

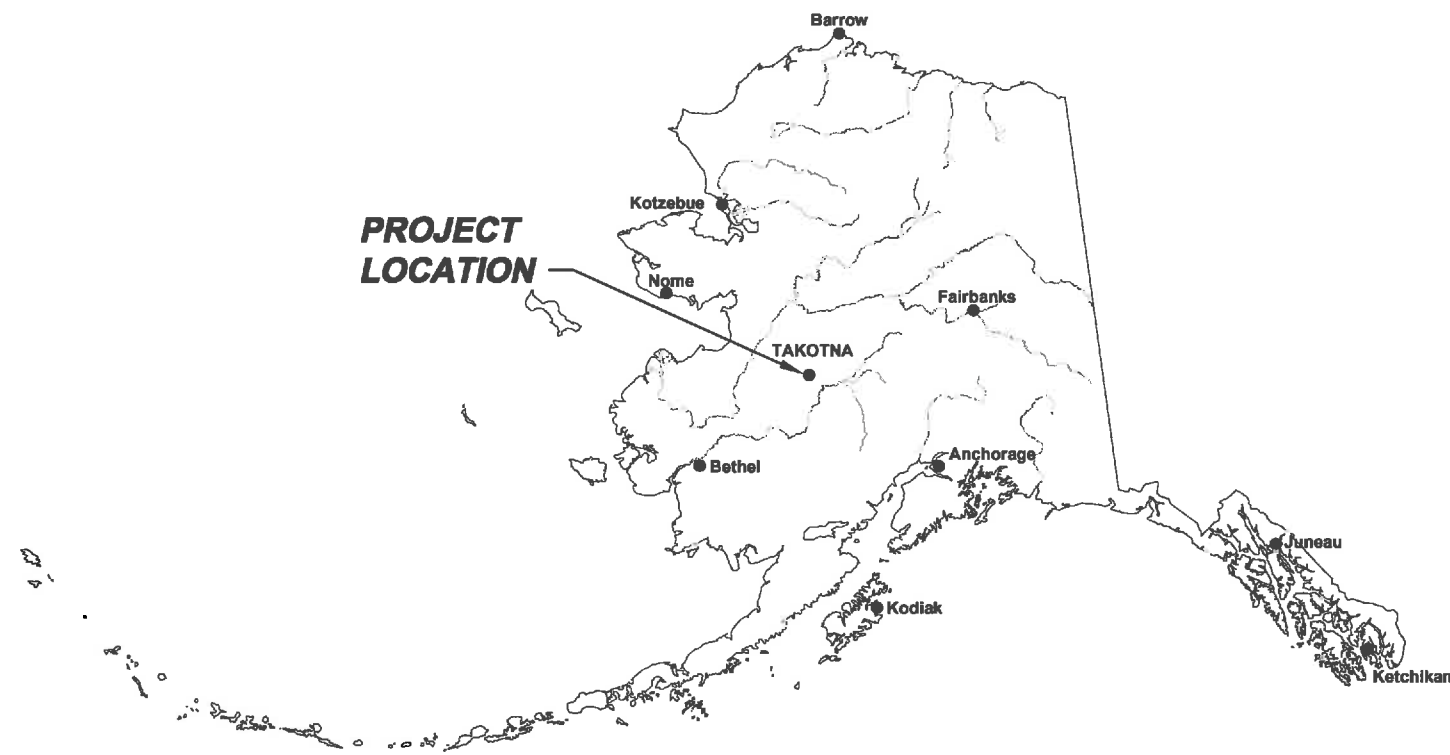
# **TAKOTNA TRIBAL COUNCIL**

## **TAKOTNA WATER TREATMENT PLANT**

### **CRYPTOSPORIDIUM TREATMENT UPGRADE**

#### **TAKOTNA, ALASKA**

**CONSTRUCTION DRAWINGS**  
**SEPTEMBER 19, 2014**



#### **CONSULTANTS**



**UMIAQ**

6700 Arctic Spur Road - Anchorage, AK 99518 - (907) 877-6220

#### **INDEX TO DRAWINGS**

COVER SHEET

G-1 PROJECT NOTES, LEGEND, ARIATIONS, AND PROCESS FLOW DIAGRAM

#### **CIVIL**

C-1 WASHETERIA DEMOLITION PLAN

C-2 WASHETERIA PIPING PLAN AND PIPING SCHEMATIC

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PRINTED: 09/19/2014 11:21 margaret.hinz-neason LAYOUT: G-1

### GENERAL NOTES

- OWNER: VILLAGE OF TAKOTNA  
TRADITIONAL COUNCIL  
P.O. BOX 7529  
TAKOTNA, AK 99675  
CONTACT: 907-298-2212
- ELECTRIC UTILITY: TAKOTNA COMMUNITY ASSOCIATION INCORPORATED  
CONTACT: 888-856-6186
- ALL ADDITIVES AND MATERIALS USED FOR THE POTABLE WATER SYSTEM SHALL BE APPROVED FOR USE BY THE NATIONAL SANITATION FOUNDATION (NSF) STANDARDS, NSF 61, NSF 53, AS APPLICABLE..
- ALL MATERIALS FOR THE POTABLE WATER SYSTEM SHALL BE LEAD-FREE. ONLY LEAD FREE PIPE, FLUX, AND SOLDER SHALL BE USED.
- DESIGN DRAWINGS ARE SCHEMATIC IN NATURE, THEY ARE NOT INTENDED TO BE DETAILED DRAWINGS.
- PROVIDE BACKFLOW AND CROSS CONNECTION CONTROL PER 18AAC80.
- ALL PIPING MATERIALS TO BE SCHEDULE 40 PVC.

### SCOPE OF WORK

- DEMOLISH EXISTING GIARDIA FILTER AND CARBON FILTERS AS SHOWN ON SHEET C-1.
- INSTALL STAGE ONE AND STAGE TWO FILTERS AND ASSOCIATED VALVES AND PIPING.
- DISINFECT SYSTEMS AND DISPOSE OF NEUTRALIZED WATER PER THE REQUIREMENTS OF ANSI/AWWA C651, C652, C653. PRESSURE TESTING MAY BE CONDUCTED AT THE SAME TIME AS DISINFECTION PER ASNI/AWWA C605.
- UPON COMPLETION OF WORK, PERFORM TOTAL COLIFORM TESTING PER ADEC REQUIREMENTS PRIOR TO ESTABLISHMENT OF SERVICE TO WATER SYSTEM.

### DESIGN CRITERIA

**WATER SOURCE:** SURFACE

**POPULATION\*:**  
CURRENT: 51  
DESIGN: 51

**PER CAPITA WATER USE\*:**  
WATERING POINT: 19 GPCPD (RECENT)  
WATER DISTRIBUTION: 25 GPCPD (RECOMMENDED)

**AVERAGE DAILY DEMAND\*:**  
CURRENT:  
WASHETERIA: 950 GPD  
SCHOOL: 627 GPD  
TOTAL: 1,577 GPD

**MAXIMUM DAILY DEMAND\*:**  
CURRENT: 3,154 GPD

**PEAK HOURLY DEMAND\*:**  
CURRENT: 5.9 GPM (CURRENT MAXIMUM FILTRATION RATE: 7 GPM)

**PEAK WATER DEMAND\*\*:**  
CURRENT: 41.5 GPM

**SOURCE PUMPING RATE\*:** 37 GPM

**CT TREATMENT:**  
THE SYSTEM CAN MEET THE CT REQUIREMENTS FOR NORMAL AVERAGE AND PEAK FLOW RATES (12 GPM AND 45 GPM RESPECTIVELY). ASSUMING A WATER TEMPERATURE OF 5 DEGREES CELSIUS, BAFLE FACTOR OF 10%, 0.5 LOG TREATMENT, pH OF 6.5, AND A MINIMUM WATER STORAGE CAPACITY OF 7,800 GALLONS, THE SYSTEM CAN ADJUST FREE CHLORINE RESIDUAL LEVELS TO MEET CT REQUIREMENTS. AT 12 GPM FLOW RATE, THE SYSTEM WOULD HAVE TO MAINTAIN 0.3 MG/L FREE CHLORINE RESIDUAL. AT 41.5 GPM FLOW RATES, THE SYSTEM WOULD HAVE TO MAINTAIN 1.2 MG/L FREE CHLORINE.

**PRE-FILTERS:**  
SAND FILTERS ARE INSTALLED BEFORE THE PROPOSED STAGE 1 FILTERS TO REMOVE SILT AND LARGE PARTICLES PRIOR TO THE TREATMENT UNITS.

**PROPOSED FILTERS:**  
STAGE 1:  
TWO (2) MUNI-1-2FL-304 MUNICIPAL HURRICANE FILTRATION SYSTEM CARTRIDGES WITH HC/170-5 HURRICANE HIGH PERFORMANCE FILTERS MANUFACTURED BY HARMSCO MUNICIPAL, OR APPROVED EQUAL.

STAGE 2:  
TWO (2) MUNI-1-2FL-304 MUNICIPAL HURRICANE FILTRATION SYSTEM CARTRIDGES WITH HC/170-LT2 HURRICANE ABSOLUTE RATED FILTERS MANUFACTURED BY HARMSCO MUNICIPAL OR APPROVED EQUAL.

\* DATA FROM G.V. JONES WATER PLANT UPGRADE DESIGN - 1/6/2004  
\*\* DATA FROM FIXTURE COUNT CONDUCTED IN DECEMBER, 2013

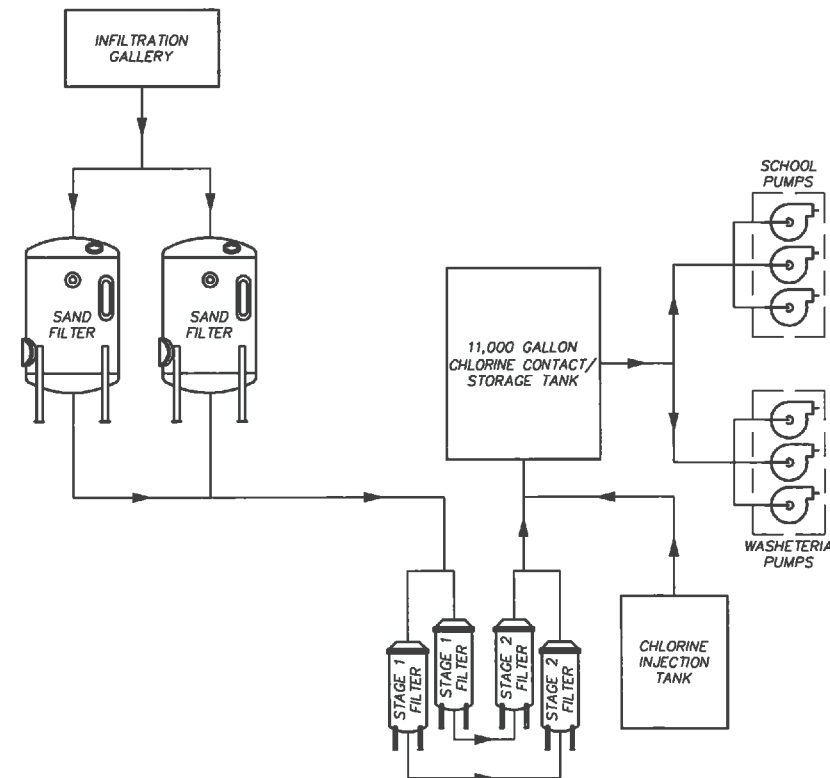
TARGET PATHOGEN	SYSTEM AS DESIGNED				REQUIRED
	PRE-FILTERS (SAND FILTERS)	STAGE 1 & 2 FILTRATION	INACTIVATION (CHLORINATION)	TOTAL	
GIARDIA LAMBLIA	0.0-LOG	2.5-LOG	0.5-LOG	3.0-LOG	3.0-LOG
CRYPTOSPORIDIUM	0.0-LOG	2.0-LOG	0.0-LOG	2.0-LOG	2.0-LOG
VIRUSES	0.0-LOG	0.0-LOG	4.0-LOG	4.0-LOG	4.0-LOG

### LEGEND

EXISTING	PROPOSED	
		SAMPLE TAP
		PRESSURE GAGE
		VALVE
		METER
		STATIC MIXER
		FLOW DIRECTION
		OVERHEAD ELECTRIC
		UNDERGROUND TELEPHONE
		UNDERGROUND POWER & TELEPHONE
		WATER
		BACKWASH LINE
		SEPTIC LINE
		FENCE
		EDGE OF GRAVEL
		PROPERTY LINE
		EASEMENT
		CONTOUR MAJOR
		CONTOUR MINOR
		BUILDING

### ABBREVIATIONS

ADEC	ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWWA	AMERICAN WATER WORKS ASSOCIATION
DEMO	DEMOLISH / DEMOLITION
GPM	GALLONS PER MINUTE
GPD	GALLONS PER DAY
GPCPD	GALLONS PER CAPITA PER DAY
HDPE	HIGH-DENSITY POLYETHYLENE
MIN/IN	MINUTES PER INCH
MG/L	MILLIGRAMS PER LITER
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NSF	NATIONAL SANITATION FOUNDATION
PVC	POLYVINYL CHLORIDE
TYP	TYPICAL



1  
G-1  
PROCESS FLOW DIAGRAM  
SCALE: N.T.S.

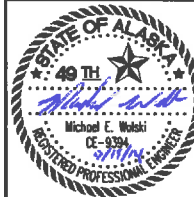
TAKOTNA TRIBAL COUNCIL

WATER TREATMENT PLANT  
CRYPTOSPORIDIUM TREATMENT UPGRADE  
TAKOTNA, ALASKA



CONSTRUCTION  
DRAWINGS

REVISIONS:



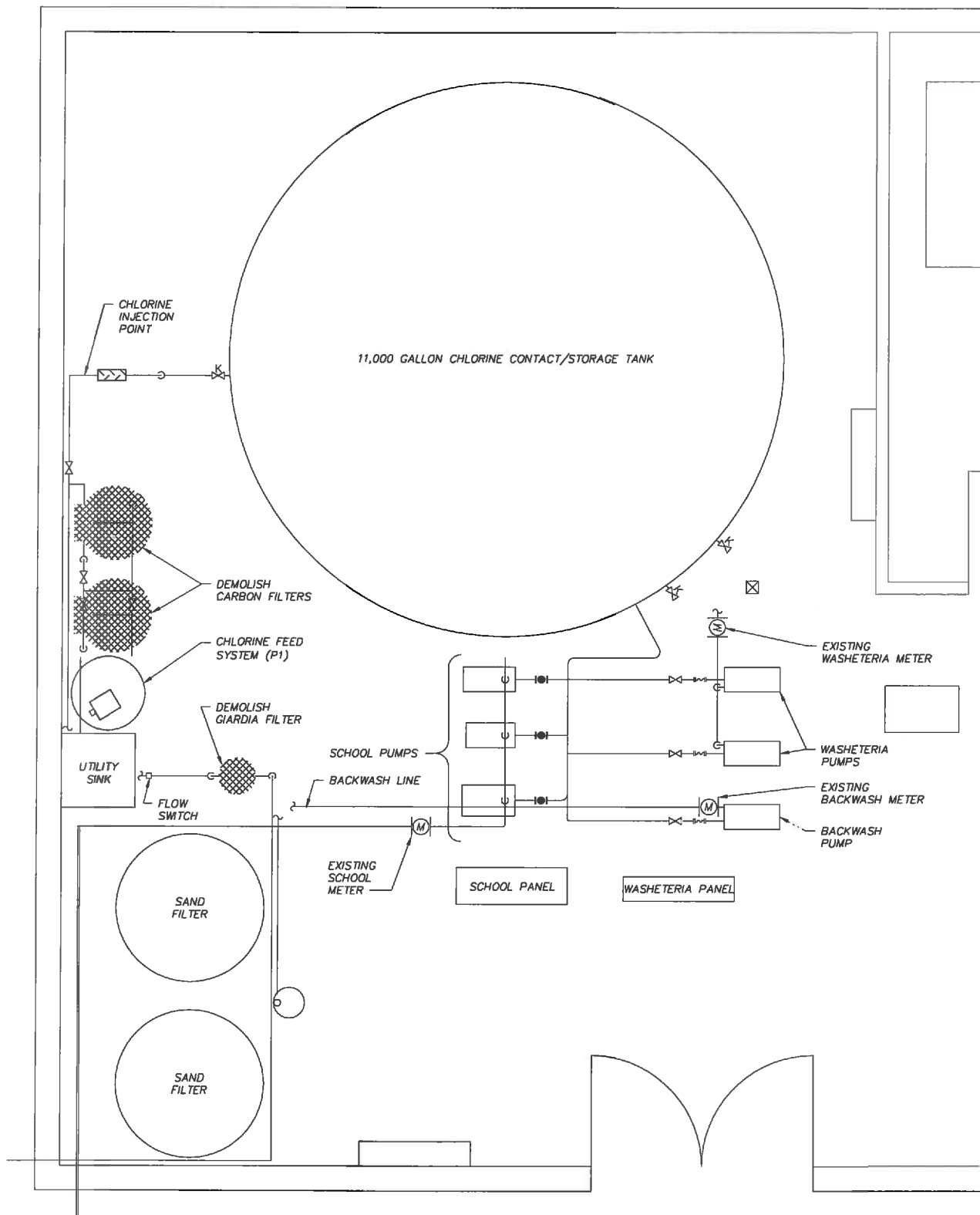
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JOB NUMBER: 70108.13  
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DRAWING TITLE:  
PROJECT NOTES, LEGEND,  
ABBREVIATIONS AND  
FLOW DIAGRAM

SHEET: 2 OF 4

G-1

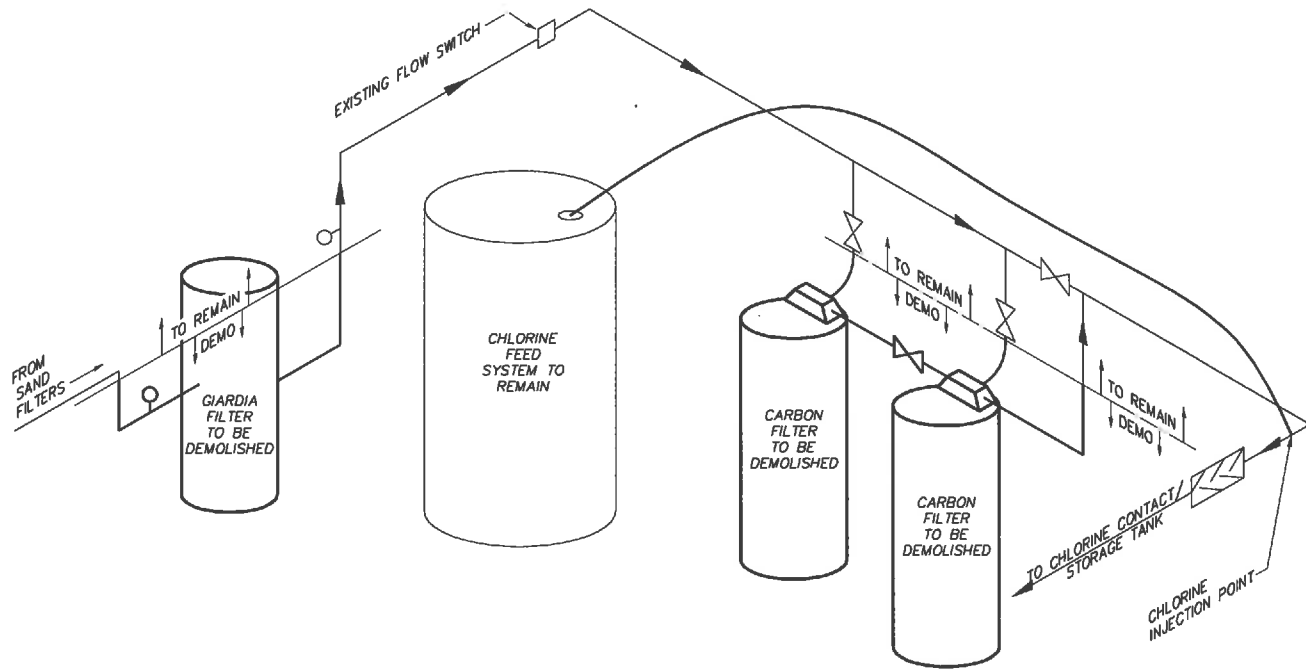
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1  
C-1

**DEMOLITION PLAN**

SCALE: N.T.S.



2  
C-1

**DEMOLITION SCHEMATIC**

SCALE: N.T.S.

**NOTES**

1. OWNER: VILLAGE OF TAKOTNA  
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CONTACT: 907-298-2212
2. ELECTRIC UTILITY: TAKOTNA COMMUNITY ASSOCIATION INCORPORATED  
CONTACT: 888-856-6186
3. REMOVE EXISTING GIARDIA FILTER AND PRESSURE GAUGE.
4. REMOVE TWO EXISTING CARBON FILTER AND ASSOCIATED HARDWARE. VALVES FROM RAW WATER LINE TO REMAIN.
5. DO NOT REMOVE OR DAMAGE BACKWASH LINES OR VALVES.

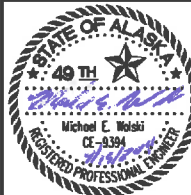
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**WATER TREATMENT PLANT UPGRADE  
CRYPTOSPORIDIUM TREATMENT UPGRADE  
TAKOTNA, ALASKA**



**CONSTRUCTION  
DRAWINGS**

REVISIONS:



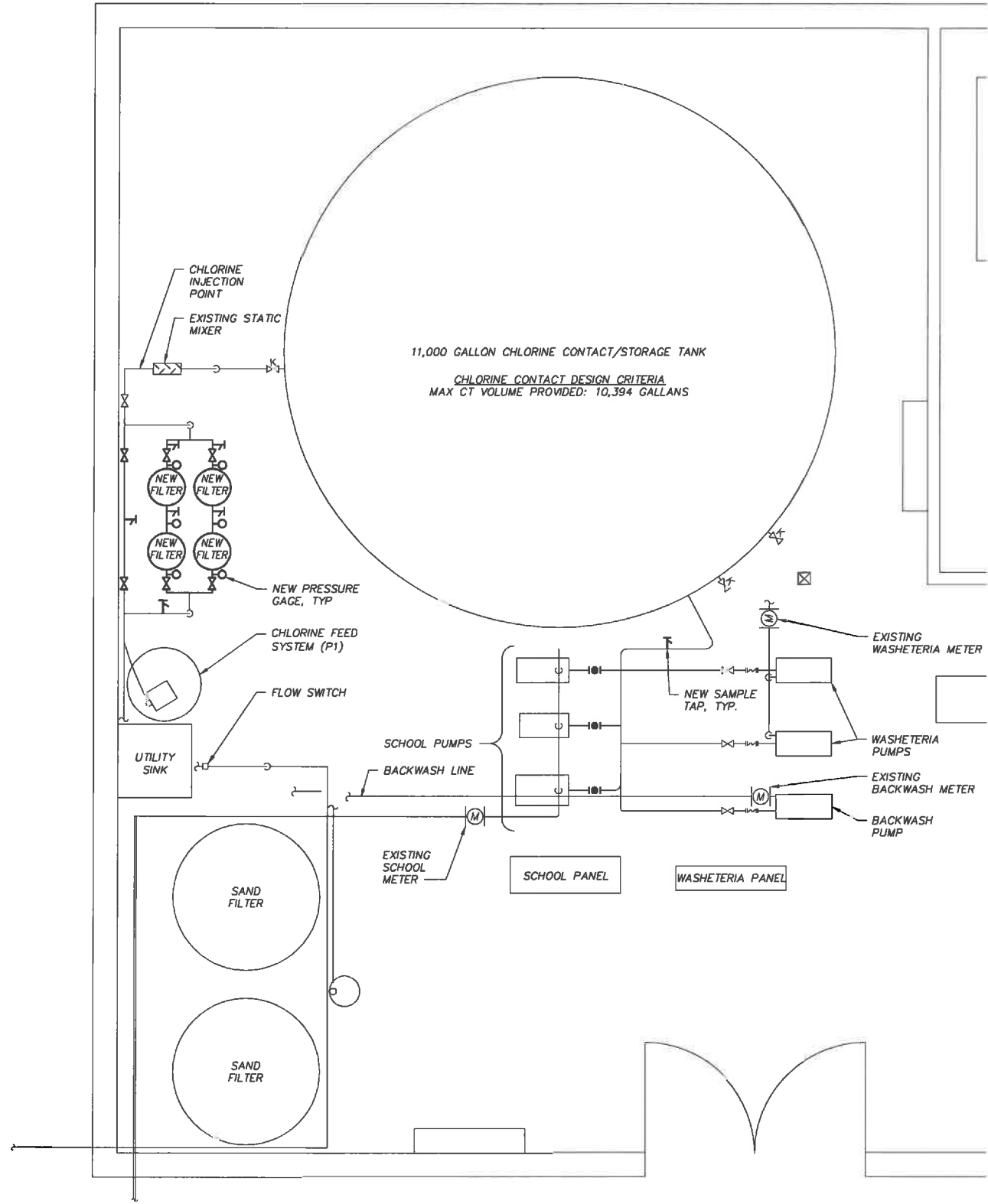
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DRAWING TITLE:  
WASHETERIA  
DEMOLITION PLAN

SHEET: 3 OF 4

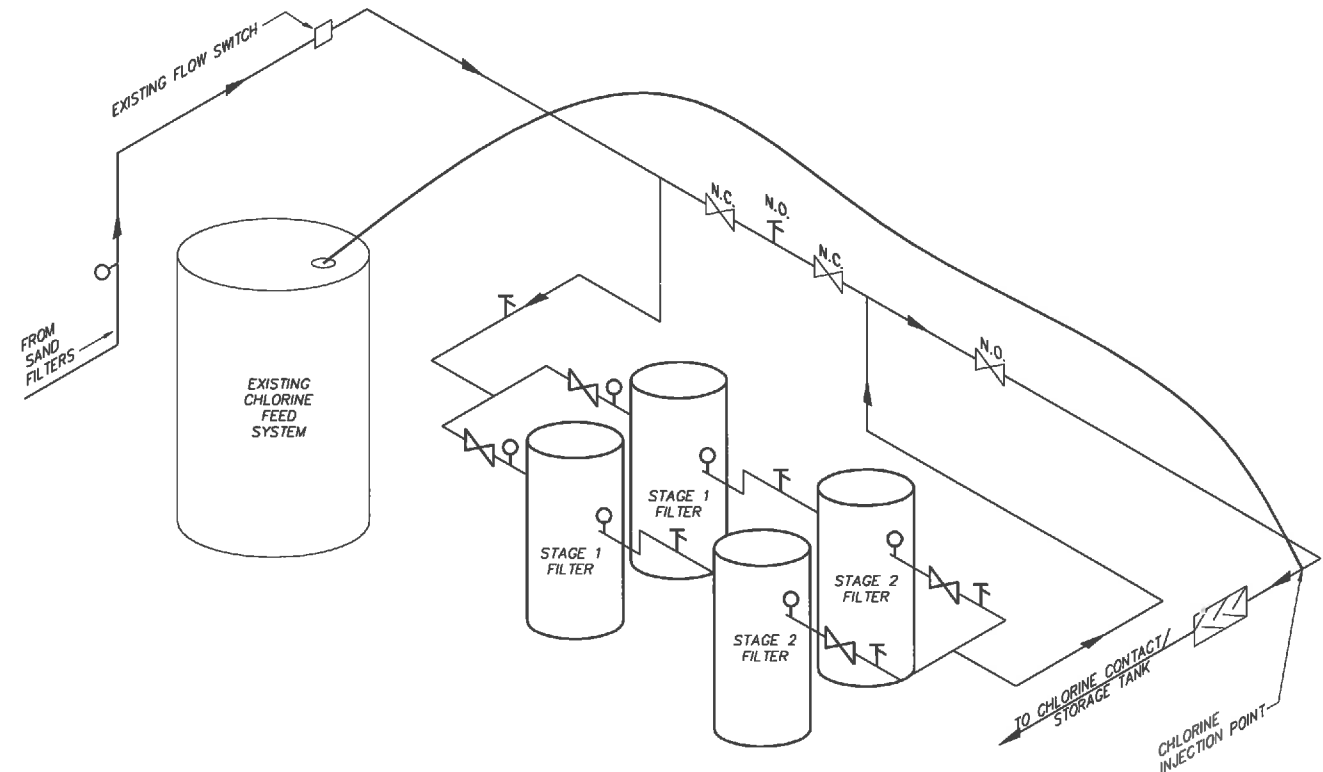
**C-1**

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1  
C-2

**WASHETERIA PLAN**  
SCALE: N.T.S.



2  
C-2

**WASHETERIA PIPING SCHEMATIC**  
SCALE: N.T.S.

<b>TAKOTNA TRIBAL COUNCIL</b>	
<b>WATER TREATMENT PLANT CRYPTOSPORIDIUM TREATMENT UPGRADE TAKOTNA, ALASKA</b>	
 6700 Arctic Spur Road - Anchorage, AK 99518 - (907) 577-1228	
<b>CONSTRUCTION DRAWINGS</b>	REVISIONS:
	
DRAWN BY: DBH CHECKED BY: MEW DATE: 09/19/2014 JOB NUMBER: 70108.13 SCALE: AS SHOWN	
DRAWING TITLE: WASHETERIA PIPING PLAN AND PIPING SCHEMATIC	
SHEET: 4 OF 4 <b>C-2</b>	