHLORINE INJECTOR, CHLORINE ANALYSER/CONTROLLER, TURBIDITY SENSOR AND LOGGER AND ALL ASSOCIATED PIPING AND ELECTRICAL REQUIRED FOR THE INTER-CONNECTION OF THIS EQUIPMENT. COMMISSIONING OF THE EQUIPMENT / SYSTEM BY A SUPPLIER REPRESENTATIVE WILL ALSO BE REQUIRED.**
- 2. PRIOR TO THE ONSET OF WORK, A DETAILED INVENTORY OF EQUIPMENT AND MATERIALS BEING SUPPLIED IS TO BE PROVIDED TO THE CLIENT. ALL MAJOR ITEMS (PROCESS EQUIPMENT AND VALVES) WILL REQUIRE SUBMITTAL OF SHOP DRAWINGS FOR REVIEW PRIOR TO THE WORK COMMENCING.**
- 3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A FULLY FUNCTIONAL UPGRADED CHLORINATION SYSTEM, AS PER THESE DRAWINGS AND SPECIFICATIONS. ANY OUTAGES OF THE DISINFECTION SYSTEM MUST BE REQUESTED BY THE CONTRACTOR (IN WRITING) AND SUBSEQUENTLY APPROVED BY THE OWNER (IN WRITING) PRIOR TO IMPLEMENTATION. IT IS ANTICIPATED THAT DETAILS OF ANY INTERRUPTION WILL BE OBTAINED IN THE KICK OFF MEETING.**
- 4. CONTINUOUS OPERATION OF THE WATER SUPPLY AND DISINFECTION MUST BE MAINTAINED FOR THE DURATION OF THE CONSTRUCTION UNDERTAKING. ANY OUTAGES OF THE DISINFECTION SYSTEM MUST BE REQUESTED BY THE CONTRACTOR (IN WRITING) AND SUBSEQUENTLY APPROVED BY THE OWNER (IN WRITING) PRIOR TO IMPLEMENTATION. IT IS ANTICIPATED THAT DETAILS OF ANY INTERRUPTION WILL BE OBTAINED IN THE KICK OFF MEETING.**
- 5. THE MOST RECENT VERSION OF THE FOLLOWING STANDARDS SHALL BE REFERENCED AS REQUIRED**
- AWWA C570 - ONLINE CHLORINE ANALYZER OPERATION AND MAINTENANCE
 - AWWA MANUAL OF WATER SUPPLY PRACTICE M20: WATER CHLORINATION PRINCIPLES AND PRACTICES
 - AWWA B301 LIQUID / GAS CHLORINE
 - CHLORINE INSTITUTE MANUAL AND PAMPHLET 1, 6 AND 155
- 6. ALL EQUIPMENT IS TO BE SUPPLIED WITH OPERATION & MAINTENANCE MANUALS. TWO PRINTED SETS AND A DIGITAL TRANSMITTAL TO THE ENGINEER.**
- 7. RECOMMENDED MAINTENANCE KITS OR SPARE PARTS SHALL BE PROVIDED AS DETAILED IN THE EQUIPMENT SPECIFICATION OR A MINIMUM OF 2 YEARS OF RECOMMENDED SUPPLIES SHALL BE PROVIDED.**
- 8. ALTERNATIVE PRODUCTS WILL NOT BE CONSIDERED DURING TENDERING PERIOD. ALTERNATIVE PRODUCTS MAY BE CONSIDERED DURING PROJECT KICK-OFF, AFTER PROJECT AWARD.**
- 9. THE FOLLOWING EQUIPMENT IS TO BE SUPPLIED AND INSTALLED:**
- CHLORINE ANALYZER / CONTROLLER**
 - TOTAL CHLORINE (HYPOCHLOROUS ACID HOCL) PROBE ASSEMBLY:
 - STANDARD OF ACCEPTANCE: PROMINENT DULCOTEST CBR PROBE UP TO 5PPM OF FREE CHLORINE
 - MODULAR SENSOR HOUSING (SINGLE PROBE):
 - FLOW METER (ROTAMETER) AND FLOW SENSOR ASSEMBLY.
 - FREE CHLORINE PROBE ASSEMBLY
 - STANDARD OF ACCEPTANCE: PROMINENT DULCOTEST DGM MODULE SUITABLE FOR CHLORINE RESIDUAL MEASUREMENT
 - WYE STRAINER TO BE INSTALLED ON THE FEED LINE. 19MM WATTS LF777 OR APPROVED EQUAL.
 - CHLORINE RESIDUAL INTERFACE AND CONTROLLER:
 - PROVIDE DATA RECORDING AND PUMP CONTROLLER INTERFACE.
 - OPERATE IN A COMPOUND LOOP CONTROL MODEL WITH FLOWMETER AND FREE CHLORINE ANALYZER AS INPUT AND 4-20MA OUTPUT TO CHLORINE CONTROL VALVE.
 - STANDARD OF ACCEPTANCE: PROMINENT DULCO-DACA 2 CHANNEL CONTROLLER (1051412).
 - THE METERING AND CONTROLLING ASSEMBLY MUST BE FULLY COMPATIBLE WITH THE ONSITE FLOWMETER (PULSE SIGNAL) AND CONTRACTOR SUPPLIED CHLORINE CONTROL VALVE.
 - CHLORINE AUTOMATIC CONTROL VALVE**
 - GAS FLOW CONTROL VALVE TO WORK WITH CURRENT SEVERN TRENT SYSTEM:
 - STANDARD OF ACCEPTANCE: SEVERN TRENT 70CV3000
 - CONTROL MECHANISM:
 - SIZED FOR 100 PPD GASEOUS CHLORINE
 - 110V POWER SUPPLY
 - 10 MM (3/8") TUBING CONNECTIONS (PVDF OR EQUIVALENT)
 - MUST BE CERTIFIED BY CSA
 - CHLORINE GAS MANUAL ROTAMETER**
 - TOTAL CHLORINE FLOW INDICATOR AND MANUAL ADJUSTMENT ASSEMBLY:
 - STANDARD OF ACCEPTANCE: SEVERN TRENT RM100C
 - 10 MM (3/8") TUBING CONNECTIONS (PVDF OR EQUIVALENT)
 - CHLORINE VACUUM GAS ISOLATION VALVE**
 - ON/OFF ISOLATION VALVE FEEDING EJECTOR:
 - STANDARD OF ACCEPTANCE: SEVERN TRENT BM-2827-1
 - 110V POWER AND SIGNAL
 - SPRING ACTUATED, FAIL CLOSE DESIGN
 - CHLORINE EJECTOR**
 - GAS CHLORINE EJECTOR ONTO SUPPLY LINE OF CARRYING WATER:
 - STANDARD OF ACCEPTANCE: SEVERN TRENT EJ100C
 - 10MM GAS TUBING CONNECTION (VACUUM CHLORINE SERVICE)
 - 25MM NPT PIPING CONNECTION FOR INLET AND OUTLET
 - TURBIDITY ANALYZER**
 - TURBIDITY ANALYZER ON-LINE TURBIDITY METER AND DATA LOGGER:
 - LOW RANGE TURBIDITY ANALYZER:
 - 0.001 TO 100 NEPHELOMETRIC TURBIDITY UNITS (NTU).
 - STANDARD OF ACCEPTANCE: HACH MODEL 1720E TURBIDIMETER WITH SC200 CONTROLLER (MULTI CHANNEL).
 - MEASUREMENT METHOD WILL MEET OR EXCEED DESIGN CRITERIA SET BY USEPA METHOD 180.1 AND STANDARD METHODS 2130B.
 - ACCURACY WILL BE STIPULATED ACCORDING TO ISO 15839: ±2% OF READING OR ±0.015 NTU (WHICHEVER IS GREATER) FROM 0 - 40 NTU.
 - COMPONENTS:
 - TURBIDIMETER SENSOR HEAD.
 - TURBIDIMETER BODY (WALL MOUNT).
 - REMOTE DISPLAY (WALL MOUNT).
 - CONNECTORS:
 - SAMPLE INLET FITTING: 0.25-INCH NPT FEMALE, 0.25-INCH COMPRESSION FITTING.
 - DRAIN FITTING: 0.5-INCH NPT FEMALE, 0.5-INCH HOSE BARB.
 - PROVIDE DATA RECORDING INTERFACE WITH SUITABLE OUTPUT FOR OPTIONAL PLANT WIDE PLC CONTROL (4-20 MA).
 - ACCESSORIES AND SPARES:
 - REPLACEMENT BULB ASSEMBLY (HACH PART # 1895000), QUANTITY: 4.
 - CALIBRATION SOLUTION: HACH STABLCL, TURBIDITY STANDARD 40 NTU, 1 LITRE BOTTLE, QUANTITY: 12.
 - CALIBRATION CYLINDER FOR 1720 SERIES, QUANTITY: 1.

SPECIFICATION

- 10. THE FOLLOWING PIPING, VALVES, SUPPORTS AND LABELS ARE TO BE PROVIDED AS INDICATED ON THE DRAWING:**
- PIPING:**
 - PIPE: PVC, TYPE 1, GRADE 1, OR CLASS 12454-B; TO ASTM D1784, D1785, AND D2467 SCHEDULE 80 UNLESS NOTED OTHERWISE. PORTABLE WATER RATED.
 - JOINTS: SOCKET WELDED BY USE OF SOLVENT-BASED CEMENTS EXCEPT WHERE CONNECTING TO VALVES AND COMPONENTS WITH THREADED OR FLANGED CONNECTIONS AND AT UNIONS, UNLESS NOTED OTHERWISE.
 - FITTINGS: SOCKET AND THREADED TYPE TO ASTM D2467 AND D2468 TO MATCH PIPE.
 - PRIMER AND SOLVENT CEMENT: TO ASTM 2564 AND MANUFACTURER'S RECOMMENDATIONS, POTABLE WATER RATED.
 - THREAD LUBRICANT: LIQUID TEFLON
 - PVDF FLEXIBLE TUBING (CHLORINATION LINES):**
 - TUBING: PVDF PLASTIC TUBING, KYNAR BRAND OR EQUIVALENT. WHITE COLOUR.
 - FITTINGS: PVDF BARBED INSERT AND THREADED NPT.
 - QUICK DISCONNECT: PVDF.
 - BALL VALVE (PVC TRUE UNION):**
 - STANDARD OF ACCEPTANCE: CHEMLINE TYPE 21
 - TYPE: FULL PORT
 - BODY MATERIAL: PVC
 - BALL MATERIAL: PVC
 - SEAT MATERIAL: PTFE
 - SEAL O-RING MATERIAL: EPDM
 - STEM: PVC
 - ACTUATOR: LEVER
 - ENDS, CLASS: SOCKET, 1000 KPA (150 PSIG)
 - SERVICE: NSF 61 POTABLE WATER APPROVED
 - CHECK VALVE (PVC TRUE UNION):**
 - STANDARD OF ACCEPTANCE: CHEMLINE
 - TYPE: BALL CHECK, TRUE UNION
 - BODY MATERIAL: PVC
 - BALL MATERIAL: PVC
 - SEAT/SEAL MATERIAL: EPDM
 - ENDS, CLASS: SOCKET, 1000 KPA (150 PSIG)
 - SERVICE: NSF 61 POTABLE WATER APPROVED
 - SIZES: 13 TO 50 MM
 - PIPING ACCESSORIES:**
 - TOOLS AND SPARE PARTS:**
 - SPECIAL TOOLS REQUIRED FOR NORMAL OPERATION AND MAINTENANCE OF THE EQUIPMENT ARE TO BE FURNISHED WITH THE EQUIPMENT BY THE MANUFACTURER.
 - PROVIDE SUPPLIER/MANUFACTURER'S RECOMMENDED SPARE PARTS FOR AN OPERATING PERIOD OF ONE (1) YEAR.
 - PIPE SUPPORT SYSTEMS:**
 - PRE-ENGINEERED 12-GAUGE CONTINUOUS SLOT CHANNEL SYSTEM AND COMPONENTS: UNISTRUT, B-LINE, POWER STRUT OR EQUIVALENT. STAINLESS STEEL FOR STAINLESS PIPING AND GALVANIZED FOR ALL OTHER PIPING, OR AS INDICATED ON DRAWINGS.
 - STEEL PIPE SUPPORTS: AS INDICATED ON DRAWINGS.
 - STEEL TUBING: TO ASTM A500, GRADE C.
 - ANCHOR BOLTS, STEEL PLATE, CHANNELS AND ANGLES: TO ASTM A36, GRADE 36.
 - HIGH STRENGTH BOLTS TO ASTM A325.
 - FABRICATED SUPPORTS TO BE APPROVED BY THE ENGINEER.
 - MANUFACTURED PIPE SUPPORT ELEMENTS:**
 - ALL SUPPORTS AND PARTS ARE TO BE AS SHOWN OR NOTED AND ALSO TO CONFORM TO THE LATEST REQUIREMENTS OF THE ASME CODE FOR PRESSURE PIPING B31.1.0 AND MSS STANDARD PRACTICE SP-58, SP-59, SP-59 AND SP-90 AND BE MANUFACTURED BY MASON, ANVIL, STANDON OR APPROVED EQUAL.
 - PIPE LABELS:**
 - PIPE LABELS AND DIRECTION ARROWS BY W.H. BRADY COMPANY, MILWAUKEE, WISCONSIN; SETON NAMEPLATE CORPORATION, NEW HAVEN, CONNECTICUT, OR APPROVED EQUAL.
 - PIPING LESS THAN 20 MM: IDENTIFICATION LABELS AND DIRECTION ARROWS STAMPED ONTO 18 GAUGE SS TAGS, LETTER HEIGHT 12 MM, TWO CORROSION RESISTANT RINGS FOR ATTACHMENT.
 - MISCELLANEOUS COMPONENTS:**
 - ALL UNLISTED OR UNSPECIFIED PRODUCTS NECESSARY TO COMPLETE A FUNCTIONAL SYSTEM ARE TO BE CONTRACTOR SUPPLIED AND ARE TO MATCH EXISTING SIMILAR PRODUCTS USED ON SITE WHERE POSSIBLE AND ARE TO BE AS APPROVED BY THE ENGINEER OR TO BE AS INDICATED IN OTHER CONTRACT DOCUMENTS.



SCHEMATIC

PROCESS FLOW

NOT TO SCALE

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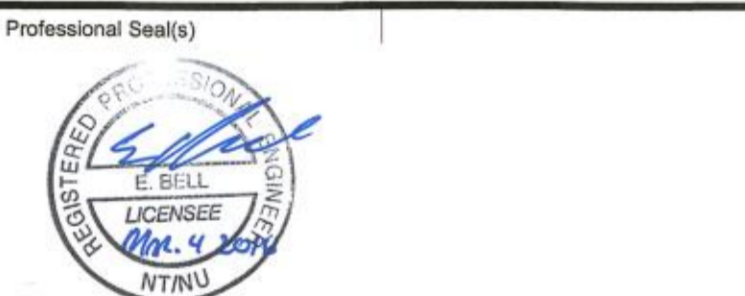
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**COMMUNITY AND
GOVERNMENT SERVICES
GOVERNMENT OF NUNAVUT
WILLIAMSON LAKE
PUMP HOUSE**

Dwg. Title

CHLORINATION PLAN

Project No. **OTT-00227159-A0**

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