# 3.7 Mitigation

## Mitigation Bank Credits

A review of the Regulatory In-Lieu fee and Bank Information Tracking System (RIBITS) revealed there are no mitigation bank service areas that include the location of the proposed project.

#### In-Lieu Fee Program Credits

A review of RIBITS revealed there are no available In-Lieu Fee (ILF) programs servicing the project area.

#### Permittee-Responsible Mitigation

Permittee-responsible mitigation is the only mitigation approach available and is also the most practical for the impacts associated with heavy mineral mining as the mining methods of mineral extraction only removes approximately 3% of material from the mined substrate and topographic features and drainage basins in the post-mining condition mimic the pre-mining condition. This method of extraction results in temporary impacts to jurisdictional wetlands, which once regraded will mimic the basin's hydrologic and aquatic benefits existing prior to mining.

Permittee responsible mitigation presents a low-risk option of mitigation. The proposed impacts are temporary in nature and Chemours maintains a history of successful mitigation projects including wetland reclamation and enhancement within the North Florida region. Furthermore, the USACE, and FDEP (under 62C-37 F.A.C), requires that at a minimum mitigation includes the reestablishment of wetlands to pre-mining conditions in-kind acre-for-acre in accordance with USACE regulations located in 33 CFR Part 332. As part of the federal reclamation requirements, financial assurances are being processed with FDEP, and upon completion, Chemours will provide to USACE a copy of the approved financial instrument that will ensure the completion of the proposed onsite mitigation.

Based on these factors, permittee-responsible mitigation is the most practical compensatory mitigation option. Chemours proposes to utilize permittee-responsible compensatory mitigation to offset the temporary impacts associated with the proposed project. This compensatory mitigation option locates wetlands within the same watershed as the proposed impacts and in approximately the same location (onsite). Additional onsite enhancement of low-quality undisturbed wetlands and offsite permittee responsible mitigation are also proposed to offset the temporal loss calculated in the UMAM scores. The restored wetlands supplement flood risk relief as well as increase in aesthetics within the area. In the northeast portion of the site where the Plant Site is proposed on historically mined area, the wetland restoration proposes to reclaim the majority of the Plant Site and in doing so will reconnect historic wetland connections that were severed by mining in the 1960s.

a. Uncertainty and Risk [Uncertainty - the element associated with whether the compensatory mitigation will successfully offset project impacts. Risk - the element associated with the potential for the proposed compensatory mitigation plan to fail]:

Permittee-responsible: This mitigation will restore the existing ecological value found within the project area and provide benefits to the remaining offsite natural areas associated with the watersheds that contribute to the Santa Fe River. Mitigation activities including wetland restoration/reclamation are based on methods that have been repeatedly and successfully implemented in similar habitats throughout Chemours mine sites, as well as other mineral sands mines and have proven high rates of survivorship, maturation and regeneration. Additionally, the mitigation is required to meet specific success criteria including annual monitoring for survivorship, and treatment for invasive and exotic species. These combined benefits should eliminate the uncertainty and risk that the mitigation will successfully offset project impacts.

b. Size and ecological value of parcel; watershed approach [how the site is ecologically suitable for providing desired functions - consider the physical characteristics, watershed scale features, size, and location; compatibility with adjacent land uses; and likely effects on important resources]:

Permittee-responsible: This mitigation will serve to compliment the larger network of wetlands and drainage features associated with the Santa Fe River. In the post-mining condition, this mitigation will return a network of wetland habitat in the floodplain and surrounding wetland strands providing functional gain and increased ecological value to water and wildlife to this important waterbody that drains to the Santa Fe River.

c. Temporal loss [the time between the initiation of the mitigation plan and the maturation of anticipated ecological functions at a compensatory mitigation site]:

Permittee-responsible: In order to offset the temporal loss calculated in the UMAM scores additional upfront onsite enhancement of undisturbed low-quality Coniferous Plantation Wetlands (441w) and offsite permittee responsible mitigation are also proposed. The proposed offsite permittee responsible mitigation is complete and functioning as mature communities.

d. Scientific/technical analysis, planning, and implementation [as commensurate with the amount and type of impact, the level of scientific/technical evaluation required to appropriately and adequately assess the likelihood for ecological success and sustainability; the location of the compensation site and the significance in the watershed; and, other factors presented in a complete mitigation plan]:

Permittee-responsible: Chemours' project team includes professional engineers, geologists, ecologists, and other appropriate fields of expertise. The proposed mitigation plan has been executed on similar habitats with success on similar Chemours mine sites, as well as other mineral sands mines and have proven high rates of survivorship, maturation and regeneration. Therefore, it is our understanding that the scientific/technical aspects of the mitigation plan have been designed, and will be implemented, successfully.

e. Long-term viability of mitigation/mitigation site [how the compensatory mitigation project will be managed after performance standards have been achieved to ensure long-term sustainability of the resource]:

Permittee-responsible: The mitigation plan is guided by a specific set of success criteria mandated by conditions of the permit and USACE. This includes specific species planted, planting density, planting configuration, plant size/height, and monitoring requirements. These conditions will ensure the success of the wetland restoration/reclamation activities. Once this mitigation achieves success it will be released from permit requirements and the long-term management of the site as a whole will be handled by CBJTC (**Exhibit E**)

f. Site Protection [aquatic habitats, riparian areas, buffers, and uplands that comprise the overall compensatory mitigation must be provided long-term protection through real estate instruments or other available mechanisms, as appropriate]:

Prior to release the reclamation/restoration mitigation areas from permit requirements it will be managed and monitored by Chemours and their environmental consultant. After the mitigation area has been released, it will be protected by the rules and statutes that protect all wetlands under Section 404 of the Clean Water Act (CWA) and placed into the long-term management plans of the CBJTC. This long-term management by the state provides reasonable protections from future disturbances.

g. Financial Assurances [description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, as well as annual cost estimates for the long-term management needs of the site and the funding mechanism that will meet those needs]:

The Financial Assurance documentation has been reviewed and approved by FDEP under the issuance of ERP Permit MMR\_137482018, for wetland mitigation and additional financial assurance that were required for property interests related to reclamation protections (**Exhibit F**).

h. Other relevant factors [additional information contributing to the appropriateness, feasibility, or practicability of the mitigation project (ESA, wildlife corridor, unique habitat, etc.)]:

Permittee-responsible: As previously noted, the reclamation of wetlands will successfully promote species diversity, promote wildlife utilization, and re-establish hydrologic regimes to mimic premining conditions. These combined mitigation efforts will serve to compliment the larger network of wetlands and tributaries associated the Santa Fe River. This mitigation will restore the network wetland habitat in the floodplain and surrounding wetland strands associated with existing watersheds, thus providing increased ecological value to water and wildlife to this important waterbody that drains to the Santa Fe River.

## Objective

The purpose of the proposed mitigation plan is to offset wetland impacts through a combination of onsite permittee responsible wetland restoration, onsite permittee responsible wetland enhancement and offsite permittee responsible mitigation (Figures 15 and 17, Table 4). Target vegetative communities for the onsite restored mitigation areas will match those of the wetlands proposed for impact at a minimum of one-to-one/type-for-type functional replacement for wetland loss in accordance with USACE regulations located in 33 CFR Part 332. Exceptions to this are the Coniferous Plantation Wetlands (441W) and Wetland Scrub (631) which will be replaced as Wetland Forested Mixed (630) to restore their historic community types. The onsite wetland enhancement and offsite permittee responsible mitigation will be additional mitigation to offset the temporal loss calculated in the UMAM analysis. The onsite wetland enhancement includes undisturbed onsite wetlands outside the limits of disturbance (Coniferous Plantation Wetlands -441W), which will be enhanced through a conversion to a Wetland Forested Mixed (630) community type. Offsite permittee responsible mitigation areas are located at the nearby Florida Mine/Trail Ridge Mine (Figure 17 and Exhibit G) located in the same drainage basin as the Project Area. These wetlands had been previously constructed during reclamation activities but were not part of the Florida Mine/Trail Ridge Mine Mitigation Plan. Additional information about each mitigation type is provided in the sections below.

#### Site Selection

The plan design has been completed to account for local water flow and will re-establish historic surface water flow patterns to mimic pre-mining conditions. Previous wetland connections near the Plant Site that were severed by historic mining activities in the 1960s will be re-established under the proposed reclamation/restoration plan. The re-establishment of historic drainage patterns will help to provide a practical and self-sustaining resource, while reducing the long-term impacts of historic mining activities on lands within the Project Area.

Wetland reclamation/restoration areas were designed to be located within the same drainage basin and vicinity as the impacted wetlands and restored on a type-for-type/acre-for-acre basis. Reclamation/restoration of wetland habitats in these locations will provide no net loss in wetland acreage within the Project Area, will serve to maintain water quantity and retention for

downstream environments. Reclamation/restoration of wetland areas in close proximity to impacted wetland habitats provides a practical means of successful reclamation/restoration of wetlands to mimic pre-mining conditions.

The establishment of wetland reclamation/restoration areas within the Project Area will provide a direct benefit to wildlife and other aquatic organisms by increasing habitat quality and connectivity for these species as compared to current environments.

#### Site Protection Instrument

After the restored and enhanced onsite and offsite mitigation areas have been released from monitoring requirements, they will be protected by the rules and statutes that protect all wetlands within the state of Florida including the Regulatory Environmental Resource Permit (ERP) program under the independent state authority of Part IV of Chapter 373 of the Florida Statutes (F.S.), and under Section 404b of the Clean Water Act. As the compensatory mitigation occurs on state owned land and will be managed by CBJTC. This long-term management by the state provides reasonable protections from future disturbances.

#### **Baseline Information**

See Section 2.3.2 above for existing wetland conditions.

#### **Determination of Credits**

A UMAM analysis has been completed for the proposed wetland impacts and the compensatory mitigation calculations are provided as **Attachment 3**. The scoring was based on onsite field reviews conducted by Kleinfelder with USACE staff on June 4, 2019, and a pre-application meeting held at the Jacksonville USACE office on November 8, 2019 and a pre-application meeting held at the Jacksonville USACE office on November 8, 2019.

The UMAM analysis, of the proposed wetland mitigation and wetland impacts, calculates a total functional gain of 344.571 that results from the proposed 930.03-acres of wetland mitigation offsetting the total functional loss of 336.520 that results from the proposed 692.14-acres of direct jurisdictional wetland and surface water impacts within the Project Area.

Total Function Loss – 336.520	Total Functional Gain – 344.571

#### Mitigation Work Plan

In order to offset the 692.14-acres of impacts to onsite wetlands, Chemours proposes the onsite restoration of 710.59-acres of wetlands impacted during mining, the enhancement of 165.48-acres of onsite wetlands which are not proposed to be impacted and 53.96-acres of offsite permittee responsible wetland mitigation (**Figures 15** and **17**). The onsite restoration will occur on an acre-for-acre, type-for-type basis with the exception of the Coniferous Plantation Wetland (441W) and Wetland Scrub (631) community types which will be restored to their historic Wetland Forested Mixed (630) community type.

The onsite reclamation/restoration plan includes the following FLUCFCS codes:

- 611 Bay Swamp
- 613 Gum Swamp
- 621 Cypress

630 - Wetland Forested Mixed

641 - Freshwater Marsh

441W converted to 630 – Coniferous Plantation Wetland to Wetland Forested Mixed

For each mitigation area, post-mining contours have been designed to mimic pre-mining elevations. Seasonal High-Water Elevations (SHWE) provided on **Figure 11**, were established based on field biological indicators of hydrology observed by Kleinfelder and SWCA biologists during the wetland delineation and surveyed by a Licensed Professional Surveyor. Elevations of 3 individual points displaying the appropriate biological indicators (lichen lines, moss lines, adventitious root formation, rack or debris lines) were set in the wetland and surveyed by a licensed professional surveyor. The average of the 3 points was used to determine the SHWE elevation for the wetland (NAVD88). Many of the wetland canopy trees which are typically used to set elevations were felled during the last major wildfire event, limiting the number of SHWEs that could be set within the Project Area.

These elevations were utilized to determine current and proposed hydrologic regimes and in determining post-mining mitigation habitat types. The seasonal low water elevation (SLWE) is anticipated to be approximately 2 feet or less below wetland bottom. Once constructed, the proposed wetland mitigation areas will be supported by ground water and intermittent surface water input.

Following final elevation contouring, topsoil storage piles (including muck) will be graded back over the wetland reclamation/mitigation area to facilitate natural recruitment of wetland plant species. For forested wetland systems, native tree species will be planted to achieve a density of 400 trees per acre. Herbaceous systems will be monitored for the natural recruitment of wetland plant species, and if after a period of two years, no positive growth or establishment of native wetland herbaceous cover is observed a supplemental planting with native herbaceous wetland species will be completed.

Locations for each restored wetland mitigation area and enhancement area are depicted in **Figure 15**. Planting details are provided in **Table 5**, including general planting zones. Cross sections for each restored mitigation area are provided in **Attachment 2: Figures 16A – 16P**. Wetland mitigation areas are located along the western side slope of the Trail Ridge geologic feature and act as drainage features throughout the Project Area. Generally, the wetland mitigation areas gently slope to the west.

Chemours proposes the following time frames for mitigation completion for onsite reclamation/restoration with the following table.

Wetland Contouring		
Commencement	Planting	Release
1-year post-mining	Next winter planting	After a minimum of 5-years of
	season following wetland	monitoring, but not before
	contouring completion	minimum success criteria is met.

The earthwork associated with the proposed onsite enhancement would be completed within one year of initiation of mining activities, with tree planting completed during the next winter planting season. The offsite mitigation includes previously reclaimed and now fully functional wetlands located at the former Florida Mine / Trail Ridge Mine Site (IP-199300565).

Following construction, reclamation/restoration mitigation areas will be monitored in accordance with previously approved wetland vegetation and wildlife mitigation monitoring plans for similar mines sites. The monitoring methodology is detailed below.

The following wetland zones will be assigned to the land use and tree, or plant species type as shown in **Table 5**.

Three "zones" are proposed, Zone A, Zone B, and Zone C.

Elevations in Zone A will be approximately 1-foot below adjacent uplands. Zone A will consist of Wetland Forested Mixed (630) and Bay Swamp (611) systems. Zone A will make up the majority of the restored onsite wetlands. Tree species proposed to be planted within this wetland system include sweet bay, swamp bay, dahoon holly, green ash (*Fraxinus pennsylvanica*), sweet gum and red maple.

Elevations in Zone B will be approximately 2-foot below adjacent uplands. Zone B will consist of Cypress (621) and Gum Swamp (613) systems. Tree species proposed to be planted in Zone B will consist of cypress and blackgum in the central portions of the zones and a mix of sweet bay, swamp bay, green ash and sweet gum in the outer portions of the zones.

Elevations in Zone C will be approximately 3-foot below adjacent uplands. Zone C will make up the herbaceous Freshwater Marsh (641) wetland areas. Zone C is not proposed for planting. It is anticipated that natural recruitment from undisturbed wetlands as well as seed source found in the muck and topsoil replaced on the mitigation areas will be sufficient to provide adequate herbaceous coverage.

A total of 12 wetland reclamation areas will be restored throughout the site. These wetland areas are Mitigation Areas 1-12 (**Figure 15**).

Mitigation Area 1: Mitigation Area 1 is a large wetland that will provide hydrologic connection throughout the Project Area. It mimics pre-mining flow-ways and restores historic hydrologic connections severed when parts of the site were mined previously. This wetland will total 677.60 acres and will include 594.33 acres of Wetland Forested Mixed (630), 81.98 acres of Freshwater Marshes (641) and 1.29 acres of Bay Swamps (611). This wetland will be contoured to contain Planting Zones A, B and C. Because of the large size of Mitigation Area 1 it has been broken down into 19 phases (Mitigation Areas 1A-1T). This is necessary in order to allow for tracking, construction and monitoring purposes.

Mitigation Area 2 will be a 3.18-acre isolated wetland located in the northern portion of the Project Area. This wetland will consist of 1.63 acres of Wetland Forested Mixed (630) and 1.55 acres of Freshwater Marsh (641). This wetland will contain Planting Zones A and C.

Mitigation Area 3 will be a 5.67-acre Wetland Forested Mixed (630) community located on the western portion of the Project Area that will connect to offsite wetlands. This area will be made up Planting Zone A.

Mitigation Area 4 will be a 1.65-acre Wetland Forested Mixed (630) isolated wetland located on the western portion of the Project Area. This area will be made up Planting Zone A.

Mitigation Area 5 will be a 3.2-acre Wetland Forested Mixed (630) isolated wetland located on the western portion of the Project Area. This area will be made up Planting Zone A.

Mitigation Area 6 will be a 7.43-acre Wetland Forested Mixed (630) isolated wetland located on the western portion of the Project Area. This area will be made up Planting Zone A.

Mitigation Area 7 will be a 1.75-acre isolated wetland located within the central portion of the Project Area. This wetland will consist of a 0.21-acre Gum Swamp (613) surrounded by a Wetland Forested Mixed (630) component. This wetland will contain Planting Zones A and B.

Mitigation Area 8 will be a 3.72-acre isolated wetland located on the western portion of the Project Area. This wetland will consist of 0.51-acre Cypress (621) component surrounded by Wetland Forested Mixed (630) wetlands. This wetland will contain Planting Zones A and B.

Mitigation Area 9 will consist of a 0.97-acre isolated Freshwater Marsh (641) located on the southeastern portion of the Project Area. This wetland will consist of a Planting Zone C.

Mitigation Area 10 will consist of a 4.12-acre isolated Freshwater Marsh (641) located in the southern portion of the Project Area. This wetland will consist of Planting Zone C.

Mitigation 11 will consist of a 0.33-acre wetland connecting two areas of wetlands not proposed to be impacted. This is the location of one of the proposed wetland crossings. The area is proposed to be a Forested Wetland Mixed (630) system, corresponding to Planting Zone A.

Mitigation Area 12 will consist of a 0.97-acre wetland connecting two areas of wetlands not proposed to be impacted. This is the location of one of the proposed wetland crossings. The area is proposed to be a Forested Wetland Mixed (630) system, corresponding to Planting Zone A.

All wetland reclamation/ restoration mitigation areas will have a 50' Hardwood-conifer Mixed upland buffer to provide for enhanced forage and refuge for species utilizing the wetlands. The remainder of onsite uplands will be converted from its present use as a coniferous plantation (441) to Pine Flatwoods (411) which will closely mimic the land cover prior to its conversion for silvicultural uses. Land management practices will be consistent with current activities conducted by CBJTC and consist of prescribed burns every 3-5 years. Details of the planned land use following the completion of all wetland reclamation/ restoration mitigation areas and upland conversion areas are provided in **Table 6**.

After the reclamation/restoration mitigation areas have been released, they will be protected by the rules and statutes that protect all wetlands within the state of Florida including the statewide ERP program under the independent state authority of Part IV of Chapter 373 of the Florida Statutes (F.S.) and under Section 404b of the Clean Water Act. The Project Area consists of state-owned property and access is limited. State ownership and long-term management by CBJTC will provide additional benefits and protections in the post-reclamation condition. Furthermore, Project Area access to the proposed mitigation areas will be restricted by the use of signage, fencing and/or gates which will reduce the potential for adverse impacts to these areas.

Onsite enhancement mitigation will be completed within one year of initiation of mining activities and consist of thinning existing undisturbed Coniferous Plantation Wetland (441W) to a density of no more than 50 trees per acre. Once this has been accomplished the area will be graded to remove furrows, windrows, ditches, old logging decks and transition the elevation into the adjacent, existing mixed hardwood forests. Onsite enhancement mitigation areas will be planted with tree species found in Planting Zone A to restore the historical Wetland Forested Mixed (630) community type depicted as Wetland Forested Mixed, Enhanced (630E) on **Figure 15**. It is anticipated that herbaceous, shrub and additional wetland tree species will recruit from the adjacent mixed hardwood forests. Qualitative wetland monitoring for these areas is proposed prior to the enhancement work and again at one year after enhancement completion. Data will be compiled into a monitoring report and submitted to the agency.

Offsite permittee responsible mitigation areas are located at the nearby Florida Mine / Trail Ridge Mine Site (**Figure 17** and **Exhibit G**) located in the same drainage basin as the proposed project. These wetlands had been previously constructed during reclamation activities but were not part of the permitted mitigation plan (IP-199300565). These areas will be monitored and managed for one-year upon which Chemours will provide one qualitative monitoring report to the USACE before the requested release. The proposed areas of offsite mitigation consist of state-owned property and property targeted to be acquired under the Army Compatible Use Buffer (ACUB) project through ecological multi-use management of natural resources as outlined in the CBJTC's guidance document, the Integrated Natural Resource Management Plan (INRMP) (**Exhibit E**). State ownership and long-term management by CBJTC will provide additional benefits and protections in the post-reclamation condition. Furthermore, site access to the proposed mitigation areas will be restricted by the use of signage, fencing and/or gates which will reduce the potential for adverse impacts to these areas. Additional information regarding the land using and functional gain is provided in the attached UMAM analysis (**Attachment 3**).

## Maintenance Plan

Maintenance of exotic and nuisance species will be completed if it is determined the absolute coverage of these species exceeds 5%, in total, cover within the mitigation area. Those plants listed in the most recent Florida Exotic Pest Plant Council (FLEPPC) Invasive Plant List, as well as plants known as native nuisance species shall be considered exotic and nuisance species. Maintenance of exotic and nuisance species shall include herbicide application and hand removal as needed.

## Monitoring Requirements

Operation and management of the onsite reclamation/restoration mitigation areas will be completed by SWCA on behalf of Chemours.

Monitoring reclamation/restoration mitigation areas will ensure these areas are trending toward success criteria and provide time for mitigation areas to establish natural vegetative community structures. Mitigation areas will be restored and monitored until they meet success criteria outlined below and USACE issues formal release.

Vegetation monitoring of the mitigation and reclamation areas shall be conducted on an annual basis for five years or until such time that success criteria are met. Within six months or at the onset of the next growing season following completion of final contouring and initial planting, a baseline quantitative monitoring event shall be conducted to document the baseline conditions for the area.

Monitoring methods in each wetland mitigation area are performed quantitatively or qualitatively, depending on the timeframe in the monitoring cycle. The first year (baseline monitoring event) is monitored quantitatively. The second, third-, and fourth-year annual monitoring events are performed qualitatively. The final fifth year monitoring event, is performed quantitatively. If the wetland mitigation areas have not reached release criteria by the fifth-year monitoring event; the monitoring methods will be re-established.

Prior to baseline quantitative monitoring, base transects are placed in each wetland mitigation area across the gradient of the wetland. These base transects are utilized for the establishment of data collection points, or quadrats, at which are placed 300-cm tall PVC poles. One quadrat is established per five acres of each wetland mitigation area; 1 quadrat is placed in wetlands one acre or less. To assure a random attribute to the placement of the quadrats, a set distance ranging from 20 to 100 m (depending on shape and size of wetland) is placed between the quadrats along the length of each base transect. The PVC poles mark the corners of each quadrat, which measure 10 meters x 10 meters ( $100 \text{ m}^2$ ) in area.

## Quantitative Monitoring

Quantitative monitoring is conducted during the first- and fifth-year annual monitoring events. Within each quadrat placed within the base transects the ground cover (mitigation areas only) and canopy components are sampled. Ground cover, defined as herbaceous and woody species less than 46 cm (18 in.) tall, is sampled using the line-intercept technique (Bonham 1989). Two 10-m line-intercept transects, as illustrated below, are utilized within each quadrat to characterize ground cover diversity, frequency, and aerial cover.



Canopy cover, defined as all woody species 46 cm (18 in.) or taller, is sampled in each quadrat for tree species, density, frequency, canopy area, height, and condition. Every tree within each 100 m<sup>2</sup> quadrat is counted and analyzed. The canopy area is calculated from x and y axial measurements of each tree's canopy.

Average canopy cover was determined with the following formula:

Average Canopy Cover =  $(\pi x^2 + \pi y^2)/2$ 

Where:  $\pi$  = 3.14 x<sup>2</sup> = x-axial measurement (radius) squared y<sup>2</sup> = y-axial measurement (radius) squared

Percent canopy cover within the sampled quadrats was calculated with the following formula:

 Percent Canopy Cover =
 Σ Average Canopy Cover
 X 100

 Total Area of Quadrats

Tree density was determined with the following formula:

#### Tree Density (trees/acre) = <u>Number of Trees in Quadrats</u>

Area of Quadrats

## Qualitative Monitoring

Qualitative monitoring is conducted during the second, third- and fourth-year annual monitoring events. For qualitative monitoring, vegetative cover is estimated by conducting meandering pedestrian transects through the mitigation area wetland as well as within each quadrat placed within the base transects, the ground cover (mitigation areas only), shrub, and canopy components are qualitatively sampled. Ground cover, defined as herbaceous and woody species less than 46 cm (18 in.) tall, is sampled by recording all the plant species identified and establishing a percent cover for each (Garbisch, 1986). The canopy component, defined as all woody species 46 cm (18 in.) or taller, is sampled in each quadrat for tree density and total abundance.

#### Hydrologic Monitoring

Hydrologic monitoring shall be conducted within the restored wetlands. Surficial piezometers shall be installed under one of the following two options; 1) one surficial piezometer and one wetland staff gauge or 2) a surficial piezometer fitted with a combination data logger unit to monitor water elevations within the wetland. Hydrographs of the data collected for the year will be provided in the annual monitoring report.

#### Wildlife Observations

Wildlife observations and evidence of use (tracks, scat, etc.) are recorded at each monitored wetland mitigation area during the monitoring events, and incidental site visits. Wildlife observations and evidence of wildlife usage for each wetland mitigation area is provided in each of the annual reports.

## Photographic Monitoring

Photographs are taken of each transect within the wetland mitigation areas at established photo points. They are included in each of the annual reports.

#### Release

When it is determined by qualitative monitoring that success criteria have been met, a final quantitative monitoring event and release report will be completed to document the established conditions. A formal release request will be submitted to USACE, and a subsequent release inspection with USACE will be completed prior to issuance of final reclamation release.

#### Performance Standards

Wetland mitigation areas shall be considered successful when the following criteria have been met:

- 400 trees per acre for forested systems.
- Water within all wetlands and waterbodies shall meet applicable Class III standards, pursuant to Chapter 62-302, F.A.C.
- The created wetlands shall have hydroperiods, depth of inundation, and flow regimes appropriate to the community type, which benefit the target plant community and communities downstream.
- At least 80% cover by appropriate wetland species (i.e., FAC or wetter)
- Less than 5 percent cover of both nuisance and Category I and II invasive exotic plant species pursuant to the most current list established by the Florida Exotic Pest Plant Council at <a href="http://www.fleppc.org">http://www.fleppc.org</a>.

#### Long-term Management Plan

The reclamation/restoration mitigation areas have been designed such to create an ecologically self-sustaining habitat. These mitigation areas will be managed and monitored by Chemours until such time that the performance standards are reached. After the mitigation area has been released, it will be protected by the rules and statutes that protect all wetlands under Section 404 of the Clean Water Act (CWA) and covered by the long-term management plans of the CBJTC.

#### Adaptive Management Plan

During the monitoring period, the following active management techniques will be conducted to address unforeseen changes in site conditions:

- Supplemental planting of native vegetation as needed to reach performance criteria;
- Maintenance of exotic, invasive or nuisance species by use of herbicide application;
- Hydrologic monitoring of groundwater to ensure establishment of wetland hydrologic conditions; and
- Re-grading as needed to achieve satisfactory wetland hydrologic conditions.

These adaptive management activities will be completed by Chemours, or their designated environmental consultants as needed. If at any time the success of the mitigation areas appears to be in jeopardy an adaptive management plan will be submitted to the USACE to ensure mitigation success.

#### Financial Assurances

The Financial Assurance documentation has been reviewed and approved by FDEP under the issuance of ERP Permit No. MMR\_137482018, for wetland mitigation and additional financial assurance that were required for property interests related to reclamation protections (**Exhibit F**).

## 4 SUMMARY

Information and materials contained herein are submitted in request to authorize wetland impacts associated with the establishment of a new mining operation known as the Trail Ridge South Mine.

The Trail Ridge South Mine comprises  $\pm 2,884.4$  acres. Approximately 692.14 acres of jurisdictional wetlands, ditches and surface waters requiring mitigation are proposed to be disturbed and impacted by mining operations. Mitigation will be accomplished through the onsite restoration of 710.59 acres of wetlands, enhancement of 165.48 acres of onsite wetlands, and provide 53.96 acres of offsite permittee responsible wetland mitigation (**Figures 15** and **17**).

Pursuant to the conditions of permit issuance, as stated in sections 40 CFR Part 230 Section 404(b)(1), we believe the project successfully demonstrates elimination and reduction of wetland impacts to the greatest extent possible and provides suitable mitigation to offset the proposed wetland impacts.

# 5 REFERENCES

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