

TULUKSAK, ALASKA

WASTEWATER SYSTEM

IMPROVEMENTS PHASE I & II

- COMMUNITY HONEYBUCKET DUMPSITE IMPROVEMENTS
- WASTEWATER TREATMENT AND DISPOSAL AREA
- COMMUNITY LIFT STATION
- GRAVITY SEWER AND FORCEMAIN PIPING

Prepared for the Tuluksak Native Community

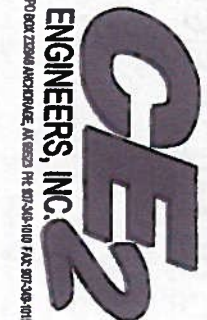
In Cooperation with the State of Alaska
Department of Environmental Conservation
Village Safe Water Program

REISSUED FOR CONSTRUCTION - JUNE 17, 2014



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RECORD DRAWING CERTIFICATE

THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.

NAME _____ DATE _____

SCOPE OF THE PROJECT

THIS PLAN SET COVERS PHASE I & II OF THE TULUKSAK WASTEWATER SYSTEM IMPROVEMENTS PROJECT. WHEN FULLY IMPLEMENTED, THIS PROJECT WILL PROVIDE BURIED PIPED GRAVITY SEWER SERVING THE CORE AREA (WASHETERIA, TEEN CENTER, CLINIC, CONSTRUCTION CAMP, STORE AND SCHOOL). THE PROJECT WILL CONSTRUCT A SEWER LIFT STATION, SEWER FORCEMAIN AND WASTEWATER LAGOON WITH A HONEY BUCKET DUMP.

Project Number (Consultant) _____

VSW Project Manager _____

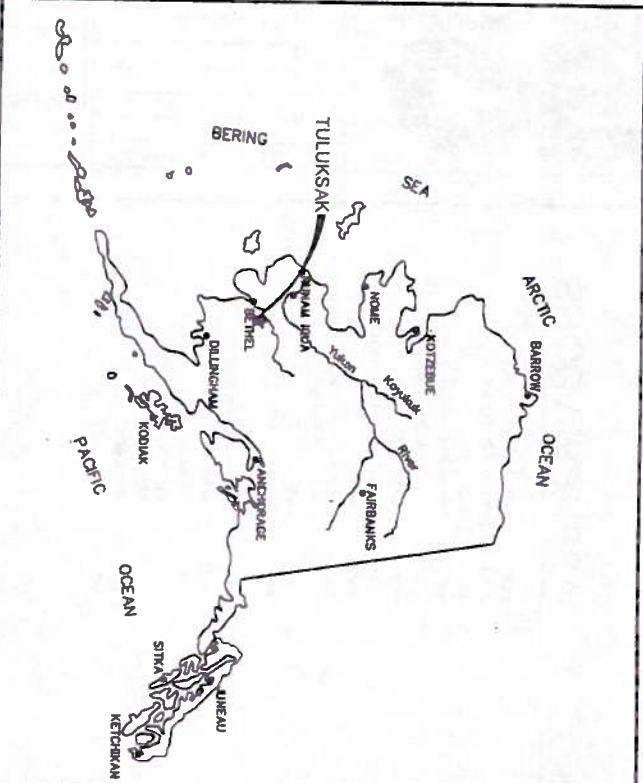
Construction Foreman _____

Final Design (Date) _____

ADEC Approval (Date) _____

Construction Period (From) _____ (To) _____

As-Built (Date) _____



LOCATION MAP

GENERAL NOTES

- A. GENERAL:
1. THE PROJECT SUPERINTENDENT SHALL MAINTAIN A CLEAN SET OF "AS-BUILT" RECORD DRAWINGS SHOWING THE LOCATIONS AND SIZES TIES TO ALL APPURTENANCES. ALL ELEVATIONS SHALL BE MARKED ASB (AS-BUILT) WITH THE CORRECT VALUE INSERTED. DRAWINGS SHALL BE KEPT CURRENT IN RED PENCIL ON A DAILY BASIS IN A NEAT, LEGIBLE FASHION. COPIES OF THE AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE TULUKSAK NATIVE COMMUNITY AND VSW UPON COMPLETION OF CONSTRUCTION.
 2. THE BASIS OF BEARINGS FOR HORIZONTAL CONTROL IS SHOWN ON SHEET G2.0.
 3. THE BASIS OF VERTICAL CONTROL IS SHOWN ON SHEET G2.0.
 4. EXISTING UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS TO THE BEST KNOWLEDGE OF THE ENGINEER AT THE TIME OF DESIGN. RECORDS MAY NOT BE COMPLETELY ACCURATE. THE PROJECT SUPERINTENDENT SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES WITHIN EACH CONSTRUCTION REACH PRIOR TO BEGINNING WORK.
 5. THE RECOMMENDED FINISHED FLOOR ELEVATION OF STRUCTURES IS 2.0 FEET ABOVE THE CORPS OF ENGINEERS 100-YEAR FLOOD ELEVATION. FOR THIS PROJECT THE 100-YEAR FLOOD STAGE IS ELEV. 30.3 FEET AND MINIMUM FINISHED FLOOR ELEVATION IS 32.3 FEET.
- B. ARCTIC PIPE:
1. CARRIER PIPE. FORCEMAINS SHALL BE 4" AND 6" HOPE. SDR 11. GRAVITY MAINS SHALL BE 6" HOPE. SDR 17. ALL HOPE PIPING SHALL BE LISTED BY THE PPI WITH A DESIGNATION OF PE3408 AND A CELL CLASSIFICATION OF 345434C OR BETTER AS PER ASTM D3390.
 2. INSULATION. ARCTIC PIPE INSULATION SHALL BE CLOSED CELL (ASTM D2241) CELL CLASSIFICATION 55047497024 URETHANE FOAM WITH A MAXIMUM K FACTOR OF 0.155 BTU-IN/HR-FT-DEG F. THE INSULATION CORE DENSITY SHALL BE BETWEEN 2.0 AND 4.0 LB/CF. Voids GREATER THAN 0.05 CUBIC INCHES BEYOND 24 INCHES OF EITHER END OF THE PIPE SECTION WILL BE CAUSE FOR REJECTION OF THE PIPE. SEE TECHNICAL SPECIFICATION FOR FURTHER REQUIREMENTS.
 3. OUTER JACKET MATERIAL. THE OUTER JACKET MATERIAL FOR ALL ARCTIC PIPE AND FITTINGS SHALL BE 16 GAUGE HELICAL CORRUGATED ALUMINUM PIPE WITH BEAMS THAT WILL WITHSTAND A HYDROSTATIC PRESSURE OF 5 FEET OF WATER WITH NO LEAKAGE.
 4. HYDRONIC HEAT TRACE. HYDRONIC HEAT TRACE (WHERE SPECIFIED) SHALL BE A MINIMUM OF 7' DIA. HOPE. SDR 11 AND LISTED BY THE PPI WITH A DESIGNATION OF PE3408 AND A CELL CLASSIFICATION OF 345434C OR BETTER AS PER ASTM D3390.
- C. CLEARING AND GRUBBING:
1. THE CONSTRUCTION CREW SHALL REMOVE ALL TREES, BRUSH, VEGETATING MAT, AND OTHER OBJECTIONABLE MATERIAL WITHIN THE ROAD FOOTPRINT. WHERE DIRT FILL IS TO BE PLACED OVER SOFT, SATURATED TUNDRA, THE GROUND SURFACE MAY BE PREPARED BY CUTTING BRUSH AND TREES WITHIN THE DIKE FOOTPRINT AND GRUBBING AN 8-FOOT WIDE KEYWAY ALONG THE CENTER OF THE DIKE.
 2. ALL GRUBBED MATERIAL SHALL BE DISPOSED OF IN THE DESIGNATED SPOILS DEPOSITION AREA OR THE BORROW AREA EAST OF THE LAGOON AND WITHIN THE PROJECT PROPERTY. A PORTION OF THE GRUBBED ORGANIC TOPSOIL SHALL BE STOCKPILED AND LATER USED TO COVER AND REVEGETATE THE DIKE SIDESLOPES, BORROW AREA, AND OTHER AREAS DISTURBED BY CONSTRUCTION.
- D. EARTHWORK:
1. SIDE WALLS OF EXCAVATIONS SHALL BE SLOPED OR SUFFICIENTLY BRACED IN CONFORMANCE WITH SECTION 05.180 OF THE STATE OF ALASKA DEPARTMENT OF LABOR STANDARDS AND THE LATEST FEDERAL OSHA EXCAVATION AND TRENCHING STANDARDS. IF IT IS NECESSARY TO LEAVE AN OPEN EXCAVATION UNATTENDED, THE OPEN EXCAVATION SHALL BE ADEQUATELY SIGNED AND BARRICADED TO WARN RESIDENTS OF THE HAZARD.
 2. COMPACTION OF STRUCTURAL FOUNDATIONS, PIPE ZONE MATERIALS, EMBANKMENTS AND ROADWAYS SHALL BE ACCOMPLISHED USING A MINIMUM OF THREE (3) PASSES WITH A 15,000 POUND VIBRATORY ROLLER OR EQUIVALENT. WHENEVER THE FILL BE COMPACTED IN MAXIMUM 8-INCH LIFTS PRIOR TO SUBSEQUENT LAYERS OF FILL, SUPERINTENDENT SHALL COORDINATE AN INITIAL EFFORT INSPECTION WITH THE ENGINEER AND SOON TO VERIFY THE ACTUAL COMPACTIVE EFFORT REQUIRED. THE ENGINEER AND SNT WILL SUBSTITUTED THE LIFT DEPTH AND NUMBER OF PASSES SHALL BE ADJUSTED TO OBTAIN THE SAME COMPACTIVE EFFORT.
 3. WHERE EXCAVATIONS ENCOUNTER GROUNDWATER, Dewatering shall be implemented and temporary shoring may be required to stabilize the walls while excess water is allowed to drain or pumped out of the excavation.
- E. PIPELINE TESTING:
1. GENERAL: ALL TESTING SHALL BE IN CONFORMANCE WITH THE FOLLOWING REQUIREMENTS. ALL TESTS SHALL BE WITNESSED BY A REPRESENTATIVE DESIGNATED BY THE COMMUNITY UPON SUCCESSFUL COMPLETION OF A TEST. THE RESULTS OF THE TEST SHALL BE DOCUMENTED ON A TEST FORM AND ACKNOWLEDGED BY SIGNATURE OF THE COMMUNITY'S REPRESENTATIVE. WITNESSING THE TEST AND BY THE PROJECT SUPERINTENDENT. THE SUPERINTENDENT'S RED LINED AS-BUILT DRAWINGS SHALL ALSO NOTE THE TIME AND DATE OF THE TEST, AS WELL AS THE NAME OF THE COMMUNITY'S WITNESS, FOR EACH PIPE SEGMENT TESTING.
 2. FORCEMAIN TESTING: PERFORM HYDROSTATIC TESTING OF ALL FORCEMAIN PIPING. FILL THE LINES WITH POTABLE WATER AND REMOVE AIR POCKETS PRIOR TO STARTING THE TEST. PRESSURE TO 100 PSI AND MAINTAIN FOR ONE HOUR. AFTER THIS INITIAL PERIOD, ADD WATER TO BRING THE PRESSURE UP TO 150 PSI AND BEGIN A ONE HOUR TEST. THERE SHALL BE NO LOSS IN PRESSURE DURING THE 1 HOUR TEST FOR THE PIPING TO BE ACCEPTED.
 3. GRAVITY SEWER MAIN TESTING: THE CONSTRUCTION CREW SHALL CLEAN AND FLUSH ALL SANITARY SEWER MAINS PRIOR TO VISUAL INSPECTION (LAMPING) AND PRESSURE TESTING. EACH REACH OF SEWER MAIN SHALL BE LAMPED. MANHOLE TO MANHOLE WITH A HIGH INTENSITY LIGHT AND LARGE MIRROR. SEGMENTS NOT LAMPING TO 7/8 OF A FULL MOON SHALL BE REALIGNED AND/OR REGRADED AS NECESSARY TO MEET THE 7/8 MOON REQUIREMENT. ALL SEGMENTS OF COMPLETED SEWER MAIN AND OUTFALL SHALL BE PRESSURE TESTED FROM MANHOLE TO MANHOLE OR TERMINUS TO TERMINUS WITH AIR AT THE END OF CONSTRUCTION (PRIOR TO CONNECTING SEWER SERVICE LINES). AIR SHALL BE SLOWLY SUPPLIED TO THE PLUGGED PIPE INSTALLATION UNTIL THE INTERNAL AIR PRESSURE REACHES 4.0 POUNDS PER SQUARE INCH (PSI) GREATER THAN THE AVERAGE BACK PRESSURE OF ANY GROUNDWATER THAT MAY SUBMERGE THE PIPE. AT LEAST TWO (2) MINUTES SHALL BE ALLOWED FOR TEMPERATURE STABILIZATION BEFORE PROCEEDING WITH THE TEST. AT THE END OF THE STABILIZATION PERIOD THE AIR PRESSURE SHALL BE ADJUSTED TO THE TEST PRESSURE AND THE 10 MINUTE TEST PERIOD SHALL BEGIN. THE MAXIMUM ALLOWABLE PRESSURE DROP FOR ANY SEWER MAIN SEGMENT DURING THE 10 MINUTE TEST PERIOD SHALL BE 27 PSI.

F. REVEGETATION SPECIFICATION.

1. THE ENTIRE AREA DISTURBED BY CONSTRUCTION SHALL BE REVEGETATED AS QUICKLY AS GOOD CONSTRUCTION PRACTICE ALLOWS. AREAS TO BE REVEGETATED SHALL FIRST BE COVERED WITH A MINIMUM 6-INCH LAYER OF FRAGILE, LOOSELY PLACED TOPSOIL, FREE OF DEBRIS. THE FOLLOWING SEED MIXTURE AND FERTILIZER APPLICATION RATES SHALL BE APPLIED:
- | SEED | NUTRIENT | RATE | METHOD |
|-------------------|------------|-------------|-----------|
| Red Fescue | Acidic Red | 14 lb/acre | Broadcast |
| Bentley Hairgrass | Norcross | 16 lb/acre | Broadcast |
| Rye Grass | Annual | 2 lb/acre | Broadcast |
| FERTILIZER | 20-20-20 | 160 lb/acre | Broadcast |
2. EROSION CONTROL FABRIC: USE BIODEGRADABLE LUTE MESH WITH A LIFE OF 1-2 YEARS. INSTALL ON SLOPES AFTER SEEDING AND ANCHOR SECURELY WITH GROUND STAPLES.
- G. HONEYBUCKET DUMP SITE CLOSURE
1. THE DUMP SITE CLOSURE WILL OCCUR ONCE THE NEW LAGOON IS OPERATIONAL.

PROJECT DESCRIPTION

THIS PROJECT CONSTRUCTS A TWO-CELL FACULTATIVE PERCOLATION LAGOON, A LIFT STATION, AND A SEWAGE FORCE MAIN BETWEEN THE LAGOON AND LIFT STATION.

THE LAGOON SYSTEM WILL PROVIDE WASTEWATER TREATMENT OF DOMESTIC WASTEWATER. TREATMENT INVOLVES A COMBINATION OF PROCESSES THAT REMOVE SOLIDS, BIODEGRADABLE ORGANICS, AND PATHOGENS FROM THE WATER PRIOR TO ITS RELEASE INTO THE PERCOLATION CELL.

THE FIRST CELL WILL RECEIVE RAW WASTEWATER VIA A FORCE MAIN FROM A LIFT STATION LOCATED WITHIN THE VILLAGE. CELL 1 IS DESIGNED TO PROVIDE A COLLECTOR ZONE FOR DIRECTION OF ORGANIC MATTER AND BIODEGRADABLE CONTAMINANTS TO THE SECOND CELL. CELL 2 WILL RECEIVE WASTEWATER FROM NON-DESTRUCTIBLE SOLIDS, MAY INCLUDE RAINFALL, CELL 1 IS HYDRAULICALLY CONNECTED TO CELL 2 WITH AN INTERCONNECTING DUAL PIPE CONTROL. STRUCTURE DESIGNED TO MAINTAIN A LIQUID DEPTH OF NO MORE THAN 7.0 FEET IN CELL 1. CELL 2 IS DESIGNED TO PERCOLATE WITH A MAXIMUM HYDRAULIC APPLICATION RATE OF 0.9 GALS/DF/AY.

WORK SUMMARY

- CONSTRUCT A DUAL-CELL, LINED WASTEWATER TREATMENT LAGOON AND ASSOCIATED HYDRAULIC CONTROL FEATURES.
- INSTALL A FORCEMAIN AND GRAVITY SEWER MAIN FROM THE CORE PART OF THE COMMUNITY TO THE PROPOSED FACULTATIVE LAGOON SITE.
- INSTALL A CENTRAL COMMUNITY LIFT STATION AND HONEYBUCKET DUMPING FACILITY.
- INSTALL A HYDRONIC HEAT TRACE AND WASTE HEAT RECOVER SYSTEM TO PROVIDE FREEZE PROTECTION OF THE LAGOON FORCEMAIN AND HONEYBUCKET DUMPING STATION.

SYSTEM STARTUP

LIFT STATION STARTUP

AFTER INSTALLATION OF ALL NEW LIFT STATION EQUIPMENT, THE PROJECT SUPERINTENDENT SHALL START AND FIELD TEST EACH PUMP UNIT TO DEMONSTRATE ITS ABILITY TO PUMP WITHOUT EXCESSIVE VIBRATION, MOTOR OVERLOADING OR OVERHEATING. EACH PUMP SHALL BE OPERATED FOR A SUFFICIENT PERIOD OF TIME TO PERMIT THOROUGH OBSERVATION OF ALL PUMP COMPONENTS. THE PROJECT SUPERINTENDENT SHALL VERIFY THE PROPER SEQUENCING AND OPERATION OF ALL CONTROLS.

AFTER THE LIFT STATION INSTALLATION IS COMPLETE BUT PRIOR TO DRAWING WASTEWATER INTO THE WET WELL, THE SUPERINTENDENT SHALL DETERMINE THE DISCHARGE RATE OF EACH OF THE SUBMERGIBLE WASTEWATER PUMPS. INDEPENDENTLY, AND IN TANDEM, THESE MEASUREMENTS SHALL BE RECORDED ON THE RECORDED DRAWINGS FOR FUTURE REFERENCE.

THE DISCHARGE PUMPING RATE SHALL BE DETERMINED BY MEASURING DRAINDOWN OF PORTABLE WATER PLACED IN THE WET WELL. ALL LIFT STATION TESTING SHALL BE PERFORMED WITH POTABLE WATER.

LAGOON STARTUP

SAMPLING WELLS SHOULD BE USED TO DETERMINE THE INITIAL NITRATE LEVELS PRIOR TO USE OF THE LAGOON SYSTEM.

STORM WATER MANAGEMENT PLAN

CONSTRUCTION SHALL BE PLANNED AND EXECUTED TO EXPEDITIOUSLY COMPLETE THE PROJECT WHILE MAINTAINING THE CONSTRUCTION SITE IN A MANNER THAT REDUCES THE POTENTIAL FOR CONTAMINATED STORM RUNOFF. SPECIFIC STEPS ARE TO INCLUDE THE FOLLOWING:

- PRIOR TO CONSTRUCTION DEVELOP A STORMWATER POLLUTION PREVENTION PLAN (SWPPP), WHICH UTILIZES THE BEST MANAGEMENT PRACTICES (BMPs) AND IS IN COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) AND THE ALASKA CONSTRUCTION GENERAL PERMIT NO. AWR10000. THIS PLAN MUST BE APPROVED BY THE STATE OF ALASKA ADEC.
- FILE A NOTICE OF INTENT (NOI) WITH THE EPA A MINIMUM OF 7 DAYS PRIOR TO THE START OF CONSTRUCTION.
- CONSTRUCTION SHALL BE VIGILANT WITH IMPLEMENTATION OF THE PLAN.

LEGEND

EXISTING			PROPOSED			DESCRIPTION
PLAN VIEW	PROFILE VIEW		PLAN VIEW	PROFILE VIEW		
		▽				GROUND SURFACE
		▽				DRAINAGE WATER FEATURE
		0				SEWER FORCE MAIN LIFT STATION REDUCER AND DOUBLE WIRE CLEANOUT
		0				SEWER SERVICE LINE
		0				CULVERT
		0				BURIED ELECTRICAL LINE
		0				BURIED FUEL OIL LINE
		0				BURIED TELEPHONE LINE
		0				OVERHEAD ELECTRIC EASEMENT
		0				UTILITY POLE
		0				FENCE
		0				ROADS AND TRAVELED WAYS
		0				CONTOUR LINE
		0				R.O.W. (RIGHT-OF-WAY)
		0				SHORELINE
		0				TREES AND/OR BRUSH
		0				STRUCTURE
		0				GROUND PROFILE
		0				DIRECTION OF DRAINAGE
		0				PROPERTY LINE
		0				SECTION LINE
		0				BLM BRASS CAPPED MONUMENT
		0				BENCH MARK
		0				SPOT ELEVATION
		0				REBAR - ABILITY SURVEY POINT NO
		0				YELLOW PLASTIC CAP (REBAR)
		0				TRACT NUMBER
		0				LOT NUMBER
		0				HEAT TRACE POWER SUPPLY

SECTION AND DETAIL DESIGNATIONS



MATERIAL QUANTITIES

ITEM	ESTIMATED QUANTITY
LAGOON OVERBURDEN	7,500 CU. YDS.
LAGOON CUT/FILL VOLUME	40,000 CU. YDS.
6" ARCTIC FORCEMAIN	3,740 L.F.
4" ARCTIC FORCEMAIN	511 L.F.
6" ARCTIC SEWER MAIN	1,351 L.F.
FORCEMAIN CLEAN OUT ASSEMBLY	8 EACH

ABBREVIATIONS

AP	ANGLE POINT (HORIZONTAL)
CMP	CORRUGATED METAL PIPE
C.O.E.	CORPS OF ENGINEERS
CULV.	CULVERT
FF	FINISHED FLOOR ELEVATION
G.B.	GRADE BREAK (VERTICAL)
G.V.	GATE VALVE
HOPE	HIGH DENSITY POLYETHYLENE PIPE
INV.	INVERT
IPS	IRON PIPE SIZE (INDUSTRY STANDARD OUTSIDE PIPE DIAMETER)
LF	LINEAR FEET
MFR	MANUFACTURER
MH	MANHOLE
SDR	SIDE DIMENSION RATIO
SHT.	SHEET
SS	STAINLESS STEEL
STA.	STATION
TOI	TOP OF PIPE JACKET
V.B.	VALVE BOX
WS	WATER SURFACE

RECORD DRAWING CERTIFICATE

THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.

NAME: _____ DATE: _____

SCALE: AS SHOWN



2010-11 WASTEWATER SYSTEM IMPROVEMENTS

GENERAL NOTES, DESIGN CRITERIA AND LEGEND

TULUKSAK, ALASKA



PO BOX 22200 ANCHORAGE, AK 99502 PH: 877-340-6710 FAX: 877-340-1015

REVISION	BY	DATE

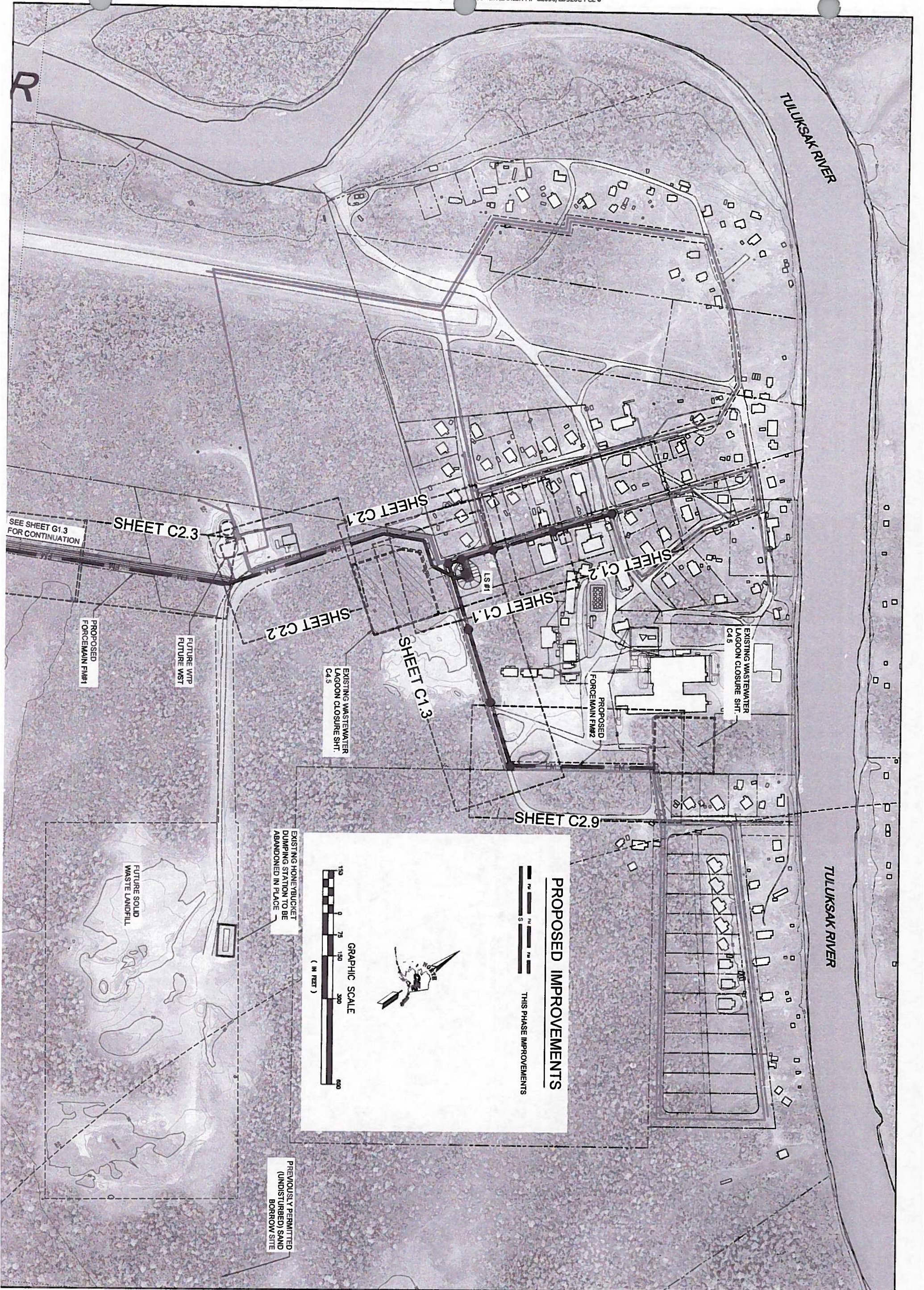
Project No. _____

Date: APRIL 2014

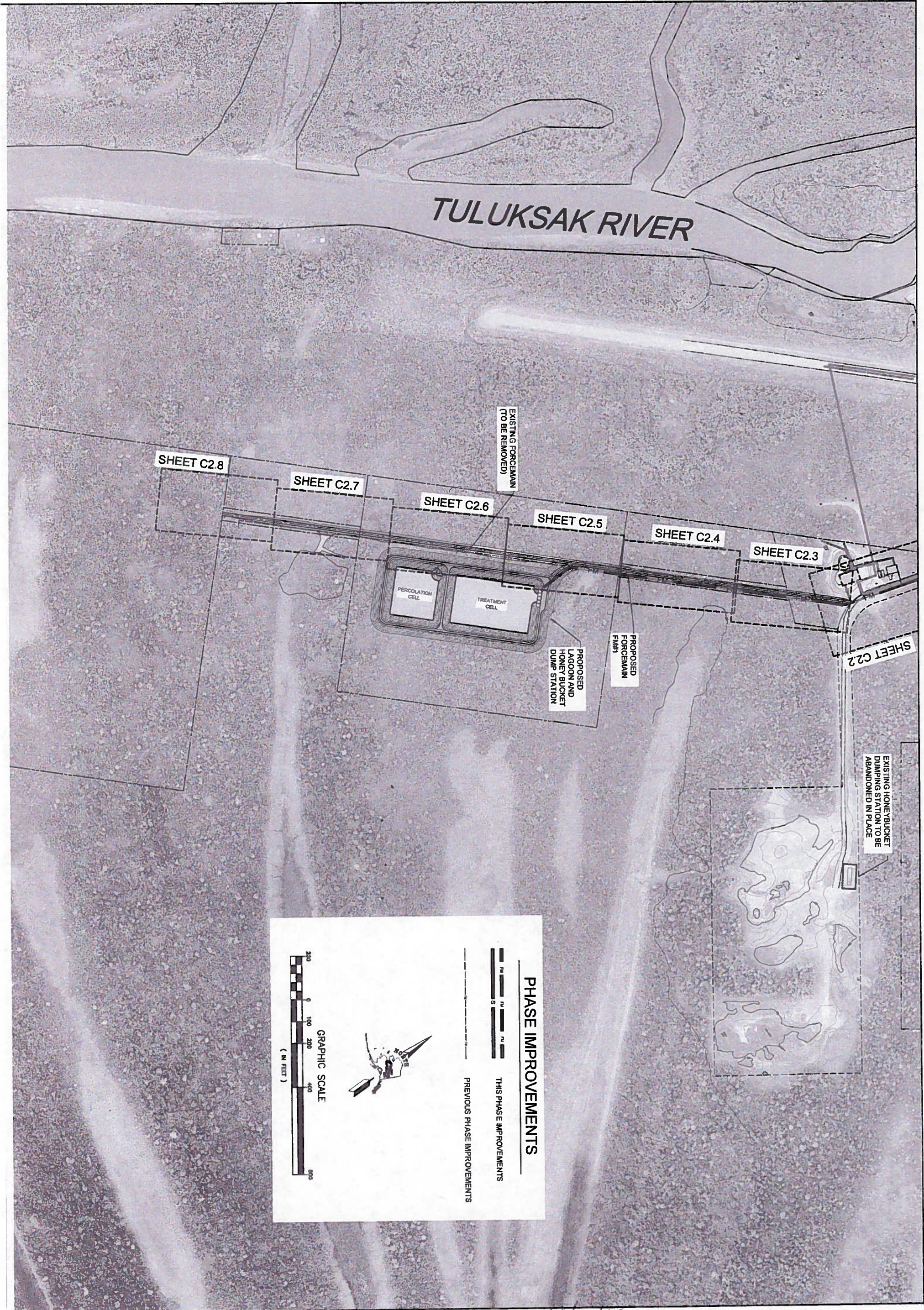
Designed: LAP

Drawn: DDR

Approved: LAP



Sheet No. G1.2	Project No. _____	REVISION	BY	DATE	 PO BOX 232949 ANCHORAGE, AK 99523 PH: 807-348-4010 FAX: 807-348-1015	2010-11 WASTEWATER SYSTEM IMPROVEMENTS 2010 AND 2011 IMPROVEMENTS SHEET INDEX TULUKSAK, ALASKA			SCALE: AS SHOWN 1" = 100' (AS SHOWN ON ORIGINAL DRAWING) IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	5/7/14
	Date APRIL 2014								RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE. NAME _____ DATE _____	
	Designed LAP									
	Drawn CMLAW									
	Approved LAP									



Sheet No. G1.3	Project No. _____	REVISION	BY	DATE
	Date APRIL 2014	LAGOON RELOCATION	CM	4/14
	Designed MRE	PERC. CELL RESIZED	CM	9/14
	Drawn CMLAW			
	Approved MRE			

CE2
ENGINEERS, INC.

PO BOX 232048 ANCHORAGE, AK 99523 PH: 907-349-1070 FAX: 907-349-1075

**2010-11 WASTEWATER
SYSTEM IMPROVEMENTS**

**2010 AND 2011
IMPROVEMENTS
SHEET INDEX**

TULUKSAK, ALASKA

STATE OF ALASKA
49th
Michael R. Erdman
No. 6252
REGISTERED PROFESSIONAL ENGINEER

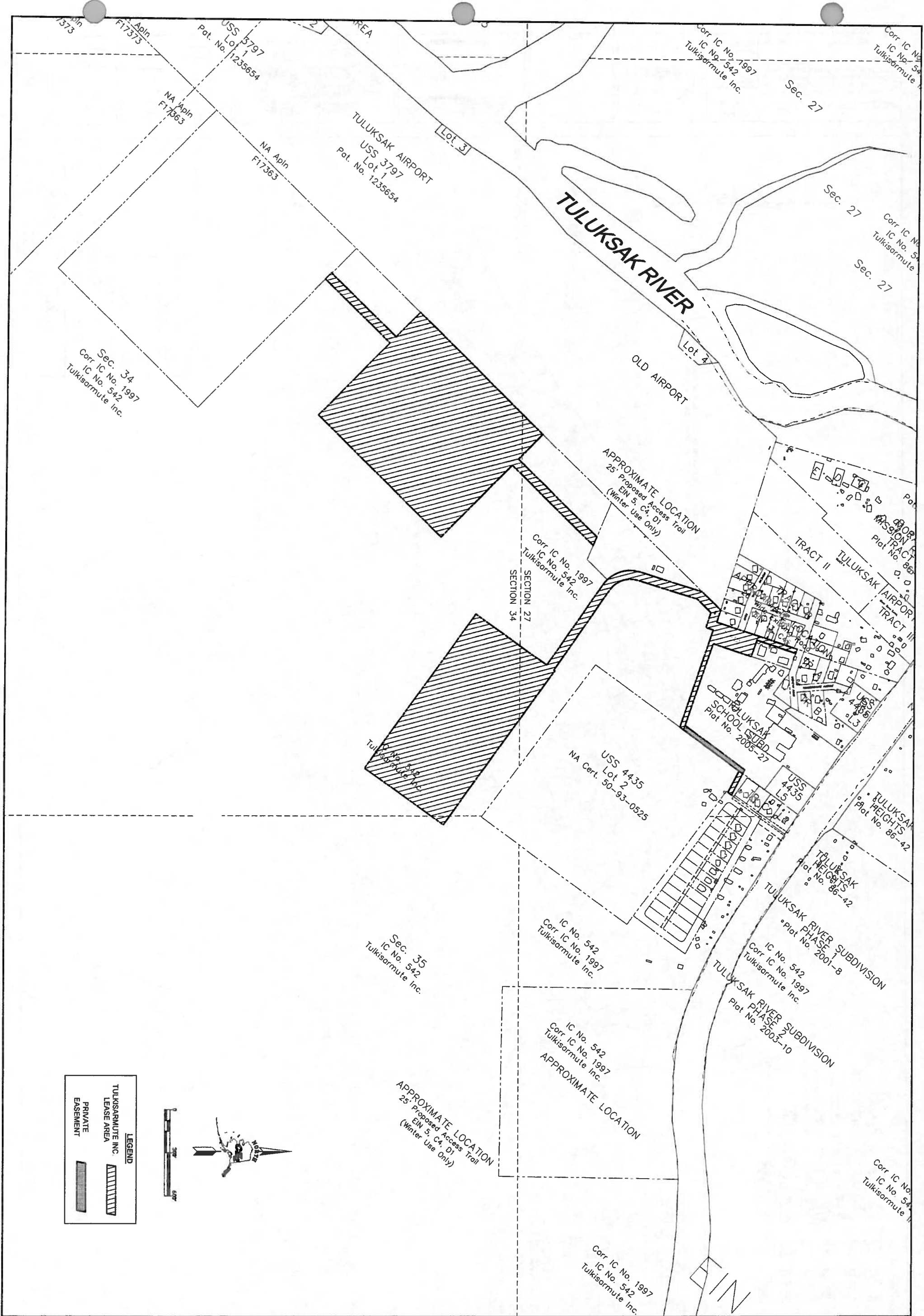
VILLAGE SAFE WATER
TULUKSAK
ALASKA

SCALE:
AS SHOWN

1" = 100' (AS SHOWN ON ORIGINAL DRAWING)

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

RECORD DRAWING CERTIFICATE	
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.	
NAME _____	DATE _____



REVISION	BY	DATE

Project No.	
Date	APRIL 2014
Designed	MRE
Drawn	CMLAW
Approved	MRE

PO BOX 222940 ANCHORAGE, AK 99523 PH: 907-340-4010 FAX: 907-340-1015

2010-11 WASTEWATER SYSTEM IMPROVEMENTS

SITE CONTROL

TULUKSAK, ALASKA

SCALE: AS SHOWN

1" = 100'

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE'S ACCORDINGLY

RECORD DRAWING CERTIFICATE

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NAME _____ DATE _____

LEGEND

2015	TYPICAL CONTROL POINT IDENTIFIER
2010	TYPICAL CONTROL POINT IDENTIFIER WITH CONVENTIONAL DIFFERENTIAL ELEVATION

[illegible]

HIGHEST PART OF 30"x30" CONC.
WIND SOCK BASE (TIPPED OVER)

USS 3787
LOT 1

3033

TBM 9 EL=28.30'

LIKE IN WEST SIDE OF POWER POLE
ABOVE GROUND

REQUIRE EASEMENT

JSS 4435
OT 2

1. *Chlorophyll a* (Chl a) content was determined using a spectrophotometer (Shimadzu UV-160U) at 663 nm. The concentration of Chl a was calculated using the following equation: $\text{Chl a (mg/L)} = 12.7 \times \text{OD}_{663}$.

TERMINAL LEASE FROM

SAMIUI CORP

10

1

—

—

—

RECORD DRAWING CERTIFICATE	
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.	
NAME _____	DATE _____

SCALE:
AS SHOWN

DRAWN BY: [illegible] DATE: [illegible]
CHECKED BY: [illegible]

OF SHEET NO. [illegible] OF [illegible]
THIS IS THE TOTAL NUMBER
OF SHEETS IN THIS SET.



2010-11 WASTEWATER
SYSTEM IMPROVEMENTS

HORIZONTAL AND
VERTICAL CONTROL

TULUKSAK, ALASKA

[illegible]

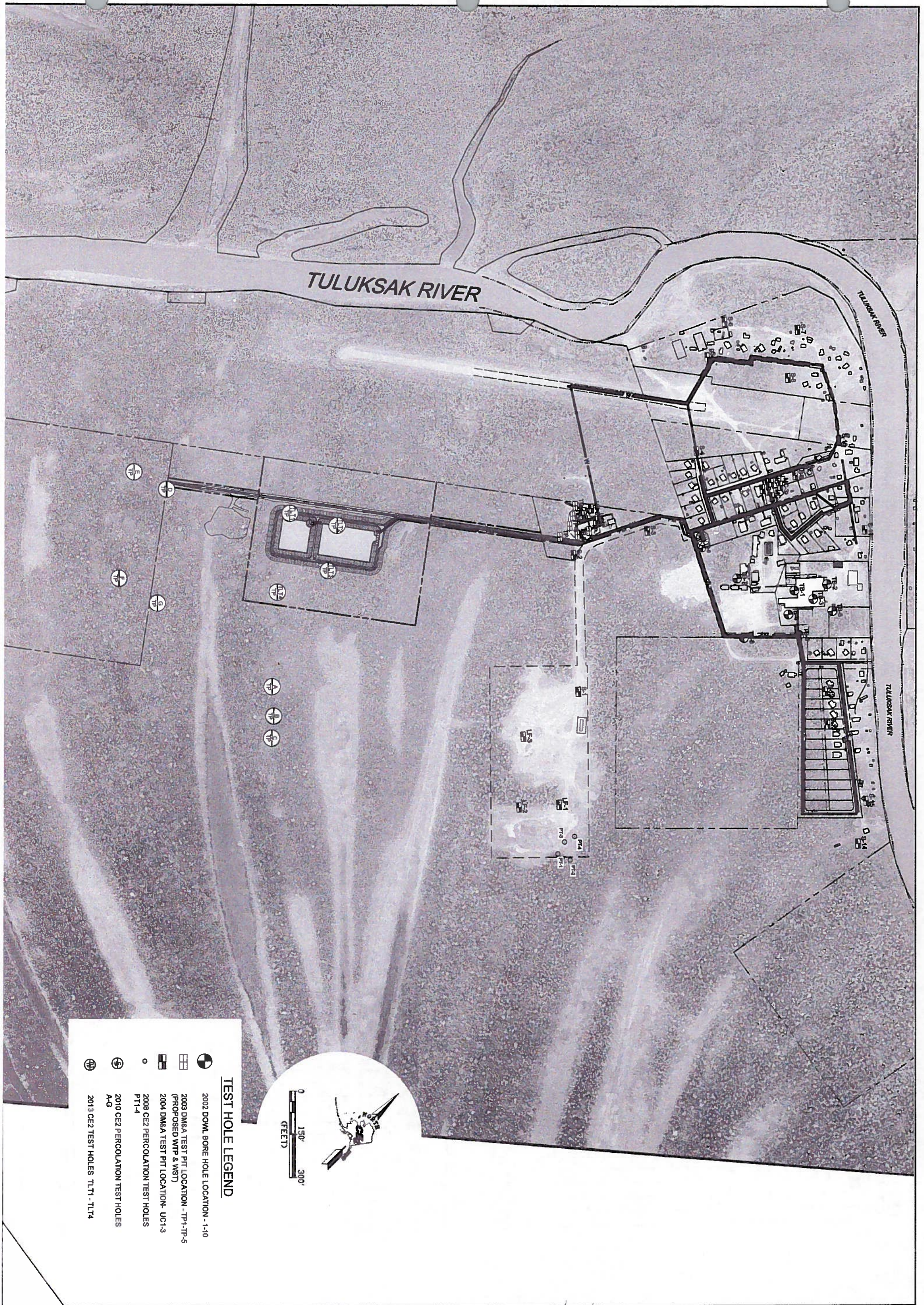
Project No. _____

Date JUNE 2009

Designed LAP

Drawn ABILITY

Approved LAP



Sheet No. G30	Project No. _____	REVISION	BY	DATE
	Date <u>APRIL 2014</u>	LAGOON RELOCATION	CM	4/14
	Designed <u>MRE</u>	PERC. CELL RESIZED	CM	6/14
	Drawn <u>CM</u>			
	Approved <u>MRE</u>			

CE₂
ENGINEERS, INC.
PO BOX 22288 ANCHORAGE, AK 99522 P: 877-340-1010 F: 877-340-1015

**2010-11 WASTEWATER
SYSTEM IMPROVEMENTS**

**TEST HOLE SITE
LOCATION MAP**

TULUKSAK, ALASKA

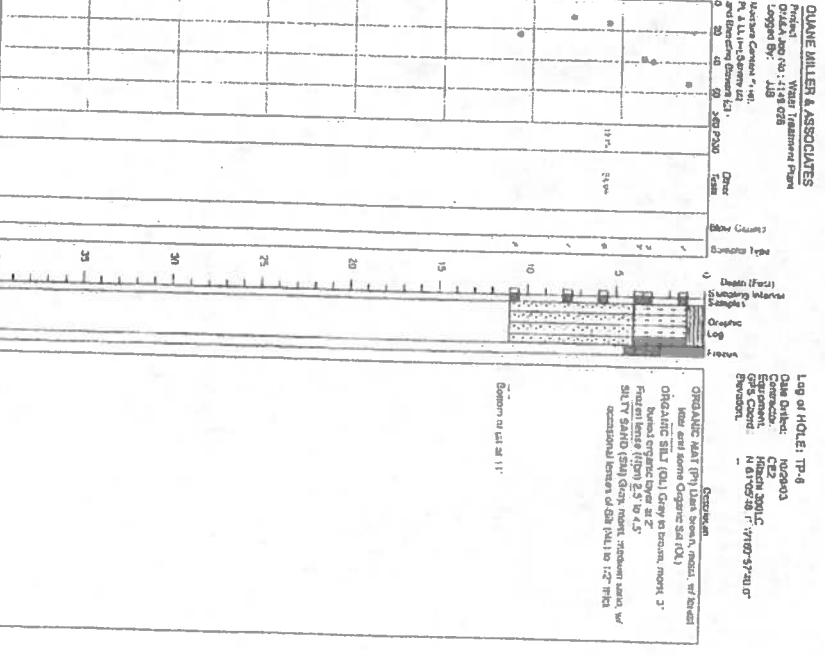
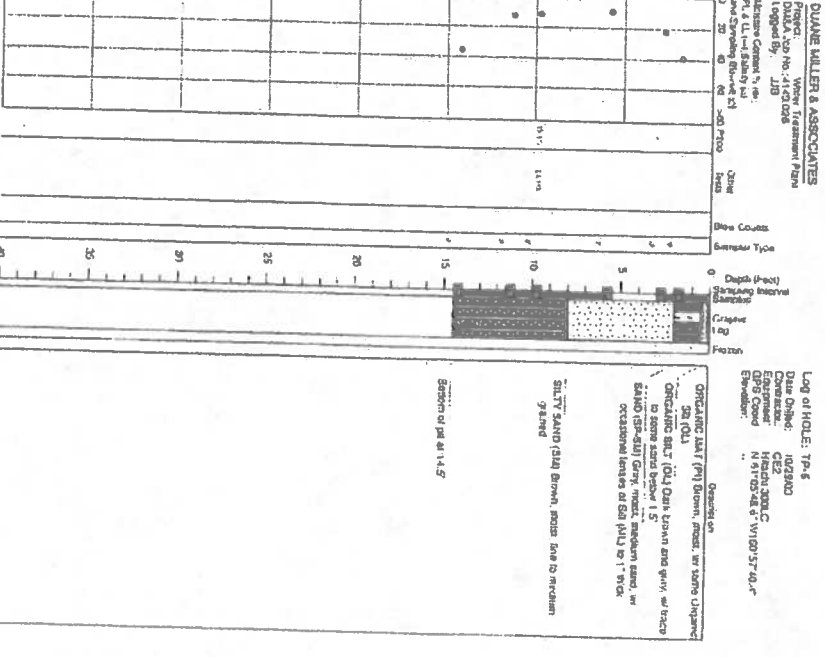
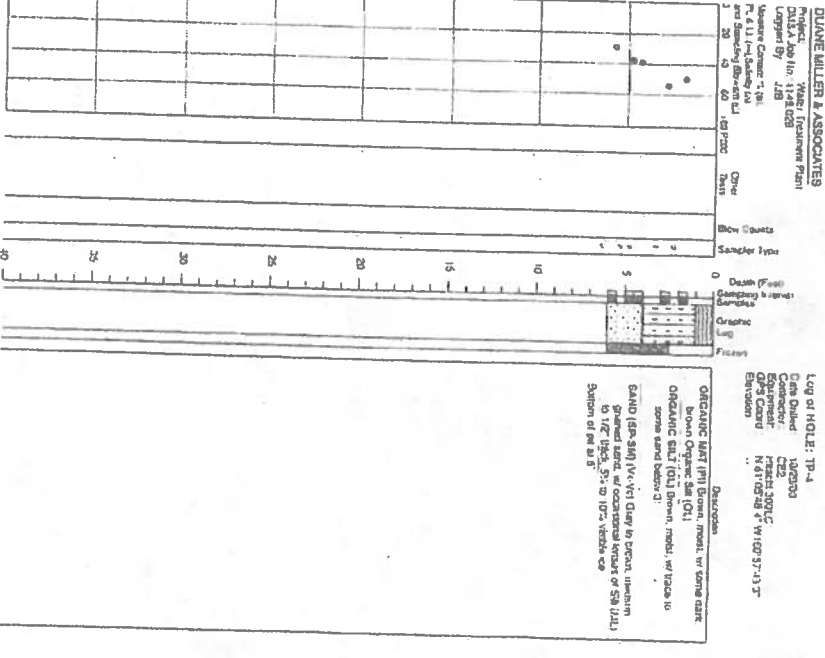
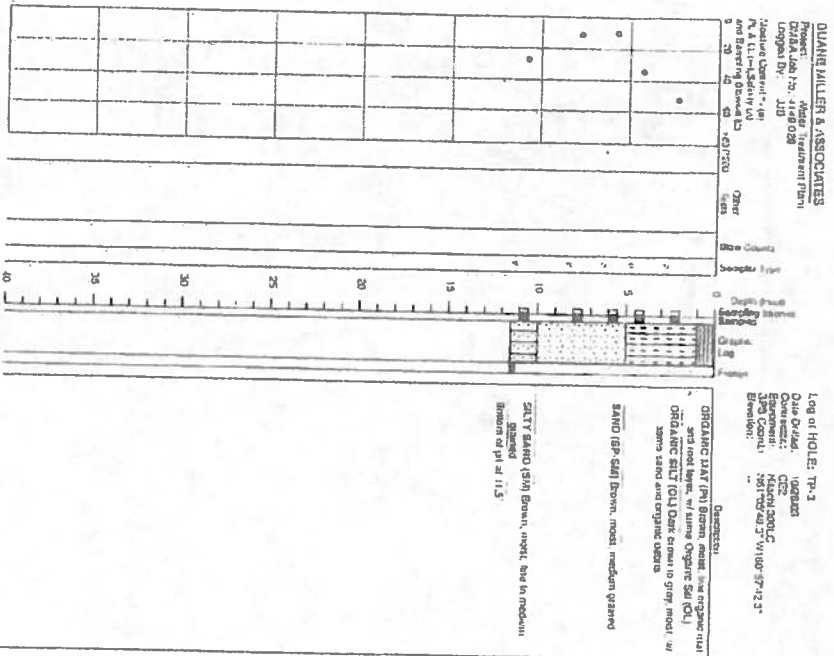
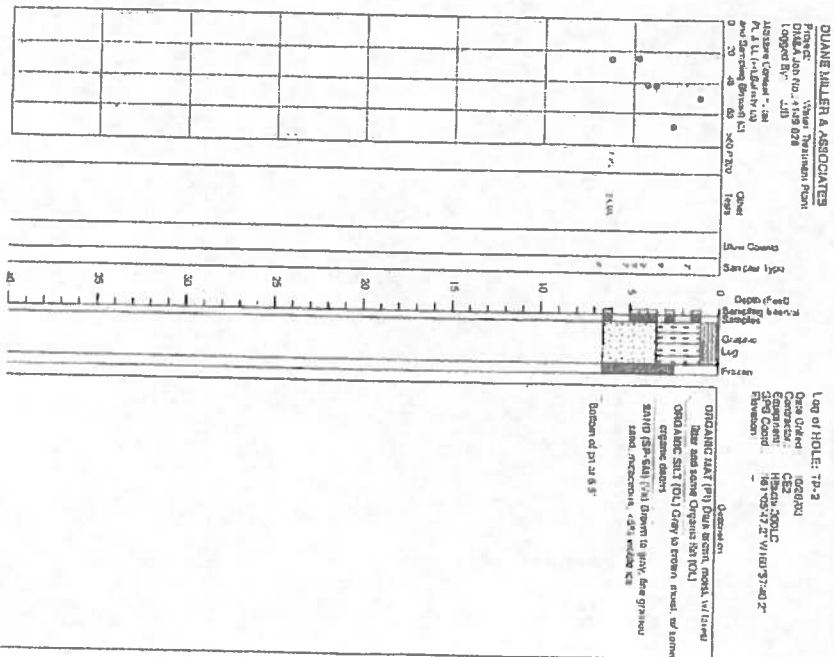
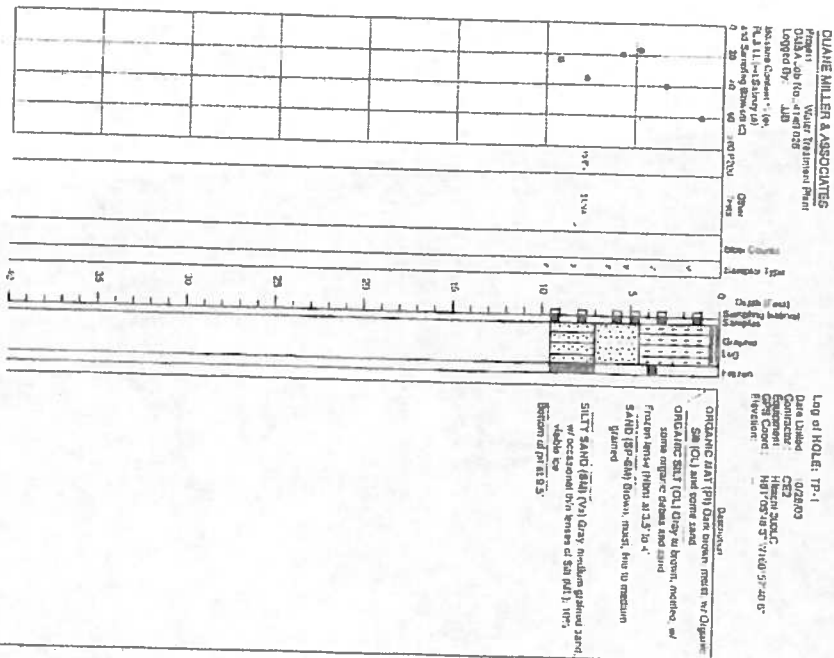
SCALE:
AS SHOWN

BAR = 1 INCH ON ORIGINAL DRAWING

0 1

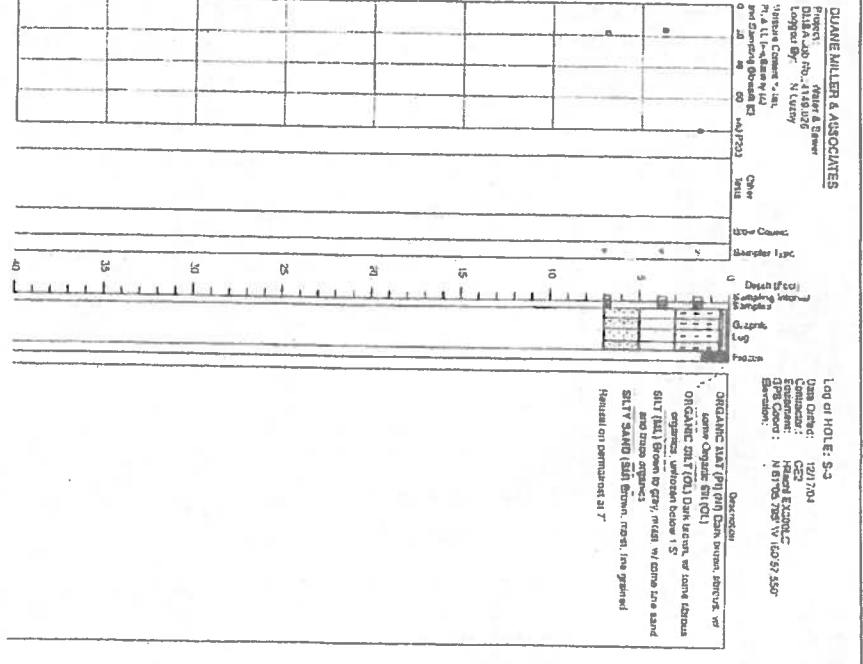
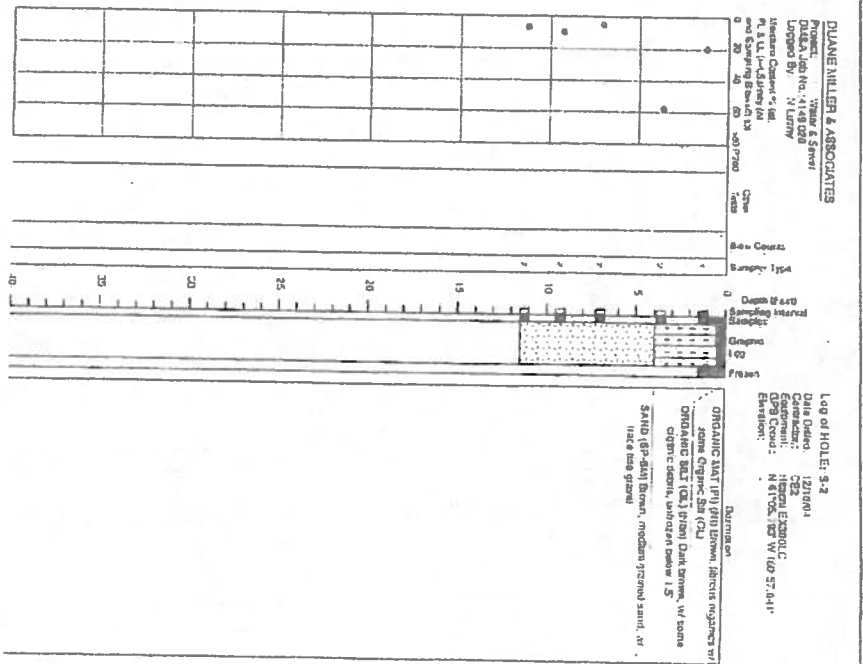
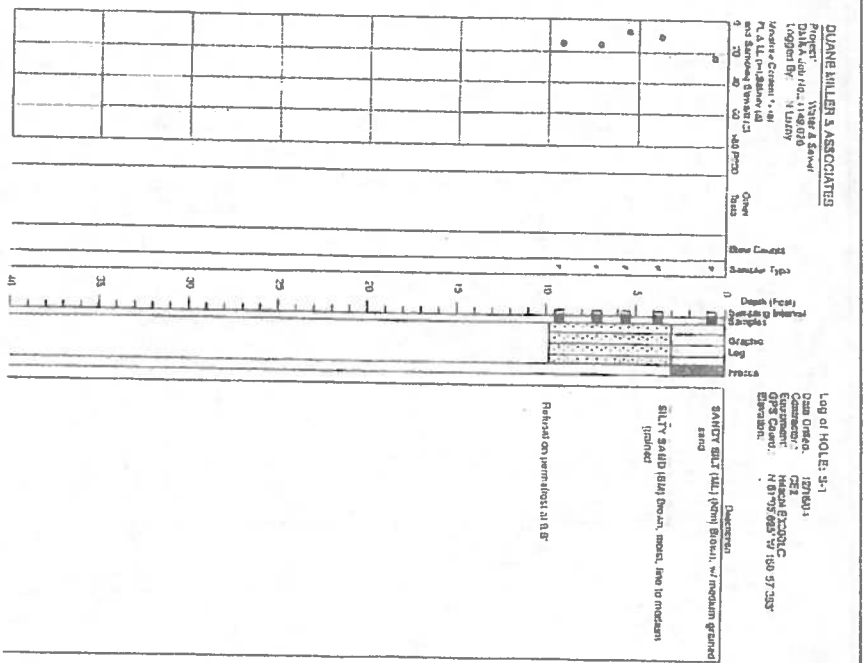
IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY

<u>RECORD DRAWING CERTIFICATE</u> THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE	
NAME _____	DATE _____





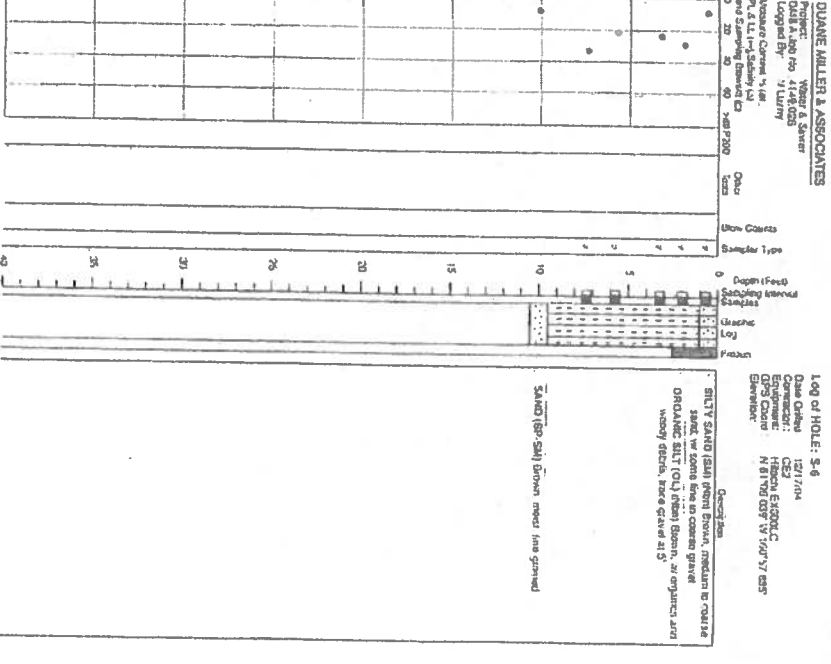
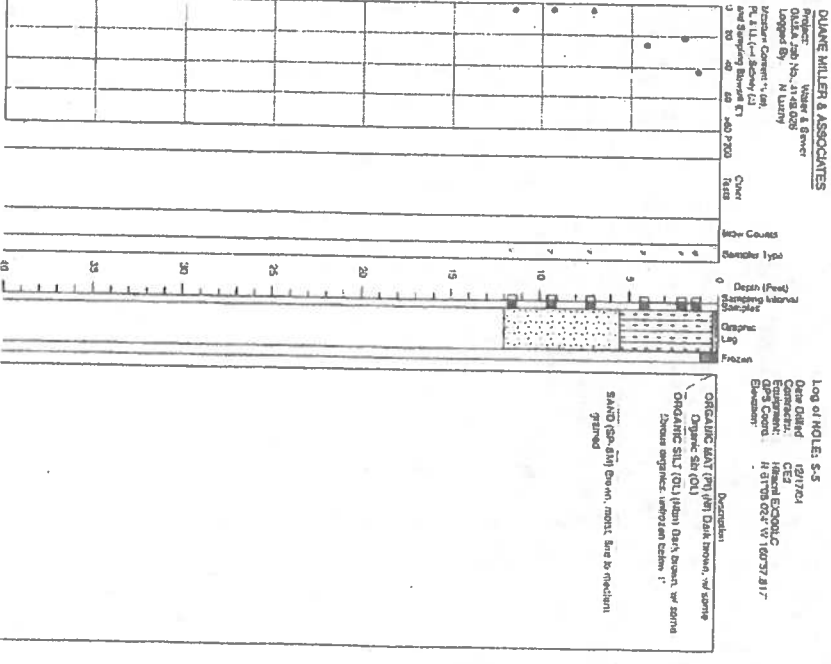
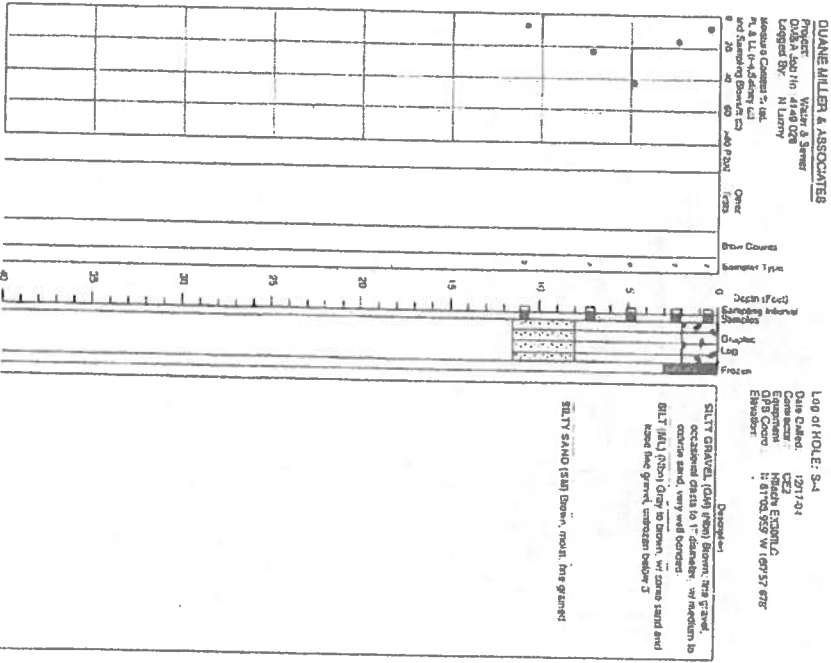
SCALE THIS IS ONE INCH TO ONE HUNDRED FEET 0 1'	RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.
IF MORE THAN ONE SET THIS SET IS A COPY SIGNED AND STAMPED	NAME _____ DATE _____



LOG of TEST PIT S-1
Page 14

LOG of TEST PIT S-2
Page 15

LOG of TEST PIT S-3
Page 16



LOG of TEST PIT S-4
Page 17

LOG of TEST PIT S-5
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LOG of TEST PIT S-6
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