



TOWN BOARD WORK SESSION

April 12, 2017 // 6:00 p.m. // First floor conference room
301 Walnut Street, Windsor, CO 80550

GOAL of this Work Session is to have the Town Board receive information on topics of Town business from the Town Manager, Town Attorney and Town staff in order to exchange ideas and opinions regarding these topics.

Members of the Public in attendance are asked to be recognized by the Mayor before participating in any discussions of the Town Board

AGENDA

1. Water options for Windsor presentation – D. Wagner
2. Future Meetings Agenda



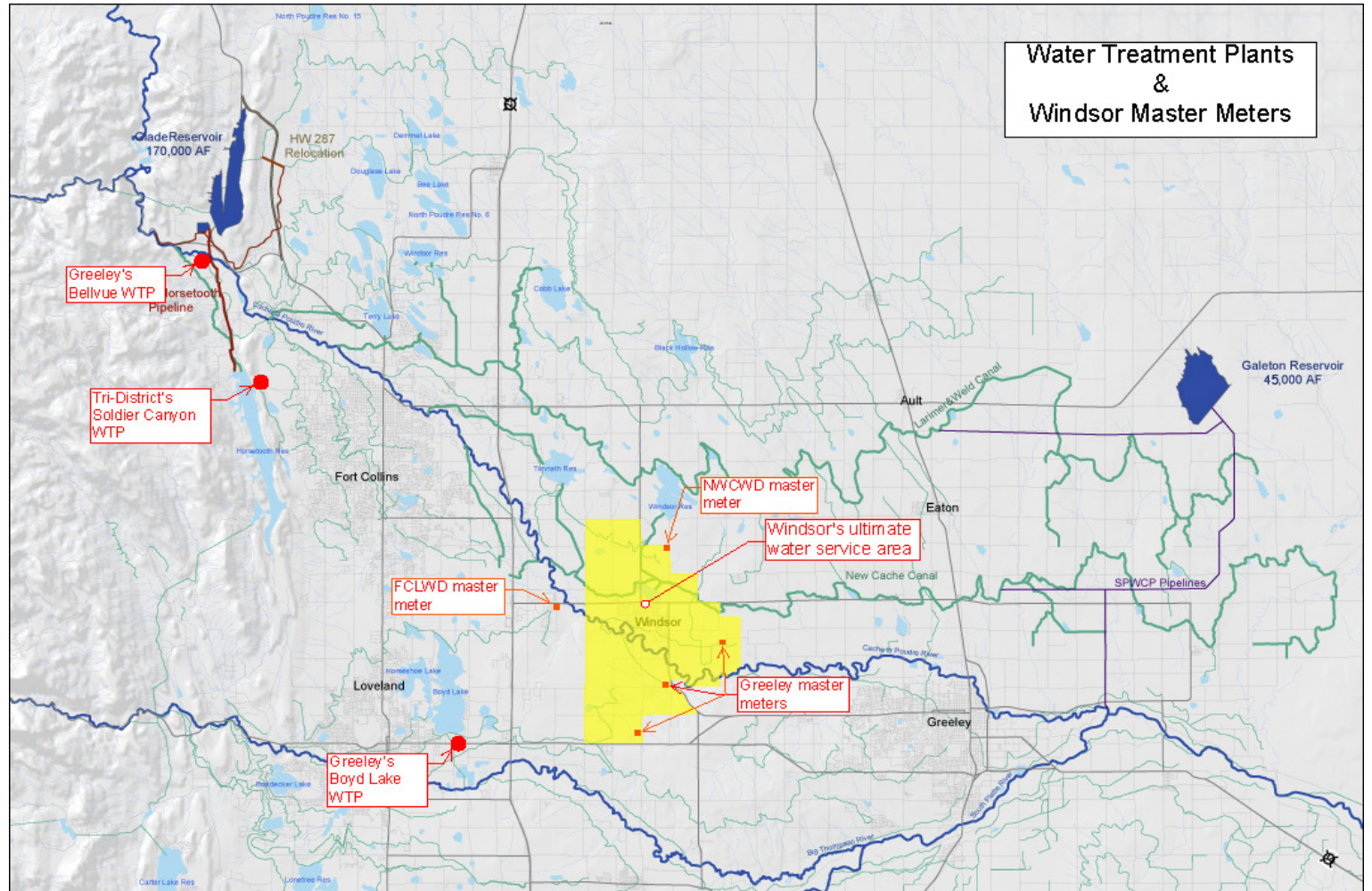
Windsor Water

April 16, 2018

Although Windsor doesn't own a water treatment plant it does own adequate raw water rights for all existing customers in its service area. The town has contracts with the City of Greeley, the Fort Collins-Loveland Water District (FCLWD) and the North Weld County Water District (NWCWD) under which those entities treat the town's raw water and delivers potable water to master meters where it enters the town's water system.

Annual amount of water treated:

- Greeley: 212 million gallons
- FCLWD: 110 million gallons
- NWCWD: 400 million gallons





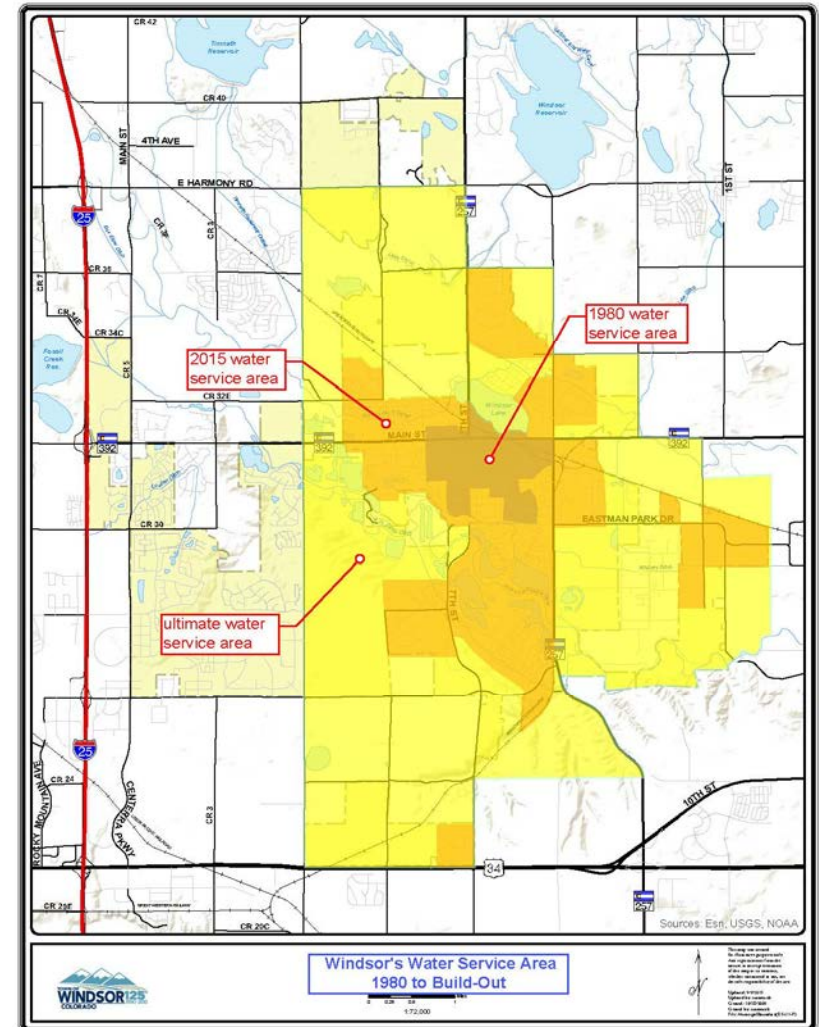
Windsor's Water Service Area 1980 to Build-out

On a typical winter day Windsor provides about 1.3 million gallons of water to its customers. On a hot summer day that amount jumps to as much as 4.0 million gallons.

On average, a household in Windsor uses 0.25 ac-ft (81,500 gallons) per year inside the home. Irrigation adds another 0.25 ac-ft to the annual water usage. Windsor's projected potable water demand at build-out of its Growth Management Area is 12,500 ac-ft. With typical water losses at the treatment plant and transmission lines, the total raw water requirement will be 15,800 ac-ft. Water rights currently owned by the town yield 3,600 ac-ft in a normal year.

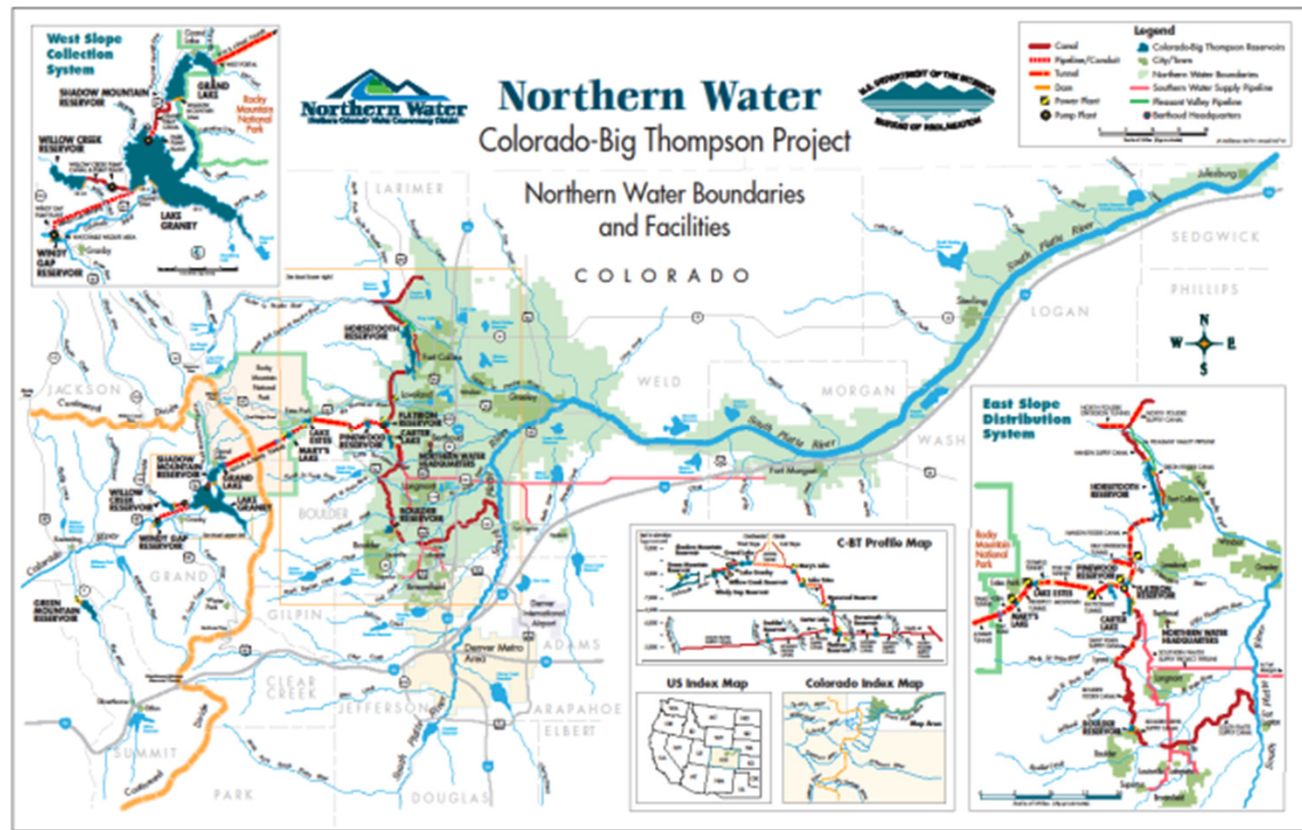
Much of the land in Windsor's Growth Management Area is or was used for irrigated agriculture and so as it is urbanized the historical agriculture water rights can continue to be used to irrigate lawns, trees and shrubs. In fact the town has an ordinance that requires a secondary non-potable water system within those new developments. For approximately the past 20 years most new residential developments in Windsor have included a non-potable water system. This has made a big difference in potable water demand. The non-potable system is typically owned and operated by either a Metropolitan District or Homeowners Association.

2003: residential single-source taps = 3,006
 residential dual-source taps = 759
 2017: residential single-source taps = 3,100
 residential dual-source taps = 3,220





Most of the potable water coming out of Windsor faucets starts as raw water on the other side of the continental divide in the Upper Colorado River Basin. It is collected and conveyed through an elaborate system of reservoirs, trans-mountain tunnel, canals and pipelines that were built under the name Colorado Big Thompson (CBT) Project.

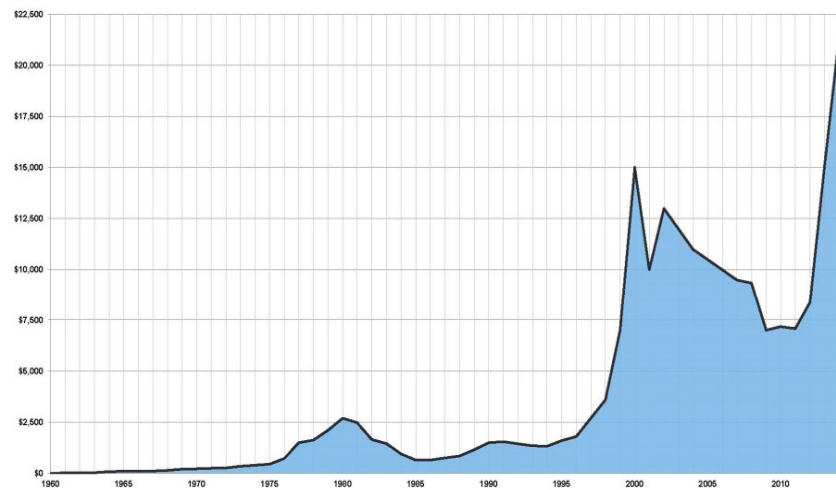




There are 310,000 acre-foot units in the CBT system. Windsor outright owns 3,755 of those acre-foot units. Windsor also owns 471 shares in the North Poudre Irrigation Company and as a result has rights to an additional 1,884 units of CBT water through that company.

Originally agriculture owned the majority of CBT units, but as the northern Colorado population grows, ownership shifts toward municipal and industrial interests. Agriculture now owns only about 30% of the 310,000 acre-foot units and that percentage will continue to decline. The graph illustrates the variability of CBT prices between 1960 and 2014. The price in 2018 is around \$29,000. Generally, the price ups and downs correspond to the housing market. Currently it costs about \$23,000 just to buy the CBT water rights for a single home.

Historical Representative Market Prices Per Acre-Foot Unit⁽¹⁾
Years ended September 30



(1) Allottees of C-BT water may transfer and sell their respective acre-foot units to other parties within Northern Water boundaries. These transactions are subject to rules and regulations of the Board. The above table represents data gathered by voluntary action and serves as an indicator of how the price of C-BT water has fluctuated on the open market through the years. Actual transaction prices may vary.

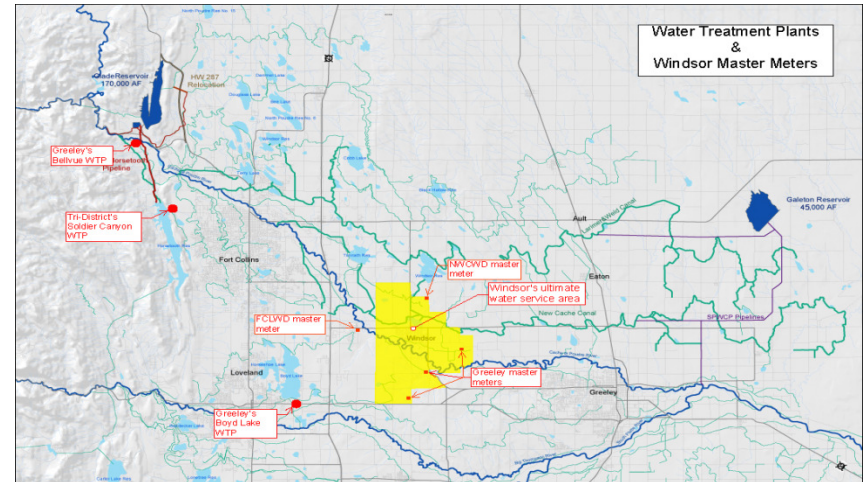


OTHER RAW WATER SOURCES

In 2009, the town contracted with a consultant to develop a potable water master plan. The plan recommended two raw water sources in addition to CBT and North Poudre Irrigation Company: Water Supply and Storage and Windy Gap. Although the 2009 plan did not recommend Greeley-Loveland Irrigation Company water rights, the town is moving forward with the acquisition of a small number of shares in that company.

NISP

Windsor is one of 15 Colorado northern front-range water providers involved in the proposed Northern Integrated Water Supply Project (NISP). NISP, as planned, will provide 40,000 acre-feet of raw water. Windsor's share of that supply will be 3,300 ac-ft (8.25% of the total). The current estimated cost to build the NISP system of reservoirs, pump stations and pipelines is \$1.1 billion; Windsor's 8.25% share is \$86.6 million. The most recent timeline assumes relocation of Highway 287 would be in 2019 through 2021; Glade Reservoir construction would be 2020-2025; Galeton Reservoir construction would be 2025-2027.

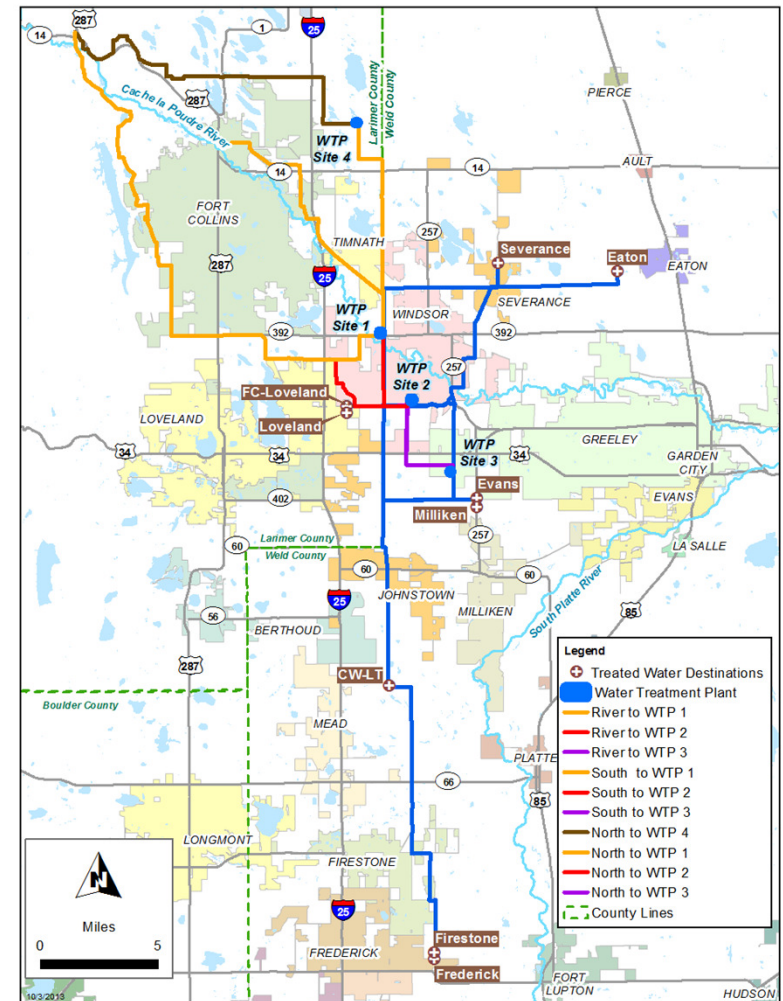




REGIONAL WATER TREATMENT PLANT

As previously stated, Windsor's raw water is treated by agreement with three entities at treatment facilities they own. In 2013, Windsor collaborated with the following ten municipalities and water districts in a study of the feasibility of constructing a regional water treatment and transmission system (RT² Study): Loveland, Severance, Eaton, Evans, Milliken, Firestone, Frederick, Fort Collins-Loveland Water District, Little Thompson Water District, and Central Weld County Water District.

The study area, various water treatment plant locations and pipeline route scenarios are shown on the map below. The study analysis of costs for combinations of three water demand scenarios, treatment plant locations and pipeline routes indicates the least life-cycle cost would be with a treatment plant at Site 4, about 2 miles north of Highway 14 and 1 mile west of the Larimer-Weld County Line, with raw water provided through a pipeline from the NISP-proposed Glade Reservoir around the north end of Fort Collins. Treated water would leave the plant at Site 4 in a pipeline that runs south along County Line Road with branch pipelines to the participants along the way.





Shortly after completion of the RT² Study, Windsor organized a series of meetings with some of the entities in northern Colorado, including two water districts that didn't participate in the RT² Study, to gauge their interest and need for expanded water treatment.

The group then evolved down to mainly Windsor, Severance, Eaton and the North Weld County Water District and in September 2015 led to another study by the original author of the RT² Study that looked closely at the existing and future Soldier Canyon Treatment Plant capacity and water transmission lines from the plant. It concluded that the plant must be expanded from 45 MGD to 60 MGD in 2020 and with another expansion in 2030, along with expansion of the transmission lines, the system can be adequate through 2050. That conclusion is valid as long as sufficient raw water can be delivered to Soldier Canyon Treatment Plant.

Then in 2017, Windsor, Severance, Eaton and the Fort Collins-Loveland Water District hired Black & Veatch Engineering to study in more detail the feasibility of a treatment plant that would treat NISP water for those entities. The plant would be sited east of I-25, north of Highway 14 and the first phase would treat 10 million gallon per day at a cost of \$60 million.



Reverse Osmosis Treatment

In 2018, Windsor will be studying the feasibility of treating water drawn from the Poudre River alluvial aquifer with reverse osmosis membrane filtration. Reverse osmosis (RO) is a water purification technology that uses a semipermeable membrane to remove microbiological pathogens and organic chemicals from drinking water. RO filtration is used in large scale applications for desalination of seawater to produce fresh potable water. It is commonly used to purify local water sources that are packaged and sold as bottled water such as Dasani and Aquafina.

The RO water treatment plant as described above would involve pumping groundwater to the treatment plant where it would probably go through the first stage of filtration and then through the RO membranes. The brine, or waste byproduct of the filtration would be injected into deep underground wells. It is estimated that 90% of the raw water entering the plant would be exit as potable water that would be introduced into Windsor's existing water distribution system.



Comparison of Costs for Raw Water Supplies and Potable Water Treatment Options

To facilitate comparison of various potable water treatment options, the following parameters were used:

- Maximum daily plant output = 3 million gallons. Note: on a typical winter day, Windsor uses about 1.5 million gallons, and on a peak summer day, Windsor uses about 4.0 million gallons.
- Annual plant output = 1,358 acre-feet (442 million gallons). Note: Windsor uses about 725 million gallons per year.
- Rate of return = 4% per year.



Comparison of Costs for Raw Water Supplies and Potable Water Treatment Options

R/O plant									
	Present worth cost of water rights and treatment							\$ 102,505,601	
Greeley's existing treatment plants									
	Treatment cost:	$1,358 \text{ AF} \times (0.75 \times \$11,400 \div 0.414 \text{ AF}) =$						\$28,045,652	
	CBT water rights:	$(1,358 \text{ AF} + 30\%) \times \$40,500/\text{AF} =$						<u>\$71,498,700</u>	
	Total:							\$99,544,352	
NWCWD's existing Soldier Canyon treatment plant									
	Treatment cost:	$\$9,000/\text{gpm} \times 3,000,000 \text{ gal/day} \div 1,440 \text{ min/day} =$						\$18,750,000	
	CBT water rights:	$(1,358 \text{ AF} + 10\%) \times \$40,500/\text{AF} =$						<u>\$60,498,900</u>	
	Total:							\$79,248,900	
NISP water rights and new regional treatment plant (present worth of Windsor's NISP expenditures 2018-2027 = \$68,284,012)									
	Treatment cost:	$\$60,600,000 \div 10 \text{ MGD} \times 3 \text{ MGD} =$						\$18,180,000	
	NISP water rights:	$(1,358 \text{ AF} + 10\%) \times (\$68,284,012 \div 3,300 \text{ AF}) =$						<u>\$30,909,896</u>	
	Total:							\$49,089,896	



FUTURE TOWN BOARD MEETINGS

April 23, 2018 5:30 p.m.	Town Board Work Session Board dinner with incoming board members
April 23, 2018 7:00 p.m.	Town Board Meeting
May 7, 2018 6:00 p.m.	Town Board Work Session Retail study overview
May 14, 2018 5:30 p.m.	Board/Manager/Attorney Monthly Meeting Commemorating the 10 th Anniversary of the Windsor Tornado
May 14, 2018 7:00 p.m.	Town Board Meeting Kern Board Meeting
May 21, 2018 6:00 p.m.	Town Board Work Session Broadband Update
May 28, 2018 7:00 p.m.	Town Board Meeting - Cancelled Memorial Day – Offices Closed
June 4, 2018 6:00 p.m.	Town Board Work Session
June 11, 2018 5:30 p.m.	Board/Manager/Attorney Monthly Meeting
June 11, 2018 7:00 p.m.	Town Board Meeting
June 18, 2018 6:00 p.m.	Town Board Work Session
June 25, 2018 6:00 p.m.	Town Board Work Session
June 25, 2018 7:00 p.m.	Town Board Meeting

Additional Events

May 22, 2018	Public Safety Fair & Awareness Day – Boardwalk Park
May 24, 2018	CML Spring Outreach Meeting – Windsor
May 24-25, 2018	Strategic Planning
June 19-22, 2018	CML Annual Conference - Vail

Future Work Session Topics

- Code Update meeting with Planning Commission (next code section in series) - Planning
- CDOT/Johnny Olson presentation
- Car Dealerships in CAC (Mr. Downing)
- Park Impact Fees – round 2
- Brush site options