



7103 SOUTH 45TH WEST, IDAHO FALLS, ID 83402
OFFICE: (208) 522-1244 FAX: (208) 522-9232

January 19, 2016

William Teuscher, PE
Department of Environmental Quality
900 N. Skyline Dr., Suite B
Idaho Falls, Idaho 83402

Re: Addendum No. 2 to Elk Bend Facility Planning Study

Dear Mr. Teuscher,

We have prepared this addendum to the Elk Bend Facility Planning Study to finalize the project budget and move toward beginning project design. This letter is written to document our work and bridge the gap from the original study and Addendum No. 1 (prepared by others) to present conditions. This letter report constitutes Addendum No. 2 to the Elk Bend Facility Planning Study.

To begin with, we reviewed the daily design flow for the project. This is a key number for the design of the LSAS and for the design of the recirculating filter WWTP. We had the Elk Bend Sewer District staff count the number of homes currently connected to the sewage collection and treatment system and evaluate how many likely potential home sites remain undeveloped in the Elk Bend unit. The results of this survey work yielded 98 connections. There are only about five possible future building sites. Of the 98 connections, seven are vacant, dilapidated and out of service, one is an RV Park consisting of 10 units that are seldom occupied. Thirty-five homes are occupied year-round. Nineteen year-round users have only one occupant. Putting this information in the context of flow calculations, we agree with the daily design flow given in the study, which is 20,000 gallons/day. Daily flow readings in October 2015 using a magmeter were all less than 15,000 gal/day. Flow metering will resume in April 2016.

We determined that the property purchased by the sewer district for the development of the Large Scale Absorption System (LSAS) will be adequate. We discovered that the purchased property was dissected by a street cul-de-sac under the jurisdiction of Lemhi County. This cul-de-sac is in the process of being vacated by Lemhi County to support the district's efforts to have enough area for the LSAS. This brings us now to the soil investigation and soil type determination of the site soils.

On September 17, 2015, we met with the Eastern Idaho Health District at the proposed LSAS site in Elk Bend and dug six test pits to determine the soil strata and took samples. The pits were logged by Eastern Idaho Health District staff. We had the material from five of the six test pits tested to determine the soil type for design. The tests indicated that the soils are mostly B-1 per the classification methodology set forth in Chapter 2 - Soils and Ground Water in the Technical Guidance Manual and the Idaho Subsurface Disposal Rules 58.01.03.008. The B-2 soils seem to be confined to the western most portion of the site which we do not intend to use at this time. The western most part of the property will be used for future set aside area. For these reasons, it seems reasonable that design loading be allowed for the B-1 soil type. The soil logs, the test results from the testing laboratory and a map showing the approximate location of each test pit on the site are attached. Considering these modules to be loaded as a bed, we assumed each bed would be loaded with treated wastewater at the design rate allowed for B-1 soils when pretreated with a recirculating filter (0.8 gallons/sqft/day per the TGM manual).

We expect to design four disposal modules with each taking up to 10,000 gallons/day. With this plan, the attached preliminary design layout of the LSAS yields four beds of 12,500 sq. ft. each. The sizing calculation for each module is attached. This layout will need a variance in regards to property line set backs and allowance to construct a small part of the LSAS within the 100 year flood plain of the Salmon River. We don't see either of these as being harmful to neighbors or the environment. The approximate location of the 100 year flood plain line is shown on the attached map of the LSAS site. With these allowances, this site will be an adequate disposal area.

While researching the advantages and disadvantages of a recirculating gravel filter, we did not like the large footprint it requires or the problems with ventilation and freezing during the winter months. We found a supplier that sells recirculating filter technology in a smaller footprint with a modern fabric media in containers that control temperature and ventilation. The nature of the media allows for a loading rate that is five times the loading rate of the gravel filter (25 gal/sqft/day compared to 5 gal/sq/ft/day). On September 24, 2015, we met in a conference call with DEQ officials. Barry Brunell and Tyler Fortunati from state DEQ in Boise and Greg Eager from the Idaho Falls DEQ participated. Allen Worst of RC Worst, the supplier of the modern recirculating filter technology, also participated from the state DEQ office in Boise. I participated with Greg Eager in Idaho Falls. The purpose of the meeting was to seek approval of the Orenco Advantex recirculating filter as an alternative recirculating filter to the gravel filter and still remain subject to the TGM and Idaho Subsurface Disposal Rules. DEQ consented to this plan if the following conditions were met: 1) An O&M plan must be submitted with the preliminary engineering report for the project; 2) All recirculating pumps would have to be provided in duplex form with alternation capability; and 3) Spare parts are required to be provided with the project. These include a ventilation fan, fabric media, recirculating pump, capacitor and relay kit and spin nozzle. This improved filter technology will provide a system that is maintainable and fully functional in the winter. Elk Bend won't have to worry about planning for large scale filter bed replacement because the fabric media can be easily removed and replaced in small segments. The septic tank and treatment containers will be built out of fiberglass. We fully support the desire of EBSD to install the modern version of the recirculating filter technology using the Orenco Advantex equipment and filter media.

We recently located and met with the original supplier of the existing extended aeration treatment systems at Elk Bend and Steelhead Bend onsite (MLF Enterprises, Denver, CO). After talking with them and DEQ, we believe it is in the best interest of EBSD to not budget treatment plant repairs at Steelhead Bend in this project. Since it appears that there may be some infiltration in the Steelhead Bend collection system, we propose that the project budget include cleaning and CCTV inspection of all of Steelhead Bend collection lines and engineering review of inspection results. EBSD also intends to collect flowmeter data with a magmeter this coming spring through fall. By doing these things first, perhaps better treatment improvement decisions can be made at Steelhead Bend later on. A budget of \$16,000 is set aside in the construction budget for this work. This work could be done under our contract with the EBSD and added by amendment. It would be prudent to move forward on this after the Elk Bend improvements (and the Steelhead Bend lift station) are bid and the remaining budget is known.

We have calculated the project budget around the Orenco Advantex technology for wastewater treatment. This revised project budget is attached. This budget includes a fiberglass septic tank, fiberglass wet and dry wells for the lift stations and fiberglass tankage for the recirculating/treatment/dosing system. Fencing around all lift stations, LSAS and treatment plant is included. This budget was prepared with help from a contractor in St. Anthony, Idaho. Construction costs with a 5.2 percent contingency were set at \$1,285,200. Soft costs were estimated to be \$389,800. These estimated costs combined together total \$1,675,000. We are confident that if present economic conditions hold, this budget will be adequate to accomplish the work.

William Teuscher
January 19, 2016
Page 3

Once we begin design, we will first prepare the preliminary engineering report that includes site plans, elevation profile and calculations for new facility design, and O&M plan and apply for the LSAS permit from Eastern Idaho Health District. Once these items are approved we will go to final design.

Please let us know if you concur with the design plan laid out in this letter to move the Elk Bend wastewater treatment and disposal project forward.

Sincerely,



Paul H Scoresby, PE

Attachments: Design flow calculation
Test pit logs, laboratory soil test results and test pit location map
LSAS sizing calculation
Preliminary design layout of the LSAS site
Project Estimate of Probable Cost

Cc: Noel LaRoque, USDA-RD w/attachments
Kelly Eager, Eastern Idaho Health District
Eleanor Wisner, Elk Bend Sewer District
Rick Miller, ECIPDA

User Summary

98 Connections incl. 1 10-unit RV Park
1 QRU Bldg and 1 fire station (these are treated as homes)

7 connections are vacant dilapidated homes
RV Park seldom has users

19 homes have one occupant year-round

35 homes stay year-round

EBSD could survey homes to determine number of bedrooms/home. Analysis assumes all homes are three bedroom homes.

Flow Calc. - Winter

10 Unit RV Park	2 units x 125 gal/day/unit	250	gal/day
19 homes w/ one occupant	x 125 gal/day/home	2,375	"
16 homes w/ two or more occupants	x 250 gal/day/home	4,000	"
Residents flow water to keeping waterlines from freezing		6,300	"
(Assume one pint/minute/home)		12,925	gal/day

Flow Calc. - Summer

	10 Unit RV Park	2 units x 125 gal/day/unit	250	gal/day
	19 homes w/ one occupant	x 125 gal/day/home	2,375	"
May be reduced if bedrooms were counted. →	71 homes w/ two or more occupants	x 250 gal/day/home	17,750	"
			20,375	gal/day

Other Items

Flow metering of influent flows into the treatment plant in October indicated flows of less than 15,000 gal/day. Due to hunting, occupancy in October was high.

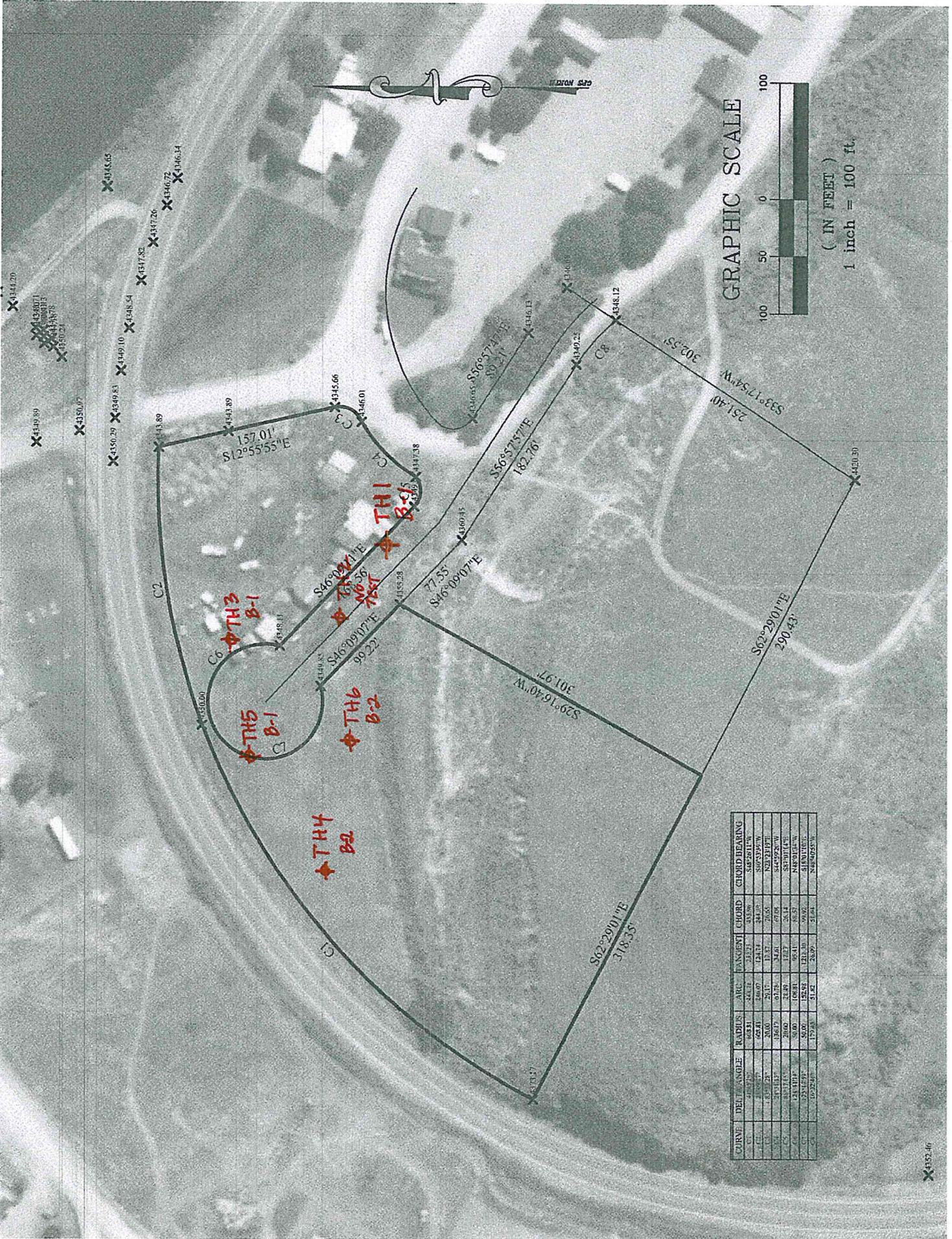
The consensus of the Sewer District Board is that Elk Bend is shrinking, not growing. Thus little need to account for future homes.

Flow metering verification will resume in April.

The recirculation tank is designed to handle two times the daily design flow so there is capability built in to handle peak flows exceeding daily design flow.

Summary

We agree with the study recommendation to design the new LSAS & WWTAP to handle 20,000 avg. daily flow. Continued flow monitoring during design should validate this decision. If not, then design would be halted and a solution found prior to construction.



GRAPHIC SCALE



(IN FEET)
1 inch = 100 ft.

CURVE	DEF. ANGLE	RADIUS	ARC	TANGENT	CHORD	CHORD BEARING
C1	21° 57' 29"	603.81	247.13	231.73	233.96	S48° 26' 11" W
C2	11° 51' 21"	360.21	251.07	124.19	334.45	S29° 53' 10" W
C3	53° 51' 53"	186.97	61.36	34.26	67.68	S44° 59' 24" W
C4	13° 52' 15"	20.00	34.80	17.27	26.14	S83° 30' 14" E
C5	23° 41' 14"	50.00	108.81	95.41	65.57	N48° 01' 24" W
C6	23° 54' 57"	50.00	128.54	121.30	99.92	S18° 01' 10" E
C7	10° 24' 40"	179.23	51.82	26.99	51.64	N48° 40' 55" W

**EASTERN IDAHO PUBLIC HEALTH DISTRICT
SPECULATIVE EVALUATION FORM**

Date Paid	9/14/15	
Receipt #	113677	Amt 200.00

Requester: EIK Bend Sewer District

Phone # 208-993-1419

Mailing Address: 206 Aspen Way City: Salmon St: ID Zip: 83467
(Current Address) email: eleanorwisner@comtel.net

Location:

Legal Description: 1/4 Section S.W Section 10 Township 18N Range 21E
Subdivision Name if applicable: Salmon River Estates Div. Unit 1 Lot 1-4, 29 Block 14.1
Address: 107 Whitetail Drive City Salmon Zip 83467

Directions to property: _____

Block 14: 1=9,174.72 ft² Block 1: 29=44,091 ft²
Lot Size: 2=11,045 ft² 3=9,381 ft² 4=5,954.34 ft² acres. Water Supply: Private Well () Shared Well () Public System (X)

This review in no way guarantees issuance of a septic system permit. It is valid for one(1) year only. Fee may be applied toward permit within 1 year.

I hereby authorize access to this property for the purpose of conducting a speculative on-site evaluation.

Signed By: X _____ Date: _____

Date(s) On-Site Evaluations Conducted. 9/17/2015 _____

Travel Time associated with evaluation. 60 _____

Inspection Time associated with evaluation. 180 _____

If more than 2 visits needed, \$200.00 additional fee required.

TEST HOLE INFORMATION

SUBDIVISION LSAS

DATE: 9/17/2015 1/1

Test Hole # 1

Test Hole # 2

Test Hole # 3

Location: SEC DIAGRAM ON BACK

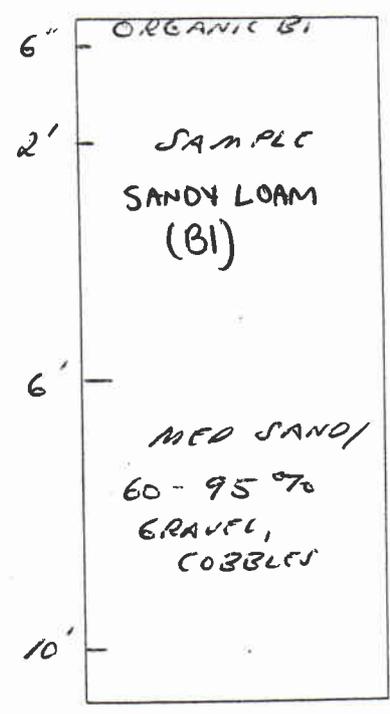
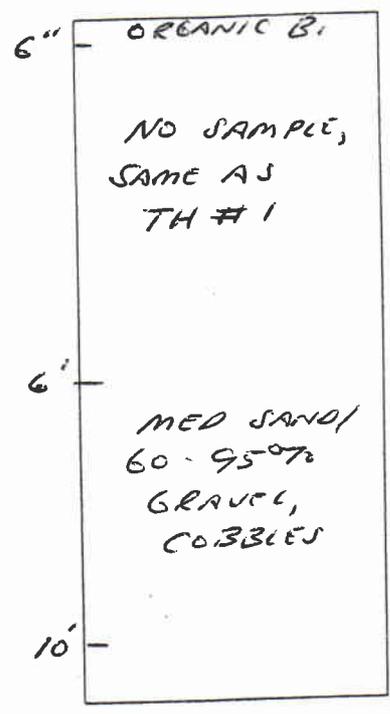
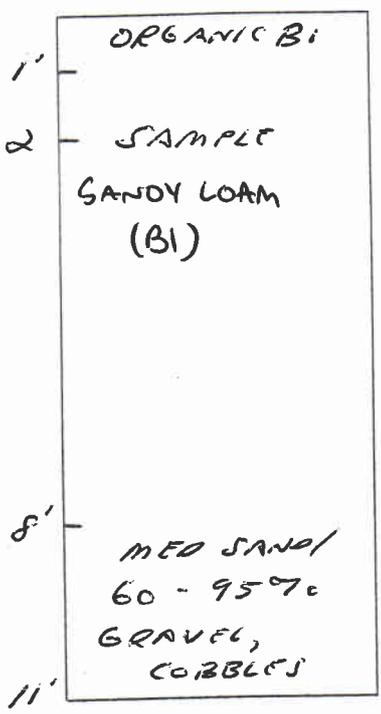
Location: _____

Location: _____

Depth: 11'

Depth: 10'

Depth: 10'



Test Hole # 4

Test Hole # 5

Test Hole # 6

Location: _____

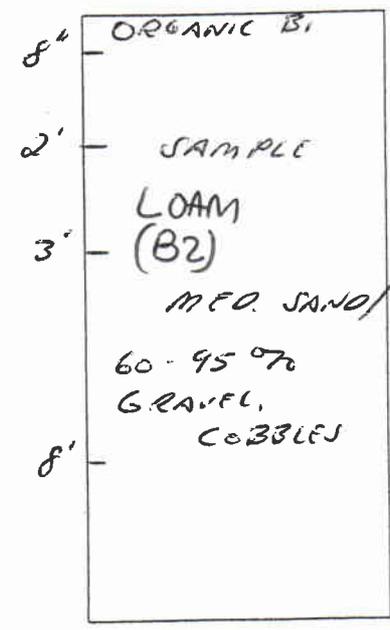
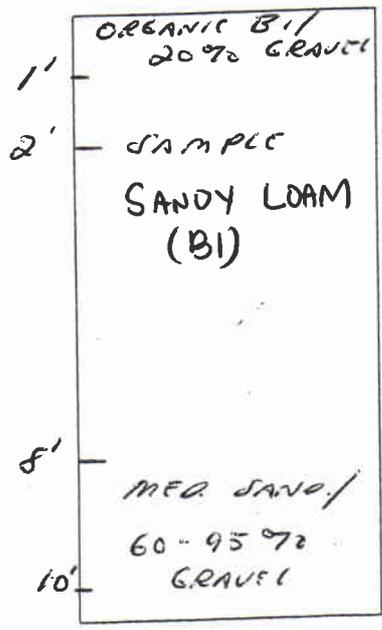
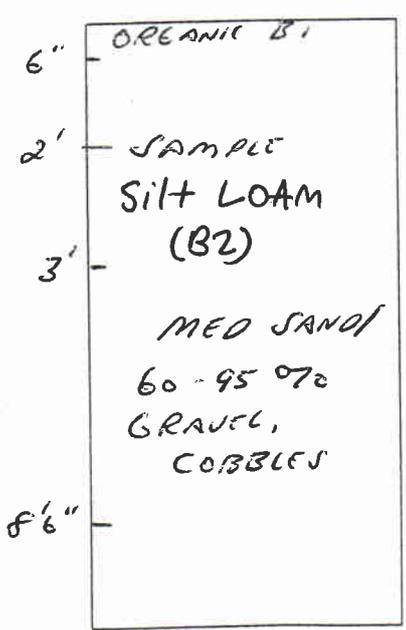
Location: _____

Location: _____

Depth: 8'6"

Depth: 10'

Depth: 8'





GRAIN SIZE ANALYSIS (HYDROMETER)

- Environmental Services
Geotechnical Engineering
Construction Materials Testing
Special Inspections

Paul Scorsby
Schiess & Associates
7103 S. 45th West
Idaho Falls, Idaho 83402

Phone: (208) 522-1244
Cell: (208) 313-2454
Other: pscorsby@schiessend.com

Project: 2015 Lab Services Elk Bend Sewer Dist
Permit #: Not Provided
Project Manager: Dain Jacobson
Lab Technician: Dain Jacobson
Test Date: October 5, 2015

As requested MTI has performed hydrometer testing on the sample referenced below. The testing was performed in accordance with current standards indicated below. The results obtained in our laboratory are as follows:

Table with 2 main columns: Source and Type, Date Obtained, Sample ID, Sampling and Preparation, Test Standard. Includes details for Sample Schiess & Assoc: TH #1, - 2 feet below existing ground - (LT Brown Sandy Loam).

Table with 2 columns: Dispersion Device, Dispersion Period, USDA Soil Classification, Maximum Size of Particles. Values include Soil Dispersion Mixer, 1 Minute, Sandy Loam (B1), #10.

Table with 2 columns: Sieve Size, Percent Passing. Lists sieve sizes from #200 to #001 and percentages for Gravel, Sand, Silt, and Clay.

If there are questions concerning this report (Elk Bend Hydro 5562), please contact the project manager at 208.529.8242.

Respectfully submitted,
MATERIALS TESTING & INSPECTION, INC.

Handwritten signature of Dan King

Dan King,
Principal / Vice President
«cc» Eleanor Wisner

Environmental Services
 Geotechnical Engineering
 Construction Materials Testing
 Special Inspections

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 Idaho Falls, Idaho 83402

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Project: 2015 Lab Services Elk Bend Sewer Dist
Permit #: Not Provided
Project Manager: Dain Jacobson
Lab Technician: Dain Jacobson
Test Date: October 5, 2015

As requested MTI has performed hydrometer testing on the sample referenced below. The testing was performed in accordance with current standards indicated below. The results obtained in our laboratory are as follows:

Source and Type:	Sample Schiess & Assoc: TH #3, - 2 feet below existing ground – (LT Brown Sandy Loam)					
Date Obtained:	September 18, 2015					
Sample ID:	15-5563					
Sampling and Preparation:	ASTM D75:	X	ASTM D421:	X	AASHTO T2:	AASHTO T27:
Test Standard:	ASTM C117/136:	X	ASTM D422:	X	AASHTO T11/27:	AASHTO T88:

Dispersion Device	Soil Dispersion Mixer
Dispersion Period	1 Minute
USDA Soil Classification	Sandy Loam (B1)
Maximum Size of Particles	#10

Sieve Size	Percent Passing
#200	46.4
.074	45.9
.020	21.0
.005	10.0
.002	6.7
.001	4.1
% Gravel	0
% Sand	53.6
% Silt	39.7
% Clay	6.7

If there are questions concerning this report (*Elk Bend Hydro 5563*), please contact the project manager at 208.529.8242.

Respectfully submitted,
MATERIALS TESTING & INSPECTION, INC.



Dan King,
 Principal / Vice President
 «cc» Eleanor Wisner

Environmental Services Geotechnical Engineering Construction Materials Testing Special Inspections

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Project: 2015 Lab Services Elk Bend Sewer Dist
Permit #: Not Provided
Project Manager: Dain Jacobson
Lab Technician: Dain Jacobson
Test Date: October 5, 2015

As requested MTI has performed hydrometer testing on the sample referenced below. The testing was performed in accordance with current standards indicated below. The results obtained in our laboratory are as follows:

Source and Type:	Sample Schiess & Assoc: TH #4, - 2 feet below existing ground – (LT Brown Silty Loam)					
Date Obtained:	September 18, 2015					
Sample ID:	15-5564					
Sampling and Preparation:	ASTM D75:	X	ASTM D421:	X	AASHTO T2:	AASHTO T27:
Test Standard:	ASTM C117/136:	X	ASTM D422:	X	AASHTO T11/27:	AASHTO T88:

Dispersion Device	Soil Dispersion Mixer
Dispersion Period	1 Minute
USDA Soil Classification	Silt Loam (B2)
Maximum Size of Particles	#10

Sieve Size	Percent Passing
#200	62.2
.074	61.5
.020	28.4
.005	16.0
.002	9.8
.001	5.5
% Gravel	0
% Sand	37.8
% Silt	52.4
% Clay	9.8

If there are questions concerning this report (*Elk Bend Normal Document Template 5564*), please contact the project manager at 208.529.8242.

Respectfully submitted,
MATERIALS TESTING & INSPECTION, INC.



Dan King,
Principal / Vice President
«cc» Eleanor Wisner



GRAIN SIZE ANALYSIS (HYDROMETER)

Environmental Services Geotechnical Engineering Construction Materials Testing Special Inspections

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Other: pscorsby@schuessend.com

Project: 2015 Lab Services Elk Bend Sewer Dist
Permit #: Not Provided
Project Manager: Dain Jacobson
Lab Technician: Dain Jacobson
Test Date: October 5, 2015

As requested MTI has performed hydrometer testing on the sample referenced below. The testing was performed in accordance with current standards indicated below. The results obtained in our laboratory are as follows:

Source and Type:	Sample Schiess & Assoc: TH #5, - 2 feet below existing ground – (Medium Brown Sandy Loam)						
Date Obtained:	September 18, 2015						
Sample ID:	15-5565						
Sampling and Preparation:	ASTM D75:	X	ASTM D421:	X	AASHTO T2:		AASHTO T27:
Test Standard:	ASTM C117/136:	X	ASTM D422:	X	AASHTO T11/27:		AASHTO T88:

Dispersion Device	Soil Dispersion Mixer
Dispersion Period	1 Minute
USDA Soil Classification	Sandy Loam (B1)
Maximum Size of Particles	#10

Sieve Size	Percent Passing
#200	53
.074	52.7
.020	35.0
.005	12.4
.002	5.5
.001	2.6
% Gravel	0
% Sand	47.0
% Silt	47.5
% Clay	5.5

If there are questions concerning this report (*Elk Bend Hydro 5565*), please contact the project manager at 208.529.8242.

Respectfully submitted,
MATERIALS TESTING & INSPECTION, INC.

Dan King,
Principal / Vice President
«cc» Eleanor Wisner



**GRAIN SIZE ANALYSIS
(HYDROMETER)**

Environmental Services Geotechnical Engineering Construction Materials Testing Special Inspections

Paul Scorsby
 Schiess & Associates
 7103 S. 45th West
 Idaho Falls, Idaho 83402

Phone: (208) 522-1244
 Cell: (208) 313-2454
 Other: pscorsby@schiessend.com

Project: 2015 Lab Services Elk Bend Sewer Dist
Permit #: Not Provided
Project Manager: Dain Jacobson
Lab Technician: Dain Jacobson
Test Date: October 6, 2015

As requested MTI has performed hydrometer testing on the sample referenced below. The testing was performed in accordance with current standards indicated below. The results obtained in our laboratory are as follows:

Source and Type:	Sample Schiess & Assoc: TH #6, - 7 feet below existing ground – (LT Brown Loam)						
Date Obtained:	September 18, 2015						
Sample ID:	15-5566						
Sampling and Preparation:	ASTM D75:	X	ASTM D421:	X	AASHTO T2:		AASHTO T27:
Test Standard:	ASTM C117/136:	X	ASTM D422:	X	AASHTO T11/27:		AASHTO T88:

Dispersion Device	Soil Dispersion Mixer
Dispersion Period	1 Minute
USDA Soil Classification	Loam (B2)
Maximum Size of Particles	#10

Sieve Size	Percent Passing
#200	52.1
.074	51.8
.020	31.4
.005	17.9
.002	14.0
.001	8.7
% Gravel	0
% Sand	47.9
% Silt	38.1
% Clay	14.0

If there are questions concerning this report (*Elk Bend Hydro 5566*), please contact the project manager at 208.529.8242.

Respectfully submitted,
MATERIALS TESTING & INSPECTION, INC.

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 Principal / Vice President
 «cc» Eleanor Wisner

LSAS Design

$Q_{\text{daily}} = 20,000 \text{ gal/day}$ IDAPA 58.01.03.008.03.b

Soil Group B-1 = 0.8 gal/sf/day including secondary treatment adjustment
(see TGM Recirculating Filter Table 4-21)

$\frac{20,000 \text{ gal/day}}{2 \text{ modules}} = 10,000 \text{ gal/day/module} \rightarrow \text{ok}$

$\frac{10,000 \text{ gal/day/module}}{0.8 \text{ gal/sf/day}} = 12,500 \text{ SF/module}$

Per discussions with DEQ, a disposal bed will be allowed. Thus four beds of 12,500 sf will be required and two additional beds for future set-aside.

100 YEAR FLOOD LINE

93

93

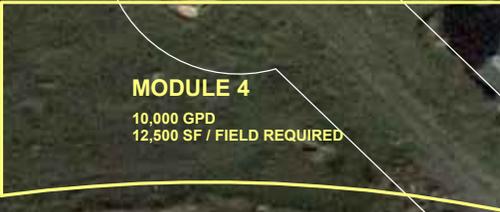


FIGURE 1

PRELIMINARY DRAIN FIELD LAYOUT



**Elk Bend Wastewater System Improvements
Estimate of Probable Project Cost**

Construction

Item No.	Item	Unit	Quantity	Unit Cost	Extended Cost
1	Elk Horn Drive Lift Station Demolition, Replacement and Site Fencing	LS	1	\$108,500	\$108,500
2	Steelhead Bend Lift Station Demolition, Replacement and Site Fencing	LS	1	\$109,800	\$109,800
3	New Power Drop for Steelhead Bend Lift Station	LS	1	\$15,000	\$15,000
4	White Tail Drive Lift Station Demolition, Replacement and Site Fencing	LS	1	\$108,800	\$108,800
5	Pressure Line from WWTP to LSAS site	LF	1,800	\$19	\$34,200
6	Recirculating Fabric Filter Treatment Plant Including Septic Tank, Filter/Treatment Units, Dose Tank, Recirculating and Drainfield Dose Pumps, Site Clearing, Installation, Bedding, Backfill, New Concrete Apron and Door on Existing Building and Site Fencing - 20,000 gal/day design	LS	1	\$543,100	\$543,100
7	Generator for WWTP and Final Lift Station	LS	1	\$30,000	\$30,000
8	Large Scale Absorption System including Site Fencing - 20,000 gal/day design	LS	1	\$191,000	\$191,000
9	Monitoring wells*	EA	3	\$7,000	\$21,000
10	Simple SCADA System (limited I/O)	LS	1	\$12,000	\$12,000
11	Clean and CCTV Steelhead Bend collection system	LS	1	\$16,000	\$16,000
12	Mobilization & Demobilization	LS	1	\$32,100	\$32,100
13	Contingency (5.2% of the sum of line items 1-12 above)	LS	1	\$63,700	\$63,700

Subtotal Construction

\$1,285,200

*This estimate assumes that ground water will be discovered closer than 15 feet to the surface, thus monitoring wells may be required.

Soft Costs

Item No.	Item	Amount
1	LSAS Property Purchase including boundary survey	\$35,000
2	Property purchase adjacent to WWTP	\$10,000
3	LSAS Permit Fee from Health Dept	\$1,500
4	Building Permit Fee	\$0
5	Advertisement fee from newspaper for bidding	\$400
6	NP Study and EID (by others)	\$30,000
7	Legal	\$10,000
8	LSAS Soils classification by MTI (already done)	\$1,200
9	Funding Administration	\$78,000
10	Interim Financing	\$20,000
11	Engineering (Preliminary Engineering, Final Design, Bid Supervision, Construction Engineering, RPR Services, Closeout, Record Drawings & O&M Manual)	<u>\$203,700</u>

Subtotal

\$389,800

Total of Soft Costs and Construction

\$1,675,000