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AGENDA BILL

Beaverton City Council
Beaverton, Oregon

SUBJECT: Construction Contract Award – Construction of Cooper Mountain Reservoir No. 2, Aquifer Storage and Recovery Well No.7, and Associated Improvements (CIP No. 4058A) to Emery & Sons Construction Group, LLC

FOR AGENDA OF: 04-28-20 **BILL NO:** 20116

MAYOR'S APPROVAL: Denny Doyle

DEPARTMENT OF ORIGIN: Public Works

DATE SUBMITTED: 04-16-20

CLEARANCES:
City Attorney MKS
Mayor's Office
Finance PD
Engineering
Planning
Purchasing TM

PROCEEDING: CONSENT AGENDA (CONTRACT REVIEW BOARD)

EXHIBITS:
1. Bid Results Summary
2. Memorandum from Engineering Consultant
3. Project Vicinity Map

BUDGET IMPACT

EXPENDITURE REQUIRED	AMOUNT BUDGETED	APPROPRIATION REQUIRED
$ 1,853,150 (FY 19-20) $14,554,402 (FY 20-21) $ 3,308,583 (FY 21-22)	$3,800,000**	$-0-

*This is the construction cost based on the bid results (Exhibit 1).
**Account Number 505-75-3622 Water Construction Fund – Cooper Mountain Reservoir No. 2 and Associated Improvements (Bonded) – Construction Account. The FY 2019-20 Adopted Budget has a $3.8 Million appropriation for this project and the proposed budgets for FY 2020-21 and FY 2021-22 will recommend the amounts listed in the Expenditure Required section above.

RECOMMENDED ACTION:

City Council, acting as the Contract Review Board, authorizes the Mayor to sign a contract with the lowest responsive bidder, Emery & Sons Construction Group, LLC in the amount of $19,716,135 for the Cooper Mountain Reservoir No.2, Aquifer Storage and Recovery Well (ASR) No.7, and Associated Improvements, (CIP No. 4058A) in a form approved by the City Attorney and authorizes the Finance Director to include the above identified Expenditure Required Amounts in the FY 2020-21 and FY 2021-22 proposed budgets.

HISTORICAL PERSPECTIVE:

The City of Beaverton (City) has owned and operated the 5.5 million gallon (MG) Cooper Mountain Reservoir No.1, since it was constructed in 1994. The reservoir is accessed from Kemmer Road and located on 9.48 acres of land literally at the top elevation of Cooper Mountain. The land was purchased in 1992 and the site layout and grading were designed to accommodate a second storage reservoir in the future.

The existing Cooper Mountain Reservoir No.1 is strategically located, currently providing direct service to approximately 16,000 residents by gravity in the upper elevations of the City and indirectly provides service to an added 60,000 residents and businesses on the valley floor to help sustain operating pressures on hot days, and added backup storage for firefighting serving the City's largest water service area. Once Cooper Mountain Reservoir No.2 is completed, the two reservoirs with a combined capacity of 11 MG in storage along with the ASR No. 7, will be able to provide emergency water to the City's entire water service area.

Water demand within the City's upper pressure zones located to the east and south side of Cooper Mountain, and supported by Reservoir No. 1, has been increasing due to buildout in the Progress Ridge area and especially the 544-acre South Cooper Mountain (SCM) development area, which was annexed and incorporated in 2014.

The City anticipates accelerated growth in water demand in SCM from urban infill of about 8,000 people within the existing boundaries of the Cooper Mountain Reservoir No.1 pressure zones. Additionally, another 1,200 acres of the upper elevations of SCM, designated Urban Reserve 6B, will be added to the urban growth boundary by Metro. Urban Reserve Area 6B could result in another 8,000 people that would also be served by the Cooper Mountain Reservoirs. The Council recently awarded a contract in February to an engineering firm to complete a comprehensive master plan of water, sanitary sewer and stormwater/drainage as a part of the Cooper Mountain Community Plan effort for the Area 6B future development.

In order to meet these future water demands, a twin 5.5 MG Cooper Mountain Reservoir No.2 is designed to primarily serve the 550-foot, 675-foot, and 750-foot upper pressure zones. This construction contract includes Cooper Mountain Reservoir No.2, ASR Well No.7, and other associated improvements.

INFORMATION FOR CONSIDERATION:

The project components listed below are included in Cooper Mountain Reservoir No.2, ASR Well No.7 and its associated improvements. This construction contract and urgency to complete the project over the next two years is to allow the City to meet the growing water demands and fire protection needs of the developing SCM area.

- 5.5 MG prestressed concrete Cooper Mountain Reservoir No. 2: This will provide a seismically resilient backbone storage system. It is designed to provide operational flexibility and redundancy to allow critical facilities to be taken off-line for maintenance without service disruption. The reservoir and other associated components are designed to provide an aesthetically pleasing site to blend with the neighboring residential community. Associated site piping and other site improvements are included in the contract.
- Pump Station Building: When the UGB is expanded to include Metro Urban Reserve 6B, a future Upper Zone pump station will be needed to serve higher elevations in the City's expanded service area (new 860 and 920 zones). The City intends to locate this future pump station at the reservoir site, as it would provide an opportunity to use available land on an existing, secure City-owned site with optimal pump suction supply from the reservoirs and ASR Well No.7. This contract includes a building component of the Upper Zone pump station to allow the City to efficiently integrate the pumps into the Cooper Mountain site in the coming years.
- Aquifer Storage and Recovery Well No. 7 and Mechanical Building: The reservoir site includes an existing groundwater well that was drilled for future development as an ASR supply source. This well, known as ASR No.7, can potentially provide the City a dependable, seismically resilient, secondary source, directly connected to the Cooper Mountain storage and transmission system that can serve the City's existing pressure zones by gravity. This contract includes all work required to construct ASR Mechanical Building and ASR Well No.7, including a CMU-style

building, a deep well vertical turbine pump and a standby generator with external fuel storage tank.

- Final segment of 24-inch diameter water main: The City installed approximately 5,400 linear feet (LF) of 24-inch diameter and 2,000 LF of 16-inch transmission main in 2019 on SW 175th Avenue and SW Weir Road to serve the developing SCM area. This transmission main was necessary to allow acceleration of the City's ability to directly serve the South Cooper Mountain and Urban Reserve Area 6B using Cooper Mountain Reservoir No.1 prior to completion of the No.2 reservoir. The final segment of this off-site transmission main is to be constructed with the reservoir project and includes a 24-inch diameter main on SW Kemmer Road (approximately 1,400 LF). The new transmission main provides a redundant, and seismically resilient transmission conveyance system from the Willamette Water Supply System (WWSS).

- Storage Building: An 80-foot x 60-foot prefabricated metal building will be constructed as a part of this contract to house parts and supplies for use by Water Operations staff for maintenance and during emergencies.

- In conjunction with the Cooper Mountain Reservoir No. 2 and Associated Improvements project, on February 18, the Council approved an Intergovernmental Agreement (IGA) with Washington County Consolidated Communications Agency (WCCCA or Agency). The approved IGA authorizes a lease of Cooper Mountain Reservoir property to site a WCCCA, emergency communication facility. Beginning in the next two weeks, WCCCA will begin construction of a new unstaffed emergency public communications service facility consisting of a new 180 ft. tall self-supporting lattice tower and equipment shelter, a backup generator, and a 1,000-gallon propane tank to be installed within a new 50' x 50' security fenced compound in the southeast corner of the City's property. By contract requirements, close coordination is required by the two (City and WCCCA) contractors to minimize potential delays and conflicts during the ongoing construction. The WCCCA construction duration is expected to be approximately four months.

MurraySmith was contracted by the City in 2018 to complete the design of Cooper Mountain Reservoir No.2, ASR Well No.7, and other associated improvements. Following completion of the final engineering plans and specifications and bid documents, an invitation to bid was advertised for construction of the Cooper Mountain Reservoir No.2, ASR Well No.7, and other associated improvements in the Daily Journal of Commerce on January 3, 2020. A mandatory pre-bid conference was held on January 17, 2020, with eleven (11) prime contractors in attendance. Bids were opened on February 25, 2020, at 2:00 p.m. and the City received three bids (Exhibit 1). Proposals were reviewed and staff determined that Emery & Sons Construction Group, LLC of Salem, Oregon was the lowest responsive bidder at $19,716,135. MurraySmith's (Consultant Engineer) construction cost estimate was $18,412,452.30. Two of the three bids that the City received fell within a reasonable range of this cost estimate. However, the Consultant Engineer's cost estimate was approximately 6.6% under the low bid. Exhibit 2 includes a memorandum from MurraySmith that explains the justification for the 6.6% increase in bid price from the Engineer's cost estimate. The schedule proposed by Emery & Sons Construction Group, LLC anticipates construction to begin in FY 19-20 and have a duration of approximately twenty-seven months. Table 1 below shows the estimated contract expense by fiscal year.

Table 1. Estimated contract expense by fiscal year for Construction of Cooper Mountain Reservoir No.2, ASR No.7, and Associated Improvements

	FY 19/20	**FY 20/21**	**FY 21/22**
Cooper Mountain Reservoir No. 2	$ 1,674,223	$ 11,441,244	$ 2,591,861
ASR No. 7	$ 178,927	$ 3,113,158	$ 716,722
Total Contract Expense by FY	$ 1,853,150	$ 14,554,402	$ 3,308,583

Emery & Sons was awarded a contract by the City on May 21, 2019, for the Willamette Water Supply (WWSP) Intertie Pipeline Project CIP4141, for $3,343,000 to construct 2,800 feet of 24-inch diameter pipeline. Emery & Sons is on schedule and has provided high quality work.

A project vicinity map is attached (Exhibit 3) showing the location of Cooper Mountain Reservoir No.2, ASR No.7, and other associated improvements included in this construction contract. Staff recommends award of the construction contract for Cooper Mountain Reservoir No.2, ASR No.7, and Associated Improvements (CIP #4058A) to Emery & Sons Construction Group, LLC.

City of Beaverton

BID SUMMARY

Project Name: COOPER MOUNTAIN RESERVOIR NO. 2 AND ASSOCIATED IMPROVEMENTS, CIP 4058A, Solicitation # 3624-20B

OPENED ON: February 25, 2020 at 2:00 PM

WITNESSED BY: Terry Muralt

VENDOR NAME CITY, STATE	Bid Proposal	Bid Proposal Certification - Ack. Addenda	Bid Bonds	Bidder Construction Schedule	Current Project Info	Bidders Responsibility Form	TOTAL BID
Emery & Sons Construction Group, LLC – Salem, OR	✓	✓	✓	✓	✓	✓	$19,716,135.00
ROTSCHY INC. – Vancouver, WA	✓	✓	✓	✓	✓	✓	$20,662,226.50
The Natt McDougall Company – Tualatin, OR	✓	✓	✓	✓	✓	✓	$25,323,155.00

The Purchasing process has been confirmed.

Signed: _____
Finance Department, Purchasing Division

The above amounts have been checked: YES NO

Date: 2/25/2020

Beaverton
OREGON

EXHIBIT 1

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EXHIBIT 2

murraysmith

Memorandum

Date: March 9, 2020

Project: Cooper Mountain Reservoir No. 2 and Associated Improvements
CIP 4058A, Solicitation # 3624-20B

To: Priya Dhanapal, PE
City of Beaverton

From: Thomas Boland, PE
Michael McKillip PhD, PE
Murraysmith

Re: Bid Result Analysis

On February 25, 2020, the City of Beaverton (City) received bids for the above referenced project. A summary of the three bids is provided below. We recommend award of the contract to the apparent lowest responsive bidder, Emery & Sons Construction Group, LLC in the amount of $19,716,135.00.

Bidder	Total Bid Price
Emery & Sons Construction Group, LLC	$19,716,135.00
Rotschy, Inc.	$20,662,226.50
The Natt McDougal Company	$25,323,155.00

Our estimate for the project was $ 18,000,000 - $22,00,000, as documented on page 3 of the City's Invitation to Bid documents dated January 3, 2020. The low end of the construction cost estimate range was developed based on a detailed bid item-based cost estimate which was $18,412,452.30, attached as Exhibit A. A 20% contingency was added to establish the upper estimate range to capture potential market condition variability and other unknowns.

The detailed bid item-based is based on 100% level design documents and is considered a Class 1 estimate as defined by the Association for the Advancement of Cost Engineering (AACE) with an expected accuracy range of -3 to -10% under, and +3 to +15% over actual bid costs.

While two of the three bids fell within our cost estimate range, our detailed bid-item estimate was $1,303,682.70 or approximately -6.6% under the low bid. We have reviewed the low bidder's prices and compared it to our own detailed estimate to identify factors that may have contributed to the low estimate. A summary of several of those factors is presented below.

- **State of Oregon Corporate Activity Tax (CAT)** – In March 2019 a new law established the CAT which imposed a tax on revenues for business done in Oregon beginning in 2020. The CAT is in addition to the state's current corporate income tax, and is computed as $250 plus 0.57% of Oregon commercial revenue of more than $1 million. At the time of bidding, the State was still developing rules for implementation of the tax, and the actual cost of the tax was uncertain. Since the tax applies to all tier of subcontractors and vendors, the actual CAT effective rate escalates due to the compounding of multiple business layers. In some industries there can be as much as five layers of pyramiding with effective tax rates reaching between 2 to 3 percent on various types of work. Due to uncertainty of the new tax, our detailed cost estimate did not include the potential bidder's cost related to the CAT, which could have theoretically contributed in excess of $200,000 to $300,000 +/- to the bid costs for a project of this complexity.

- **EPA Water Infrastructure Finance and Innovation Act (WIFIA) U.S. Steel Requirement** – The Cooper Mountain Reservoir No. 2 projects is one of multiple projects that the City is receiving funding through the EPA WIFIA program. The federal funding triggers the "American Iron and Steel Requirement" (AIS) which requires recipients to use iron and steel products that are produced in the United States. The City's project involves thousands of tons of construction materials that include steel (reinforcing steel, piping, valves, etc). Historically, the requirement for projects to use domestic steel has resulted in higher costs. Due to the timing of the funding identification, our detailed cost estimate did not include the potential bidder's cost related to the WIFIA AIS requirement, which theoretically could have contributed hundreds of thousands of dollars to the bid costs.

- **Bid Item A-2(g) Reservoir Construction** - Our detailed cost estimate for Bid Item A-2(g) Reservoir Construction was low by approximately $200,000. This bid item includes thousands of tons of reinforcing steel and approximately 25 miles of galvanized steel prestressing strand wrap. The cost of the large quantity of steel products associated with this bid item could have been affected by the AIS requirement note above, in addition to steel market pricing variability over the past year.

- **Bid Items with Ductile Iron Pipe** - Our detailed cost estimates for Bid Items with ductile iron pipe (Bid Items Item A-6, A-7, A18 and A-30) were low by approximately $750,000. It appears that our unit prices for 24-inch diameter DI pipe, in particular, was very low. It appears that we did not update our unit prices to reflect recent bid pricing from the City's March 2019 24-inch diameter transmission main project and we did not account for the very deep piping construction for unit prices with pipe depths of 10-20 feet and 20-30 feet deep.

Exhibit A

COOPER MOUNTAIN RESERVOIR NO. 2 AND ASSOCIATED IMPROVEMENTS
100% Cost Estimate

SCHEDULE A - COOPER MOUNTAIN RESERVOIR NO. 2					
Item	Description	Quantity	Unit	Unit Price	Total Cost
A-1	Mobilization, bonds, permitting, insurance, and demobilization	1	LS	$ 849,310.00	$ 849,310.00
Reservoir No. 2 and On-Site Improvements					
Item	Description	Quantity	Unit	Unit Price	Total Cost
A-2	All work required to construct a 5.5 MG prestressed concrete reservoir, complete, other than as provided for under separate unit prices, will be made on a single lump sum basis. General work categories are described in the price breakdown below, with the sum of Items (a) through (o) below being equal to the total lump sum for Bid Item A-2:				
	a. Shop drawings and approvals	1	LS	$ 27,500.00	$ 27,500.00
	b. Erosion control plan and maintenance	1	LS	$ 55,000.00	$ 55,000.00
	c. Construction survey and staking	1	LS	$ 16,500.00	$ 16,500.00
	d. Tree protection, removal, clearing, a	1	LS	$ 27,500.00	$ 27,500.00
	e. Dewatering	1	LS	$ 27,500.00	$ 27,500.00
	f. Site preparation, excavation, backfill	1	LS	$ 1,321,100.00	$ 1,321,100.00
	g. Reservoir construction, including reservoir membrane-slab foundation; underdrain, foundation, radial, and French drain piping to STM MHs P1 and P2; access hatches; roof vent; interior piping and pipe blocks; interior ladder with fall prevention systems; and all other accessories as noted and shown in the Drawings	1	LS	$ 4,906,000.00	$ 4,906,000.00
	h. Reservoir active mixing system	1	LS	$ 137,500.00	$ 137,500.00
	i. Reservoir testing, disinfection, and start-up	1	LS	$ 5,500.00	$ 5,500.00
	j. Sanitary improvements	1	LS	$ 17,600.00	$ 17,600.00
	k. Site access roads with surfacing, drainage ditches, and features as noted and shown in the Drawings	1	LS	$ 69,300.00	$ 69,300.00
	l. Landscaping to include soil, preparation, grass seeding, plantings, and jute matting	1	LS	$ 290,400.00	$ 290,400.00
	m. Site fencing improvements, including exterior and interior access gates	1	LS	$ 140,800.00	$ 140,800.00
	n. Retaining wall	1	LS	$ 67,650.00	$ 67,650.00

A-2	o. Final site grading, surface restoration, site clean-up, and demobilization	1	LS	$ 27,500.00	$ 27,500.00
				Subtotal	$ 7,137,350.00
A-3	Rock excavation for various site features:				
	a. Reservoir structure	1000	CY	$ 110.00	$ 110,000.00
	b. Site stormwater detention facility	750	CY	$ 110.00	$ 82,500.00
	c. Sanitary improvements	5	CY	$ 110.00	$ 550.00
				Subtotal	$ 193,050.00
A-4	Additional cost for overexcavation and select backfill material for unsuitable conditions				
	a. Reservoir structure	1200	CY	$ 71.50	$ 85,800.00
	b. Site stormwater detention facility	600	CY	$ 71.50	$ 42,900.00
				Subtotal	$ 128,700.00
A-5	Electrical, instrumentation and control, telemetry equipment, and SCADA equipment associated with work under this schedule will be paid on a lump sum basis. System integration work under all schedules is paid under Bid Item C-5. General work categories are described in the price breakdown below, with the sum of Items (a) through (b) below being equal to the total lump sum for Bid Item A-5:				
	a. Existing service transfer	1	LS	$ 11,000.00	$ 11,000.00
	b. Remaining Schedule A electrical work	1	LS	$ 44,000.00	$ 44,000.00
				Subtotal	$ 55,000.00
A-6	Furnish and install restrained, Special Thickness Class 52, zinc-coated, ductile iron pipe, wrapped in two layers of polyethylene, with Class B (imported granular material) trench backfill:				
	a. 24-inch diameter				
	i. (0 – 10 feet)				
	1. STA F1+60 to STA F2+20	60	LF	$ 187.00	$ 11,220.00
	ii. (10 – 20 feet)				
	1. STA A1+16 to STA A2+01	85	LF	$ 198.00	$ 16,830.00
	2. STA A2+28 to STA A2+87	59	LF	$ 198.00	$ 11,682.00
	3. STA F2+20 to STA F2+83	63	LF	$ 198.00	$ 12,474.00
	iii. (20 – 30 feet)				
	1. STA B1+00 to STA B1+44	44	LF	$ 209.00	$ 9,196.00
	2. STA B1+79 to STA B2+01	22	LF	$ 209.00	$ 4,598.00
	3. STA B2+28 to STA B2+80	52	LF	$ 209.00	$ 10,868.00

A-6	4. STA C3+78 to STA C4+49	71	LF	$ 209.00	$ 14,839.00
	5. STA D1+00 to STA D1+48	48	LF	$ 209.00	$ 10,032.00
	b. 18-inch diameter				
	i. (0 – 10 feet)				
	1. Booster Pump Station discharge piping	90	LF	$ 170.50	$ 15,345.00
	2. Booster Pump Station bypass piping	47	LF	$ 170.50	$ 8,013.50
	ii. (10 – 20 feet)				
	1. STA E1+00 to STA E2+30	130	LF	$ 181.50	$ 23,595.00
	c. 12-inch diameter				
	i. (0 – 10 feet)				
	1. STA F1+00 to STA F1+60	60	LF	$ 143.00	$ 8,580.00
	2. STA G1+00 to STA G2+57	157	LF	$ 143.00	$ 22,451.00
	3. STA H1+00 to STA H2+20	120	LF	$ 143.00	$ 17,160.00
	ii. (10 – 20 feet)				
	1. STA H2+20 to STA H3+00	80	LF	$ 154.00	$ 12,320.00
	iii. (20 – 30 feet)				
	1. STA H3+00 to STA H4+32	132	LF	$ 165.00	$ 21,780.00
	d. 10-inch diameter				
	i. (0 – 10 feet)				
	1. STA K1+00 to STA K4+06	306	LF	$ 132.00	$ 40,392.00
	e. 8-inch diameter				
	i. (0 – 10 feet)				
	1. STA J1+00 to STA J3+70	270	LF	$ 121.00	$ 32,670.00
				Subtotal	$ 304,045.50
A-7	Furnish and install restrained, Special Thickness Class 55, zinc-coated, ductile iron pipe, wrapped in two layers of polyethylene, with Class A (compacted native material) trench backfill:				
	a. 24-inch diameter				
	i. (25 – 40 feet)				
	1. STA B2+80 to STA B5+67	287	LF	$ 231.00	$ 66,297.00
A-8	Furnish and install zinc-coated ductile iron pipe fittings	42,000	LB	$ 4.13	$ 173,250.00
A-9	Furnish and install buried butterfly valves:				
	a. 24-inch diameter, FLG	2	EA	$ 12,210.00	$ 24,420.00
	b. 20-inch diameter, FLG	2	EA	$ 8,800.00	$ 17,600.00
	c. 18-inch diameter, FLG	2	EA	$ 6,930.00	$ 13,860.00
	d. 18-inch diameter, MJ	1	EA	$ 6,930.00	$ 6,930.00
	e. 12-inch diameter, FLG	4	EA	$ 2,970.00	$ 11,880.00
				Subtotal	$ 74,690.00

A-10	Furnish and install flexible expansion joints:				
	a. 24-inch diameter, FLGxMJ	3	EA	$ 37,620.00	$ 112,860.00
	b. 20-inch diameter, FLGxMJ	3	EA	$ 28,710.00	$ 86,130.00
	c. 18-inch diameter, FLGxMJ	1	EA	$ 24,200.00	$ 24,200.00
	d. 12-inch diameter, FLGxMJ	1	EA	$ 13,310.00	$ 13,310.00
				Subtotal	$ 236,500.00
A-11	Furnish and install permanent blow-off assemblies:				
	a. 2-inch diameter	4	EA	$ 4,400.00	$ 17,600.00
A-12	Furnish and install fire hydrant assemblies	1	EA	$ 6,050.00	$ 6,050.00
A-13	Furnish and install 1 ½" water service connection	1	LS	$ 16,225.00	$ 16,225.00
A-14	Hydrostatic testing, flushing, and disinfection of water mains	1	LS	$ 24,200.00	$ 24,200.00
A-15	Connections to existing water system piping:				
	a. Connect to 20-inch diameter water main (STA A2+87)	1	EA	$ 3,080.00	$ 3,080.00
	b. Connect to 20-inch diameter reservoir outlet pipe (STA C3+87)	1	EA	$ 3,080.00	$ 3,080.00
	c. Connect to 20-inch diameter reservo	1	EA	$ 3,080.00	$ 3,080.00
	d. Connect to 12-inch diameter reservoir pump suction line (Alignment E)	1	EA	$ 1,980.00	$ 1,980.00
	e. Connect to 20-inch diameter reservoir overflow pipe (Alignment Q)	1	EA	$ 3,080.00	$ 3,080.00
				Subtotal	$ 14,300.00
A-16	Existing utility abandonment	1	LS	$ 7,700.00	$ 7,700.00
A-17	Furnish and install chemical sampling and injection conduit system	1	EA	$ 188,650.00	$ 188,650.00
A-18	Furnish and install non-restrained, Special Thickness Class 52, zinc-coated, ductile iron pipe, wrapped in two layers of polyethylene, with Class B (imported granular material) trench backfill:				
	a. 24-inch diameter				
	i. STA P1+00 to STA P1+94	94	LF	$ 176.00	$ 16,544.00
	b. 20-inch diameter				
	i. STA Q1+00 to STA Q2+00	100	LF	$ 170.50	$ 17,050.00
	c. 18-inch diameter				
	i. Reservoir No. 2 drain piping	17	LF	$ 159.50	$ 2,711.50
				Subtotal	$ 36,305.50
A-19	Furnish and install PVC drain pipe with Class B (imported granular material) trench backfill:				
	a. 24-inch diameter				
	i. STA P1+94 to STA P2+84	90	LF	$ 297.00	$ 26,730.00
	b. 10-inch diameter				

	i. STA W1+00 to STA W8+75	775	LF	$ 143.00	$ 110,825.00
	c. 8-inch diameter				
A-19	i. STA V1+00 to STA V2+14	114	LF	$ 132.00	$ 15,048.00
	ii. Additional storm drain piping	130	LF	$ 143.00	$ 18,590.00
				Subtotal	$ 171,193.00
A-20	Furnish and install 84-inch diameter reservoir monitoring manhole	1	EA	$ 22,000.00	$ 22,000.00
A-21	Furnish and install 72-inch diameter air gap manhole	1	EA	$ 25,630.00	$ 25,630.00
A-22	Furnish and install 48-inch diameter storm manholes	2	EA	$ 11,000.00	$ 22,000.00
A-23	Furnish and install catch basins/ditch inlets	9	EA	$ 4,400.00	$ 39,600.00
	All work required to construct the site stormwater detention facility, complete, other than as provided for under separate unit prices, will be made on a single lump sum basis. General work categories are described in the price breakdown below, with the sum of Items (a) through (l) being equal to the total lump sum for Bid Item A-23:				
	a. Furnish and install class 50 rip rap outfalls	32	CY	$ 143.00	$ 4,576.00
	b. Furnish and install class 100 rip rap outfalls	25	CY	$ 165.00	$ 4,125.00
	c. Furnish and install PVC drain pipe with Class A (compacted native material) trench backfill				
	i. 24-inch diameter				
	1. STA T0+34 to STA T2+78	244	LF	$ 242.00	$ 59,048.00
A-24	ii. 18-inch diameter				
	1. STA U0+00 to STA U0+05	5	LF	$ 187.00	$ 935.00
	iii. 15-inch diameter				
	1. STA R0+63 to STA R1+20	57	LF	$ 165.00	$ 9,405.00
	2. STA T2+78 to STA T3+36	58	LF	$ 165.00	$ 9,570.00
	d. Furnish and install PVC drain pipe with Class B (imported granular material) trench backfill				
	i. 18-inch diameter				
	1. STA U0+05 to STA U1+12	107	LF	$ 242.00	$ 25,894.00
	ii. 15-inch diameter				
	1. STA R1+20 to STA R2+05	85	LF	$ 220.00	$ 18,700.00
	e. Excavation, backfill, and grading (in native material) to include temporary construction shoring as needed	2600	CY	$ 11.00	$ 28,600.00
	f. Furnish and install 40 mil PVC liner membrane	7550	SF	$ 2.20	$ 16,610.00
	g. Furnish and install pipe collar	1	LS	$ 4,400.00	$ 4,400.00

A-24	h. Furnish and install 60-inch diameter standard manhole	2	EA	$ 14,300.00	$ 28,600.00
	i. Furnish and install 60-inch diameter water quality manhole	1	EA	$ 16,500.00	$ 16,500.00
	j. Furnish and install 60-inch diameter flow control manhole	1	EA	$ 22,000.00	$ 22,000.00
	k. Furnish and install ditch inlet	1	EA	$ 4,400.00	$ 4,400.00
	l. Furnish and install topsoil, 18-inch depth	600	CY	$ 55.00	$ 33,000.00
				Subtotal	$ 286,363.00
A-25	Stormwater facilities and drainage system testing and start-up	1	LS	$ 11,000.00	$ 11,000.00
A-26	Additional cost for utility trench rock excavation	500	CY	$ 110.00	$ 55,000.00
A-27	Additional cost for overexcavation and select backfill material for unsuitable trench conditions	5000	CY	$ 71.50	$ 357,500.00
A-28	Improvements to existing 5.5 MG concrete reservoir	1	LS	$ 143,000.00	$ 143,000.00
A-29	Improvements to existing meter manhole (C1+96)	1	LS	$ 11,000.00	$ 11,000.00
	Off-Site Improvements				
Item	Description	Quantity	Unit	Unit Price	Total Cost
A-30	Traffic control				
	a. Temporary protection and direction of traffic	1	LS	$ 66,000.00	$ 66,000.00
	b. Flaggers	1	LS	$ 22,000.00	$ 22,000.00
	c. Portable changeable message signs	1	LS	$ 24,200.00	$ 24,200.00
	d. Radar speed trailers	1	LS	$ 22,000.00	$ 22,000.00
				Subtotal	$ 134,200.00
A-31	Furnish and install restrained, Special Thickness Class 52, zinc-coated, ductile iron pipe, wrapped in two layers of polyethylene, with Class B (imported granular material) trench backfill:				
	a. 24-inch diameter				
	i. (0 – 10 feet)				
	1. STA B11+40 to STA B19+31	791	LF	$ 187.00	$ 147,917.00
	ii. (10 – 20 feet)				
	1. STA B8+20 to STA B11+40	320	LF	$ 198.00	$ 63,360.00
	iii. (20 – 30 feet)				
	1. STA B5+67 to STA B8+20	253	LF	$ 209.00	$ 52,877.00
				Subtotal	$ 264,154.00
A-32	Furnish and install zinc-coated ductile iron pipe fittings	5,500	LB	$ 4.13	$ 22,687.50
A-33	Furnish and install buried gate valves:				
	a. 24-inch diameter, MJ	1	EA	$ 8,800.00	$ 8,800.00

A-34	Furnish and install 6-inch combination air valve (CARV) assemblies	1	EA	$ 22,000.00	$ 22,000.00
A-35	Hydrostatic testing, flushing, and disinfection of water mains	1	LS	$ 2,200.00	$ 2,200.00
A-36	Connections to existing water system piping				
	a. Connect to 24-inch diameter water main	1	EA	$ 3,300.00	$ 3,300.00
A-37	Additional cost for utility trench rock excavation	500	CY	$ 110.00	$ 55,000.00
A-38	Overexcavation and select backfill material for unsuitable trench conditions	2500	CY	$ 71.50	$ 178,750.00
A-39	Saw-cutting existing AC pavement and concrete surfacing	2700	LF	$ 1.65	$ 4,455.00
A-40	Grind and install 2-inch thick AC inlay	3600	SY	$ 24.20	$ 87,120.00
A-41	Placement of new road striping	1340	LF	$ 5.50	$ 7,370.00
				SUBTOTAL FOR SCHEDULE A:	$ 11,463,545.50

SCHEDULE B - CONTROL VALVE VAULT AND OPERATIONS BUILDING					
Item No.	Description	Quantity	Unit	Unit Price	Total Cost
B-1	Mobilization, bonds, permitting, insurance, and demobilization	1	LS	$ 105,270.00	$ 105,270.00
B-2	All work required to construct cast-in-place concrete control valve vault and CMU operations building, complete, other than as provided for under separate unit prices, will be made on a single lump sum basis. General work categories are described in the price breakdown below, with the sum of Items (a) through (f) being equal to the total lump sum for Bid Item B-2:				
	a. Shop drawings and approvals	1	LS	$ 11,000.00	$ 11,000.00
	b. Dewatering	1	LS	$ 5,500.00	$ 5,500.00
	c. Excavation, backfill, and grading to include temporary construction shoring as needed	1	LS	$ 33,000.00	$ 33,000.00
	d. Cast-in-place vault construction, to include stairs, platforms, and handrails; valves; piping not included in other Bid Items; fittings; foundation and floor drain piping to STM MH P2; plumbing; HVAC; and other accessories noted and shown in the Drawings	1	LS	$ 938,300.00	$ 938,300.00

B-2	e. CMU building construction, to include HVAC, chemical systems, and other accessories noted and shown in the Drawings	1	LS	$ 143,000.00	$ 143,000.00
	f. Facility start-up and testing	1	LS	$ 5,500.00	$ 5,500.00
				Subtotal	$ 1,136,300.00
B-3	Additional cost for rock excavation	600	CY	$ 110.00	$ 66,000.00
B-4	Overexcavation and select backfill material for unsuitable foundation conditions	50	CY	$ 71.50	$ 3,575.00
B-5	Lighting and other electrical work for vault; instrumentation, control & telemetry for vault. System integration work under all schedules is paid under Bid Item C-5	1	LS	$ 110,000.00	$ 110,000.00
				SUBTOTAL FOR SCHEDULE B:	$ 1,421,145.00

SCHEDULE C - ASR MECHANICAL BUILDING AND WELL NO. 7 IMPROVEMENTS					
Item No.	Description	Quantity	Unit	Unit Price	Total Cost
C-1	Mobilization, bonds, permitting, insurance, and demobilization	1	LS	$ 210,430.00	$ 210,430.00
C-2	All work required to construct ASR Mechanical Building and Well No. 7, complete, other than as provided for under separate unit prices. Work items include CMU-style building; interior piping, control valves, HVAC and plumbing; deep well vertical turbine pump and motor; well head enclosure; and incidental work as specified and necessary. Includes standby generator with automatic transfer switch and external fuel storage tank.	1	LS	$ 1,667,600.00	$ 1,667,600.00
C-3	Additional cost for rock excavation	150	CY	$ 110.00	$ 16,500.00
C-4	Overexcavation and select backfill material for unsuitable foundation conditions	150	CY	$ 71.50	$ 10,725.00
C-5	Electrical including electrical service, motor control panels and ditribution; plus instrumentation, control & telemetry for this building, and system integration work under all schedules	1	LS	$ 935,000.00	$ 935,000.00
				SUBTOTAL FOR SCHEDULE C:	$ 2,840,255.00

Exhibit A

SCHEDULE D - UPPER ZONE BOOSTER PUMP STATION					
Item No.	Description	Quantity	Unit	Unit Price	Total Cost
D-1	Mobilization, bonds, permitting, insurance, and demobilization	1	LS	$ 53,900.00	$ 53,900.00
D-2	All work required to construct potable water pump station building, complete, other than as provided for under separate unit prices. Anticipated work items include CMU-style building construction; pump station interior piping and valves; HVAC and plumbing; and incidental work as specified and necessary	1	LS	$ 610,500.00	$ 610,500.00
D-3	Additional cost for rock excavation	75	CY	$ 110.00	$ 8,250.00
D-4	Overexcavation and select backfill material for unsuitable foundation conditions	75	CY	$ 71.50	$ 5,362.50
D-5	Lighting and other electrical work for building, instrumentation, control & telemetry for this building. System integration work under all schedules is paid under Bid Item C-5	1	LS	$ 55,000.00	$ 55,000.00
				SUBTOTAL FOR SCHEDULE D:	$ 733,012.50

SCHEDULE E - STORAGE BUILDING					
Item No.	Description	Quantity	Unit	Unit Price	Total Cost
E-1	Mobilization, bonds, permitting, insurance, and demobilization	1	LS	$ 57,750.00	$ 57,750.00
E-2	All work required to construct the storage building, complete, other than as provided for under separate unit prices. Anticipated work items include foundation excavation and subgrade preparation; prefabricated metal building; HVAC and plumbing; and incidental work as specified and necessary	1	LS	$ 641,300.00	$ 641,300.00
E-3	Additional cost for rock excavation	100	CY	$ 110.00	$ 11,000.00
E-4	Overexcavation and select backfill material for unsuitable foundation conditions	200	CY	$ 71.50	$ 14,300.00
E-5	Lighting and other electrical work for building; instrumentation, control & telemetry for this building. System integration work under all schedules is paid under Bid Item C-5	1	LS	$ 55,000.00	$ 55,000.00
				SUBTOTAL FOR SCHEDULE E:	$ 779,350.00

SCHEDULE F – ASR 7 WELL ALTERATION AND AQUIFER TESTING					
NOTE: Line Items F-12 through F-14 are required elements of this project and are to be completed in their entirety. If the Contractor is not willing to complete an aquifer test in an open borehole then they should not submit a bid on this project.					
Item No.	Description	Quantity	Unit	Unit Price	Total Cost
General					
F-1	Erosion Control	1	LS	$ 11,000.00	$ 11,000.00
F-2	Water Management	1	LS	$ 33,000.00	$ 33,000.00
Test Well Reaming and Completion					
F-3	Ream 14.75 inch existing borehole from 23 to 695 ft bgs to 20-inch	672	LF	$ 577.50	$ 388,080.00
F-4	Furnish and install 16-inch OD 0.375-inch wall thickness low carbon steel casing from the ground surface to 695 feet bgs. Linear foot cost includes any additional material that might be needed to set the casing and complete this task.	695	LF	$ 220.00	$ 152,900.00
F-5	Install bentonite seal for 16-inch casing from the ground surface to 695 feet bgs.	695	LF	$ 165.00	$ 114,675.00
F-6	Clean-out 14.75-inch lower borehole and ream to 16-inch nominal from 695 to 1,025 feet bgs	330	LF	$ 495.00	$ 163,350.00
F-7	Conduct well development.	8	HRS	$ 715.00	$ 5,720.00
F-8	Conduct plumbness and alignment testing of the entire borehole.	1	LS	$ 4,400.00	$ 4,400.00
F-9	Complete 2 video logs of the entire borehole (immediately after development, and after aquifer testing).	1	LS	$ 3,300.00	$ 3,300.00
F-10	Standby time for up to 2 days.	2	DAY	$ 2,200.00	$ 4,400.00
F-11	Drill rig hours – Standby Time.	8	HRS	$ 385.00	$ 3,080.00
Base Aquifer Testing					
F-12	Furnish and install necessary equipment, including temporary test pump, to complete the basalt aquifer testing of the OPEN BOREHOLE.	1	LS	$ 44,000.00	$ 44,000.00
F-13	Perform step-rate test at the follow four steps: 550 gpm, 1,000 gpm, 1,300 gpm and 1,500 gpm. Each step shall be approximately 2 hours long.	8	HRS	$ 440.00	$ 3,520.00
F-14	Perform constant-rate pump test at 1,500 gpm (120 hours of pumping and up to 120 hours for recovery - no time paid for recovery).	120	HRS	$ 330.00	$ 39,600.00
Miscellaneous Tasks, Extra Work and Mobilization/Demobilization					

F-15	Well disinfection & completion of an above-grade (3-ft stickup), well cap with an access port and installation of three yellow painted bollards	1	LS	$ 3,300.00	$ 3,300.00
Base Bid Amount (Total Bid Items F-1 through F-15)					
F-16	Mobilization and Demobilization, including all equipment and incidental items required to complete the Scope of Work (the total amount for this bid item CANNOT be more than 15% of the Total Schedule F Base Bid amount (bid items F-1 through F-15)	1	LS	$ 145,819.30	$ 145,819.30
F-17	"Extra Work as Authorized" (means additional work tasks not specifically required or implied by the Contract that an authorized City representative specifically requests in writing for a contractor to perform. Executing a construction contract is not a specific request for a contractor to perform any additional work)	1	LS	$ 55,000.00	$ 55,000.00
				SUBTOTAL FOR SCHEDULE F:	$ 1,175,144.30

Grand Total $ 18,412,452.30

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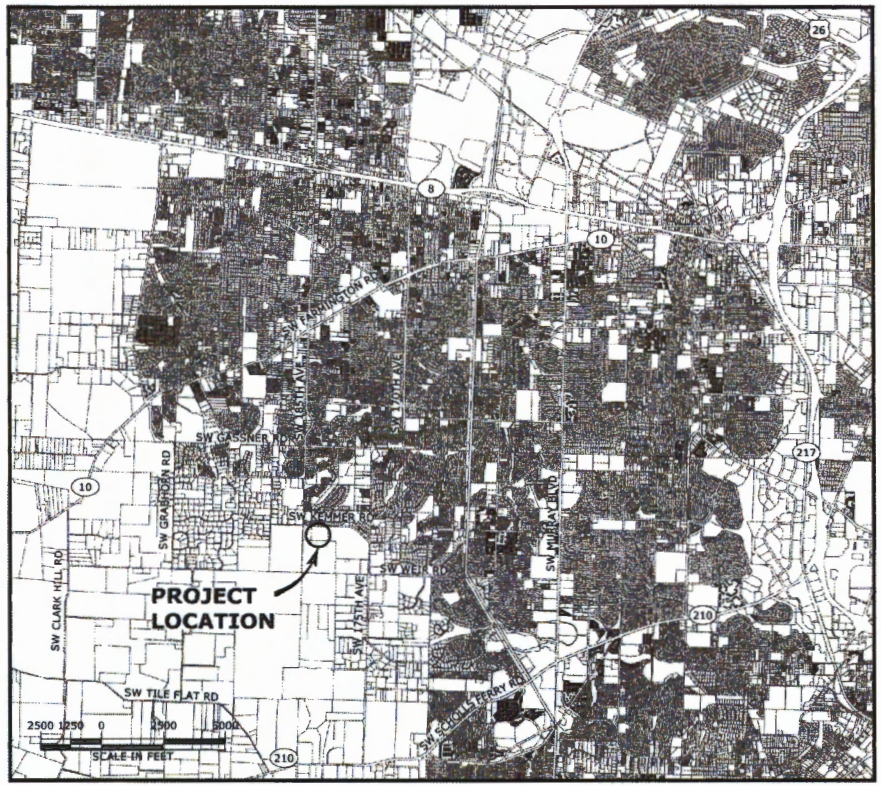
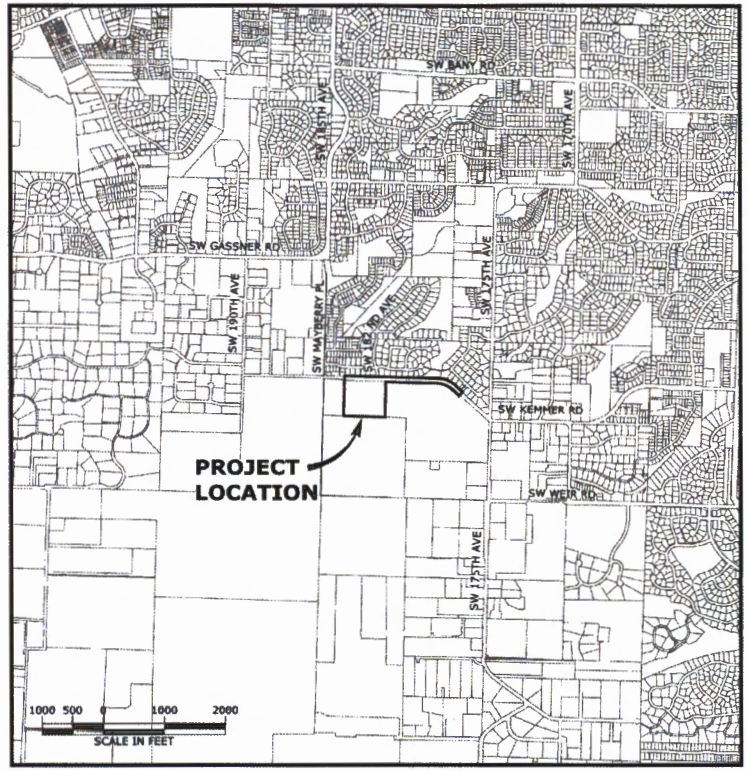
EXHIBIT 3



VICINITY MAP

SCALE: 1"=2,500'



LOCATION MAP

SCALE: 1"=1000'

TAX LOT 1S130CB02400
TOWNSHIP 1 SOUTH, RANGE 1 WEST, SECTION 30CB
WILLAMETTE MERIDIAN, CITY OF BEAVERTON
WASHINGTON COUNTY, OREGON

RESERVOIR SITE ADDRESS:
18250 SW KEMMER RD
BEAVERTON, OR 97007

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

TMS DESIGNED
MBM DRAWN
MLM CHECKED

BEAVERTON PUBLIC WORKS ISSUED 12-19-19 MICHAEL L. MAVELLER REGISTERED PROFESSIONAL ENGINEER REGISTERED OREGON REVIEWS 12-31-20

murraysmith

Beaverton OREGON

COOPER MOUNTAIN RESERVOIR NO. 2 AND ASSOCIATED IMPROVEMENTS

VICINITY AND LOCATION MAPS

PROJECT NO.: 18-2258 | SCALE: AS SHOWN | DATE: JANUARY 2020

SHEET G-3

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