Texas Commission on Environmental Quality

Tier II
401 Certification Questionnaire

I. Impacts to surface water in the state, including wetlands

A. What is the area of surface water in the state, including wetlands, which will be disturbed, altered or destroyed by the proposed activity?

Permanent loss of approximately 18.513 acres of forested wetlands will result from project excavation activities. Phase 1 and Phase 2 will impact 14.557 acres and 3.956 acres, respectively.

B. Is compensatory mitigation proposed? If yes, submit a copy of the mitigation plan. If no, explain why not.

Yes. See Attachment E of the Individual Permit (IP) application for the mitigation plan.

C. Please complete the attached Alternatives Analysis Checklist.

A completed Alternatives Analysis Checklist is attached.

II. Disposal of waste materials

A. Describe the methods of disposing of materials recovered from the removal or destruction of existing structures.

Currently, there are no existing structures on-site that will require demolition and removal; however, if unforeseen structures are encountered during development, the material will be disposed of properly by a licensed waste management contractor in accordance with local, state, and federal regulations. No structural material will be buried on-site.

B. Describe the methods for disposing of sewage generated during construction. If the proposed work establishes a business or a subdivision, describe the method for disposing of sewage after completing the project.

During construction, sewage will be collected on a regular basis and will be treated by a licensed portable toilet service provider.

C. For marinas, describe plans for collecting and disposing of sewage from marine sanitation devices. Also, discuss provisions for the disposing of sewage generated from day-to-day activities.

N/A. No marinas will be constructed.

III. Water quality impacts

A. Describe the methods to minimize the short-term and long-term turbidity and suspended solids in the waters being dredged and/or filled. Also, describe the type of sediment (sand, clay, etc.) that will be dredged or used for fill.

N/A. No dredging of "Waters of the U.S." is proposed for this project. The type of sediment that will be used to fill the wetlands is structural fill, reinforced concrete (rebar) and gravel. The structural fill will be obtained from an off-site supplier. Prior to earth moving activities, Best Management Practices (BMPs) will be installed to limit sediment transport and erosion. General areas requiring BMPs will be designated on the alignment sheets. BMPs will be site specific and depend on current site and weather conditions.

B. Describe measures that will be used to stabilize disturbed soil areas, including: dredge material mounds, new levees or berms, building sites, and construction work areas. The description should address both short-term (construction related) and long-term (normal operation or maintenance) measures. Typical measures might include containment structures, drainage modifications, sediment fences, or vegetative cover. Special construction techniques intended to minimize soil or sediment disruption should also be described.

All land disturbing activities for the proposed project will be appropriately managed with sedimentation and erosion control BMPs. These BMPS will limit the potential for sediments to leave the construction area and temporary workspaces and enter the receiving waters the U.S. Examples include silt fencing, hay bales, inlet protection into adjacent wetlands, culverts with rip rap, and wood chip bags.

During Construction, Celanese will adhere to TPDES General Permit No. TXR150000 for Construction Sites that Discharge Storm Water Associated with Construction Activity and the project-specific construction Storm Water Pollution Prevention Plan (SWPPP), which would reduce or eliminate and impacts on storm water. The SWPPP will be referred to throughout the project to ensure proper sediment and erosion control and reporting procedures. Potential spills would be avoided and the impacts of spills minimized with the implementation of BMPs.

Long-term maintenance of BMPs will include detailed maintenance plans that include specific maintenance activities and frequencies for each type of BMP. Maintenance agreements will be implemented and will clearly

define the responsibilities of Celanese and onsite contractors. Tasks that should be incorporated into an agreement include performance of routine maintenance, maintenance schedules, inspection requirements, and steps available for addressing a failure to maintain situations.

C. **Discuss how hydraulically dredged materials will be handled to ensure maximum settling of solids before discharging the decant water. Plans should include a calculation of minimum settling times with supporting data. (Reference: Technical Report, DS-7810, Dredge material Research Program, GUIDELINES FOR DESIGNING, OPERATING, AND MAINTAINING DREDGED MATERIAL CONTAINMENT AREAS). If future maintenance dredging will be required, the disposal site should be designed to accommodate additional dredged materials. If not, please include plans for periodically removing the dried sediments from the disposal area.**

N/A. No dredging is proposed for this project.

D. **Describe any methods used to test the sediments for contamination, especially when dredging in an area known or likely to be contaminated, such as downstream of municipal or industrial wastewater discharges.**

N/A. No dredging is proposed for this project.

AUG 10 2016

Tier II
Alternatives Analysis Checklist

To assist with evaluating available alternatives, Celanese developed a list of site selection screening criteria to assist with identifying the preferred alternative as well as developing a rational and reasoned basis to support why the other alternatives are not practicable to meet the Proposed Project's purpose and need. The criteria used to evaluate each identified alternative and assist in identifying the preferred alternative is as follows:

- **EHS (Environmental, Health & Safety):** The alternative needs to avoid or minimize negative environmental, health and safety impacts such as impacts resulting from air emissions to off-site receptors.
- **Siting (Process Safety):** The alternative needs to conform with Guidelines for Evaluating Plant Buildings for Fire, Explosion, and Toxic Releases (API RP 752), and Celanese identified RAGAGEPs (Recognized and Generally Accepted Good Engineering Practices) for evaluating and determining facility siting; a requirement established by OSHA's PSM standard (29 CFR 1910.119).
- **Layout (Process Safety):** The alternative needs to conform to Guidelines for Facility Siting and Layout as developed and published by CCPS (Center for Chemical Process Safety). These guidelines establish spacing for major equipment including but not limited to compressors, pressure vessels, and reactors. These guidelines have been developed to assist with managing vapor cloud dispersion and prevention/mitigation of "chain" effect fires following an incident.
- **Size:** The alternative needs to provide a construction/operating footprint of 475' x 625'. Please note that the size of the footprint and both siting (process safety) and layout (process safety) are directly related. While the foot print could be reduced, the result is a tight and congested layout both horizontally and vertically which does not allow conformance to the guidelines mentioned above.
- **Distance:** The alternative needs to minimize the distance required to connect to existing facilities and services required to support unit operation. Currently, the Clear Lake Plant main pipe rack runs east/west through the facility. As such any alternative that requires connection from either the north or south will significantly increase the project costs.
- **Industry Best Practice:** The alternative needs to conform to industry best practice carbon monoxide (CO) supply from an on-site production thereby avoiding transportation of CO. CO is classified as a hazardous material for both flammability and toxicity by the Department of Transportation.
- **Supply:** The alternative needs to provide for continuation of CO feed which is a key raw material and required to support unit operation. An alternative that does not meet this criterion results in an untenable business situation for Celanese given

the CO consuming unit at the Clear Lake Plant would cease operation; an unacceptable business situation.

The following table provides a summary of the identified on-site alternatives.

Alternative Number	Location	Description
1	Onsite – Within Existing Facility	Update Existing CO Unit
2	Onsite – Within Existing Facility	Vacant Unit Plot 1
3	Onsite – Within Existing Facility	Vacant Unit Plot 2
4	Onsite – Build North of Existing Facility	North Alternative
5	Onsite – Build West of Existing Facility	West Alternative

I. Alternatives

A. **How could you satisfy your needs in ways which do not affect surface water in the state?**

The needs of the project could not be satisfied without affecting surface waters in the State due to construction and feasibility requirements preventing the project from avoiding impacts to all associated wetlands due to the prevalence of wetlands adjacent to the existing and currently operating Celanese Facility. Alternatives for offsite locations not immediately adjacent to the existing facility property were considered, but determined to be not practicable in order to align with industry best practices, which seek to minimize transportation of CO given its classification as a DOT hazardous material for flammability and toxicity.

B. **How could the project be re-designed to fit the site without affecting surface water in the state?**

The proposed project could not be re-designed to completely avoid impacts to wetlands due to construction and operation requirements that are required adjacent to the existing facility, along with significant economic factors preventing the project from avoiding impacts to all associated wetlands due to the prevalence of wetlands adjacent to the existing and currently operating facility. Alternatives for offsite locations not immediately adjacent to the existing facility property were considered, but determined to be non-viable given Celanese's desire to align with industry best practices, which seek to minimize transportation of CO given its classification as a DOT hazardous material for flammability and toxicity.

C. **How could the project be made smaller and still meet your needs?**

AUG 10 2016

The proposed project area has been modified through an alternatives analysis and cannot be made smaller and still satisfy the need of installing and operating a new CO unit that will support production of its current acetyl production operations and conform with both siting (process safety) and layout (process safety) guidelines. Celanese is utilizing as much upland and previously disturbed land on Celanese-owned property adjacent to their existing facility as possible to avoid and minimize wetland impacts outside those having been determined to be unavoidable.

D. What other sites were considered?

1. What geographical area was searched for alternative sites?

Several alternatives were considered during the planning and siting phase of the Celanese CO Project. Three general locations within current property owned by Celanese were considered for the Project: 1) within existing operating facility boundaries; 2) north of the existing facility, and 3) west of the existing facility. Multiple locations were then considered within each of the general location alternatives. Alternatives for offsite locations not immediately adjacent to the existing facility property were not considered viable options given Celanese's need to align with industry best practices, which seek to minimize transportation of CO given its classification as a DOT hazardous material for flammability and toxicity.

2. How did you determine whether other non-wetland sites are available for development in the area?

A desktop survey of aerial photography, topographic maps, NRCS soil maps, and FEMA floodplain maps, as well as a wetland delineation was performed. Alternatives for offsite locations not immediately adjacent to the existing facility property were not considered practicable given Celanese's need to align with industry best practices, which seek to minimize transportation of CO given its classification as a DOT hazardous material for flammability and toxicity.

3. In recent years, have you sold or leased any lands located within the vicinity of the project? If so, why were they unsuitable for the project?

Yes. Celanese property at this facility was leased in 2014 to a partnership for the recently constructed and operating Methanol unit. At the time of that project's inception, the project need for a possible new CO Unit was unknown. Portions of the land cleared for the Methanol project that were not part of the final lease agreement are intended for use by the proposed alternative. The project, as proposed, is located wholly within property currently owned by Celanese (Figure1). The project is a facility expansion

and requires connection to existing utilities and supply materials.

E. What are the consequences of not building the project?

Celanese currently obtains required CO from on on-site 3rd party under contract to Celanese. The existing CO Unit began operation in 1969 as a Celanese asset. In 2005, Celanese sold the CO Unit and entered into a supply contract with the new owner. This supply contract for CO will terminate on December 31, 2019. Business negotiations to extend this supply contract are ongoing as well as an evaluation of available business options to construct and operate a new CO Unit within the Clear Lake Plant (as proposed). This business option evaluation favors construction of a new CO Unit versus extending the supply contract with the existing CO Unit due not only to commercial considerations, but also reliability and technological improvements expected from the new CO Unit. CO is a required raw material for the Clear Lake Plant and loss of this supply would result in an untenable business situation for Celanese given the CO consuming unit at the Clear Lake Plant would cease operation. Celanese's Clear Lake Facility cannot exist without production from its assets.

II. Comparison of alternatives

A. How do the costs compare for the alternatives considered above?

No Action Alternative

The No Action alternative would avoid impacts to all wetlands and waterbodies within the project area, but would not meet the applicant's purpose and need as outlined in the project purpose. The No Action Alternative leaves Celanese without CO supply and would likely result in the shutdown of some of the operating units within the Clear Lake Plant. Not being able to produce CO would be very costly to Celanese. The evaluation of available business options prefers the construction and operation of a new CO unit due to its lower cost as opposed to extending the current contract for continued supply of CO from the existing CO unit owned and operated by a 3rd party.

Offsite Alternatives

Alternatives for offsite locations not immediately adjacent to the existing facility property were not considered practicable given Celanese's need to align with industry best practices, which seek to minimize transportation of CO given its classification as a DOT hazardous material for flammability and toxicity.

Onsite Alternatives Within The Existing Facility

While Onsite Alternatives #1, #2, and #3 (Figure 2) would avoid impacts to all wetlands and waterbodies within the project area, the available acreage does not meet the size criteria of 475' x 625' as summarized in the following table.

Alternative Number	*Description*	*Estimated Size*
1	*Update Existing CO Unit*	*175' X 550'*
2	*Vacant Unit Plot 1*	*175' X 550'*
3	*Vacant Unit Plot 2*	*275 X 375'*

Given Onsite Alternatives #1 through #3 do not meet the size criteria, Celanese believes it will be unable to comply with the layout (process safety) guidelines as developed and published by the CCPS given a design that would require the CO Unit to be built within the available space would result in a tight and congested layout both horizontally and vertically. To mitigate or reduce the anticipated risk from a tight and congested design would be cost prohibitive (if even attainable) to address the significant safety issues including but not limited to inability to manage vapor cloud dispersion and prevention and/or mitigation of "chain" effect fires following an incident.

In addition, Onsite Alternative #3 is closer to the facility's Administrative Buildings and as such has been reserved for utility processes to comply with siting (process safety) guidelines for chemical/hydrocarbon production units. Compliance with siting (process safety) has been identified as a criterion that must be achieved given the proximity to the facility's Administrative Buildings. On-site Alternative #3 does not meet this criterion.

Therefore, Onsite Alternatives #1, #2, and #3 do not meet the applicant's purpose and need as outlined in the project purpose.

Updating Existing CO Unit (Onsite Alternative #1, Figure 2)

To utilize On-site Alternative #1 to construct the proposed project would require the shutdown and demolition of the existing CO, which would result in the loss of CO supply while the new CO Unit is constructed (estimated to be a minimum of two (2) years). CO is a key raw material that is required to support continued operation of CO consuming units at the Clear Lake Plant. This result is an untenable business position for Celanese given the CO consuming units at the Clear Lake Plant would cease operation, an unacceptable business situation.

Alternatively, the existing CO unit could be upgraded or retrofitted, which has been estimated to be comparable to cost of building a new CO Unit. This variation of On-site Alternative #1 would also result in the shutdown of the existing CO Unit to accommodate the upgrades needed for the existing CO Unit (estimated to be a minimum of two (2) years), which again results in the loss of CO supply. As indicated above, this is an untenable business positon for Celanese. In addition, Celanese does not own the existing on-site CO unit and as such, Celanese is unable to commit the resources to upgrade and/or retrofit the existing CO unit.

This plot site sits within the developed area inside the existing Facility. The site's existing CO unit currently resides on this plot. This CO unit must operate through its contract life (December 31, 2019) in order to allow the other units dependent on CO as a raw material to continue their operation. The estimated construction duration for the new unit is 24 months, which includes 3 months for commissioning and start up. In order to use this plot, the current CO unit would need to cease operation in June 2017, allowing 6 months for demolition and a start of construction of the new CO unit in January of 2018. This option is not economically reasonable, as it would cease CO production at the Facility for a period of two and a half years. Additionally, the required footprint for the new CO unit is 475' X 625'. The new CO unit production rate is equivalent to the existing CO unit's capacity; however, industry and company process safety practices and policies require additional equipment spacing for vapor cloud dispersion. In addition to those requirements, the new CO unit has compression requirements for incoming oxygen raw material and outgoing hydrogen product, including a Pressure Swing Absorption (PSA) section for processing of the hydrogen product. All combined, the new CO unit will not physically fit in this plot.

Onsite Alternative #2 (Vacant Unit Plot, Figure 2). This plot site sits within the developed area inside the existing Facility. This plot is vacant at the current time. Its footprint is 175' X 550'. The required footprint for the new CO unit is 475' X 625'. The new CO unit production rate is equivalent to the existing CO unit's capacity; however, industry and company process safety practices and policies require additional equipment spacing for vapor cloud dispersion. In addition to those requirements, the new CO unit has compression requirements for incoming oxygen raw material and outgoing hydrogen product, including a PSA section for processing of the hydrogen product. All combined, the new CO unit will not physically fit in this vacant plot.

Onsite Alternative #3 (Vacant Unit Plot, Figure 2). This plot site sits within the developed area inside the existing Facility. This plot is vacant at the current time. Its footprint is 275' X 375'. The required footprint for the new CO unit is 475' X 625'. The new CO unit production rate is equivalent

to the existing CO unit's capacity; however, industry and company process safety practices and policies require additional equipment spacing for vapor cloud dispersion. In addition to those requirements, the new CO unit has compression requirements for incoming oxygen raw material and outgoing hydrogen product, including a PSA section for processing of the hydrogen product. All combined, the new CO unit will not physically fit in this plot. Additionally, the location of this plot is more near the Administrative Buildings of the site and is reserved for utility processes due to the process safety hazards posed by chemical/hydrocarbon production units. Thus, location of a CO unit in this plot would not meet Celanese Corporate Process Safety policies.

Build Alternatives – North Alternative #4 and West Alternative #5:

The cost to construct North Alternative #4 (Figure 3) or West Alternative #5 (Figure 4) is significantly higher than the No Action Alternative. As indicated above, the No Action Alternative leaves Celanese without CO supply and would likely result in the shutdown of some of the operating units within the Clear Lake Plant, which is an untenable outcome for Celanese.

In addition, both the North Alternative #4 and West Alternative #5 will require the connection of twelve (12) utilities pipelines to the Clear Lake Plant's existing pipe rack. The existing pipe rack runs east/west and as such the distance to connect to this existing pipe rack has been identified as a criterion to assist with evaluating available alternatives. Utilizing the North Alternative # 4 would require the east/west pipe rack to be extended approximately 3,000' versus the West Alternative #5, which would require the east/west pipe rack to be extended by 600' for each of the twelve (12) utilities required to support the new CO unit. The distance required for North Alternative #4 is five (5) times greater than the distance required for West Alternative #5 and as such the project costs for North Alternative # 4 is substantially greater than West Alternative #5.

The existing facility has been designed to expand westward, rather than to the north and as a result of Clear Lake Plant's existing pipe rack runs east to west. Both the North Alternative #4 and West Alternative #5 will require the connection of twelve (12) utilities pipelines to this east/west pipe rack. The distance to connect to this east/west pipe rack has been identified as a criterion to assist with evaluating available alternatives. Utilizing the North Alternative # 4 would require the east/west pipe rack to be extended approximately 3,000' versus the West Alternative #5, which would require the east/west pipe rack to be extended by only 600' for each of the twelve (12) utilities required to support the new CO unit. The distance required for North Alternative #4 is five (5) times greater than the distance required for West Alternative #5 as such the project costs for North Alternative # 4 is substantially greater than West Alternative #5.

Due to the increased project costs associated with the required additional and unavoidable infrastructure, North Alternative #4 is not a viable alternative as it is above the objectives and economic threshold of the project. West Alternative #5 would decrease the amount of utility and pipeline construction needed for North Alternative #4, thus reducing construction costs by expanding the facility to the west.

B. Are there logistical (location, access, transportation, etc.) reasons that limit the alternatives considered?

Yes. Alternatives for offsite locations not immediately adjacent to the existing Facility property were not considered practicable options given Celanese's need to align with industry best practices, which seek to minimize transportation of CO given its classification as a DOT hazardous material for flammability and toxicity.

Use of North Alternative #4 to construct the new CO unit results in the new CO unit being located 500 feet from the closest property boundary while use of West Alterative # 5 will be located 1500 feet from the closest property boundary. Given the distance to the closest property boundary is greater for West Alternative # 5 than North Alternative # 4, West Alternative #5 is projected to avoid or minimize negative environmental, health and safety impacts such as impacts resulting from air emissions to off-site receptors. Avoiding or reducing EHS risks has been identified as a criterion to assist with evaluating available alternatives. North Alternative #4 is not a practicable alternative given this alternative is projected to increase our EHS risks given its proximity to the closest property boundary while the EHS risks are expected to be lower for West Alternative #5. This outcome results in West Alternative #5 being the preferred alternative.

The logistics in providing both utilities and services to North Alternative # 4 will be greater than providing the same utilities and services to the West Alternative #5.

C. Are there technological limitations for the alternatives considered?

Yes. As discussed above, Onsite Alternatives #1 through #3 are not viable given the available size does not meet the minimum size required to construct and operate the new CO unit. In addition, conformance with layout (process safety) will not be achieved.

D. Are there other reasons certain alternatives are not feasible?

None other than those discussed above.

III. If you have not chosen an alternative which would avoid impacts to surface water in the state, explain:

A. Why your alternative was selected, and

Build Alternative – West Alternative # 5 criteria evaluation:

- ***EHS (Environmental, Health & Safety):*** *Due to the proximity of West Alternative # 5 to the nearest property boundary, this alternative satisfies the criteria to avoid or minimize negative environmental, health and safety impacts such as impacts resulting from air emissions to off-site receptors.*
- ***Siting (Process Safety):*** *The proposed siting for West Alternative # 5 is projected to conform with Guidelines for Evaluating Plant Buildings for Fire, Explosion, and Toxic Releases (API RP 752) and Celanese identified RAGAGEP (Recognized and Generally Accepted Good Engineering Practices) for evaluating and determining facility siting; a requirement established by OSHA's PSM standard (29 CFR 1910.119).*
- ***Layout (Process Safety):*** *The proposed siting for West Alternative # 5 is projected to conform with the Guidelines for Facility Siting and Layout as developed and published by CCPS, which will assist in minimizing process safety risks.*
- ***Size:*** *The size of West Alternative #5 provides the available acreage needed to satisfy the construction/operating footprint of 475' x 625'.*
- ***Distance:*** *A comparison of distance required for both Build Alternatives indicates that West Alternative #5 minimizes the distance required to connect existing facilities and services required to support unit operation.*
- ***Industry Best Practice:*** *West Alternative #5 provides for production of CO with the Clear Lake Plant as such achieves the desire for on-site production which minimizes transportation of CO.*
- ***Supply:*** *Given Celanese will continue to receive CO supply from the existing CO unit and the new CO unit will be operating/producing CO before the supply contract terminates, West Alternative #5 provides for continuation of CO feed which is a key raw material and required to support unit operation at the Clear Lake Plant.*

As indicated above, West Alternative #5 (Figure 4) aligns best with the intended purpose and need for the project.

The Proposed Project will be completed in two phases. Phase 1 will include the development and construction of the new CO unit and supporting infrastructure. West Alternative #5 is the chosen alternative because it meets the project's objectives and requirements, reduces wetlands and surface water impacts to the greatest extent practicable, reduces construction and operation safety concerns, and is within the economic threshold to support implementation of the project.

The start date for Phase 2 is undetermined at this time.

B. What you plan to do to minimize adverse effects on the surface water in the State impacted.

Celanese would prevent or minimize sediment from leaving the project footprint by implementing adequate erosion control measures. Sedimentation and erosion control devices would prevent sediment from leaving the construction workspaces and entering wetlands and waterbodies near the project. During construction, Celanese will adhere to TPDES General Permit No. TXR150000 for Construction Sites that Discharge Storm Water Associated with Construction Activity and its project-specific construction SWPPP, which would reduce or eliminate any impacts on storm water. Potential spills would be avoided and the impacts of spills minimized with the implementation of best management practices.

IV. Please provide a comparison of each criteria (from Part II) for each site evaluation in the alternatives analysis.

No-Action Alternative

Under this alternative, the permittee would not construct and operate the proposed Celanese Clear Lake Facility Expansion including the construction and operation of a new CO unit. This alternative would not result in potential impacts to wetlands or waters of the U.S. No Individual Permit (IP) application would be submitted, and no coordination with U.S. Fish and Wildlife Service (USFWS) would be necessary. The No-Action alternative was analyzed and eliminated for the following reasons: (1) the No-Action alternative would not serve to accommodate the facility's need to supply CO for its acetyl operation; and (2) not constructing the CO unit would not meet the project's purpose and need.

The following table provides a summary for each alternative considered to support the proposed Celanese Clear Lake Facility Expansion including the construction and operation of a new CO unit and a comparison to project criteria.

Criteria	*Alternative 1*	*Alternative 2*	*Alternative 3*	*Alternative 4*	*Alternative 5*
Practicability Costs					*X*
Aquatic Impacts Minimized	*X*	*X*	*X*	*X*	*X*
EHS		*X*	*X*		*X*
Siting (Process Safety)		*X*	*X*	*X*	*X*
Layout (Process Safety)				*X*	*X*
Size				*X*	*X*
Distance	*X*	*X*	*X*		*X*
Industry Best Practice	*X*	*X*	*X*		*X*

X = Complies with criteria

Alternative # 1: Update Existing CO Unit

Apart from the continuous improvements of the established technologies in acetyl production, new technologies are available for the manufacturing of CO. One alternative considered was to update the existing CO unit that currently supplies CO to Celanese. The current CO unit onsite has been in use for 40 years. Updating the existing CO unit would provide better technology, increased efficiency, and a decrease in energy usage. The upgrading costs of established techniques are dependent on the specific technology, but most importantly, the capability for the facility to maintain production during the upgrade construction.

Currently, onsite production of CO is limited to a single unit, therefore, shutting down this CO unit and maintaining current production metrics is not possible. Upgrading or retrofitting the current CO unit has a timeframe of approximately 24 months. Celanese cannot operate other on-site units without continued CO supply, and an outage that would shut down the production of CO for the timeframe that is expected to replace the old CO unit with a new CO unit with better technology is not practical. Celanese does not own these assets for the existing on-site CO unit as such Celanese is unable to commit the resources to upgrade and/or retrofit the existing CO unit. Therefore, shutting down CO production to allow for upgrades to the current CO unit was removed from further consideration.

Alternatives # 2 and #3: Additional Onsite Location Alternatives

Two other onsite alternatives were considered within the existing operating Celanese Facility boundaries (Figure 2). Both Onsite Alternatives are centrally located within the

existing Facility. Available space for construction of the CO unit at Onsite Alternative #2 is approximately 4.16 acres and 2.40 acres at Onsite Alternative #3, which are both less than the required 30.86 acres that are needed to construct and operate the CO unit and associated facilities. Thus, neither alternative provides the acreage required to operate or safely construct the CO unit and associated facilities. Therefore, both vacant existing areas with the potential to be onsite location alternatives were removed from further consideration.

North Alternative #4

Figure 3 depicts North Alternative #4. Due to constructability and economic feasibility issues, North Alternative #4 does not meet the project's objectives and requirements for the reasons described below.

Construction and safety concerns for North Alternative #4 include:

- *Construction in proximity to existing ponds and possible impact on pond integrity;*
- *Construction adjacent to Bay Park Road;*
- *Equipment working under existing powerlines; and*
  Equipment working on and within close proximity to existing gas pipelines.

North Alternative #4 requires a necessary operating footprint which includes 20.09 acres and 8.77acres for Phases 1 and 2, respectively.

Based on a wetland and waterbody delineation performed in February 2016, this proposed alternative would permanently impact 0.474 acre of emergent wetlands and 2.139 acres of forested wetlands, a total of 2.613 acres of wetlands.

North Alternative #4 does not provide enough land space for construction and operation of the new CO unit. The proposed placement of this Alternative will not fit into the area between the Facility's eastern property boundary and Bay Park Road located to the west. In addition, an existing parking lot would be impacted and would force Celanese to construct another parking area for employees during construction. Therefore, its location and distance from existing utilities eliminates this location for the project.

North Alternative #4 would require construction of new pipeline racks for existing utilities and supply materials required for the operation of the new CO unit. If built in this alternative location, the pipelines would be constructed over existing natural gas pipelines and under existing powerlines, which would increase safety hazards during construction and future maintenance activities. Construction in proximity to or under the existing ponds is also not preferred as, depending on the depth of each pond, construction could impact pond structure integrity. These ponds were constructed as stormwater detention ponds and

AUG 10 2016

serve a function necessary for plant operation during high rainfall events. These ponds maintain water throughout the year and provide little to no aquatic habitat.

Although this Alternative is located in a space with more upland areas, due to safety concerns and costs associated with the required additional infrastructure that are unable to be justified or avoided, North Alternative #4 is not a viable alternative as it is above the objectives and economic threshold of the project. Therefore, North Alternative #4 was removed from further consideration.

AUG 10 2016

Preferred Alternative - West Alternative #5 – Proposed Action

West Alternative #5 (Figure 4) is the preferred alternative and proposed action of the project. The project footprint was modified to reduce impacts on potential forested wetlands by:

- *Reconfiguring construction laydown areas and contractor offices;*
- *Using existing contractor parking lot (north of existing facility) rather than building new parking area within wetlands;*
- *Using existing cleared upland areas on the eastern portion of the project area; and*
- *Leaving existing storm water pond in place and not causing disturbance during construction activities.*

Approximately 30.86 acres would be permanently developed under this alternative, of which 4.86 acres are located within previously disturbed upland areas. The remaining 26.03 acres of construction workspace lie in undisturbed forested habitat. Approximately 18.513 acres of potential forested wetlands will be impacted. The contractor office will be wholly located within a previously disturbed upland area, thus eliminating wetland impacts for this activity. Construction laydown areas were reduced within the wetlands by using the existing cleared areas directly west of the existing methanol unit. Rather than building a new parking lot, the existing 5.60-acre contractor parking area located north of the existing operating facility will be used, thus no additional construction impacts will occur. During active construction, contractors will use the dedicated parking lot and will be transported to the construction zone via bus.

This preferred alternative would meet the criteria for the project's purpose outlined above including (but not necessarily limited to) siting along the western portion of the existing Facility, easy access and minimum pipeline and utility construction, ability to construct necessary infrastructure, and will be developed on property already owned by Celanese. This combination of factors is required to render the project economically feasible.

West Alternative #5 is the chosen alternative because: 1) it meets the project's objectives and requirements, 2) reduces construction and operation safety concerns and is within the economic threshold to support implementation of the project and 3) when compared to the other alternatives, it is the only alternative available that minimizes potential wetland impacts to the greatest extent practicable, considering the proposed mitigation for impacts to wetlands.

Refer to IP application, Attachment C for the project maps and Attachment D for the project drawings.