



STAFF REPORT

To: Honorable Mayor and Members of Town Council

From: Mark Marlowe, Utilities Director
Matt Benak, Water Resources Manager
Sheri Scott, Water Resources Program Analyst

Title: Update: Alternative Source of Water Supply Projects

History of Past Town Council, Boards & Commissions, or Other Discussions

In August 2009, Town Council unanimously approved participation in the Denver – Aurora – South Metro Intergovernmental Agreement to identify and evaluate opportunities to address long-term water supply needs for all Denver-metro communities in the most efficient and cost-effective manner possible.

In 2011, staff was directed by Town Council to evaluate other potential water supply projects (Alternative Source of Water Supply Projects) to ensure that Castle Rock fully understood the options available in addition to WISE. The Town developed a Request for Proposals (RFP) process that could accomplish that in a public, transparent process.

Through various public meetings in 2012, Town Council considered the risks, benefits, and costs of all of the proposals submitted including a hybrid option that couples the WISE project with one of the other proposals. As a result of these meetings, Town Council directed staff to focus efforts on a scaled back (hybrid) renewable water project (2,000 - 4,000 acre-foot solution) and explore in more detail, the hybrid option. Staff has been providing Town Council regular updates to the progress of the hybrid water supply option.

On February 19, 2013, staff provided an update to Town Council on the Alternate Source of Water Supply Projects.

On March 27, 2013, staff provided the Utilities Commission an update of the status of the ongoing negotiations with WISE and Stillwater Resources and announced that the discussions were continuing regarding the Western Pipeline and progress of receiving the necessary signatures for the Colorado River Cooperative Agreement (CRCA).

On May 7, 2013, Town Council unanimously approved the South Metro WISE Authority Formation and Organizational Intergovernmental Agreement (IGA) which made the Town of Castle Rock one of ten members of the South Metro WISE Authority.

On June 18, 2013, staff provided an update to Town Council on the Alternative Source of Water Supply project.

On August 28, 2013, staff informed the Utilities Commission that the WISE Delivery Agreement had been executed by all parties and that internal planning for the local infrastructure was commencing. Staff also reported that meetings are continuing with municipalities north of Denver regarding the Box Elder project and that a draft option agreement is being negotiated.

On September 17, 2013, staff provided an update to Town Council on the Alternative Source of Water Supply Projects.

On September 25, 2013, staff informed the Utilities Commission that the CRCA contingency was close to being complete and that the WISE agreement deadline may be extended six months. Staff also mentioned that the Box Elder ground water modeling is being conducted to assess the flow of the alluvial wells on the property and that staff is reviewing an option agreement that would allow the Town to exercise an option for up to 3-1/2 years before purchasing the property.

On October 23, 2013, staff informed the Utilities Commission that the CRCA contingency has been met but that the WISE Authority has recommended extending the WDA by one year in order to satisfy the remaining contingencies. By general consensus, the commissioners supported this deadline extension.

On December 3, 2013, Town Council unanimously approved extension of the deadline for an additional year to meet the three contingencies in the South Metro WISE IGA.

On January 7, 2014 Town Council approved an intergovernmental agreement (IGA) with Dominion Water and Sanitation District (Dominion) which will allow Dominion to move their WISE water through the Town's distribution system. The first capacity reservation fee (\$50,000) has already been received from Dominion.

On April 1, 2014 Town Council approved the 5-1/2-year option agreement for Box Elder Creek Well Field. The Town paid \$50,000 for the 6-month option requirement of the option agreement.

On April 23, 2014, staff provided the Utilities Commission with an update of the Western Pipeline Agreement.

The draft western pipeline purchase agreement and the key deal terms for lease purchase agreement for the WISE project were brought to the Utilities Commission on May 28, 2014. Utilities Commission recommended Council proceed with approval of the purchase agreement and the related lease purchase agreement with Dominion.

On June 17, 2014, Town Council approved the Western Pipeline Purchase Agreement.

On July 22, 2014, Town Council approved a \$4.3 million Lease-Purchase Agreement with Dominion Water and Sanitation District.

Utilities Commission was updated on the Rothe Water Rights on May 28, 2014. On July 30, 2014, Utilities Commission recommended that Town Council proceed with approval

of the contract assignment for the purchase and sale of land and water rights associated with the Rothe Recharge Plan.

On August 19, 2014, Town Council approved the Rothe Water Rights Purchase for up to 770 acre-feet of water rights to be used as augmentation water for the Box Elder Creek Well Field. This purchase closed on September 17, 2014 for a total cost of \$5,460,000.

On August 27, 2014, Utilities Commission reviewed the key terms of the Modifications Agreement and recommended to Town Council for approval.

On September 16, 2014, Town Council approved the execution of the Modifications Agreement, key terms of the Operations Agreement, key terms of the Joint Use Agreement, and associated costs for other key WISE Project components. The resulting closing of the Western Pipeline essentially satisfied the Western Pipeline contingency in the Water Delivery Agreement.

On October 1, 2014, the Town paid its second option payment for the Box Elder Well Field of \$100,000. This payment extended the due diligence period to October 1, 2015.

On October 22, 2014, staff provided the Utilities Commission with an update of the Alternate Source of Supply Projects.

On November 18, 2014, Town Council approved a resolution to participate in the Ridgeway Pipeline Participation Agreement for the design of the Ridgeway Pipeline and other local infrastructure needed to move WISE water through PWSD to the Town of Castle Rock. Town Council was updated on status of the Rueter-Hess Reservoir permit amendment and that a draft permit had been received, which for practical purposes, satisfied the last contingency in the Water Delivery Agreement.

On December 16, 2014, staff provided an update to Town Council on the Alternate Source of Water Supply Projects.

On March 17, 2015, Town Council approved additional funds (\$368,337) to implement the agreement regarding modifications to shared infrastructure of the WISE Western Pipeline by the South Metro WISE Authority.

On April 21, 2015, staff provided an update to Town Council on the Alternate Source of Water Supply Projects.

On June 24, 2015, staff provided the Utilities Commission with the details of the surface use lease agreement for the Rothe Property. Utilities Commission recommended moving forward and finalizing the lease agreement with the adjacent landowner, Sublette, Inc.

On August 18, 2015, Town Council approved Burns & McDonnell, Inc. to design approximately five miles of pipeline that will be a key piece of infrastructure in order for the Town to accept WISE supplies.

On August 18, 2015, Town Council approved a Surface Use Agreement with Sublette, Inc. to use the Rothe Property for recreation activities, while managing the property on the Town's behalf.

On December 9, 2015, staff update the Utilities Commission on the status of the WISE and Box Elder projects, including the 1041 permit process being considered by Weld County and associated with the Box Elder project.

Discussion

WISE Project

The WISE Authority was formed on July 10, 2013. Including the Town, there are currently ten South Metro members comprising the Authority. The purpose of the Authority is to implement the WISE project and deliver WISE water to all members of the Authority based on their average annual subscription amount. Below is a table showing all of the participating entities and their subscription amounts and a seat they hold on the WISE Authority Executive Board. Board member elections were held in November 2015. The new Board is shown below.

Authority Member	Subscription Amount	Board Member
Dominion	1,325	Yes
Parker	1,200	Re-elected
Castle Rock	1,000	Re-elected
Centennial	1,000	
Pinery	500	Re-elected
Stonegate	1,000	
Rangeview	500	Yes
Inverness	500	
Cottonwood	400	
Meridian	300	
TOTAL	7,725	

Board member roles will be determined in January 2016 when the new Board takes office.

Infrastructure

The infrastructure includes two distinct parts, “core” infrastructure and “local” infrastructure. The core infrastructure will be shared by all WISE members and comprises primarily the Western Pipeline and modifications to that pipeline. More details on this infrastructure are in **Attachment A**. Local infrastructure is defined as infrastructure required by one or more of the members of the WISE Authority. Castle Rock’s strategy is to partner with as many other members as possible on each portion of the local infrastructure.

Core Infrastructure

On June 17, 2014, Town Council approved the Western Pipeline Purchase Agreement. This document has been signed by all parties. On September 16, 2014, Town Council approved the Modifications Agreement as well as the key terms of the Operations Agreement and the Joint Use Agreement, which were the remaining components of the Western Pipeline Agreement. The closing of the Western Pipeline Purchase Agreement, which includes the Operations Agreement, Modifications Agreement, and License Agreement, was on October 21, 2014.

In December 2014, the WISE Authority received proposals from two design-build teams to construct the improvements to the Western Pipeline as part of the Modifications Agreement. Both bids came in higher than expected resulting in total modifications costs exceeding the original budgeted cost of \$12.28 million. After evaluating a host of options, the WISE Authority recommended entering into negotiations with the low bidder, Western Summit, to determine what savings might be realized using value engineering and scope refinement. These negotiations have resulted in a design build contract with Western Summit for the Western Pipeline modifications and the Aurora Connection of \$13,295,000. When adding other project costs including services during construction, tank land, preliminary engineering, a proposed 5% construction contingency to be managed by the WISE Authority and \$300,000 for tank aesthetics in accordance with the requirement from Aurora City Council, the total costs for the modifications will be \$14,751,852 and for the Aurora Connection \$1,364,838.

This translated into an additional \$368,337 from the Town of Castle Rock for our portion for a total of \$1.17 million. Town Council approved this additional funding at the March 17, 2015 council meeting. All of the individual member boards approved the additional funds and Notice to Proceed was issued on May 6, 2015. Substantial completion for this work is still slated June 2016. The modifications are on schedule and on budget. Western Summit's monthly project summary is shown in **Attachment B**. A high level map of proposed modifications is shown in **Attachment C**.

Dominion Water and Sanitation District has been making their monthly lease-purchase interest payments on the \$4,300,000 lease-purchase agreement that was approved by Town Council on June 17, 2014. This lease-purchase agreement was for a period of 60 months at a minimum 3% interest rate. The Town expects to collect \$645,000 in interest over this period with a full principal payment at the end of the term.

Local Infrastructure

The Town is continuing discussions with future partners – Parker, Dominion, Pinery and Stonegate – for the local WISE infrastructure. The plan is to create IGAs between the partners similar to the South Metro Participation Agreements to outline the costs for design and construction on separate pieces of the local infrastructure, including wheeling WISE water through Parker Water and Sanitation District's distribution system to the Town.

Significant progress is being made in planning and design of the local WISE infrastructure. As part of the Ridgeway Pipeline Participation Agreement (approved by Town Council on November 18, 2014), Parker Water and Sanitation District hired CH2M Hill to design the Ridgeway Pipeline and other local infrastructure needed to move

WISE water through Parker Water and Sanitation District (PWSD) to the Town of Castle Rock. The Town originally allocated \$273,300 for our portion of the design project; however, CH2M Hill's bid was significantly less. Thus our portion is now \$103,720, for a savings of \$169,580. The design is approximately 90% complete, with project bidding scheduled for February, 2016 and construction commencement in March, 2016.

From the Ridgeway Pipeline, water will need to go to a receiving tank and pump station at PWSD. Several alternatives of the WISE water receiving tank and pump station that would be owned and operated by PWSD have been discussed. The alternative that was selected is estimated at \$12.5 million. The Town would be responsible for a pro-rata share of the capital infrastructure plus future annual operation and maintenance costs. The preliminary wheeling fees, which include operation and maintenance costs, are anticipated to be \$1.53 per 1,000 gallons of water delivered through PWSD's system. The depiction of this infrastructure is shown on **Attachment D**.

Furthermore, PWSD reported that they conducted a study to evaluate converting their water disinfectant from free chlorine to chloramines and are interested in pursuing the conversion. The WISE water that will be available and the Town's existing water use chloramines for water disinfection. PWSD is currently reviewing recommendations from a consulting firm for this disinfection conversion. PWSD is also reviewing design proposals for evaluating the treatment alternatives for the removal of iron and manganese. PWSD currently sequesters iron and manganese (adds a sequestering agent to keep iron and manganese in solution) while iron and manganese is removed from the WISE water deliveries and the Town of Castle Rock's existing water supplies. WISE deliveries through PWSD would be greatly simplified if PWSD converts their disinfectant system and removes iron and manganese.

The Town has concluded an alignment and preliminary design study to convey WISE water from the Ridgeway Pipeline. The study compared two main alignment options to convey the WISE water to the Town, one alignment option being around the west side of Rueter-Hess Reservoir (RHR) and the other proposed alignment was around the eastern side of RHR (using some existing infrastructure owned by PWSD). AECOM (previously known as URS) was awarded the design in July 2014 for \$84,998 plus a Town managed 10% contingency (\$8,500) for a total encumbered value of \$93,498. Dominion Water & Sanitation District paid for 50% of these costs.

This preliminary design provided the Town staff budgetary cost estimates of necessary infrastructure to go around the west side of Rueter-Hess Reservoir which can be compared against costs associated with wheeling water through PWSD's distribution system and bringing the water around the east side of Rueter-Hess Reservoir. The Town issued Change Order #1 to this contract for AECOM to use the contingency money to further evaluate the hydraulic conditions of WISE deliveries from PWSD to Castle Rock. The Town issued Change Order #2 to AECOM to help with the cost analysis of infrastructure (expanding pump stations and new pump stations for near-term and future needs) needed to wheel water from PWSD to Crowfoot Valley Road or approximately 3 miles further to Ray Waterman Regional Water Treatment Center (RWRWTC). AECOM submitted a final study report dated October 28, 2015 and the Town is proceeding to design a pipeline from PWSD to the RWRWTC.

The Town also plans to partner with PWSD to study the hydraulics of the flow of WISE water through Parker's system to identify possible bottlenecks and to evaluate the timing of when certain infrastructure expansions will need to be made. AECOM has submitted a proposal to us in the amount of \$19,715, which will be split 50/50 between the Town and PWSD.

The Town plans to partner with PWSD, Dominion, and the Canyons Development on shared infrastructure around the east side of Rueter-Hess Reservoir. Additionally, the Town issued a request for proposals for the design of approximately two miles of 30-inch pipeline from Outer Marker Road (PWSD infrastructure) to Crowfoot Valley Road connecting to the Town's water distribution system. Proposals were received by four consulting firms with the low cost proposal received by Burns & McDonnell. The Town requested and received a revised proposal from Burns & McDonnell to extend the design services scope to include the additional three miles of pipeline to the RWRWTC. On August 18, 2015, Town Council approved Burns & McDonnell to design the final leg of the local infrastructure for \$263,873.00, plus a 10% Town managed contingency, for a total authorization of \$290,260.00.

The good news is that as the WISE project has become clearer, the estimated and actual costs projected for the WISE capital improvements have come down from the last financial evaluation done by the Utilities Department at the time of approval of the Hybrid Long-Term Water Solution. The costs for pipeline and modifications infrastructure at that time were estimated at \$42 million, and now the costs are estimated at \$38 million. Thus, the project is still tracking below the earlier project cost estimate. As it is clear that construction costs are increasing across the board, we will continue to monitor this project budget closely. The schedule is to still bring WISE water to the Town by 2017.

In December 2014, the Town entered into an intergovernmental agreement with PWSD to utilize their Cherry Creek Diversion Structure to pump the Town's water rights within that basin into Rueter-Hess Reservoir for storage. According to PWSD staff, at the close of the water year (October 31, 2015), the Town had 44.71 acre-feet of water stored in Rueter-Hess.

Douglas County Option

In an effort to help reduce the reliance on non-renewable groundwater supplies in Douglas County, the County, Denver Water and Aurora have signed a Memorandum of Understanding for the County to obtain an option to secure an additional 2,675 AF of WISE water (on average) each year for rural users or for existing WISE Authority members. Initially, Stonegate accessed this reserved water and had taken down an additional 500 acre-feet from this option for a total subscription amount of 1,000 acre-feet. The caveat with using Douglas County's option was that the water would not be available for use until 2021. Stonegate would be able to fully utilize any additional water available immediately. Further discussions revealed that Dominion does not need WISE water until 2018 or 2019 and based on the terms of the Water Delivery Agreement, Dominion would have to take-or-pay for its WISE water beginning in 2017 even though it was unable to use the water. After Stonegate and Dominion discussed their matters, Stonegate elected to take down 500 acre-feet of Dominion's take-or-pay subscription amount so they can utilize the additional WISE water immediately and

when Dominion needs their full subscription of water, they will take down a portion of the Douglas County option to utilize in 2021. Dominion will continue to pay capital costs based on their full subscription amount.

Rueter-Hess Reservoir 404 Permit Amendment

In October 2014, the draft permit was issued and in August 2015, the Corps issued the final permit with signatures from the Native American tribes.

Colorado River Cooperative Agreement

Denver Water's participation in the WISE Partnership – Water Delivery Agreement includes providing water from reusable return flows, which originate on the West Slope. To resolve longstanding disputes with the West Slope, Denver Water has entered into the Colorado River Cooperative Agreement (CRCA), which authorizes use of Denver Water's reusable return flows in the WISE Partnership under certain terms and conditions. The CRCA was executed at the end of 2013.

Box Elder Project

Box Elder Well Field

The first piece of the puzzle for the alternate northern water supply is the diversion system for future water supply rights that the Town may obtain in the South Platte River basin. The Box Elder Well Field was put forward as just such a diversion. This well field is located approximately six miles east of Lochbuie, CO in southern Weld County as shown on **Attachment E**. The well field contains eleven existing permitted alluvial wells, 850 acres of property, approximately 300 acre feet of consumptive use HID water rights, and 300 acre feet per year of Ground Water Management Subdistrict of the Central Colorado Water Conservancy District (Central GMS) irrigation water rights.

On April 1, 2014 Town Council approved a resolution for the Town to enter into a 5-1/2 year option agreement on the well field with the Box Elder owners. The Town made its first option payment of \$50,000 in April 2014 which extended the option agreement for 6 months. The Town made its second option payment of \$100,000 on October 1, 2014 which extends the option agreement for 1 year until October 1, 2015. The third option agreement payment of \$200,000 was due on October 1, 2015 and was paid by the Town. Terms of the option agreement are summarized below:

- A 5-1/2 year option with annual payments as follows:
 - \$50,000 (during the first six months)
 - \$100,000 at the end of year 1
 - \$200,000 at the end of year 2
 - \$300,000 at the end of year 3
 - \$300,000 at the end of subsequent years
 - Each payment is non-refundable but accrues towards the final purchase price
- A base purchase price of \$9.407 million for the well field, 850 acres of land, non-renewable water rights, 300 acre-feet (AF) of consumptive use Henrylyn Irrigation District (HID) water rights, and 5 shares of FRICO-Barr water rights.

The Box Elder owners have proposed to offer the Town an incentive to close on the Box Elder Well Field early. The following list shows a schedule of timing of closing and the cost to the Town:

<u>Close in Year</u>	<u>Total Cost</u>	
2014	\$6,044,659	
2015	\$7,178,032	
2016	\$8,311,406	
2017	\$9,407,000	Primary Base Cost
2018	\$10,535,840	
2019	\$11,664,680	

The benefits of the current option include:

- The cost is less than the amount budgeted for the project;
- The amount of water that can be diverted in a sustainable manner under both a constant pumping and municipal curve is approximately 2,500 acre feet and within the constraints established for the hybrid approach;
- This option provides the lowest near term cost and allows us to continue our due diligence for up to 5-1/2 years before making a final commitment;
- This option provides the most time to secure renewable water rights prior to investing in the well field:
- With the HID water, the Town would have the ability to engage on how the District operates.

Initially, there were few drawbacks to the current option. The primary risk was the securing of appropriate water rights and the water court requirements to put these rights to municipal use. The staff has been working very hard to secure water rights in a timely manner so that we can close early and save our customers a very significant sum of money. This savings would have the impact of reducing the amount of future projected needed rate increases.

Town staff has performed additional due diligence on the Box Elder Well Field including a property value assessment and a Phase I Environmental Site Assessment. Both assessments were completed in June 2014 and showed no negative issues. Additionally, the Town is developing a plan to engage the local community, doing further testing of the hydrogeology of the aquifer, quarterly stream flow monitoring of Box Elder Creek, and is preparing a groundwater modeling plan with our consultants to gather key data in preparation for Water Court.

There is a new drawback to the project. Recently, Weld County announced it is interested in moving forward with the 1041 Permitting Process. House Bill 74-1041, allows local governments to regulate a variety of development activities with guidance from the State. The 1041 process allows local governments to identify, designate, and

regulate areas and activities of state interest at a local level. Exporting water from the county as part of our plans for this project would be considered an activity of interest that would be regulated by Weld County. The Town attended a stakeholder's meeting on June 19, 2015. The County discussed plans to move forward with regulations and hold additional stakeholder's meetings. The next County stakeholder meeting was held on November 23, 2015 in Greeley and Utilities Department staff attended. Additional meetings and regulation language has been put forth in December. Staff will continue to monitor developments in this process.

Securing Water Supply

Securing of water supply has been put on hold pending the 1041 permit process outcomes. Staff has worked with Stillwater on water rights that may be available for the Town to secure. The potential costs and timing of all of the various water supplies were being evaluated. These supplies include recharge credits that are already decreed for augmentation and potential exchanges from rights downstream of the confluence of Box Elder Creek and the South Platte River. The total of potential water rights that were being evaluated is in excess of the 2,500 AF that the Town is seeking as a part of the hybrid solution.

The Town's purchase of the Rothe Property is a major step forward towards renewable water rights acquisition. The good news is these water rights can be used regardless of whether the Box Elder project proceeds or not. On August 19, 2014, Town Council approved the contract assignment and subsequent purchase of the Rothe Recharge water rights which can be used as an augmentation water source in conjunction with the Box Elder Creek Well Field for the Alternate Source of Water Supply Project hybrid solution. The Rothe Recharge water rights could potentially account for 770 acre-feet of this augmentation water which is approximately 30% of the total water that is to be acquired for the project. The purchase price for the agreement was \$5,200,000 which included an existing well, 640 acres of property, and an existing easement. A 5% brokerage fee of \$260,000 was also paid as part of this agreement to Stillwater in accordance with the Town's existing brokerage agreement dated February 19, 2013. This purchase deal closed on September 17, 2014.

The general concept of the Rothe Recharge Project is that water can be diverted from the South Platte River at the Riverside Canal which is located east of Greeley under a water right with an effective 1988 priority date (see **Attachment E**). This water is delivered from the Riverside Canal into several recharge ponds which then makes its way through the alluvial sands as groundwater return flow to the South Platte River approximately 16 miles downstream of the point where Box Elder Creek theoretically enters the South Platte River. The hydrogeologic transport of this water through the alluvium takes a number of years. The decree in Colorado Water Court Case No. 89CW027 defines the terms and conditions for operation of this project, including the specific timing of the recharge credits.

Staff has a proposed lease of these recharge credits for Council consideration. This would allow the Town to recoup a portion of the purchase price, thus, decreasing the overall financial impact to the Town. Staff is currently developing a contract with one municipality for the short-term lease of this water.

Infrastructure

The model for the well field continues to be revised and optimized. To date, Miller Groundwater Engineering LLC has been able to identify the sustainable yield of the well field under both a constant year round pumping scenario and a municipal curve pumping scenario (i.e. timing water demands and pumping at the well field with actual demands in our system including increased summer usage and decreased winter usage).

The results of these analyses indicate that sustainable yields under constant pumping are 2,100 to 3,100 AF/year. Under our municipal demand curve, sustainable yields are 2,300 to 2,700 AF/year. The original response to the RFP from Stillwater indicated an estimated capacity of 4,000 AF/year. The Town's current hybrid solution seeks 2,500 AF/year of water from the other northern supplies and 1,000 AF/year from WISE. As such, this well field capacity is adequate to meet the needs of the Town's hybrid solution, but we will continue to collect data and improve this model during our due diligence phase.

The negotiations for additional capacity in ECCV's Northern Pipeline are on hold pending outcomes of the 1041 permit process. If Box Elder project continues, the Western Pipeline will also be part of the infrastructure that will be needed for the Box Elder project to transport water from that area. Castle Rock currently owns 1.4 million gallons per day capacity in the Northern Pipeline but will need to secure up to 2.2 million gallons per day additional capacity to move the water from the Box Elder Well Field to Castle Rock.

Attachments

- Attachment A: Water Plan
- Attachment B: Western Summit Update
- Attachment C: Core Infrastructure
- Attachment D: Local infrastructure
- Attachment E: Location Map