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May 15, 2023

HAND DELIVERED

Mr. Steve Kahl
Executive Secretary Director
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480

RE: SCS Carbon Transport LLC
Midwest Carbon Express Project
Case No. PU-22-391

Dear Mr. Kahl:

In response to certain requests made at the public hearings in the above-captioned matter, please find enclosed herewith for filing with the North Dakota Public Service Commission, an original and five (5) copies of the following:

1. Letter to Mr. Kahl in Response to Requests for Additional Information with Informative Attachments.

Also enclosed herewith, please find a Compact Disc (CD) containing this letter and the above-referenced documents in PDF format.

Should you have any questions, please advise.

Sincerely,

LAWRENCE BENDER

LB/caj
Enclosures

79124210 v1

223 PU-22-391 Filed 05/15/2023 Pages: 21
Response to Requests for Additional Information
SCS Carbon Transport LLC
Lawrence Bender, Fredrikson&Byron, P.A.

Fredrikson

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RE: Case No. PU-22-391
SCS Carbon Transport LLC
Midwest Carbon Express Project

Dear Mr. Kahl:

On October 17, 2022, SCS Carbon Transport LLC ("SCS") filed with the North Dakota Public Service Commission ("Commission") its Consolidated Application for a Certificate of Corridor Compatibility and Route Permit in the above-referenced matter ("Application") concerning its Midwest Carbon Express Project ("Project"). At the various public hearings held to date in the above-captioned matter, the Commissioners and Commission staff have made certain requests for additional information concerning the Application and the Project. In response to said requests, SCS submits the following:

1. *Assessment of re-routing the Project to the south of Bismarck.*

   RESPONSE: The assessment is nearly complete and SCS expects to file the assessment with the Commission prior to the June 2, 2023 public hearing in Bismarck.

2. *Reference being made to the aerial mapbook submitted as Appendix 1 to the Application (Cass County, page 2 of 29), please confirm that the proposed route is located outside of the 500 foot minimum setback with respect to the structure located in the SE/4 of Section 5, Township 139 North, Range 52 West.*

   RESPONSE: The pipeline route was adjusted due to landowner request on Section 08, Township 139N, Range 52W NE. The building is over 1,300 feet from the active route. See Exhibit A attached hereto.

3. *Reference being made to the aerial mapbook submitted as Appendix 1 to the Application (Cass County, page 2 of 29), please explain the proposed access road which crosses the wetland identified in the NE/4 of Section 8, Township 139 North,*

Range 52 West.

RESPONSE: All impacts to the wetland from the use of the temporary access road during construction will be temporary and the wetland will be restored to preconstruction conditions following the completion of construction and restoration. Construction activities within wetlands will comply with the Project's USACE Section 404 permit and the Project's Environmental Construction Plan (Appendix 3 of the Application).

4. *Is the corrugated steel pipe which will be used in drain tile repair perforated?*

RESPONSE: No.

5. *What is the thickness of the corrugated pipe which will be used in drain tile repair?*

RESPONSE: 0.0625 inch.

6. *What is buoyancy and is it a concern with respect to pipelines in North Dakota, including SCS's proposed carbon dioxide pipeline?*

RESPONSE: See Exhibit B attached hereto.

7. *Please explain the criteria for determining High Consequence Area's (HCA's).*

RESPONSE: Per 49 CFR Part 195.450, Definitions, High consequence area means:

1. A *commercially navigable waterway*, which means a waterway where a substantial likelihood of commercial navigation exists;
2. A *high population area*, which means an urbanized area, as defined and delineated by the Census Bureau, that contains 50,000 or more people and has a population density of at least 1,000 people per square mile;
3. An *other populated area*, which means a place, as defined and delineated by the Census Bureau, that contains a concentrated population, such as an incorporated or unincorporated city, town, village, or other designated residential or commercial area;
4. An *unusually sensitive area*, as defined in § 195.6

8. *How many population related HCA's are there along the proposed route in North Dakota?*

RESPONSE: As testified to by Mr. James Powell at the March 14, 2023 hearing in Bismarck, North Dakota, there are two (2) *other populated area* HCA's along the pipeline route in North Dakota. The location of the HCA's are included in the confidential dispersion modeling and risk assessment data submitted to the Commission and PHMSA. HCA's comprise approximately 0.09% or 0.3 miles of the proposed pipeline route.

9. *How much of the proposed corridor is comprised of native prairie lands?*

RESPONSE: True native prairie is 2.6 miles or 0.7% of the route, true native prairie plus native/non-native mix is 17.2 miles or 5.0% of the route in North Dakota.

10. *Will Summit work with the county and individual landowners to ensure proper seed mix is used to restore native prairie lands disturbed by the Project?*

RESPONSE: Yes. Please reference Section 7.0 Reclamation and Revegetation of the Project's Environmental Construction Plan (Appendix 3 of the Application).

11. *Will SCS install security cameras at each pump station location?*

RESPONSE: Yes. See Exhibit C attached hereto.

12. *Does SCS have cybersecurity protocol?*

RESPONSE: Yes, SCS will have cybersecurity protocols based on the guidelines established by the Transportation Security Administration under the Department of Homeland Security. These guidelines were published as the Security Directive Pipeline-2021-02C: *Pipeline Cybersecurity Mitigation Actions, Contingency Planning, and Testing*, which is based on the National Institute of Standards and Technology Special Publication 800 framework.

13. *What factors go into SCS's decision to bore (HDD) or open cut at waterbody crossings?*

RESPONSE: Footprint, depth, width, water flowrate, risk of scour and lateral migration and environmental sensitive areas are just some of the factors considered.

14. *Is there any oversight with respect to SCS's decision to bore (HDD) or open cut at waterbody crossing?*

RESPONSE: Yes. SCS evaluates each waterbody crossing on a case-by-case basis and submits its proposed crossing method for each waterbody to the United States Army Corps of Engineers as part of its Section 404 permit application.

15. *Please provide an update regarding the current status of SCS's right-of-way acquisition efforts.*

RESPONSE: See Exhibit D attached hereto.

A compact disc (CD) containing a copy of this letter and a certificate of service is also enclosed herewith. Should you have any questions, please advise.

Sincerely,

LAWRENCE BENDER

LB/tjg
Enclosures

cc: SCS Carbon Transport LLC

EXHIBIT A

Structure ID: 33 -- Distance to Centerline: 1338.74 ft

EXHIBIT B

SUMMIT CARBON SOLUTIONS PIPELINE PROJECT

GULF PROJECT NUMBER 1927

BUOYANCY CONTROL STUDY

SCS Document No.: GPLUS-GENL-ENG-STY-GIE-0005

Revision	Date	Revision Description	Prepared By	Reviewing Engineer	Project Manager	Client Approval
A	4/05/2023	Issued for Internal Review	Y. Amjoun	Y. Katchan	D. Ammerman	

GULF INTERSTATE ENGINEERING Houston, Texas F-2830	REVISION LOG			
PROJECT:	SUMMIT CARBON SOLUTIONS PIPELINE PROJECT			
DOCUMENT NUMBER:		GPLUS-GENL-ENG-STY-GIE-0005	GULF PROJECT NO.:	1927
TITLE:	BUOYANCY CONTROL STUDY			
Provide a brief description of changes for all revisions following Rev. 0				

Rev.	Date	Revision Description

TABLE OF CONTENTS

1.0 INTRODUCTION

The purpose of this study is to determine when buoyancy controls may be needed. The buoyancy of a pipeline depends upon the weight of the pipe, the weight of the displaced water, the weight of the CO_2 carried by the pipe, and the weight of the backfill. Areas where the weight of the displaced water are greater than the summation of other factors will require buoyancy control measures.

The buoyant force, density of the submerging fluid, soil conditions, and groundwater table were considered when designing for buoyancy control. This study provides recommendations for the pipeline sections where buoyancy control may be required.

2.0 METHODOLOGY

As a conservative analytical practice, a design safety factor of 1.25 was utilized along with an assumption that the pipeline is empty. Assuming the pipeline is devoid of CO_2 is an additional safety factor once in operation while also ensuring the same level of safety prior to commissioning the pipeline.

There are two major factors that contribute to a soils ability to resist buoyant forces of a pipeline. The first component to consider is the shear strength while the second is the density of the soil.

As part of this study, a comprehensive review of the pipeline route was performed to determine areas where the pipeline may experience buoyancy issues. Risk areas include those that have a high-water table or low-density soils like wetlands, flood zones, lakes, and rivers/streams. Most of these areas are identified utilizing publicly available data, environmental field surveys, flood elevation maps, land surveys, county soil data maps, topographical maps, and geotechnical borings. Additionally, buoyancy controls may be required if weather conditions hinder the ability to dewater excavations.

The required negative buoyancy for a pipeline can be achieved in several ways. Utilizing existing backfill materials is the most common. If the backfill alone does not meet the buoyancy control requirements, additional methods include increasing the wall thickness of the pipe, adding concrete weight coating, or installing Geotextile Pipeline Weights (GPW).

Where horizontal direction drill (HDD) techniques are used to install the pipe below rivers/creeks or wetlands, buoyancy control will not be required due to the depth below surface and undisturbed soil above the pipe.

3.0 SOIL CATEGORIZATION

One of the important parameters of soils is the shear strength or the ability of the soil to withstand shear stress. The higher the shear strength, the better the soil will resist buoyant forces from the pipeline. Cohesion is a component of a soils shear strength and gives an indication of resistance to uplift.

When selecting pipeline buoyancy control methods, soils on the right-of-way can be simplified into the following three categories:

- Type A Soils: Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (tsf) (144 kPa) or greater. Examples of Type A cohesive soils are often: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. No soil is Type A if it is fissured, is subject to vibration of any type, has previously been disturbed, is part of a sloped, layered system where the layers dip into the excavation on a slope of 4 horizontal to 1 vertical (4H:1V) or greater, or has seeping water.

- Type B Soils: Cohesive soils with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa). Examples of other Type B soils are: angular gravel; silt; silt loam; previously disturbed soils unless otherwise classified as Type C; soils that meet the unconfined compressive strength or cementation requirements of Type A soils but are fissured or subject to vibration; dry unstable rock; and layered systems sloping into the trench at a slope less than 4H:1V (only if the material would be classified as a Type B soil).

- Type C Soils: Cohesive soils with an unconfined compressive strength of 0.5 tsf (48 kPa) or less. Other Type C soils include non-cohesive, granular soils such as gravel, sand and loamy sand, submerged soil, soil from which water is freely seeping, and submerged rock that is not stable. Also included in this classification is material in a sloped, layered system where the layers dip into the excavation or have a slope of four horizontal to one vertical (4H:1V) or greater.

Based on these definitions, all excavated (i.e., disturbed) material returned to the ditch as backfill is anticipated to be either Type B, or C soil.

Type B soil is deemed suitable for restraining buoyant uplift wherever the soil occurs in the ditch area. This is the case even if the vicinity is flooded or flood-prone.

Type C soil is deemed a "weak soil," unsuitable for restraining buoyant uplift wherever it occurs in flooded or flood-prone areas. In areas dominated by weak soils, pipeline buoyancy control measures should be considered.

4.0 PIPELINE BUOYANCY CONTROL SELECTION LOGIC

Soil characteristics (bulk density and plasticity) and trench conditions during installation dictate the preferred buoyancy control type. For instance, in dense, low to high plastic soils with a dry trench, backfill is sufficient and additional buoyancy control is not necessary. In the opposite case, with light, silty soils that are subject to frequent flooding or a high-water table, buoyancy control measures may be required.

Table 1 below is a Buoyancy Control Selection Matrix that lists the combinations of soil type and trench condition to set the boundary conditions for pipeline buoyancy control selection during design and construction.

Table 1: Buoyancy Control Selection Matrix

Soil Type[1]	Trench Condition	Can Trench be Dewatered?	Buoyancy Control Required?
B	Dry	N/A	None
B	Flooded	Yes	None
B	Flooded	No	Yes
C	Dry	N/A	None
C	Flooded	Yes	Competent Person Determination
C	Flooded	No	Yes
1. No Type A soils because of disturbance to them by excavating			

5.0 SOIL DENSITY

Another important parameter of soils is the density. The higher the density, the better the soil will resist buoyant forces from the pipeline.

The United States Department of Agriculture Soil Conservation Service (USDA SCS) maintains a detailed database of soil types and densities. This database was overlayed with the pipeline route to create a crossing list of soil types by pipeline stationing, generating over ten thousand unique data sets. Figure 1 is a representative sample of this data from NDM-106. The minimum submerged density observed across the entire project footprint was 21 lb/ft^3.

PIPE SEGMENT	STATION BEGIN	STATION END	MAP SYMBOL	MOIST BULK DENSITY (g/cm^3)	Dry bulk density (lb/ft3)	Mapunit Name	Unified Soil Classification	LIQUID LIMIT (%)	PLASTICITY INDEX (%)
NDM-106	0+00	10+02	C210B	1.46	86.93	Williams-Bowbells loams, 3 to 6 percent slopes	ML	40	18
NDM-106	10+02	19+47	C148C	1.46	86.93	Williams-Zahl-Parnell complex, 0 to 9 percent slopes	ML	40	18
NDM-106	19+47	27+85	C177D	1.46	86.93	Williams-Zahl-Bowbells loams, 3 to 15 percent slopes	ML	40	18
NDM-106	27+85	30+57	C148C	1.46	86.93	Williams-Zahl-Parnell complex, 0 to 9 percent slopes	ML	40	18
NDM-106	30+57	34+57	C177D	1.46	86.93	Williams-Zahl-Bowbells loams, 3 to 15 percent slopes	ML	40	18
NDM-106	34+57	36+77	C172D	1.45	86.30	Williams-Zahl loams, 3 to 15 percent slopes, very stony	ML	40	18
NDM-106	36+77	37+82	C177D	1.46	86.93	Williams-Zahl-Bowbells loams, 3 to 15 percent slopes	ML	40	18
NDM-106	37+82	39+90	C172D	1.45	86.30	Williams-Zahl loams, 3 to 15 percent slopes, very stony	ML	40	18
NDM-106	39+90	43+77	C177D	1.46	86.93	Williams-Zahl-Bowbells loams, 3 to 15 percent slopes	ML	40	18
NDM-106	43+77	48+38	C172D	1.45	86.30	Williams-Zahl loams, 3 to 15 percent slopes, very stony	ML	40	18
NDM-106	48+38	49+35	C177D	1.46	86.93	Williams-Zahl-Bowbells loams, 3 to 15 percent slopes	ML	40	18
NDM-106	49+35	51+30	C005A	1.29	77.06	Southam silty clay loam, 0 to 1 percent slopes	OH	56	27
NDM-106	51+30	56+39	C148C	1.46	86.93	Williams-Zahl-Parnell complex, 0 to 9 percent slopes	ML	40	18
NDM-106	56+39	61+64	C177D	1.46	86.93	Williams-Zahl-Bowbells loams, 3 to 15 percent slopes	ML	40	18
NDM-106	61+64	64+32	C136B	1.46	86.93	Williams-Zahl loams, 3 to 6 percent slopes	ML	40	18
NDM-106	64+32	66+60	C177D	1.46	86.93	Williams-Zahl-Bowbells loams, 3 to 15 percent slopes	ML	40	18
NDM-106	66+60	68+09	C175C	1.45	86.30	Zahl-Williams-Zahill complex, 6 to 9 percent slopes	CL	38	19
NDM-106	68+09	69+03	C005A	1.29	77.06	Southam silty clay loam, 0 to 1 percent slopes	OH	56	27

Figure 1: USDA SCS Soil Information Sample

6.0 CALCULATIONS

A series of calculations of uplift forces were performed to determine the factor of safety against flotation given varying depths to the water table and soil backfill densities. These calculations indicate that the two major factors influencing pipe buoyancy are the water table (the higher the water level in the trench, the more resistance is required to counteract the buoyancy forces) and the weight of the loose dumped/lightly compacted backfill. The heavier/denser the soil, the greater the resistance it provides to counteract buoyancy forces even when the soil is saturated. If water is present in the excavations and it is not possible to dewater, buoyancy control may be necessary to resist the hydrostatic pressure and to facilitate installation of the pipe.

Assuming a minimum safety factor of 1.25 and assuming water table at ground height the below calculations were utilized to assess the pipe's susceptibility to buoyancy when empty and relying solely on the backfill.

Uplift force:

$$U = \gamma_w \, x \, \frac{\pi D^2}{4}$$

Where: U – uplift force, lbs/linear ft

γ_w – unit weight of water, pcf

D – pipe diameter, ft

Soil cover volume per linear foot of pipe:

$$S_v = D \, x \left(S_c + \frac{D}{2}\right) - \left(D_2 x \frac{\pi}{4}\right) x \frac{1}{2}$$

Where: Sv – soil cover volume, ft3

S_c – soil cover thickness, ft

D – pipe diameter, ft

Soil weight per linear foot of pipe:

$$S = \left(S_v - (W_T\ x\ D)x\ (\gamma_s - \gamma_w)\right) + W_T x\ D\ x\ \gamma_D$$

Where: S – soil weight per linear foot of pipe, lbs/linear ft

W_T – depth to water table below the ground surface, ft

γ_s – soil saturated density, pcf

γ_D – soil dry density

The first part of the equation calculates the effective weight of the entire soil block at or below the water table and uses the saturated density of soil. The second part of the equation corrects the weight for scenarios where the water table is below the ground surface and a portion of the soil block remains dry, so soil dry density was used.

Total resistance:

$$R_T = S + P_w$$

Where: R_T – uplift resistance, lbs./linear ft.

Pw – pipe weight, lbs./linear ft.

Calculated Factor of Safety:

$$FS_C = \frac{R_T}{U}$$

If calculated Factor of Safety FS_c is greater than 1.25, additional buoyancy controls measures are not required.

If FS_c is less than 1.25, the amount of additional buoyancy resistance is:

$$R_A = (U\ x\ FS_D) - R_T$$

A summary of calculations for all pipe diameters at various soil densities can be found in Appendix 1. Results are also graphically represented in Figure 4, where areas above the red dotted line exceed the required 1.25 safety factor and do not require additional buoyancy controls measures.

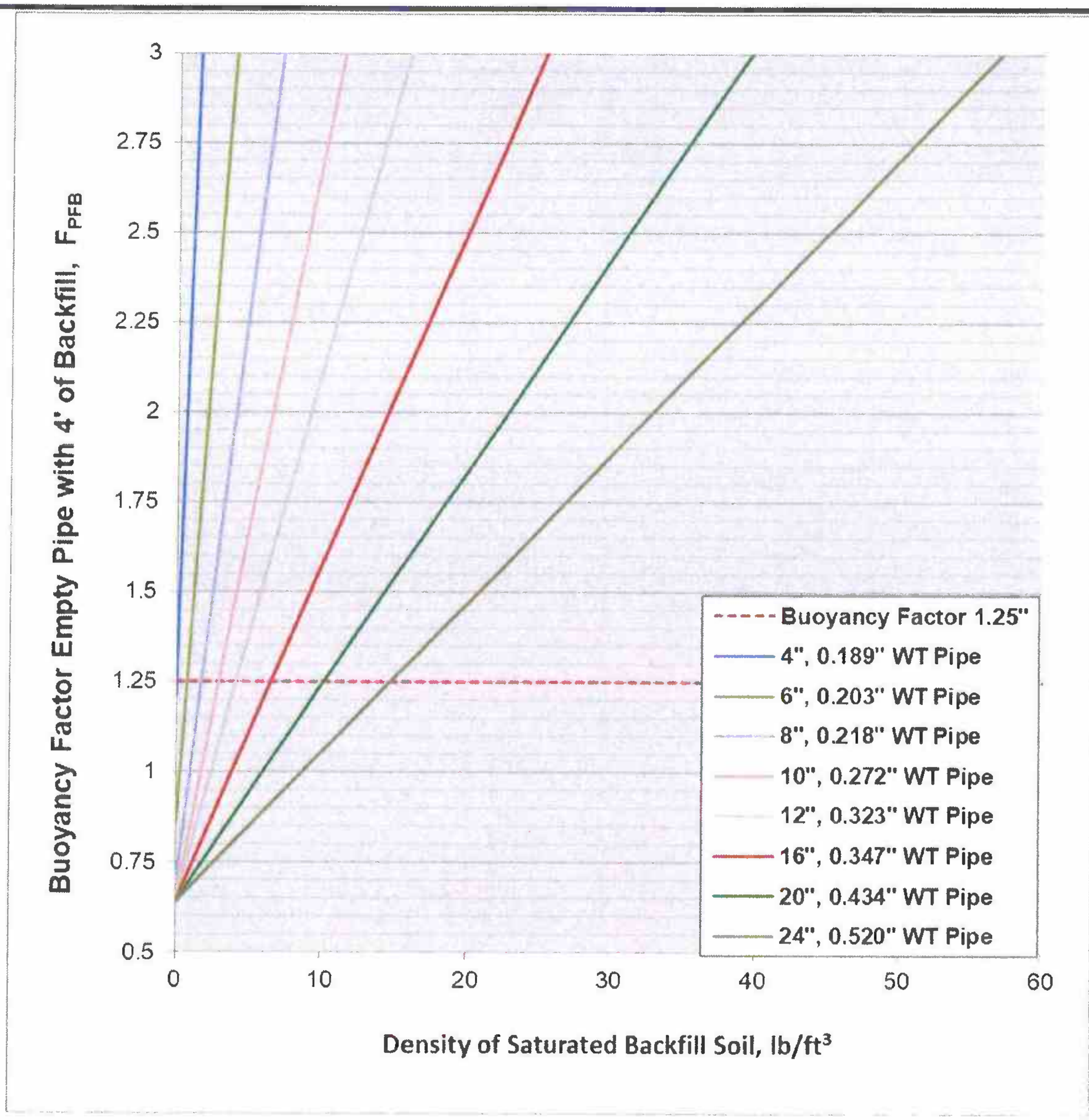


Figure 2: Safety Factor determined by Saturated Density of Backfill

7.0 CONCLUSIONS

To assess the risk of buoyancy, the soil cohesion as well as density were evaluated based upon a wide range of soil types. Based on the results of the soil categorization, only Type C soils may require buoyancy control. The next soil property to evaluate is density. The density of backfill necessary to meet a 1.25 safety factor increases with pipe size. To meet a safety factor of 1.25 for all pipe diameters on the project the soil must have a minimum density of 15 lb/ft^3, as shown in Figure 2. Comparing the soil density values across the entire route to the calculations, there are no identified locations that will require buoyancy control. There may be weather conditions that do not allow for the dewatering of the pipeline trench, in these instances, additional buoyancy control measures such as Geotextile Pipeline Weights (GPW) will be deployed.

The majority of waterbody crossings for the project are crossed by Horizontal Directional Drilling and do not require any buoyancy control measures.

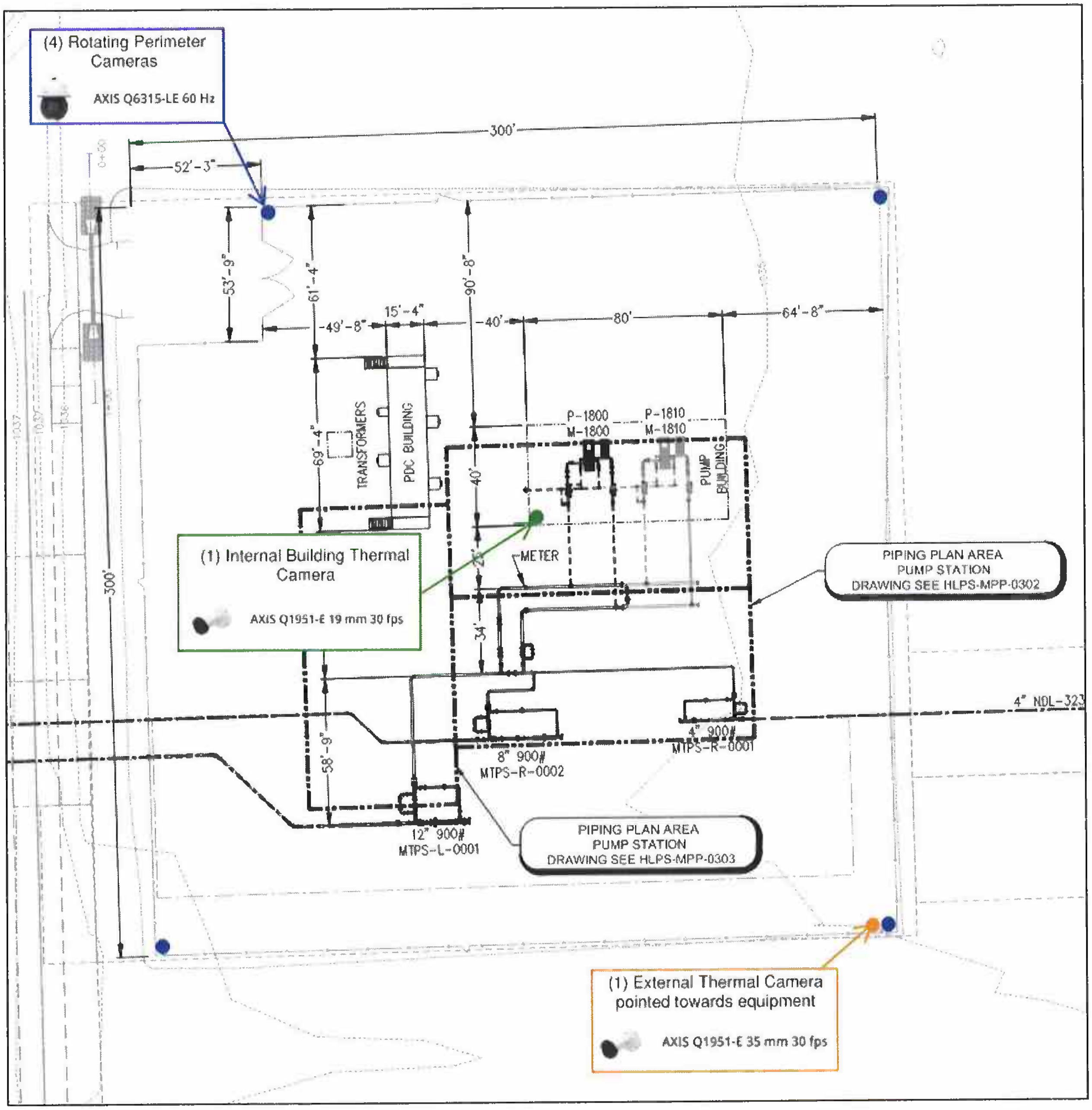
Appendix 1

GULF INTERSTATE ENGINEERING	CALCULATION TASK-1				
PROJECT:	Summit Carbon Solutions Pipeline	GULF PROJECT No.:			1927
CALCULATION NUMBER:	1927	SHEET:			2
TITLE:	Buoyancy Control	Rev.No.:	A	Date:	4/21/2023

Item	Pipe Geometry						Unit Weights, kg/m				Backfill Geometry and Weights								Buoyancy Factor	
	Pipe OD		Pipe Nom. WT	Pipe ID	FBE WT	Pipe OD with FBE	Pipe	FBE	Pipe with FBE	Water displaced by Pipe with FBE	Cover Depth from TOP	Water Table	Depth of Inundated Backfill above TOP	Density of Dry Backfill Soil	Density of Inundated Backfill Soil	Weight of Inundated Backfill	Weight of Backfill above Water Level	Weight of Backfill	Empty Pipe w/o Backfill	Empty Pipe with Backfill
	D_P (in)	D_P (ft)	t_n (ft)	D_{ID} (ft)	t_{FBE} (ft)	D_{FBE} (ft)	W_P (lb/ft)	W_{FBE} (lb/ft)	W_D (lb/ft)	W_W (lb/ft)	H (ft)	H_W (ft)	H_i (ft)	ρ_{DB} (lb/ft³)	ρ_i (lb/ft³)	W_i (lb/ft)	W_a (lb/ft)	W_B (lb/ft)	F_P	F_{PFB}
1	24.000	2.000	0.0433	1.913	0.0013	2.003	130.26	0.71	130.97	204.42	4.00	0.00	4.00	100.00	62.26	525.55	0.00	525.55	0.64	3.21
											4.00	0.00	4.00	95.00	59.15	499.28	0.00	499.28	0.64	3.08
											4.00	0.00	4.00	90.00	56.04	473.00	0.00	473.00	0.64	2.95
											4.00	0.00	4.00	85.00	52.92	446.72	0.00	446.72	0.64	2.83
											4.00	0.00	4.00	80.00	49.81	420.44	0.00	420.44	0.64	2.70
											4.00	0.00	4.00	75.00	46.70	394.17	0.00	394.17	0.64	2.57
											4.00	0.00	4.00	70.00	43.58	367.89	0.00	367.89	0.64	2.44
											4.00	0.00	4.00	65.00	40.47	341.61	0.00	341.61	0.64	2.31
											4.00	0.00	4.00	24.00	14.94	126.13	0.00	126.13	0.64	1.26
											4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.64	0.64
2	20.000	1.667	0.0362	1.594	0.0013	1.669	90.59	0.61	91.20	142.04	4.00	0.00	4.00	100.00	62.26	525.55	0.00	525.55	0.64	4.34
											4.00	0.00	4.00	95.00	59.15	499.28	0.00	499.28	0.64	4.15
											4.00	0.00	4.00	90.00	56.04	473.00	0.00	473.00	0.64	3.97
											4.00	0.00	4.00	85.00	52.92	446.72	0.00	446.72	0.64	3.79
											4.00	0.00	4.00	80.00	49.81	420.44	0.00	420.44	0.64	3.60
											4.00	0.00	4.00	75.00	46.70	394.17	0.00	394.17	0.64	3.42
											4.00	0.00	4.00	70.00	43.58	367.89	0.00	367.89	0.64	3.23
											4.00	0.00	4.00	65.00	40.47	341.61	0.00	341.61	0.64	3.05
											4.00	0.00	4.00	17.00	10.58	89.34	0.00	89.34	0.64	1.27
											4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.64	0.64
3	16.000	1.333	0.0289	1.276	0.0013	1.336	57.95	0.49	58.43	90.98	4.00	0.00	4.00	100.00	62.26	525.55	0.00	525.55	0.64	6.42
											4.00	0.00	4.00	95.00	59.15	499.28	0.00	499.28	0.64	6.13
											4.00	0.00	4.00	90.00	56.04	473.00	0.00	473.00	0.64	5.84
											4.00	0.00	4.00	85.00	52.92	446.72	0.00	446.72	0.64	5.55
											4.00	0.00	4.00	80.00	49.81	420.44	0.00	420.44	0.64	5.26
											4.00	0.00	4.00	75.00	46.70	394.17	0.00	394.17	0.64	4.97
											4.00	0.00	4.00	70.00	43.58	367.89	0.00	367.89	0.64	4.68
											4.00	0.00	4.00	11.00	6.85	57.81	0.00	57.81	0.64	1.28
											4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.64	0.64
3	12.750	1.063	0.0231	1.016	0.0013	1.065	36.86	0.39	37.25	57.83	4.00	0.00	4.00	100.00	62.26	525.55	0.00	525.55	0.64	9.73
											4.00	0.00	4.00	95.00	59.15	499.28	0.00	499.28	0.64	9.28
											4.00	0.00	4.00	90.00	56.04	473.00	0.00	473.00	0.64	8.82
											4.00	0.00	4.00	85.00	52.92	446.72	0.00	446.72	0.64	8.37
											4.00	0.00	4.00	80.00	49.81	420.44	0.00	420.44	0.64	7.91
											4.00	0.00	4.00	75.00	46.70	394.17	0.00	394.17	0.64	7.46
											4.00	0.00	4.00	70.00	43.58	367.89	0.00	367.89	0.64	7.01
											4.00	0.00	4.00	7.00	4.36	36.79	0.00	36.79	0.64	1.28
											4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.64	0.64
3	10.750	0.896	0.0194	0.857	0.0013	0.899	26.14	0.33	26.47	41.15	4.00	0.00	4.00	100.00	62.26	525.55	0.00	525.55	0.64	13.41
											4.00	0.00	4.00	95.00	59.15	499.28	0.00	499.28	0.64	12.78
											4.00	0.00	4.00	90.00	56.04	473.00	0.00	473.00	0.64	12.14
											4.00	0.00	4.00	85.00	52.92	446.72	0.00	446.72	0.64	11.50
											4.00	0.00	4.00	80.00	49.81	420.44	0.00	420.44	0.64	10.86
											4.00	0.00	4.00	75.00	46.70	394.17	0.00	394.17	0.64	10.22
											4.00	0.00	4.00	70.00	43.58	367.89	0.00	367.89	0.64	9.58
											4.00	0.00	4.00	5.00	3.11	26.28	0.00	26.28	0.64	1.26
											4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.64	0.64
3	8.625	0.719	0.0168	0.685	0.0013	0.721	16.15	0.26	16.41	26.53	4.00	0.00	4.00	100.00	62.26	525.55	0.00	526.55	0.69	20.51
											4.00	0.00	4.00	95.00	59.15	499.28	0.00	499.28	0.69	19.51
											4.00	0.00	4.00	90.00	56.04	473.00	0.00	473.00	0.69	18.52
											4.00	0.00	4.00	85.00	52.92	446.72	0.00	446.72	0.69	17.53
											4.00	0.00	4.00	80.00	49.81	420.44	0.00	420.44	0.69	16.54
											4.00	0.00	4.00	75.00	46.70	394.17	0.00	394.17	0.69	15.55
											4.00	0.00	4.00	70.00	43.58	367.89	0.00	367.89	0.69	14.56
											4.00	0.00	4.00	2.80	1.74	14.72	0.00	14.72	0.69	1.29
											4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.69	0.69
3	6.625	0.552	0.0162	0.520	0.0013	0.555	13.31	0.20	13.51	15.69	4.00	0.00	4.00	100.00	62.26	525.55	0.00	525.55	0.66	34.36
											4.00	0.00	4.00	95.00	59.15	499.28	0.00	499.28	0.66	32.83
											4.00	0.00	4.00	90.00	56.04	473.00	0.00	473.00	0.66	31.31
											4.00	0.00	4.00	85.00	52.92	446.72	0.00	446.72	0.66	29.31
											4.00	0.00	4.00	80.00	49.81	420.44	0.00	420.44	0.66	27.66
											4.00	0.00	4.00	75.00	46.70	394.17	0.00	394.17	0.66	25.39
											4.00	0.00	4.00	70.00	43.58	367.89	0.00	367.89	0.66	24.31
											4.00	0.00	4.00	1.25	0.78	6.57	0.00	6.57	0.66	1.23
											4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.66	0.66
3	4.500	0.375	0.0158	0.344	0.0013	0.376	8.69	0.14	8.63	7.27	4.00	0.00	4.00	100.00	62.26	525.55	0.00	526.55	1.21	73.50
											4.00	0.00	4.00	95.00	59.15	499.28	0.00	499.28	1.21	68.89
											4.00	0.00	4.00	90.00	56.04	473.00	0.00	473.00	1.21	66.27
											4.00	0.00	4.00	85.00	52.92	446.72	0.00	446.72	1.21	62.38
											4.00	0.00	4.00	80.00	49.81	420.44	0.00	420.44	1.21	59.01
											4.00	0.00	4.00	75.00	46.70	394.17	0.00	394.17	1.21	56.12
											4.00	0.00	4.00	70.00	43.58	367.89	0.00	367.89	1.21	51.22
											4.00	0.00	4.00	0.10	0.06	0.53	0.00	0.53	1.21	1.25
											4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	1.21	1.21

Density of FBE Coating, ρ_{FBE} 87 [lb/ft³]
Density of Pipe Material, ρ_P 489 [lb/ft³]
Density of Water, ρ_W 62.43 [lb/ft³]
Density of Water/Soil Slurry, ρ_{WS} 64.90 [lb/ft³]
Specific Gravity of Backfill Soil (sand), SG_B 2.65

EXHIBIT C



(4) Rotating Perimeter Cameras
AXIS Q6315-LE 60 Hz
300'
52'-3"
53'-9"
61'-4"
90'-8"
49'-8"
15'-4"
40'
80'
64'-8"
TRANSFORMERS
PDC BUILDING
69'-4"
P-1800
M-1800
P-1810
M-1810
PUMP BUILDING
40'
METER
(1) Internal Building Thermal Camera
AXIS Q1951-E 19 mm 30 fps
PIPING PLAN AREA
PUMP STATION
DRAWING SEE HLPS-MPP-0302
300'
34'
58'-9"
8" 900#
MTPS-R-0002
4" 900#
MTPS-R-0001
4" NDL-323
12" 900#
MTPS-L-0001
PIPING PLAN AREA
PUMP STATION
DRAWING SEE HLPS-MPP-0303
(1) External Thermal Camera pointed towards equipment
AXIS Q1951-E 35 mm 30 fps

EXHIBIT D

SUMMIT CARBON SOLUTIONS

SCS ROW Progress as of May 12th, 2023						
North Dakota	Parcels	ROW Miles	ROW Miles Executed	ROW Miles Executed %	Parcels Executed	Parcels Executed %
Burleigh	121	41.79	25.35	60.65%	68	56.20%
Cass	63	21.75	16.02	73.68%	46	73.02%
Dickey	91	36.76	25.58	69.60%	62	68.13%
Emmons	102	37.10	23.19	62.50%	62	60.78%
Logan	6	1.83	1.83	100.00%	5	83.33%
McIntosh	110	34.25	30.67	89.56%	97	88.18%
Morton	56	23.45	21.22	90.47%	50	89.29%
Oliver	51	18.41	16.99	92.26%	47	92.16%
Richland	171	65.13	39.54	60.72%	108	63.16%
Sargent	98	39.53	31.94	80.80%	74	75.51%
Grand Total	869	319.99	232.33	72.61%	619	71.23%

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

SCS Carbon Transport LLC
Midwest Carbon Express CO2 Project
Sitting Application

CASE NO. PU-22-391

CERTIFICATE OF SERVICE

I, the undersigned, hereby certify that a true and correct copy of the following:

1. Letter to S. Kahl forwarding documents for filing; and
2. Letter to S. Kahl in Response to Reqeusts for Additional Information and Attachments.

were, on May 15, 2023, filed with the North Dakota Public Service Commission and served electronically to the following:

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Dated this 15th day of May, 2023.

FREDRIKSON & BYRON, P.A.

By: ______________________________

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