



**SUMMIT CARBON
SOLUTIONS**

**W162
PU-22-391**

**SUMMIT CARBON SOLUTION PIPELINE PROJECT
GULF PROJECT NUMBER: 1927**

FROST HEAVE STUDY



**GULF INTERSTATE
ENGINEERING**
Houston, Texas F-2830

GULF DOCUMENT NO.: 1927-000-PL-STY-0004

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Revision	Date	Revision Description	Prepared By	Reviewing Engineer	Project Manager	Client Approval
0	04/17/2023	Issued for Information	David Ammerman	Lance Thomas	David Ammerman	



**GULF INTERSTATE
ENGINEERING**

REVISION LOG

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Exhibit W162 - Summit - Frost Heave Study dated 4-17-23
Intervenor John H. Warford, Jr., as Trustee of Revocable Trust



MIDWEST CARBON EXPRESS PROJECT

PROJECT:

MIDWEST CARBON EXPRESS PROJECT

REPORT NUMBER:

GPLUS-GENL-ENG-STY-GIE-0004

GULF PROJECT NO.:

1927

TITLE:

Frost Heave Study

Provide a brief description of changes for all revisions following Rev. 0

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REV.	DATE	REVISION DESCRIPTION



burial alone, the likelihood of frost heave on any buried portion of the SCS system is highly unlikely. Where conditions may allow frost to reach beyond 51 inches, the likelihood of the soil being susceptible to frost heave (silt) is also unlikely given that frost penetration occurs more slowly with fine-grained soils of high moisture content.

Water table depths vary from location to location across the pipeline from over a hundred feet below the pipe to depths above assumed trench bottom. The likelihood of frost depths significantly beyond 51 inches with a water table slightly below is probabilistically small. In a situation where frost could reach beyond 51 inches, the amount of movement expected at such a depth would be very small given the relation to the thickness of any underlying ice lenses and the unconstrained expansion that would occur above.

Today's materials and construction practices have evolved including the introduction of more ductile steels allowing greater allowable deformation (strain) due to external loads (frost heave) thus further preventing any likelihood of frost heave creating a pipeline integrity issue.