EXHIBIT E
MITIGATION WORK PLAN (MWP)

The Sponsor shall submit and obtain approval of the MWP from the IRT for each Phase of the Bank (in accordance with Section 12 of the MBI). The MWP includes all technical work methods and descriptions for the Bank, and is separated into two submittals, the Conceptual Mitigation Work Plan and Final Mitigation Work Plan. The Conceptual Mitigation Work Plan for the entire Bank is required to be submitted and approved concurrent with the MBI. The Final Mitigation Work Plan is to be submitted and approved prior to the commencement of construction activities, and may be submitted according to an approved Phase Plan. This Exhibit outlines the general MWP descriptions (Section I) as well as the sheet set deliverables (Section II) required for a Final Mitigation Work Plan.

I. MWP Description

A. Site Description

This may include but is not limited to:

- Name of Site
- Address of site
- Acreage of site
- Description and quantities (i.e., acreage and linear feet) of proposed mitigation type
- Bank Phasing Plan (if applicable): The initial (first) Phase of each Bank or site must be large enough to stand alone as a viable Bank, as determined by the IRT, and should include all areas where construction will be initiated within one full growing season after the first Credit sale. Subsequent Phases do not have to be independently viable but should be physically and ecologically viable.

B. Objectives of the Bank

This shall include but is not limited to:

- A description of the compensatory mitigation resource type(s) and amount(s) that will be provided;
- The method of compensatory mitigation (i.e., restoration, establishment, enhancement, and/or preservation);
- A list of the expected functions that will be provided by the proposed Bank, including an explanation of how these will be achieved;
- How the identified resource functions of the Bank are expected to address the needs of the watershed and the Geographic Service Area. This description may include:
    - Water quality improvements
    - Erosion control
    - Fisheries/wildlife habitat
    - Flood conveyance/flood storage
    - Restoration of stream channel dimension, pattern, profile
    - Streambank stability
    - Aquatic and riparian habitat
    - Open space/aesthetics
    - Recreation
    - Rare or threatened and endangered species

- Objectives of upland buffers (e.g., filer sediment, protect bank site from adjacent development, stream stability, etc.)
- Other bank-specific objectives

C. Baseline Existing Conditions

This may include but is not limited to:

- Description of existing onsite streams and wetlands
- Descriptions of historic and existing plant communities/cover type, and age;
- Historic and existing hydrology;
- Historic and existing soil conditions;
- Historic, archaeological, and cultural resources;
- Federal and State Rare, threatened and/or endangered species, including USFWS IPaC results (https://ecos.fws.gov/ipac/) and any baseline or other reporting requirements pursuant to the USACE Endangered Species Act (ESA) guidance, Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services (http://vafwis.org/fwis/), and the Virginia Department of Conservation and Recreation Natural Heritage Data Explorer (https://vanhde.org);
- Geographic coordinates at the center of the Bank;
- A boundary survey;
- Delineation;
- For areas of proposed stream restoration provide aquatic macroinvertebrate surveys (as described in Exhibit K);
- For areas of proposed stream restoration provide fish, amphibian, or surveys of other biota;
- For areas of proposed stream restoration provide water quality surveys (as described in Exhibit K);
- Description of the nature, extent, and probable causes of degradation of wetlands and streams including running DEQ's WetCAT on any existing onsite wetlands (http://cmap.vims.edu/WetlandViewer/Virginia/WetCAT_VA.html);
- For areas of proposed wetland restoration, creation, or enhancement, a historical characterization of the area, including historic and existing land use, and reasons and methods for conversion from wetlands (i.e. historic ditching, re-contouring, filling, etc. for farming, silvicultural or other land use activities);
- For areas of proposed stream restoration or enhancement, a survey of existing typical channel cross section, plan view, and profile indicative of each stream type, condition class, and order, and existing site morphological characteristics data;
- INU species inventory map depicting the location and extent of individual species of INU plants over the entire mitigation site;
- Any other site characteristics appropriate to the type of resource proposed as compensation;
- Site specific water quality or habitat concerns within the immediate watershed;
- Any stream crossings, roads, or other structures that will be removed, replaced, or left in place should be identified on the plans. Generally, crossings should be removed; if needed to be left in place, they should be stable and not adversely impact the stream;
- An assessment of adjacent/offsite activities that may impact water quality and habitat onsite.

D. Proposed Compensatory Mitigation Activities

This may include but is not limited to:

- Filling or blocking of ditches
- Creation of low berms with outlet controls
- Regrading of high spots
- Removal of fill areas
- Treatment of INU species
- Discing and Plowing of soils
- Soil amendments
- Replanting of desired native vegetation
- Fencing along adjacent land uses
- Restoration of stream channels
- Stabilization of eroding banks
- Buffer or stream bank plantings
- Installation of grade controls or other instream structures
- Identification of stream reach, wetland area, and/or riparian buffer area where work is to occur

II. MWP Submittals

A. Conceptual Mitigation Work Plan (CMWP)

The Sponsor shall submit a Conceptual Mitigation Work Plan (CMWP) to the IRT and obtain approval of the IRT (in accordance with Section 12 of the MBI), prior to approval of the MBI.

The CMWP shall include, but not be limited to:

- Cover Sheet with Location and Vicinity Maps;
- Master Plan Map of proposed mitigation activities for the entire proposed Bank;
- Phase Plan Map, if applicable;
- Existing Conditions for the entire proposed Bank, with wetlands delineation survey, topography, existing tree line, photo locations, and photos;
- Hydrologic analyses;
- Soils Map, soil test pit profiles and/or soil auger borings to controlling depths, and soil testing results (e.g. C, N, P, Acidity);
- Narrative descriptions of wetland and/or stream deficiencies, and how the objectives and functions of the Bank will address these deficiencies;
- Wetland preliminary grading plan and profile, including proposed buffer limits, types, preliminary water control structure locations; and acres of wetland creation, restoration, enhancement, and preservation areas;
- Stream preliminary grading plan, including plan view, profile, cross-sections (riffle and pool only) and existing and proposed typical design morphological characteristics for each type of activity and stream type, preliminary structure locations, proposed riparian buffer communities, linear feet of stream restoration, enhancement, preservation and acreages of riparian buffers;
- Reference data from existing wetland, stream, and riparian buffer communities that is utilized for proposed mitigation activities. This may include but is not limited to:

reference location, watershed and land use composition, proximity to Bank, field data and analysis, monitoring well data, including existing hydrology, vegetation, soils, stream type, morphological characteristics, wildlife and aquatic communities

- Preliminary proposed planting plan with general locations of planting, typical plant species, and methods.
- Invasive Species (INU) Management Plan – Including an inventory map (depicting the location and extent of individual INU plant species over the entire proposed Bank), a species-specific Management Plan, and proposed monitoring and Performance Standards. Sponsors should manage all INU species onsite, to the greatest extent practicable. Exceptions to management or treatment must be outlined in this Management Plan and approved by the IRT; and
- Timing and schedule for construction of compensation activities.

B. Final Mitigation Work Plan (FMWP)

The Sponsor shall submit the Final Mitigation Work Plan (FMWP) to the IRT for each Phase of the Bank and obtain approval of the IRT (in accordance with Section 12 of the MBI), prior to commencement of construction activities.

The FMWP (90-100% design plan) shall include, but is not limited to:

- Narrative describing the nature of the final mitigation work;
- Grading plans at a scale of 1"=50' and providing 0.5 ft. contour intervals in Restoration areas (or metric equivalent), or at a more detailed scale. Plans shall use the correct vertical datum, NOS in tidal mitigation areas and NGVD 88 in non-tidal areas;
- Erosion and Sediment Control (ESC) Plans, designed in accordance with General ESC Specifications approved by the Virginia Soil and Water Conservation Board, or in accordance with the locality's ESC Program;
- A detailed location map, including the latitude and longitude and the hydrologic unit code (HUC) at the center of the site;
- Construction Methods and Details;
- Timing and Sequence;
- Updated Invasive Species (INU) Management Plan;
- Credit analysis based on the FWP for the subject Phase, utilizing the methodology described in Exhibit G to estimate the expected number of Credits that will be created by the FWP;
- A GIS shapefile or similar exhibit depicting the location and extent of the Bank.

The Wetland FMWP shall include, but is not limited to:

- Water budget for a typical, wet, and dry year that includes, on a monthly basis:
    - Inputs
        a. Precipitation
        b. Infiltration
        c. Surface Flow Runoff
    - Outputs
        a. Evapotranspiration
        b. Exfiltration
        c. Spillway Outflow

- Vegetation schedule with plants and seeds selected based on habitat value and projected water elevation and duration. Schedule shall include, but not be limited to:
    - Expected zonation (i.e. POWZ, PEM, PSS, and PFO)
    - Species names of herbaceous and woody species
    - Herbaceous seed mix that includes at least ten (10) native species (as shown for the locality in the Digital Flora of Virginia)
    - Woody species list that includes a minimum of four (4) native species (as shown for the locality in the Digital Flora of Virginia) per strata
    - Wetland indicator status as specified in the current version of the *National List of Plant Species That Occur in Wetlands: Northeast (Region 1)*
    - Plant size and spacing
    - Wildlife value assessment

- Soil mapping, planned soil handling, soil amendments, and soil testing

- A surveyed delineation, in accordance with the USACE 1987 Wetland Delineation Manual (Manual) and the appropriate Regional Supplement to the Manual of the existing wetland areas of each Phase. A GPS survey is sufficient.

- Reference wetland data from existing wetland communities that are utilized for proposed wetland establishment, restoration, and enhancement activities. These data may include but are not limited to:
    - Reference location
    - Watershed and land use composition
    - Proximity to the Bank
    - Monitoring well data
    - Field data and analysis of those data including hydrology, vegetation, soils, wildlife, etc.

The Stream FMWP shall also include, but is not limited to:

- The proposed stream segment restoration and/or enhancement locations, including plan views, longitudinal profiles, and cross-sections, with structure locations; Proposed detailed cross-sections should be located a minimum of every 500 feet within restoration/enhancement stream channels.

- A description of the existing watershed, valley, and channel classification, and the estimated proposed land use for that watershed (percent residential, forested, commercial, agricultural, etc.);

- A description of the existing riparian buffer (age of forested, shrub, and herbaceous strata present, utility easements, understory mowed, actively cropped, etc.);

- Phase of channel evolution;

- Data table comparison of existing, reference, and proposed design morphological characteristics. Hydraulic assessment including, but not limited to, a quantification of bankfull, flood stage, stream velocity, sheer stress, and stream power;

- The stream deficiencies to be addressed. Describe the causes of instability and the methods used to make determinations, existing lateral and vertical stability; and planned channel types;

- The proposed restoration measures and methods (form, process, combination) to be employed, including channel measurements (bankfull elevation, cross-sectional area, slope, etc.), proposed design flows, typical design cross-sections, proposed detailed design cross-sections, and types of instream structures;

- Reference stream data from existing stream and riparian buffer communities that is utilized for proposed stream restoration and enhancement activities. This may include but is not limited to: Reference location, watershed and land use composition, proximity to Bank, stream type, geomorphology, hydrology, vegetative and aquatic communities, etc.

- Describe any project constraints;

- Plan-view location of proposed riparian buffer restoration, reestablishment, enhancement, and preservation segments.

- Vegetation schedule with plants and seeds selected based on habitat, water quality, and stream stability value. Schedule may include but should not be limited to:
    - Species name
    - Indicator status as specified in the current version of the *National List of Plant Species That Occur in Wetlands: Northeast (Region 1)*
    - Plant size and spacing
    - Wildlife value assessment
    - Statement that all proposed species are shown for the locality in the Digital Flora of Virginia

- Any stream crossings, roads, or other structures that will be removed, replaced, or left in place should be identified on the plans. Generally, crossings should be removed; if needed to be left in place, they should be stable and not adversely impact the stream.