

Executive Summary

Larimer County 1041 Permit Request

The city of Thornton (Thornton), Colorado is requesting a 1041 permit for the Thornton Water Project (TWP) water pipeline in Larimer County, the siting and development of which has been designated as an area and activity of state interest as authorized by Title 24, Section 65.1-501 of the Colorado Revised Statutes, and Section 12 Common Procedures for Development Review and 14 Area and Activities of State Interest (1041 Permit) of Part II of the Larimer County Land Use Code (LUC), Version September 13, 2017. The matter of state interest, as defined by the LUC, involves the siting and development of a new domestic water transmission line that is contained within new permanent easements greater than 30 feet.

Thornton requests approval of an approximate 500-foot to ¼-mile wide corridor to construct, operate, and maintain the TWP, which includes up to approximately 27 miles of a buried 48-inch domestic water transmission line (water pipeline) and associated appurtenances in unincorporated Larimer County. The corridor width varies depending on location and is less than 500-feet wide at some locations to minimize impacts to existing infrastructure.

The TWP is a water delivery system that will convey domestic water from the Water Supply and Storage Company (WSSC) system purchased by Thornton in the mid-1980's to Thornton.

This Supplement 3 addresses areas in unincorporated Larimer County, which include private or public lands within the boundaries of unincorporated Larimer County but outside the boundaries of any municipality (city or town). This Supplement 3 is organized consistent with the *Larimer County Planning Department Procedural Guide for 1041 Permits, Submittal Requirements for 1041 Permits*, October 20, 2008 (*Larimer County Planning Department Procedural Guide for 1041 Permits*). The siting and development of the TWP water pipeline conforms to Larimer County 1041 permit requirements as described in this Supplement 3.

Purpose and Need of the TWP

The purpose of the TWP is to convey domestic water from the WSSC system purchased by Thornton in the mid-1980's to enhance Thornton's water supply reliability and drought resiliency, help address source water quality issues, and meet municipal and industrial demands of Thornton's water customers through 2065.

Thornton's population is projected to increase from its current estimated population of 139,622 residents (City of Thornton, Third Quarter 2018, Population Estimate and Housing Inventory Report) to 242,000 residents by 2065. Thornton has proactively planned for the anticipated population increase to ensure that Thornton can provide a reliable, high quality, and cost efficient water supply to meet the needs of its residents and businesses. Thornton's existing water system, including an extensive water conservation program, has served to meet municipal and industrial water needs of Thornton's current water customers in its service area, as well as to meet existing contractual obligations. Thornton water supply projects in development will allow Thornton to provide water service up to a population of 158,000 residents. Beyond 158,000 residents, which Thornton projects to reach by 2025, additional water supplies are needed to ensure reliable water service to Thornton's water customers. Water from the WSSC system in Northern Colorado purchased by Thornton in the mid-1980's from willing sellers has been decreed in Water Court for use in Thornton, but Thornton currently lacks the infrastructure to deliver that water to Thornton. The TWP will provide the necessary infrastructure for delivery of this water to Thornton, and provides

the means by which Thornton’s customers will receive the benefit of Thornton’s decades-long planning for and investment in this additional water supply. The TWP is being configured to deliver an average of 14,000 acre-feet of water annually, which is sufficient to meet the municipal and industrial demands of Thornton’s water customers through 2065. In addition to meeting water demand, in adding this high quality source the TWP provides diversity, enhanced water supply reliability, quality and drought resiliency to Thornton’s supply.

Supplement 3

Unless otherwise noted, information provided in this TWP Larimer County 1041 Permit Application Supplement 3 (Supplement 3) is in addition to information that was previously provided. It is not intended to replace previously submitted Application materials. The following Application materials were previously submitted:

- TWP Larimer County 1041 Permit Application (Application), January 5, 2018.
- TWP Larimer County 1041 Permit Application Supplemental Additional Information (Supplement), April 2, 2018.
- TWP Larimer County 1041 Permit Application Supplement Addendum (Supplement Addendum), April 10, 2018.

At the Larimer County Land Use Hearing on August 1, 2018, the Board of Larimer County Commissioners (BOCC) continued the hearing until December 17, 2018 to allow Larimer County and Thornton to work with the public to better define and analyze issues and alternatives related to the TWP water pipeline. Larimer County initiated the following activities in response to the BOCC request for additional information:

- Hired an independent outside facilitator, Peak Facilitation Group, to manage the public engagement process.
- Formed a working group (Working Group) comprised of representatives from interested parties. Thornton attended the meetings and provided requested information but was not a member.
- Hosted two public open house meetings to provide information to the public and obtain feedback on Larimer County’s process for the TWP.
- Administered additional technical analysis for the TWP.

As a result of Larimer County’s process, additional alternatives for the TWP were developed by the Working Group. This Supplement 3 provides information on a reasonable alternative resulting from Larimer County’s public involvement (Public Involvement), process the Alternative 3 (Option C) Corridor, that presents a reasonable siting and design alternative that meets the purpose and need of the TWP. Information included in this Supplement 3 is to assist the BOCC in their decision-making process on the TWP water pipeline.

Project Description

Thornton is proposing to construct, operate, and maintain the TWP, and the Application before the BOCC is for approximately 27 miles of a buried 48-inch water pipeline and associated appurtenances in unincorporated Larimer County, Colorado. TWP appurtenances include various buried water pipeline structures and valve vaults including access manways, blow-off assemblies, air release vaults, and isolation valve vaults. The TWP as a whole is a water delivery system that will convey domestic water Thornton purchased in the mid-1980’s from the WSSC system to Thornton.

Land uses in the TWP area of unincorporated Larimer County are predominantly agricultural. Other uses include residential use. The TWP water pipeline is consistent with continuation of current land uses. Property owners who grant a permanent easement to Thornton can continue to use the land within the easement area for purposes such as farming, grazing, or access, so long as such uses do not interfere with or endanger the operation of the TWP.

The Application included a water tank as an appurtenance to the TWP. However, after listening to the interests and concerns of the community through the hearing, Working Group process and Open House about the location of the water tank in Larimer County, Thornton has determined not to locate the water tank within Larimer County, and that request is withdrawn from the Application.

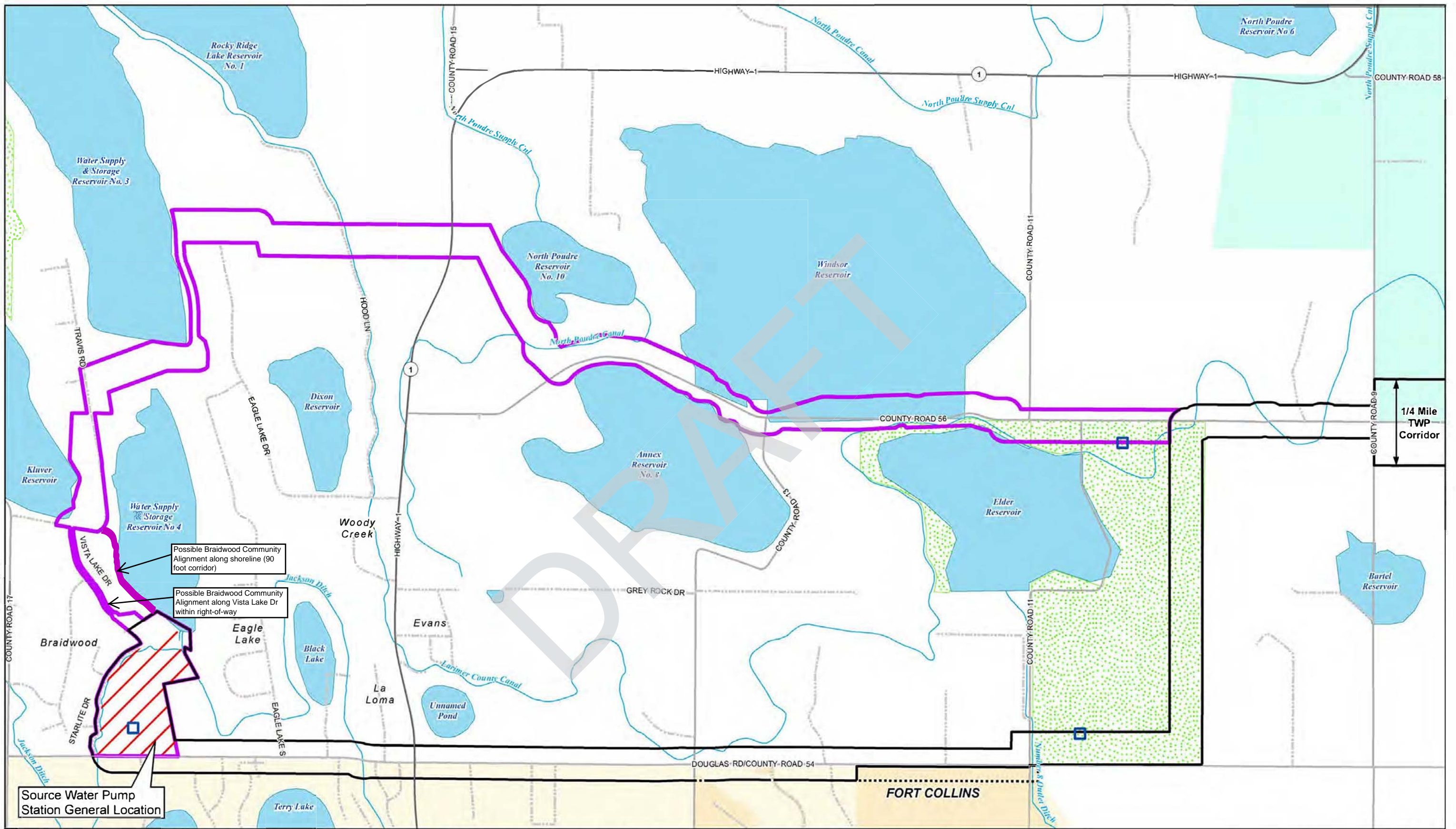
Alternative 3 (Option C) Corridor

The Alternative 3 (Option C) Corridor is typically 500-foot wide for TWP components in unincorporated Larimer County. The final water pipeline alignment within a Larimer County approved corridor will be developed during final design. Typically a 50-foot permanent easement for the water pipeline and an additional 40-foot temporary easement for construction will be purchased from property owners except where the TWP will be constructed in road right-of-way (ROW). The Alternative 3 (Option C) Corridor width allows for flexibility when developing the final water pipeline alignment and location of appurtenances. Alternative 3 (Option C) Corridor limits are shown on **Figure ES-1S**.

The Alternative 3 (Option C) Corridor is approximately 6 miles long in unincorporated Larimer County north of Fort Collins. It includes an area that extends south from Water Supply and Storage Company (WSSC) Reservoir No. 4 to the proposed location of the source water pump station. This area will accommodate the connection to WSSC Reservoir No. 4, the water pipeline to the source water pump station, and the water pipeline from the source water pump station. The Alternative 3 (Option C) Corridor extends north then east from the west side of WSSC Reservoir No. 4 to County Road 9. The Alternative 3 (Option C) Corridor includes options to construct the water pipeline in Vista Lake Drive or on private property adjacent to WSSC Reservoir No. 4.

The Alternative 3 (Option C) Corridor ties into the TWP corridor presented in the Application at County Road 9. The TWP with Alternative 3 (Option C) Corridor (which is the Alternative 3 (Option C) Corridor plus TWP corridor east of County Road 9) is approximately 27 miles long in unincorporated Larimer County.

The Alternative 3 (Option C) Corridor appurtenances also include an approximate 40-million gallon per day (mgd) source water pump station located near WSSC Reservoir No. 4. The source water pump station will be permitted through the Site Plan Review permit process. Information on the source water pump station provided in this Supplement 3 is of a general nature and is included to present a more complete scope of the TWP and seek siting and location approval from Larimer County.




Possible Braidwood Community Alignment along shoreline (90 foot corridor)

Possible Braidwood Community Alignment along Vista Lake Dr within right-of-way

Source Water Pump Station General Location

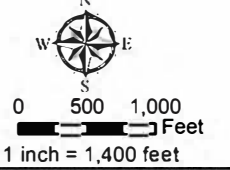
1/4 Mile TWP Corridor



CITY OF THORNTON
COLORADO

12450 WASHINGTON ST
THORNTON, CO 80241-2405

12/6/2018



0 500 1,000 Feet
1 inch = 1,400 feet

Alternative 3 (Option C) Corridor	*Source Water Pump Station General Location	Corporate Boundary Fort Collins	GMA Boundary Fort Collins
TWP Corridor in Unincorporated Larimer County	Lake/Reservoir	Wellington	Wellington
TWP Corridor outside Unincorporated Larimer County	River/Stream/Canal/Ditch	Thornton Farm	
	Potential Staging Area		

Figure ES-1S
Alternative 3 (Option C) Corridor Map

* Final location of the Source Water Pump Station will be determined during design development. Thornton will submit a Site Plan Review permit application to Larimer County after design has progressed to the level necessary to submit the application.

Sources: NHD, CDWR, Larimer County, CDOT, ESRI

Alternative 3 (Option C) Corridor Components

The Alternative 3 (Option C) Corridor components in unincorporated Larimer County include the following:

- Water pipeline. Up to approximately 6 miles of a buried, 48-inch diameter water pipeline capable of conveying 40 mgd of water will be constructed in unincorporated Larimer County. The water pipeline will be buried at a minimum depth of 4 feet below grade. The depth of bury will vary based on existing utility crossings, road crossings, water crossings, other existing or proposed features, and property owner preferences. Typically, a 50-foot permanent easement for the water pipeline and an additional 40-foot temporary easement for construction will be purchased from property owners except where the Alternative 3 (Option C) Corridor will be constructed in road ROW. If property owners object to granting an easement for the Alternative 3 (Option C) Corridor parallel to County Road 56, the water pipeline is proposed to be located in the Larimer County ROW where feasible and as approved by Larimer County.
- Appurtenances
 - Source water connection. Two buried valve vaults will be constructed to connect the TWP water pipeline to two existing outlet pipelines at WSSC Reservoir No. 4. From the valve vaults up to approximately ½ mile of buried 48-inch diameter water pipeline and fiber optic cable will be routed to the source water pump station.
 - Communications. Up to approximately 6 miles of buried fiber optic cable, including buried manholes, test stations, and other fiber optic cable appurtenances will generally parallel the water pipeline in unincorporated Larimer County. The fiber optic cable will be installed in close proximity to the water pipeline. The fiber optic cable will allow Thornton to remotely communicate with and operate the TWP. The cable will be buried at a minimum depth of 3 feet below grade. The depth of bury will vary based on existing utility crossings, road crossings, water crossings, or other existing or proposed features, and property owner preferences.
 - Other Appurtenances. Various buried water pipeline appurtenances and structures, including access manways, blow-off assemblies (used to drain the water pipeline), combination air release valve vaults (used to exhaust air when filling the water pipeline and admitting air during draining operations), and isolation valve vaults, will be constructed. Additional permanent and temporary easements could be obtained for these appurtenances.

The Alternative 3 (Option C) Corridor appurtenances also include an approximate 40-million gallon per day (mgd) source water pump station located near WSSC Reservoir No. 4. The source water pump station will require an approximate 2-acre site with up to an approximate 10,000 square-foot building to house pumps and associated equipment. Thornton has confirmed with Poudre Valley Rural Electrical Association (PVREA) that sufficient power is available in the area to supply the source water pump station. In public comments, Thornton heard community concerns that the emergency diesel powered backup generator associated with the source water pump station proposed in the Application would be noisy and have emissions detrimental to nearby residents and the community as a whole. In response, Thornton was able to confirm with PVREA that it is possible for PVREA to extend a second, redundant power feed to the source water pump station for emergency backup power; therefore, an emergency diesel powered backup generator will not be required. Accordingly, Thornton proposes as a condition of approval, that it not place a permanent emergency diesel powered backup generator at the source water pump station site.

The final siting of the source water pump station will be completed during final design. The preferred location is adjacent to Douglas Road. **Figure ES-2S** shows an example rendering of the source water pump station adjacent to Douglas Road. During design, Thornton will consider input and suggestions on the design and architecture for the source water pump station that reduce the visual impacts of the facility. The facility will be designed to meet the then-existing Larimer County Noise Level Ordinance.



FIGURE ES-2S
Example Pump Station Rendering adjacent to Douglas Road

TWP Corridor with Alternative 3 (Option C) Corridor

The TWP corridor with Alternative 3 (Option C) Corridor includes up to approximately 27 miles of a buried 48-inch water pipeline and associated appurtenances in unincorporated Larimer County, Colorado. If the TWP corridor with Alternative 3 (Option C) Corridor is approved by BOCC, the water pipeline and appurtenant facilities will be constructed as follows:

- Within the Alternative 3 (Option C) Corridor as presented in this Supplement 3 from WSSC Reservoir No. 4 to County Road 9.
- Within the TWP corridor as presented in the Application from County Road 9 to County Road 14.

Site Selection Process and Alternatives Analysis

The TWP corridor with Alternative 3 (Option C) Corridor was developed using a series of evaluations. Reasonable siting and design alternatives for the TWP are those that include taking delivery of drinking water from WSSC Reservoir No. 4 and conveying it east via pipeline.

As a result of listening to public comments during the hearing and engagement with Larimer County's Working Group and Open Houses process, certain alternatives presented in the original

Application, and additional options were analyzed further. Supplement 3 includes six alternative water pipeline alignments for the WSSC Reservoir area to County Road 9 portion of the project. Of these six, four were presented as part of the Application.

In the Application, Thornton selected an alternative identified as South 2 as the preferred alternative. This is commonly known as the Douglas Road alignment. This alternative was re-analyzed as a part of the Working Group and Public Involvement process and it remains a reasonable siting and design alternative as set forth in the Application, so long as the project is not co-located with the Northern Integrated Supply Project (NISP) pipeline in Douglas Road.

However, based on the results of the alternative development and analysis, Thornton requests approval for the TWP corridor with Alternative 3 (Option C) Corridor, a water pipeline installed around the west side of WSSC Reservoir No. 4 meeting up with the NISP pipeline alignment at a point between WSSC Reservoir No. 3 and WSSC Reservoir No. 4. The TWP water pipeline would be co-located with the NISP pipeline from this point west to County Road 9, generally in the County Road 56 corridor. This is the West 2 alternative described in the Application of the Alternative Configurations Analysis. This alternative was reviewed by the Working Group as Option C.

The TWP corridor with Alternative 3 (Option C) Corridor best meets what Thornton understood to be important considerations expressed by the Working Group and the public, such as: 1) the opportunity to co-locate with NISP; 2) to minimize traffic/construction duration; and 3) reduce impacts to private property. At the same time because the public engagement process was designed to consider community interests at the exclusion of Thornton's interests, Thornton also evaluated the alignments and proposed ideas on whether they are or are not reasonable siting and design alternatives to meet the purpose and need of Thornton's drinking water supply project including: 1) preserving source water quality to protect public health; 2) providing water supply reliability; 3) protecting yield; 4) abiding by the water court Decree; 5) protecting WSSC and its shareholders; 6) being fiscally responsible with taxpayer money; and 7) delivering water to Thornton by 2025. Combined with addressing the important considerations that Thornton heard through the Public Involvement process, the TWP corridor with Alternative 3 (Option C) Corridor is a reasonable siting and design alternative that best addresses Thornton's interests in the purpose and need of the project.

In addition, Thornton evaluated the following ideas presented by the Working Group:

- Use the Cache la Poudre River instead of a pipeline (River Delivery Alternatives—also labeled by Larimer County in the Public Involvement process as Option D: Poudre River)
- Use existing ditches or canals instead of a pipeline (Canal Delivery Alternatives—also labeled by Larimer County in the Public Involvement process as Option A: Canal Conveyance)
- Use lake taps (micro-tunneled lake intakes) to access water in the WSSC reservoir system instead of trenched pipelines from reservoir outlets (Lake Tap Concept)

For the River Delivery Idea, four (4) alternatives were developed and evaluated. The analysis concluded that none of the alternatives were reasonable. For the Canal Delivery Idea, four (4) alternatives were developed and evaluated. The analysis concluded that none of the alternatives were reasonable. With respect to the use of lake taps, the analysis concluded that lake taps were not a reasonable alternative to the use of conventional, open-trench excavation for pipeline installation.

Accordingly between its Application and this Supplement 3, Thornton has presented six reasonable siting and design alternatives. Of those, because of expressed community preferences, Thornton has

changed its preferred alignment from that sought in its Application (South 2) to the TWP corridor with Alternative 3 (Option C) Corridor.

Land Use

The majority of the Alternative 3 (Option C) Corridor within unincorporated Larimer County is located in areas categorized as rural lands and designated as farming, rural estate, and open zoning districts. The water pipeline and fiber optic cable will be buried, and land use effects on agricultural and other similar use will be temporary during construction and are anticipated to be minimal after construction. Agricultural use within the permanent easement can continue after construction. The buried water pipeline and fiber optic cable are compatible with other land uses, such as residential use, that the Alternative 3 (Option 3) Corridor crosses.

With respect to the source water pump station, the location proposed for the source water pump station site (2 acres) is zoned farming. Thornton will work with the property owner to locate the source water pump station to minimize impact to the property owner to the extent it is reasonably possible.

Vegetation provides some indication of land uses. For example, nonnative upland vegetation typically occurs in areas that have been historically disturbed by heavy grazing and hay production. Vegetation types found in the Alternative 3 (Option C) Corridor and the TWP corridor with Alternative 3 (Option C) Corridor are presented in are presented in **Table ES-1S**.

TABLE ES-1S
Vegetative Communities

Vegetative Community	Approximate Total Acres in Alternative 3 (Option C) Corridor	Approximate Total Acres in the TWP Corridor with Alternative 3 (Option C) Corridor	Description
Agricultural Lands	34	1,227	Tilled or managed agricultural lands.
Developed/ Disturbed Areas	67	875	Have received heavy human use, including buildings and surrounding disturbed areas, livestock concentration areas, roads, trails, and other developed areas.
Nonnative Upland	170	820	Occurs in areas that have been historically disturbed by heavy grazing, tilling, and hay production.
Mixed Upland	34	88	Occurs primarily in historically undisturbed upland areas.
Wetlands	13	64	Fringes or wide benches along drainages, roadside swales, ponds and lakes, and isolated depressions
Riparian	0	7	Moist areas along larger tributaries and rivers.

Stakeholder Outreach

During the land use hearing on August 1, 2018, the BOCC voted to continue the hearing regarding Application for the development of a water pipeline. The BOCC cited the need for additional evaluation of alternative water conveyance concepts, pipeline routes, mitigation of the effects of the project to residents in the area, identification of benefits to the Larimer County as well as the need for additional public outreach on the project.

In an effort to address these needs, the BOCC asked that Larimer County staff establish a public engagement framework and process to solicit community input on the project.

Larimer County initiated their public engagement process by contracting with Peak Facilitation Group, an independent third-party facilitator, to establish a process outline, public engagement framework, and to facilitate a stakeholder discussion that would identify ways to maximize community benefit and minimize or mitigate negative impacts of potential water conveyance alternatives for Thornton's and NISP pipelines through the community. Larimer County staff indicated to Thornton and Northern Water that there was interest on Larimer County's behalf in exploring the co-location of the pipelines to reduce impacts to the community.

Larimer County staff, in consultation with the facilitator, established the Larimer Water Projects Working Group (Working Group) comprised of twenty-eight representatives of interested parties and organizations to "maximize the benefits and minimize or mitigate impacts" to Larimer County. Thornton was not a participant in the selection of Working Group participants. In addition to the formation of the Working Group, Larimer County also noticed two public meetings (Open House) to ensure the general public had an opportunity to review the work products from the Working Group and offer input of their own.

While Thornton was not an official member of the Working Group, it provided, upon request, technical expertise and educational materials to the Working Group for their consideration and evaluation. The Working Group convened on five separate occasions where it was asked to evaluate interests, impacts and benefits relative to five proposed alternative water conveyance concepts identified by Larimer County and the Working Group itself. The Working Group was established by Larimer County to be a venue for public input (without decision-making authority).

Thornton staff attended each of the Working Group meetings as audience members and were available for questions and answers from the Working Group members, County staff and the facilitator.

Thornton was asked by Larimer County to provide technical studies and background educational material on each of the five alternative water conveyance concepts put forth by the Working Group including, water quality and quantity evaluations, and constructability. Thornton staff and consultants, Larimer County staff and Larimer County contracted consultants, evaluated what would be required to implement the alternative concepts and presented that evaluation to the Working Group members in three informational webinars.

Thornton staff and consultants also attended the two Open House meetings set by Larimer County. Thornton staff was asked by Larimer County to provide a display of informational material on Thornton's project and to be on hand to answer questions from the attendees, including Working Group members, about their proposed ideas and to provide information on what legal, technical, infrastructure, operational and financial needs would be required for each concept.

In addition to Thornton’s participation in the official Larimer County public outreach process, Thornton also proactively engaged with the community. In early November, Thornton and the Eagle Lakes Community agreed to meet for the purpose of evaluating the potential impacts to eight property owners in Eagle Lakes along a possible pipeline alignment through their community. Some Working Group members expressed concerns about the timing and purpose of that meeting, and it was ultimately cancelled in order to avoid a disruption to the Working Group process. Thornton feels it is important to continue its public engagement with the Working Group members, property owners and homeowners associations along possible pipeline routes to ensure they have sufficient opportunity to assist in the siting and development of the pipeline in a manner that limits community impacts and provides sufficient mitigation.

From Thornton’s perspective, Larimer County’s Public Involvement process and the Working Group activity was useful in further understanding the community’s concerns and interests and was instrumental to informing this Supplement 3. The process resulted in a supplement that includes feedback and data from Larimer County, the Working Group, and from the residents of Larimer County. As a result of community engagement since the August 1, 2018 hearing, this Supplement 3 provides information on a reasonable alternative that proposes a pipeline route, Alternative 3 (Option C) Corridor similar to the West 2 route described in the Application, modified to reflect input received from the community. Thornton did not make this decision lightly, and is appreciative to the community and the Working Group for their efforts and willingness to inform the process. Thornton believes the Alternative 3 (Option C) Corridor proposed in this Supplement 3 mitigates many of the concerns of the community, provides additional benefits to the community, and respects the values and the residents of Larimer County.

Compliance with 1041 Permit Requirements

The TWP corridor with Alternative 3 (Option C) Corridor meets the review criteria for approval described in Larimer County Land Use Code (LUC) Section 14.10.D.

14.10.D1 The proposal is consistent with the master plan and applicable intergovernmental agreements affecting land use and development.

Impacts to Larimer County Master Plan goals, IGAs, and plans resulting from construction of the pipeline and the source water pump station will be temporary. Impacts to traffic, sensitive environmental biological resources and agriculture can be avoided or mitigated during construction. For example, the TWP will utilize trenchless construction methods for water pipeline installation to minimize impacts to natural resources such as jurisdictional waters and wildlife habitat associated with those areas. With respect to traffic impacts during construction, selection of the Alternative 3 (Option C) Corridor avoids more major impacts on other routes because the impact of rerouting through vehicle movements is almost undetectable since traffic volumes on County Road 56 are extremely low. In addition, Thornton and the TWP contractors will exercise care and will coordinate with property owners to minimize impacts to property owner’s existing access locations. With respect to land use, where the TWP corridor with Alternative 3 (Option C) Corridor parallels Larimer County roads, the water pipeline is proposed to be located in the Larimer County ROW as approved by Larimer County if the property owner is not agreeable to selling an easement for the water pipeline.

Long-term, because the water pipeline will be buried and disturbed areas will be restored to pre-construction grades and vegetation, there are no impacts to the Master Plan goals resulting from the water pipeline. For example, the majority of the TWP corridor with Alternative 3 (Option C) Corridor is located in rural land use areas that include lands zoned open, rural estate, and farming.

After construction, agricultural use within the permanent easement can continue as before. With respect to the source water pump station, the location proposed for the source water pump station site (2 acres) is zoned farming. Thornton will work with the property owner to locate the source water pump station to minimize impact to the property owner to the extent it is reasonably possible. The source water pump station will be designed to be compatible with the surrounding area. After listening to the interests and concerns of the community through the hearing, Working Group process and Open House concerning noise and emission resulting from the proposed installation of an emergency diesel backup generator in the Application, Thornton proposes as a condition of approval, that it not place a permanent emergency diesel powered backup generator at the source water pump station site. After construction, the source water pump station will be unmanned, though it will be monitored and operated remotely, inspected daily, and repaired and maintained as needed.

The Application also included a water tank as an appurtenance to the Application. However, after listening to the interests and concerns of the community through the hearing, Working Group process and Open House about the location of the water tank in Larimer County, Thornton has determined not to locate the water tank within Larimer County, and that request is withdrawn from the Application.

Accordingly the proposal is consistent with the master plan and applicable intergovernmental agreements affecting land use and development. Therefore, TWP corridor with Alternative 3 (Option C) Corridor complies with Criterion No. 1.

14.10.D.2 The applicant has presented reasonable siting and design alternatives or explained why no reasonable alternatives are available.

The TWP corridor with Alternative 3 (Option C) Corridor was developed using a series of evaluations. Reasonable siting and design alternatives for the TWP are those that include taking delivery of drinking water from WSSC Reservoir No. 4 and conveying it east via pipeline.

As a result of listening to public comments during the hearing and engagement with Larimer County’s Working Group and Open Houses process, certain alternatives presented in the original Application, and additional options were analyzed further. Supplement 3 includes six alternative water pipeline alignments for the WSSC Reservoir area to County Road 9 portion of the project. Of these six, four were presented as part of the Application.

In the Application, Thornton selected an alternative identified as South 2 as the preferred alternative. This is commonly known as the Douglas Road alignment. This alternative was re-analyzed as a part of the Working Group and public process and it remains a reasonable siting and design alternative as set forth in the Application, so long as the project is not co-located with the NISP pipeline in Douglas Road.

However, based on the results of the alternative development and analysis and the Public Involvement process, Thornton requests approval for the TWP corridor with Alternative 3 (Option C) Corridor, a water pipeline installed around the west side of WSSC Reservoir No. 4 meeting up with the NISP pipeline alignment at a point between WSSC Reservoir No. 3 and WSSC Reservoir No. 4. The TWP water pipeline would be co-located with the NISP pipeline from this point west to County Road 9, generally in the County Road 56 corridor. This is the West 2 alternative described in the Application of the Alternative Configurations Analysis. This alternative was reviewed by the Working Group as Option C.

The TWP corridor with Alternative 3 (Option C) Corridor best meets what Thornton understood to be important considerations expressed by the Working Group and the public, such as: 1) the opportunity to co-locate with NISP; 2) to minimize traffic/construction duration; and 3) reduce impacts to private property. At the same time because the public engagement process was designed to consider community interests at the exclusion of Thornton’s interests, Thornton also evaluated the alignments and proposed ideas on whether they are or are not reasonable siting and design alternatives to meet the purpose and need of Thornton’s drinking water supply project including: 1) preserving source water quality to protect public health; 2) providing water supply reliability; 3) protecting yield; 4) abiding by the water court Decree; 5) protecting WSSC and its shareholders; 6) being fiscally responsible with taxpayer money; and 7) delivering water to Thornton by 2025. Combined with addressing the important considerations that Thornton heard through the public process, the TWP corridor with Alternative 3 (Option C) Corridor is a reasonable siting and design alternative that best addresses Thornton’s interests in the purpose and need of the project. In addition, Thornton evaluated the following ideas presented by the Working Group:

- Use the Cache la Poudre River instead of a pipeline (River Delivery Alternatives—also labeled by Larimer County in the Public Involvement process as Option D: Poudre River)
- Use existing ditches or canals instead of a pipeline (Canal Delivery Alternatives—also labeled by Larimer County in the Public Involvement process as Option A: Canal Conveyance)
- Use lake taps (micro-tunneled lake intakes) to access water in the WSSC reservoir system instead of trenched pipelines from reservoir outlets (Lake Tap Concept)

For the River Delivery Idea, four (4) alternatives were developed and evaluated. The analysis concluded that none of the alternatives were reasonable. For the Canal Delivery Idea, four (4) alternatives were developed and evaluated. The analysis concluded that none of the alternatives were reasonable. With respect to the use of lake taps, the analysis concluded that lake taps were not a reasonable alternative to the use of conventional, open-trench excavation for pipeline installation.

Accordingly between its Application and this Supplement 3, Thornton has presented six reasonable siting and design alternatives. Of those, because of expressed community preferences Thornton has changed its preferred alignment from that sought in its Application (South 2) to the TWP corridor with Alternative 3 (Option C) Corridor. Therefore, Thornton has complied with Criterion No. 2.

14.10.D.3 The proposal conforms with adopted county standards, review criteria and mitigation requirements concerning environmental impacts, including but not limited to those contained in this Code.

and

14.10.D.4 The proposal will not have significant adverse affect on or will adequately mitigate significant adverse affects on the land or its natural resources, on which the proposal is situated and on lands adjacent to the proposal.

The TWP corridor with Alternative 3 (Option C) Corridor was developed considering adopted county standards, review criteria and mitigation requirements concerning environmental impacts and compatibility with sensitive natural areas. The TWP corridor with Alternative 3 (Option C) Corridor was chosen and will be constructed to minimize impacts to sensitive natural areas.

Resources have been identified within the TWP corridor with Alternative 3 (Option C) Corridor and are either mitigable or have no significant impact. For those resources that require mitigation,

appropriate mitigation measures will be implemented in the development of the final pipeline alignment considering data received from the Planning Division, environmental field surveys that will be completed for the TWP once access is available, and other sources as additional studies are conducted during the design phase.

Surface drainage BMPs implemented during construction will include application of erosion control techniques and the successful revegetation of disturbed areas.

The TWP will utilize trenchless construction methods for water pipeline installation to minimize effects to natural resources such as jurisdictional waters and wildlife habitat associated with those areas.

The area disturbed for constructing the water pipeline will be restored to pre-construction conditions, including grade and revegetation, thus avoiding any long-term impacts to wildlife the environment, the land, land adjacent to the proposal or natural resources.

As described in detail in the Application and Supplement 3, the TWP corridor with Alternative 3 (Option C) Corridor conforms with adopted county standards, review Criteria and mitigation requirements concerning environmental impacts, including but not limited to those contained in this Code and complies with Criterion No. 3.

In addition, TWP corridor with Alternative 3 (Option C) Corridor will not have significant adverse affect on or will adequately mitigate significant adverse affects on the land or its natural resources, on which the proposal is situated and on lands adjacent to the proposal. Accordingly, the TWP corridor with Alternative 3 (Option C) Corridor complies with Criterion No. 4.

14.10.D.5 The proposal will not adversely affect any sites and structures listed on the State or National Registers of Historic Places.

A Class I File Search and Literature Review for cultural resources was conducted in 2016, 2017, and 2018. Based on that review, there are no cultural sites or structures that are listed on the State and National Register of Historic places within the TWP with Alternative 3 (Option C) Corridor within unincorporated Larimer County.

Accordingly because the proposal will not adversely affect any sites and structures listed on the State or National Registers of Historic Places, the TWP corridor with Alternative 3 (Option C) Corridor complies with Criterion No. 5.

14.10.D.6 The proposal will not negatively impact public health and safety.

The TWP corridor with Alternative 3 (Option C) Corridor will not negatively impact public health and safety.

Although the TWP crosses three designated 100-year floodplains, the TWP will not alter the floodplains. Therefore, the TWP will have no impact on the hydraulics and hydrology of the floodplain and no impact to public health and safety. The TWP will have no impact on wildfire hazards because it is outside of the wildfire hazard area and is mostly buried pipeline.

Appurtenances will be constructed of steel, concrete, and other non-flammable materials. Therefore, because the TWP has no impact on wildfire hazards, it will have no impact on public health and safety.

The majority of the TWP corridor with Alternative 3 (Option C) Corridor is located in a low geologic hazard category. Where mitigation measures are needed, these hazards can be avoided through use

of mitigation. Therefore, because the TWP is sited through mostly low geologic hazards, or can be mitigated to avoid geologic hazards, it will have no impact on public health and safety.

With respect to traffic, Thornton places a high priority on safety during construction. TWP contractors will implement traffic management plans based upon local traffic control requirements and general safe operating practices. Access will be maintained to local area residents. Emergency vehicle access needs will be maintained and construction activities coordinated with local fire departments, police departments, ambulance services, and other emergency responders as necessary.

Any areas impacted during construction will be restored to pre-construction conditions upon completion of the TWP. Traffic impacts after completion of the construction of the TWP are expected to be limited as the facilities will be unmanned and operations will require minimal traffic. Therefore, the TWP will not negatively impact public health and safety.

Thornton will protect water quality during construction through surface drainage BMPs and the successful revegetation of disturbed areas. Development of the final water pipeline alignment will consider water pipeline construction locations that minimize impacts to historical surface and subsurface water flows in the project area. Water pipeline crossings of jurisdictional waters, including wetlands, will be constructed utilizing trenchless construction methods. This construction method will eliminate surface disturbance to the waterbody and effects on water quality. No direct effects on water quality in irrigation ditches that the TWP crosses are anticipated. Stormwater management practices will be incorporated in the design of the source water pump station site. Therefore, because water quality will not be negatively impacted, the TWP will not negatively impact public health and safety.

Air quality will not be negatively impacted because Thornton and/or the TWP contractors will develop a fugitive dust control plan, submit an air pollution emissions notice, and obtain a permit from CDPHE prior to construction activities in accordance with state air quality regulations and will mitigate fugitive dust caused by construction activities. Permanent facilities associated with the TWP will comply with air pollution control regulations. Thornton heard community concerns that the diesel-powered backup generator associated with the source water pump station as proposed in the Application would be noisy and have emissions detrimental to nearby residents and the community as a whole. In response, Thornton was able to confirm with PVREA that it is possible for PVREA to extend a second, redundant power feed to the source water pump station for emergency backup power; therefore, an emergency diesel powered backup generator will not be required. Accordingly, Thornton proposes as a condition of approval, that it not place a permanent emergency diesel powered backup generator at the source water pump station site. This will eliminate the noise and emissions otherwise associated with a diesel backup generator.

The TWP will not pose environmental hazards because Thornton and the TWP contractors will provide and maintain sanitary accommodations for the use of their employees during construction of the TWP in a manner that complies with the requirements and regulations of health departments and other governmental bodies. Construction, operation, and maintenance activities will follow best management practices for the management of wastes to avoid and minimize impacts from potential spills or other releases to the environment. Thornton will also comply with applicable federal, state, and local laws and regulations regarding the handling, storage, disposal, transportation, and use of hazardous substances.

Accordingly because the proposal will not negatively impact public health and safety, the TWP corridor with Alternative 3 (Option C) Corridor complies with Criterion No. 6.

14.10.D.7 The proposal will not be subject to significant risk from natural hazards including floods, wildfire or geological hazards.

The TWP corridor with Alternative 3 (Option C) Corridor will not be subject to significant risk from natural hazards including floods, wildfire or geologic hazards.

The TWP crosses three designated 100-year floodplains, the TWP will not alter the floodplains. Therefore, the TWP will have no impact on the hydraulics and hydrology of the floodplain and be at no risk of flooding because it is a buried pipeline.

The TWP will not be subject to wildfire hazards because it is outside of the wildfire hazard area and is mostly buried pipeline. Appurtenances will be constructed of steel, concrete, and other non-flammable materials.

Based on Larimer County GIS data downloaded from Larimer County's GIS Digital Data, the majority of the TWP corridor with Alternative 3 (Option C) Corridor is located in a low geologic hazard category. Where mitigation measures are needed, these hazards can be avoided through mitigation. Therefore, because the TWP is sited through mostly low geologic hazards, or can be mitigated to avoid geologic hazards, it will not be subject to significant risk from geologic hazards.

Accordingly, the TWP corridor with Alternative 3 (Option C) Corridor will not be subject to significant risk from natural hazards including floods, wildfire or geologic hazards and therefore complies with Criterion No. 7.

14.10.D.8 Adequate public facilities and services are available for the proposal or will be provided by the applicant, and the proposal will not have a significant adverse effect on the capability of local government to provide services or exceed the capacity of service delivery systems.

The TWP corridor with Alternative 3 (Option C) Corridor adequate public facilities and services are available for the proposal or will be provided by Thornton, and the proposal will not have a significant adverse effect on the capability of local government to provide services or exceed the capacity of service delivery systems.

The TWP will not have a negative effect on local government or any other existing public facilities and services. The construction, operation, and maintenance of the underground water pipeline and associated facilities will not require any new public facilities or impact existing services such as police, fire, waste water, and healthcare. During construction water and sanitary facilities will be provided by Thornton or its TWP contractor. After construction, water and sewer utility services for operations and maintenance will not be required. After construction, no on-site personnel will be required, and no added burden will be placed on existing fire and police facilities. During construction of the water pipeline short-term disruptions could occur to domestic water service if utility requires relocation. Area residents will be notified in advance of any service disruptions. The TWP will employ Thornton employees, a construction management team, and contractors to construct the TWP. No lodging or temporary housing is expected to be required for Thornton employees or the construction management team. Some workers may require local lodging or temporary housing in the area during construction. After construction, no lodging or housing will be required.

TWP will not reduce existing service below adequate levels. Larimer County residents will not subsidize the TWP. Similar to other utility/water providers, Thornton's water utility customers will pay for the TWP.

Existing transportation facilities are adequate to serve construction of the TWP, and no new roads or improvements to existing roads are anticipated to be necessary in unincorporated Larimer County. Access will be via existing roads, temporary construction access, and the ROWs negotiated through individual easements. The existing County Road 56 road network has adequate capacity to serve anticipated construction traffic needs for facilities within the TWP corridor with Alternative 3 (Option C) Corridor. The impact of rerouting through vehicle movements is almost undetectable since traffic volumes on County Road 56 are extremely low.

After construction, the TWP facilities may operate year-round, 24 hours of a day; however, the facilities are intended to be unmanned. The source water pump station will be monitored and operated remotely, inspected daily, and repaired and maintained as needed. The existing road network has adequate capacity to serve anticipated operational traffic needs.

Access to the source water pump station will be determined after the final site location has been determined. Access to the source water pump station is anticipated to be from Douglas Road, but is dependent the final location. Vista Lake Drive and Starlite Drive are Larimer County public roads that are privately maintained. Vista Lake Drive is a paved road and Starlite Drive is a gravel road and, if used, Thornton will work with the community to ensure that roads are maintained during construction and restored to pre-construction or better condition after construction.

Thornton contacted PVREA to determine if current infrastructure in the area supports the proposed load, and they confirmed sufficient power is available in the area to supply the source water pump station. Thornton heard community concerns that the diesel-powered backup generator associated with the source water pump station as proposed in the Application would be noisy and have emissions detrimental to nearby residents and the community as a whole. In response, Thornton was able to confirm with PVREA that it is possible for PVREA to extend a second, redundant power feed to the source water pump station for emergency backup power; therefore, an emergency diesel powered backup generator will not be required. Accordingly, Thornton proposes as a condition of approval, that it not place a permanent emergency diesel powered backup generator at the source water pump station site.

Accordingly, Thornton has demonstrated that the TWP corridor with Alternative 3 (Option C) Corridor has adequate public facilities and that services are available for the proposal or that such will be provided by Thornton and the proposal will not have a significant adverse effect on the capability of local government to provide services or exceed the capacity of service delivery systems. Therefore, Thornton has demonstrated compliance with Criterion No. 8.

14.10.D.9 The applicant will mitigate any construction impacts to county roads, bridges and related facilities. Construction access will be re-graded and revegetated to minimize environmental impacts.

Thornton will mitigate any construction impacts to county roads, bridges and related facilities related to the TWP corridor with Alternative 3 (Option C) Corridor. Construction access will be re-graded and revegetated to minimize environmental impacts.

The TWP with Alternative 3 (Option C) Corridor was reviewed in conjunction with the area goals and transportation improvement plans outlined in the *Larimer County Transportation Master Plan*, adopted in July 2017. The *Larimer County Transportation Master Plan* identifies multiple road improvement projects within the area along the TWP with Alternative 3 (Option C) Corridor. Thornton will coordinate design efforts with Larimer County improvement projects to minimize conflicts with future plans. If Larimer County’s improvement projects occur within the timeframe of

the construction of the TWP, Thornton will work with Larimer County and other involved parties to coordinate construction and minimize disruption.

Traffic impacts due to construction and post-construction operation of the water pipeline and appurtenances have been considered. Thornton places a high priority on safety during construction. TWP contractors will implement traffic management plans based upon local traffic control requirements and general safe operating practices. Any areas impacted during construction will be re-graded and re-vegetated to pre-construction conditions upon completion of the TWP. Traffic impacts after completion of the construction of the TWP are expected to be limited as the facilities will be unmanned and operations will require minimal traffic.

Access to the source water pump station will be determined after the final site location has been determined. Access to the source water pump station is anticipated to be from Douglas Road, but is dependent the final location. Vista Lake Drive and Starlite Drive are Larimer County public roads that are privately maintained. Vista Lake Drive is a paved road and Starlite Drive is a gravel road and, if used, Thornton will work with the community to ensure that roads are maintained during construction and restored to pre-construction or better condition after construction. These existing roads could provide access for construction vehicles during construction of the source water pump station and for future maintenance. The access drive and parking areas are anticipated to be gravel. Future access requirements will be minimal as this is anticipated to be an unmanned facility with limited maintenance requirements.

Accordingly, Thornton has demonstrated that it will mitigate any construction impacts to county roads, bridges and related facilities and that construction access will be re-graded and revegetated to minimize environmental impacts. Accordingly, the TWP corridor with Alternative 3 (Option C) Corridor complies with Criterion No. 9.

14.10.D.10 The benefits of the proposed development outweigh the losses of any natural resources or reduction of productivity of agricultural lands as a result of the proposed development.

The TWP corridor with Alternative 3 (Option C) Corridor provides benefits that outweigh the losses of any natural resources or reduction of productivity of agricultural lands as a result of the project. The TWP corridor with Alternative 3 (Option C) Corridor avoids impacts to natural resources, and any reduction of productivity of agricultural lands as a result of the project will be temporary; the impacted landowner will be compensated for any reduction in production, and the property will be restored to its previous condition to resume normal crop production.

Thornton has demonstrated that the proposed development outweighs the losses of any natural resources or reduction of productivity of agricultural lands as a result of the proposed project. Accordingly, the TWP corridor with Alternative 3 (Option C) Corridor complies with Criterion No. 10.

14.10.D.11 The proposal demonstrates a reasonable balance between the costs to the applicant to mitigate significant adverse affects and the benefits achieved by such mitigation.

The TWP corridor with Alternative 3 (Option C) Corridor does not pose significant adverse affects to the master plan, applicable IGAs, county standards, the community, the environment, the land directly impacted by the project or lands adjacent, natural resources, any sites or structures listed on the State or National Registers of Historic Places, public health and safety, natural hazards such as floods, wildfire or geologic hazards, the capability of local government to provide services or exceed the capacity of service delivery systems, county roads, bridges and related facilities,

agricultural productivity, wildlife, water or air. Where there are impacts, mostly short-term, Thornton has demonstrated the ability to mitigate those in a cost efficient manner.

Accordingly, the proposal demonstrates a reasonable balance between the costs to the applicant to mitigate significant adverse affects and the benefits achieved by such mitigation. Accordingly, the TWP corridor with Alternative 3 (Option C) Corridor complies with Criterion No. 11.

14.10.D.12 The recommendations of staff and referral agencies have been addressed to the satisfaction of the county commissioners.

Thornton addressed staff and referral agency recommendations as a part of the Application. Thornton will continue to coordinate with staff and local agencies on any recommendations resulting from this Supplement 3.

Technical Reports

As indicated in the *Larimer County Planning Department Procedural Guide for 1041 Permits*, a number of reports and plans are required to be submitted with Larimer County's 1041 permit application

Wetland Mitigation Plan

Thornton retained ERO Resources, Inc. (ERO) to provide a natural and cultural resources assessment for the TWP. ERO assessed the Alternative 3 (Option C) Corridor plus an additional study buffer for potential isolated wetlands, jurisdictional wetlands, and other waters of the United States. (WOTUS). Boundaries of wetlands and open water areas were defined based on 2018 site visits, National Wetland Inventory (NWI) mapping, U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) mapping, and 2017 aerial photographs. The determination on whether a wetland or open water area is a potential WOTUS was based on reviewing NHD mapping to determine if the area has a possible connection to any known WOTUS.

Six potential wetlands (12.77 acres) and eight potential other WOTUS (3.48 acres) were mapped within the Alternative 3 (Option C) Corridor in Larimer County.

Thornton is proposing to use trenchless construction methods to cross jurisdictional WOTUS including wetlands. This construction method will eliminate surface disturbance to the waterbody and effects on water quality. Based on this approach, it is anticipated that the TWP would not require any federal approvals such as a Clean Water Act 404 permit. Thornton plans to submit a jurisdictional determination request to U.S. Army Corps of Engineers (USACE) to determine which areas in the Alternative 3 (Option C) Corridor are jurisdictional WOTUS.

Open waters and wetlands determined to be nonjurisdictional and riparian areas will be temporarily impacted by trenching activities. During construction, the trench will be as narrow as safely practicable when crossing nonjurisdictional waters and wetlands or any riparian areas. Temporary impacts will be restored to pre-construction conditions following completion of the proposed activities.

BMPs will be implemented during construction, which will help minimize or eliminate impacts within the Alternative 3 (Option C) Corridor. These BMPs include installing temporary fencing to deter access to sensitive areas outside the Alternative 3 (Option C) Corridor limits, placing staging areas in previously disturbed upland areas, and installing sediment and erosion control devices to minimize surface runoff in disturbed areas. Temporarily disturbed areas will be restored to pre-construction grades, planted with native seed mixes or as specified by property owner, and mulched.

Wildlife Conservation Plan

Thornton retained ERO to provide a natural and cultural resources assessment for the TWP. ERO assessed the Alternative 3 (Option C) Corridor plus an additional study buffer for terrestrial and aquatic animals and habitat. Information was obtained from various sources including Colorado Parks and Wildlife (CPW), Colorado Natural Diversity Information System (CNDIS), Colorado Natural Heritage Program (CNHP), U.S. Fish and Wildlife Service (USFWS), published literature, and field surveys. Site visits to the Alternative 3 (Option C) Corridor and study buffer, where accessible, were conducted in 2018 to assess potential wildlife habitat, potential habitat for federally threatened, endangered, and candidate species protected under the Endangered Species Act (ESA).

Federal Threatened, Endangered, and Candidate Animal Species

No impacts are anticipated on federally threatened, endangered, and candidate species protected under the ESA or their habitat. The Preble's meadow jumping mouse (Preble's) is listed as a federally and state threatened species. No impacts on Preble's or its habitat are anticipated to occur from the TWP and none of the drainages that occur within the Alternative 3 (Option C) Corridor and study buffer have been identified by the USFWS as area essential to the recovery of Preble's. Field reviews indicate the potential wetlands and riparian habitat where the Alternative 3 (Option C) Corridor and study buffer cross. These areas are not suitable habitat or are unlikely to support a population of Preble's because they are largely dominated by cattails, are isolated from known Preble's populations, or do not contain adequate shrub cover to be considered suitable habitat. Use of trenchless construction methods in areas with suitable Preble's habitat will eliminate impacts on Preble's habitat. A site assessment will be completed to determine the boundaries of potential or suitable habitat for Preble's to confirm which construction methods should be implemented in those areas. A habitat assessment will be submitted to the USFWS when the final water pipeline alignment has been determined to confirm the boundaries of potential habitat identified within the alignment and to confirm that the TWP will have no effect on Preble's or its habitat.

State Animal Species of Concern

The Alternative 3 (Option C) Corridor and study buffer were assessed for potential habitat for Colorado threatened, endangered, and species of special concern, as well as species that have been described as rare, vulnerable, or imperiled in the state by the CNHP. The Alternative 3 (Option C) Corridor contains suitable or potentially suitable habitat for several state-listed species as presented in **Table ES-2S**. The table presents state animal species of concern potentially found in the Alternative 3 (Option C) Corridor and study buffer or with potential to be affected by the TWP.

TABLE ES-2S
Suitable or Potential Habitat for State Animal Species

Common Name	State Status ¹	CNHP Rank ²	Suitable Habitat Present	Impact
Amphibians and Reptiles				
Common garter snake	SC	NI	Yes – tributaries to the South Platte River in the Alternative 3 (Option C) Corridor and study buffer	The trenchless construction methods proposed to eliminate impacts on wetlands and waters will minimize long-term adverse impacts; therefore, the TWP would not likely adversely affect the overall populations.
Northern leopard frog	SC	G5, S3	Yes – banks and shallow portions of marshes, wet meadows, ponds, lakes, and streams in the Alternative 3 (Option C) Corridor and study buffer	
Birds				
Black-necked stilt	—	G5, S3	Yes – suitable habitat in the Alternative 3 (Option C) Corridor and study buffer	These birds are federally protected under the Migratory Bird Treaty Act (MBTA). Mitigation methods such as seasonal restrictions and buffers, clearance surveys, minimizing limits of construction disturbance, passive dispersal during construction, and trenchless construction methods will minimize long-term adverse impacts on these species and their habitat; therefore, the TWP will not likely adversely affect the overall populations.
Ferruginous hawk	SC	G4, S3/4	Yes – known to breed in scattered locations in eastern Larimer County; no breeding ferruginous hawks were recorded near the Alternative 3 (Option C) Corridor	
Long-billed curlew	SC	G5, S2	Potentially – has not been recorded in the Alternative 3 (Option C) Corridor and study buffer	

¹SE = State Endangered Species; ST = State Threatened Species; SC = State Species of Concern.

²CNHP Ranking: G1 = Critically imperiled globally, G2 = Imperiled globally, G3= Vulnerable throughout its range, G4 = Apparently secure globally, G5 = Demonstrably secure globally, S1 = Critically imperiled in state, S2 = Imperiled in state, S3 = Vulnerable in state, S4 = Apparently secure in state, NI = No information. *Source:* Colorado Division of Wildlife (CDOW) 2006; Colorado Natural Diversity Information Source (CNDIS) 2016; CNHP 2016; CPW 2016a, 2016b; Woodling 1985.

Raptor and Other Migratory Birds

Raptors are protected under the MBTA. The CPW raptor nest database shows one red-tailed hawk nest, one osprey nest, one great horned owl nest, and one unknown hawk nest located in or near the Alternative 3 (Option C) Corridor and study buffer; however, the locations of these nests could not be verified due to limited land access. Three inactive raptor nests were observed during the 2018 site visit. Additional suitable nesting habitat is also present in the Alternative 3 (Option C) Corridor and study buffer. Ground-nesting and other birds could nest in the grasslands and trees in and near the Alternative 3 (Option C) Corridor. Physical disturbance, displacement, and clearing of upland and wetland habitats could affect raptors and other migratory birds during construction. Impacts will be temporary, and many habitats are anticipated to recover quickly following construction. Thornton will review the CPW raptor nest data and perform nest surveys for raptors before the nesting season to identify potential active raptor nests before construction. Thornton will

coordinate with CPW regarding any potential conflicts between scheduled construction and potential raptor nests, and develop measures acceptable to CPW to minimize impacts on nesting raptors.

Other Game and Nongame Species

Areas within the proposed Alternative 3 (Option C) Corridor and study buffer may provide habitat for other animals, including coyote, red fox, racoon, cottontail rabbit, deer mouse, prairie vole, plains pocket gopher, and ground squirrel. The TWP could displace some individuals during construction, but would not have a significant long-term negative impact on these animals because these species are common and widespread throughout Larimer County.

Natural Hazard Mitigation Plan

Wildfire Hazards

Based on Larimer County GIS data downloaded in December 2018 from Larimer County's GIS Digital Data, the Alternative 3 (Option C) Corridor is located outside of designated wildfire hazard areas. With the exception of the source water pump station, the majority of the TWP is underground including the water pipeline and underground appurtenances that would not be susceptible to wildfires.

Geologic Hazards

Based on Larimer County GIS data downloaded December 2018 from Larimer County's GIS Digital Data, the Alternative 3 (Option C) Corridor is located in a low geologic hazard category.

A subsurface geotechnical investigation of geologic conditions utilizing soil borings will be completed during design to further determine the subsurface soil conditions and associated geological hazards along the Alternative 3 (Option C) Corridor. Mitigation measures will be further refined during design to meet site-specific geological hazards.

Jurisdictional waters will be crossed using trenchless construction methods. Mitigation measures will be implemented as required in areas outside of any jurisdictional waters.

Traffic Impact Study

Impacts caused by construction equipment and activity on Larimer County roads will be short term during construction. Access will be maintained to local area residents. Emergency vehicle access needs will be maintained and construction activities coordinated with local fire departments, police departments, ambulance services, and other emergency responders as necessary. Thornton places a high priority on safety during construction. TWP contractors will implement traffic management plans based upon local traffic control requirements and general safe operating practices. Proper signage, flaggers, lighting, speed limits, work hours, postings, notifications, and other precautionary safety measures will be taken to protect the residents of Larimer County and contractor's employees.

Thornton understands that if the water pipeline is required to be located parallel to and within Larimer County ROW other than as specifically approved in a 1041 permit, then use of that ROW will require Larimer County approval.

In the fourth quarter of 2018, Larimer County recorded traffic volume data at intersections along County Road 56. That data is documented in the *Memorandum TWP – Summary of Existing Conditions and Project Impacts* by Felsburg Holt & Ullevig, November 13, 2018. The level of vehicle movements along County Road 56 are less than 10 vehicle peak hours. The analysis results presented in the memorandum indicate that construction impacts from Alternative 3 (Option C)

Corridor will be almost undetectable because traffic volumes are extremely low and no improvements were recommended.

The Alternative 3 (Option C) Corridor was reviewed in conjunction with the area goals and transportation improvement plans outlined in the *Larimer County Transportation Master Plan*, adopted in July 2017. No planned improvements were identified along the Alternative 3 (Option C) Corridor for County Road 56. The *Larimer County Transportation Master Plan* includes planned improvements for Douglas Road near WSSC Reservoir No. 4. If Larimer County's improvement projects occur within the timeframe of the construction of the water pipeline and source water pump station near WSSC Reservoir No. 4, Thornton and/or the Alternative 3 (Option C) Corridor contractor will work with Larimer County and other involved parties to coordinate construction and minimize disruption.

Trip Generation

Trip generation will be primarily related to construction activities, including delivery of materials and equipment, worker transport, and water pipeline installation.

On average, five to ten trips per day to the site are expected for each type of vehicle: pickup trucks, welding trucks, pipe/material hauling trucks, water trucks, and equipment transport trucks for each construction package.

Post-construction trip generation will be primarily related to the operation and maintenance of the TWP. Normal operations and maintenance activities could include TWP operators periodically traveling in a pickup truck to the source water pump station location, and along the water pipeline route for a visual inspection. To the extent practicable, visual inspections could be from public roads to minimize impacts to property owners.

Project Access

Access along the final water pipeline alignment will be along roadways, at existing access locations when practicable, or via properties owned by Thornton that are within the construction work limits. New access locations are anticipated to be required for temporary and permanent use. Thornton will obtain individual Larimer County and CDOT access permits for any necessary temporary and permanent access locations as applicable. If access is needed using private roads or drives, Thornton will negotiate use with owners. Stabilized construction entrances/exits will be installed, as necessary, at the intersections of the TWP temporary access roads with paved roads. Permanent access locations will be designed per municipal standards based on location of access. Temporary access will be unpaved and used primarily for transport of materials and construction workers. Temporary and permanent access locations will be closed to the public. Temporary access locations could include warning signs, flaggers, and controlled access, as necessary. Additionally, gates or other approved barriers on temporary access roads may be utilized when construction workers are not present to control unauthorized access. Temporary access locations will be restored to pre-construction conditions upon the completion of construction.

It is anticipated that access to the final water pipeline alignment will be required along County Road 56. Other potential access locations, depending on the final water pipeline alignment, could be required along other local roads. It is anticipated that Travis Road will be required to provide access for construction vehicles during construction of the water pipeline, connection to WSSC Reservoir No. 4, and for future maintenance as necessary depending on the final water pipeline alignment. Vista Lake Drive or Starlite Drive could provide access for construction vehicles during construction of the water pipeline, connection to WSSC Reservoir No. 4, and for future maintenance as

necessary. Vista Lake Drive and Starlite Drive are Larimer County public roads that are privately maintained. Vista Lake Drive is a paved road and Starlite Drive is a gravel road and, if used, Thornton will work with the community to ensure that roads are maintained during construction and restored to pre-construction or better condition after construction.

Access to the source water pump station will be determined after the final site location has been determined. Access to the source water pump station is anticipated to be from Douglas Road, but is dependent on the final location. Vista Lake Drive and Starlite Drive are Larimer County public roads that are privately maintained. Vista Lake Drive is a paved road and Starlite Drive is a gravel road and, if used, Thornton will work with the community to ensure that roads are maintained during construction and restored to pre-construction or better condition after construction. These existing roads could provide access for construction vehicles during construction of the source water pump station and for future maintenance as necessary. The access drive and parking areas are anticipated to be gravel. Future access requirements will be minimal as this is anticipated to be an unmanned facility with limited maintenance requirements. Site access will be submitted for review to Larimer County with the Site Plan Review Permit application.

Possible Delivery, Commuting Routes, and Material Storage

Truck haul routes for material deliveries from off-site locations will be chosen to facilitate safe and expedient delivery while minimizing traffic impacts. It is expected that the daily commuting route for construction workers would also follow the same roads as the truck haul routes to the construction site or temporary staging areas for parking. It is not expected that any road improvements or closures would be required to facilitate the transport of materials. In the event that a closure is necessary, the duration of the closure will be minimized, and Larimer County standards and procedures will be followed. The water pipeline and other materials are expected to be transported via truck haul routes to the temporary and permanent easement or temporary staging areas.

Construction in ROW

Unless required otherwise by Larimer County, water pipeline installation in ROW including road crossings in unincorporated Larimer County will be constructed using open-cut construction. Road closures with detour routes or partial road closures could be required. Larimer County standards will be followed, and permits will be obtained for any required closures. The ROW will be restored to pre-construction conditions and in accordance with Larimer County standards.

Construction Traffic Mitigation Measures

Access will be maintained to local area residents. Impacts to community services will be mitigated by coordinating with Poudre School District and Weld RE-4 School district to minimize conflicts with school bus routes. Thornton will coordinate with local fire departments, police departments, and other emergency responders to maintain emergency vehicle access. Disturbances from construction traffic to the surrounding soil can be mitigated with water application to control dust and stabilized construction entrances/exits will be installed to mitigate soil transfer onto county roads and state highways.

Drainage and Erosion Control Report and Plan

The Alternative 3 (Option C) Corridor within unincorporated Larimer County spans two 10-digit hydrologic unit code (HUC) watersheds. HUC watersheds along the Alternative 3 (Option C) Corridor are delineated based on the following basins:

- Horsetooth Reservoir-Cache la Poudre River Basin
- Boxelder Creek Basin

The Alternative 3 (Option C) Corridor will be restored to pre-construction topography and vegetation conditions following construction. The water pipeline crossing of jurisdictional waters, including wetlands, will be constructed using trenchless construction methods. Irrigation ditches will be crossed using trenchless construction methods as required by ditch owner. Existing ditches, streams, and natural drainages will be preserved, and no permanent effects on area drainage are anticipated.

Construction Water Quality Management

Prior to construction, Thornton and/or the TWP contractors will obtain a Stormwater Discharge Associated with Construction Activity – General (Construction Stormwater Discharge) Permits from the CDPHE. SWMPs will be developed under the general permit to protect the quality of stormwater runoff during construction in accordance with the Construction Stormwater Discharge Permit requirements.

Post-Construction Stormwater Runoff

The Alternative 3 (Option C) Corridor will be restored to pre-construction topography and vegetation conditions following construction. To mitigate impacts caused by erosion, landscaping for the TWP will consist of vegetation restoration and maintenance of areas disturbed by the TWP. Effects to vegetation along the work areas will be temporary and mostly associated with construction. Any vegetated areas disturbed during maintenance or any required repairs will be restored by the methods used during construction.

Floodplain Hydraulic/Hydrologic Modeling Report

The Alternative 3 (Option C) Corridor does not cross any designated 100-year floodplain.

Simulation of the Appearance of the Facility

The Alternative 3 (Option C) Corridor appurtenances also include an approximate 40-million gallon per day (mgd) source water pump station located near WSSC Reservoir No. 4. The source water pump station will require an approximate 2-acre site with up to an approximate 10,000 square-foot building to house pumps and associated equipment.

The final siting of the source water pump station will be completed during final design. The preferred location is adjacent to Douglas Road. **Figure ES-2S** shows an example rendering of the source water pump station adjacent to Douglas Road. During design, Thornton will consider input and suggestions on the design and architecture for the source water pump station that reduce the visual impacts of the facility.

Noise Analysis

Thornton heard community concerns that the diesel-powered backup generator associated with the source water pump station as proposed in the Application would be noisy and have emissions detrimental to nearby residents and the community as a whole. In response, Thornton was able to confirm with PVREA that it is possible for PVREA to extend a second, redundant power feed to the source water pump station for emergency backup power; therefore, an emergency diesel powered backup generator will not be required. Accordingly, Thornton proposes as a condition of approval, that it not place a permanent emergency diesel powered backup generator at the source water pump station site.

Air Quality Impact and Mitigation Report

Thornton heard community concerns that the diesel-powered backup generator associated with the source water pump station as proposed in the Application would be noisy and have emissions

detrimental to nearby residents and the community as a whole. In response, Thornton was able to confirm with PVREA that it is possible for PVREA to extend a second, redundant power feed to the source water pump station for emergency backup power; therefore, an emergency diesel powered backup generator will not be required. Accordingly, Thornton proposes as a condition of approval, that it not place a permanent emergency diesel powered backup generator at the source water pump station site.

Additional Information

Enhanced Community Benefits to Larimer County

At the August 1, 2018 hearing on Thornton's 1041 Application, the BOCC made several comments suggesting that Thornton identify broader community benefits as a part of its Application. Thornton utilized the public hearings, the enhanced community engagement process, and other stakeholder outreach to collect input regarding community interests and enhanced benefits. Because these benefits are not directly related to the pipeline project, Thornton proposes to memorialize these community benefits in a separate Intergovernmental Agreement (Community Benefits IGA) to be entered into between Larimer County and Thornton upon issuance of a 1041 Permit to Thornton for the TWP corridor with Alternative 3 (Option C) Corridor with terms and conditions as agreed to by Thornton.

Thornton is proposing the following benefits to be included in the Community Benefits IGA. These benefits have an estimated value to Larimer County of approximately \$60 million dollars:

1. Cache la Poudre River Health
 - a. Thornton will work with the Colorado Water Conservation Board and other parties to establish a framework consistent with Colorado water law that would preserve and enhance river flows on the Poudre River. This project is called Poudre Flows, and seeks to obtain an Instream Flow Augmentation Plan for the Poudre River (Poudre Flows Augmentation Plan). This augmentation plan would establish minimum seasonal flows in specific reaches of the Poudre River to protect and improve the natural environment. These minimum flow designations are recognized by Colorado law, established by the CWCB in conjunction with the Colorado Division of Parks and Wildlife, and the water dedicated to these reaches is then administered within Colorado's water rights priority system by the State and Division Engineers. Poudre River water rights holders could then temporarily or permanently convey water to the CWCB that would be used to meet these minimum flow designations, resulting in additional water to the river that is protected through the river reach by Colorado water law.
 - b. Thornton proposes to dedicate and deliver up to 3,000 acre-feet a year of water to the CWCB for use in the Poudre Flows Augmentation Plan. Under the Poudre Flows Augmentation Plan, Thornton will make this water available to the CWCB to release to the Poudre River at specific times and locations upstream of critical river reaches to help meet the flow targets identified in the Poudre Flows Augmentation Plan, and will be protected from diversion or exchange as it flows through the protected reaches. This is not something that Thornton could do on its own. It would cost about \$45 million dollars to acquire 3,000 acre feet of comparable Poudre River water on the open market.
 - c. Additional measuring devices as well as physical modifications to several diversion structures in the Poudre River will be necessary in order to maximize the benefits of

added flows from the Poudre Flows Augmentation Plan and other flow enhancement efforts. Thornton proposes to contribute \$750,000 toward the study, implementation and evaluation of efforts related to improving Poudre River connectivity, aquatic and environmental health, and water rights administration.

2. Water supply challenges on the Poudre River are complex, and are just one factor of many that influence overall Poudre River health. To help address these challenges, Thornton proposes to contribute \$1,000,000 toward the establishment of a Water Innovation Fund which could be used to fund creative strategies to enhance Poudre River health and address local water supply challenges.
3. Boxelder Creek flows through two of Thornton's farms east of I-25. Thornton proposes providing Larimer County with approximately 1.25 miles of 50 foot wide easement across Thornton-owned properties along Boxelder Creek for connectivity of the Boxelder Creek Regional Trail. This easement has an approximate value of \$65,000.
4. As part of the Thornton Water Project, a fiber optic conduit will be installed throughout the length of the pipeline to provide for communication and operability of the many mechanisms needed to transmit and monitor the water supply. Thornton proposes to provide Larimer County with 12 strands of fiber-optic cable for the County to use for institutional services or its residents. This has the capability of providing up to 115 terabits per second of throughput. Access to this fiber is conservatively valued at \$12 million dollars.
5. Thornton will begin a community-based planning process to evaluate and identify future land uses for the properties that Thornton owns in Larimer and Weld Counties. As a part of this process, Thornton will coordinate with Larimer County and other local stakeholders to identify the interests of the community, and to develop Thornton's properties in a manner in which both Thornton's water interests and the communities' vision are preserved.
6. Since 1987, Thornton has made voluntarily payments in lieu of taxes on the farms that Thornton owns in Larimer County, even though as a governmental entity Thornton is exempt from taxation on those properties. Total payments to Larimer County taxing districts since 1987 have exceeded \$800,000. Thornton proposes that as long as Thornton is the fee owner of farms in Larimer County, Thornton pay the assessed valuation of those farms as agricultural property as a voluntary payment in lieu of taxes.