## Data Management Plan

**Introduction**: Data management will be coordinated by the Principal Investigators. The plan encompasses three areas: use policies, data preservation and archival, and standards. The PIs will leverage existing systems wherever possible. All data will be communicated in a timely fashion following the NSF OCE policy.

**Expected Data Products**: Three sites in the Mississippi Delta topset in the northern Gulf of Mexico will be sampled over four seasons. Data products during this seasonal sampling will include:

1. R/V Pelican underway data acquisition system (UDAS) data products
2. Water column hydrographic data (i.e., CTD)
3. Porewater elemental and isotopic composition data
4. Corresponding sediment composition, grain size data, excess $^{210}$Pb activity, and reactive Si and Fe phase characterizations
5. $^{32}$Si activities in reactive Si pools
6. Microscopic imaging of diatom frustules from selected depth intervals via XRD, EMP, and Raman Spectroscopy

**Data access and sharing policies:** Data collected under the project will be made available to the public with as few restrictions as possible. Under these policies, we plan to share results of the work principally through peer-reviewed publications and deposited in a public repository. For each sample collected, we will generate a suite of associated data. Corresponding subsamples will be assigned a unique identifier with associated metadata, e.g., station identifiers logged while at sea. This identifier will be used to ensure that data generated in individual labs is associated with the correct sample. All sample data will be logged into shared documents that will be accessible to all project personnel. Data will be rigorously checked for quality as it is collected, with raw data maintained as well as processed and analyzed data.

**Archival Plans**: As is required, metadata and data will be contributed to one or more existing catalogs. The PIs will be responsible for working with the Biological and Chemical Oceanography Data Management Office (BCO-DMO) to establish a project portal. Shipboard underway data for all three cruises will be automatically sent to the Rolling Deck to Repository (R2R) catalog, coordinated by the Chief Scientist(s). Non-UDAS data generated from this proposal will be submitted to the BCO-DMO within two years of collection, following OCE requirements for public accessibility.

All the Raman spectroscopy data generated and associated with this project will be continuously co-collected and duplicated on the Raman Server, a network attached storage device (NAS) owned by Dr. Alexis Templeton, the CU faculty member who manages and runs the Raman Microspectroscopy Lab. The NAS is routinely backed up to a secondary drive and a hybrid RAID structure protects the device against drive failure. Data on the NAS can be accessed by anyone with granted permissions. Note original August 2021 data, which corresponds to another project by the co-PI, will be also included where necessary (e.g., common measurements); this will result in some redundancy (i.e., data also archived with original project) but will aid usability for future end users.

**Standards and formats to be used for metadata and data**: - The PIs will conform to the metadata standards of BCO-BMO.