

## ADMINISTRATIVE MEETING

December 14, 2016

4:00 p.m. to 6:00 p.m.

Room 326

### AGENDA

1. **Call to order, introductions, opening comments**
2. **November 30, 2016 Administrative Meeting summary**
3. **Commission comments, questions**
  - Upcoming appointments
4. **City Manager's Report**
  - Charter Franchise Agreement – Short Term Extension (*\*materials forthcoming*)
  - Armory – Parkland Dedication Discussion
5. **Department discussions**
  - City Attorney**
    - CI 116 – Potential Impacts Discussion (*\*no materials attached*)
    - **Consensus Direction to Manager:**
  - Public Works**
    - Quiet Zone Discussion
    - Wastewater Effluent Disposal Study – Options (Morrison-Maierle)
    - **Consensus Direction to Manager:**
6. **Committee discussions**
  - a) Audit Committee, City-County Board of Health, L&C County Mental Health Advisory Committee, Montana League of Cities & Towns  
– Mayor Jim Smith
  - b) Mayor Pro-Tem, Audit Committee, Helena Chamber of Commerce Liaison, Information Technology Committee, Transportation Coordinating Committee  
– Commissioner Dan Ellison
  - c) ADA Compliance Committee, Audit Committee, City-County Parks Board , Civic Center Board  
– Commissioner Rob Farris-Olsen
  - d) Board of Adjustment, City-County Administration Building (CCAB), Non-Motorized Travel Advisory Board, Transportation Coordinating Committee  
– Commissioner Andres Haladay
  - e) Business Improvement District/Helena Parking Commission ,Montana Business Assistance Connection, Public Art Committee  
– Commissioner Ed Noonan
  - f) Helena Citizens Council
7. **Review of agenda for December 19, 2016 Commission meeting**
8. **Public comment**
9. **Commission discussion and direction to City Manager**
10. **Adjourn**

*City of Helena, Montana*

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## **ADA NOTICE**

The City of Helena is committed to providing access to persons with disabilities for its meetings, in compliance with Title II of the Americans with Disabilities Act and the Montana Human Rights Act. The City will not exclude persons with disabilities from participation at its meetings or otherwise deny them the City's services, programs, or activities.

Persons with disabilities requiring accommodations to participate in the City's meetings, services, programs, or activities should contact the City's ADA Coordinator, Elroy Golemon, as soon as possible to allow sufficient time to arrange for the requested accommodation, at any of the following:

(406) 447- 8490

TTY Relay Service 1-800-253-4091 or 711

[citycommunitydevelopment@helenamt.gov](mailto:citycommunitydevelopment@helenamt.gov)

316 North Park, Avenue, Room 440, Helena, MT 59623

*City of Helena, Montana*

**Date:** December 8, 2016

**TO:** Ron Alles, City Manager

**FROM:** Ryan Leland, City Engineer  
Randall Camp, Public Works Director

**Subject:** Bid Award for the Quiet Zone Phase II - second bidding

The City of Helena first bid the Quiet Zone in July 2016 and received only one bid. That bid was considered too expensive and the City Commission rejected all bids and decided to re-bid the project this fall. On Nov. 15<sup>th</sup>, 2016 the City of Helena, through our consultant KLJ, received two bids for the Quiet Zone Phase II. Initial direction from the Commission at the November 30, 2016 administrative meeting was to consider awarding the base bid and alternate no. 1 and not award alternate no. 3 or 4.

Based on the guidance given by the Commission, staff would bring forward the award of the Quiet Zone Phase II project to Missouri River Contractors in the amount of \$574,925.10. This amount includes the base bid of \$485,201.20 and alternate #1 (\$89,723.90) for the total award of \$574,925.10. The total remaining budget for construction is \$425,200.00. The estimated budget balance including testing & contingencies (10%) could have a budget shortfall of \$207,217.61 (shown as option #1 – budget analysis worksheet).

If the Commission would like to consider awarding all alternates (including the wayside horns at National and Roberts), staff would bring forward the award to Missouri River Contractors in the amount of \$832,925.10. This amount includes the base bid of \$485,201.20, alternate #1 (\$89,723.90), alternate #2 (\$129,000), and alternate #3 (\$129,000). The total remaining budget for construction is \$425,200.00. The estimated budget balance including testing and contingencies (10%) could have a budget shortfall of \$491,017.61 (shown as option #2 – budget analysis worksheet).

These projected shortfalls could be covered by using all or a portion of the \$300,000 budgeted in the capital improvement fund for non-motorized projects or the \$500,000 budgeted in gas tax for Commission approved projects. It was also discussed that a possible option would be to use Street Maintenance capital funds (not currently budgeted). Staff is looking for final direction on the bid recommendation and how to cover the expected budget shortfall.

The Commission consideration of this award would be scheduled on January 9, 2017 and would meet our 60 day award schedule.

*City of Helena, Montana*

BUDGET ANALYSIS WORKSHEET

# Quiet Zone Phase II - Option #1

City project 15-31

Description	Costs
<b>Funding</b>	
Capital Improvement Fund	\$ 500,000.00
<b>Total Funds Available</b>	<b>\$ 500,000.00</b>
<b>Engineering</b>	
Total Engineering Cost	\$ 74,800.00
<b>Total Funds Available for Construction</b>	
	<b>\$ 425,200.00</b>
<b>Construction</b>	
Base Bid - Carter, Montana, Benton and Joslyn	\$ 485,201.20
Alternate 1 - Pedestrian Improvements Benton	\$ 89,723.90
Alternate 2 - Wayside Horn National Avenue	\$ -
Alternate 3 - Wayside Horn Roberts Street	\$ -
<b>Construction Cost</b>	<b>\$ 574,925.10</b>
10% Contingency and Testing	\$ 57,492.51
<b>Total Construction Cost</b>	<b>\$ 632,417.61</b>
<b>Estimated Budget Balance</b>	<b>-\$207,217.61</b>

Possible Additional Sources:

\$300,000 - Capital Improvement Fund - Non-motorized projects (TBD by Commission)

\$500,000 - Gas Tax (Commission Approved Projects)

Compiled 12/8/2016



November 21, 2016

David Knoepke; PE  
City of Helena  
316 N. Park Ave.  
Helena, MT 59623

Re: Quiet Zone Phase II Bid Recommendation

Dear David:

On Tuesday November 15<sup>th</sup>, 2016, bids for the Helena Quiet Zone Phase II project were publicly opened and read aloud in the City-County Building conference room. Two contractors submitted bids for the project, Helena Sand & Gravel, Inc. and Missouri River Contractors. After reviewing the bid packages, it has been determined that both bids are “responsive” (i.e. bid forms were filled out according to the bidding instructions and the addendum was acknowledged).

In review of the bid package submitted by Helena Sand and Gravel, Inc., no errors were discovered. The following two minor discrepancies were discovered in the bid package submitted by Missouri River Contractors.

1. There was a math error on the base bid sheet. The total bid price for installation of the flexible delineators was \$320 greater than the price calculated using the unit price (\$33 per delineator x 16 delineators = \$528, not \$848). The error has been corrected on the attached bid tabulation using the unit price calculation.
2. The bidder’s list of project references does not include any projects which involve work similar to this project. However, we know that this company was recently created which is likely the justification for their lack of relevant company experience. We have worked with members of this company on other projects with their previous employer, and have confidence in their ability to complete the work included in this project.

Both of the bids received are significantly higher than the Engineer’s Opinion of Probable Construction Cost for the project. Attached is a bid tabulation showing the unit prices provided by the contractors, and the Engineer’s estimated unit prices. Following is a summary of the results:

	Helena Sand & Gravel	Missouri River Contractors	Engineer’s Estimate
Base Bid	\$480,880.75	\$485,201.20	\$258,066.64
Alternate 1 (Pedestrian Improvements, Benton Ave.)	\$129,863.55	\$89,723.90	\$60,574.35
Alternate 2 (Wayside Horn, National Ave.)	\$135,000.00	\$129,000.00	\$130,000.00
Alternate 3 (Wayside Horn, Roberts St.)	\$135,000.00	\$129,000.00	\$130,000.00
<b>Total</b>	<b>\$880,744.30</b>	<b>\$832,925.10</b>	<b>\$578,640.99</b>



We understand that it is the City's desire to award the Base Bid, Alternate 1, and possibly Alternates 2 and 3 (wayside horns.) It is not required that wayside horns be installed at National Avenue and Roberts Street based on the Federal Railroad Administration (FRA) Quiet Zone Rule. However, due to safety concerns associated with silencing train horns and making no improvements to these specific crossings, we recommend installation of wayside horns (award of Alternates 2 and 3). Montana Rail Link (MRL) and the Montana Department of Transportation (MDT) also recommend installation of the wayside horns. Attached is a letter from the President of MRL, stating this recommendation. Based on award of the Base Bid, Alternate 1, Alternate 2, and Alternate 3, Missouri River Contractors is the low bidder.

The Engineer's Opinion of Probable Construction Cost was prepared based on our experience with previous projects, and reference to a compilation of average bid prices on Montana Department of Transportation projects. Both of the bids that were received on the project are considerably higher than the Engineer's Opinion of Probable Construction Cost. However, the project has now been bid two times, and it is not likely that rebidding the project will result in significantly lower prices. Therefore, it is our recommendation that the base bid and three alternates be awarded to Missouri River Contractors in the amount of \$832,925.10.

Please call me at (406)449-7764 if you have any questions or need additional information.

Sincerely,

KLJ

A handwritten signature in blue ink that reads "Bradley Koon". The signature is written in a cursive, flowing style.

Brad Koon, P.E.  
Project Manager

Enclosure(s): Bid Tabulation  
June 9, 2015 Letter from Montana Rail Link

Project #: 15-31

TABULATION OF BIDS  
 QUIET ZONE PHASE II (BASE BID)  
 CITY OF HELENA



Bid Letting: November 15, 2016

				Engineering Estimate		Helena Sand & Gravel, Inc. Helena, MT		Missouri River Contractors Helena, MT	
ITEM NUMBER	UNIT DESCRIPTION	QTY	UNIT	UNIT PRICE	Engineering Estimate TOTAL SUM	UNIT PRICE	Helena Sand & Gravel, Inc. TOTAL SUM	UNIT PRICE	Missouri River Contractors TOTAL SUM
<b>BASE BID</b>									
109200005	MOBILIZATION	1	LS	\$ 23,460.60	\$ 23,460.60	\$ 108,000.00	\$ 108,000.00	\$ 81,500.00	\$ 81,500.00
202020140	REMOVE BITUMINOUS PAVEMENT	690	SQYD	2.22	1,531.80	11.00	7,590.00	9.00	6,210.00
203020100	EXCAVATION-UNCLASSIFIED	622.0	CUYD	10.00	6,220.00	11.00	6,842.00	10.00	6,220.00
203020200	EXCAVATION-UNCLASS BORROW	264	CUYD	15.00	3,960.00	26.00	6,864.00	45.00	11,880.00
203020375	TOPSOIL-SALVAGING AND PLACING	329	CUYD	10.00	3,290.00	10.00	3,290.00	10.00	3,290.00
301020340	CRUSHED AGGREGATE COURSE	222	CUYD	35.00	7,770.00	60.00	13,320.00	75.00	16,650.00
301020625	AGGREGATE TREATMENT	162	SQYD	1.00	162.00	6.50	1,053.00	10.00	1,620.00
401020022	COMMERCIAL MIX-PG 64-28	36	TON	150.00	5,325.00	485.00	17,217.50	400.00	14,200.00
603010532	CSP 24 IN 0.064	56	LNFT	60.37	3,380.72	65.00	3,640.00	80.00	4,480.00
608010112	CONCRETE MEDIAN CAP	155	SQYD	42.94	6,638.52	45.00	6,957.00	55.00	8,503.00
609010030	CURB-CONC MEDIAN TYPE A	1,467	LNFT	9.52	13,963.94	17.00	24,935.60	22.00	32,269.60
609010200	CURB AND GUTTER-CONC	1,471	LNFT	25.55	37,594.27	38.00	55,913.20	39.00	57,384.60
609010305	REMOVE CURB AND GUTTER	73	LNFT	3.52	255.90	15.00	1,090.50	20.00	1,454.00
610100101	SEEDING AREA NO 1	1	ACRE	478.23	334.76	1,700.00	1,190.00	1,700.00	1,190.00
610100326	FERTILIZING AREA NO 1	1	ACRE	94.56	66.19	600.00	420.00	900.00	630.00
610100555	CONDITION SEEDBED SURFACE	1	ACRE	109.47	76.63	500.00	350.00	750.00	525.00
616343914	CONDUIT-PLASTIC 1 1/2 IN	512	LNFT	7.08	3,624.96	10.50	5,376.00	11.50	5,888.00
616783007	PULL BOX-COMPOSITE TYPE 2	1	EACH	638.79	638.79	800.00	800.00	850.00	850.00
617000000	FOUNDATION-CONCRETE	4	CUYD	1,000.37	4,001.48	1,100.00	4,400.00	1,000.00	4,000.00
617033214	CABLE-COPPER 3AWG14-600V	627	LNFT	1.07	670.89	1.00	627.00	1.00	627.00
617123110	CONDUCTOR-COPPER AWG10-600V	1,881	LNFT	0.59	1,109.79	0.75	1,410.75	1.00	1,881.00
617183056	STANDARD-STL TYPE 10-A-500-6	8	EACH	2,145.29	17,162.32	2,600.00	20,800.00	2,700.00	21,600.00
617303300	HIGH EFFICACY LUMINAIRE LED - 400W EQUIV.	4	EACH	587.54	2,350.16	1,250.00	5,000.00	1,450.00	5,800.00
617305300	HIGH EFFICACY LUMINAIRE LED - 250W EQUIV.	4	EACH	225.00	900.00	1,250.00	5,000.00	1,450.00	5,800.00
617333160	SERV ASSEMB-60 AMP	8	EACH	2,635.00	21,080.00	2,000.00	16,000.00	2,150.00	17,200.00
618030080	TRAFFIC CONTROL	1	LS	32,500.00	32,500.00	92,000.00	92,000.00	95,000.00	95,000.00
619010086	SIGNS-ALUM REFL SHEET IV	101	SQFT	26.06	2,626.85	24.00	2,419.20	25.00	2,520.00
619010230	REMOVE SIGN	4	EACH	46.20	184.80	37.00	148.00	50.00	200.00
619010300	POSTS-TUBULAR STEEL	664	LB	5.88	3,904.32	8.00	5,312.00	8.25	5,478.00
619010340	POSTS-TUBULAR STEEL-SQ-PERF	56	LB	7.01	392.56	11.00	616.00	12.00	672.00
619010740	FRANG SIGN POST BKWY-3 IN RD (76 MM)	8	EACH	969.50	7,756.00	1,000.00	8,000.00	1,300.00	10,400.00
619011180	DELINEATOR-FLEX SURF MTD YLW	16.0	EACH	65.76	1,052.16	48.00	768.00	33.00	528.00
620010301	CURB MARKING-YELLOW EPOXY	24	GAL	254.45	6,106.80	350.00	8,400.00	300.00	7,200.00
620011260	WORDS AND SYMBOLS-WHITE EPOXY	20	GAL	295.94	5,918.80	350.00	7,000.00	400.00	8,000.00
620011265	WORDS AND SYMBOLS-YELLOW EPOXY	8	GAL	305.06	2,440.48	350.00	2,800.00	400.00	3,200.00
620013955	REMOVE PAVEMENT MARKINGS	12,778	LNFT	1.93	24,661.54	2.00	25,556.00	2.00	25,556.00
620013960	STRIPING-WHITE EPOXY	12	GAL	65.51	786.12	130.00	1,560.00	175.00	2,100.00
620014960	STRIPING-YELLOW EPOXY	29	GAL	56.12	1,627.48	130.00	3,770.00	175.00	5,075.00
999999997	CONDUIT BORING	127	LNFT	20.00	2,540.00	35.00	4,445.00	60.00	7,620.00
<b>TOTAL ESTIMATED PROJECT COST (Base Bid)</b>					<b>\$ 258,066.64</b>		<b>\$ 480,880.75</b>		<b>\$ 485,201.20</b>

TABULATION OF BIDS  
 QUIET ZONE PHASE II (ALTERNATES)  
 CITY OF HELENA



Bid Letting: November 15, 2016

				Engineering Estimate		Helena Sand & Gravel, Inc. Helena, MT		Missouri River Contractors Helena, MT	
ITEM NUMBER	UNIT DESCRIPTION	QTY	UNIT	UNIT PRICE	Engineering Estimate TOTAL SUM	UNIT PRICE	Helena Sand & Gravel, Inc. TOTAL SUM	UNIT PRICE	Missouri River Contractors TOTAL SUM
<b>ALTERNATE 1</b>									
109200005	MOBILIZATION	1	LS	\$ 5,506.76	\$ 5,506.76	\$ 20,000.00	\$ 20,000.00	\$ 2,000.00	\$ 2,000.00
301020340	CRUSHED AGGREGATE COURSE	2	CUYD	35.00	70.00	60.00	120.00	90.00	180.00
301020625	AGGREGATE TREATMENT	19.0	SQYD	1.00	19.00	6.50	123.50	50.00	950.00
401020022	COMMERCIAL MIX-PG 64-28	4	TON	150.00	615.00	485.00	1,988.50	475.00	1,947.50
608000020	SIDEWALK DRAIN	1	EACH	1,200.00	1,200.00	2,400.00	2,400.00	2,500.00	2,500.00
608010020	SIDEWALK-CONCRETE 4 IN	288	SQYD	72.32	20,806.46	59.50	17,118.15	50.00	14,385.00
608010050	SIDEWALK-CONCRETE 6 IN	13.3	SQYD	81.69	1,086.48	108.50	1,443.05	75.00	997.50
608010125	DETEC WARNING DEVICES-TYPE 1	14	SQYD	347.70	4,867.80	400.00	5,600.00	500.00	7,000.00
610100490	TURF REINF MAT-NATURAL FIBER	1	SQYD	5.80	5.22	800.00	720.00	650.00	585.00
616343914	CONDUIT-PLASTIC 1 1/2 IN	223	LNFT	7.05	1,572.15	10.50	2,341.50	12.00	2,676.00
617000000	FOUNDATION-CONCRETE	2	CUYD	910.26	1,729.49	1,100.00	2,090.00	1,000.00	1,900.00
617123110	CONDUCTOR-COPPER AWG10-600V	693	LNFT	0.58	401.94	0.75	519.75	1.00	693.00
617183056	STANDARD-STL TYPE 10-A-500-6	1	EACH	2,107.56	2,107.56	2,600.00	2,600.00	2,600.00	2,600.00
617303300	HIGH EFFICACY LUMINAIRE LED - 400W EQUIV.	1	EACH	598.36	598.36	1,250.00	1,250.00	1,300.00	1,300.00
617573070	RECTANGULAR RAPID FLASING BEACON (SOLAR)	1	LS	10,100.00	10,100.00	18,000.00	18,000.00	18,000.00	18,000.00
617673200	SIG STANDARD TYPE 1-200	3	EACH	564.36	1,693.08	7,150.00	21,450.00	7,500.00	22,500.00
618030080	TRAFFIC CONTROL	1	LS	5,000.00	5,000.00	28,000.00	28,000.00	5,000.00	5,000.00
619010086	SIGNS-ALUM REFL SHEET IV	13	SQFT	24.51	308.83	24.00	302.40	25.00	315.00
619010088	SIGNS-ALUM REFL SHEET IX	50	SQFT	23.48	1,176.35	27.00	1,352.70	29.00	1,452.90
619010200	RESET SIGNS	1	EACH	220.19	220.19	320.00	320.00	350.00	350.00
619010230	REMOVE SIGN	4	EACH	38.96	155.84	37.00	148.00	50.00	200.00
619010340	POSTS-TUBULAR STEEL-SQ-PERF	116	LB	6.79	787.64	11.00	1,276.00	12.00	1,392.00
620011260	WORDS AND SYMBOLS-WHITE EPOXY	2	GAL	273.10	546.20	350.00	700.00	400.00	800.00
<b>TOTAL ESTIMATED PROJECT COST (Alternate 1)</b>					<b>\$ 60,574.35</b>		<b>\$ 129,863.55</b>		<b>\$ 89,723.90</b>
<b>ALTERNATE 2 (National Avenue)</b>									
999999998	WAYSIDE HORN	1	LS	\$ 130,000.00	\$ 130,000.00	\$ 135,000.00	\$ 135,000.00	\$ 129,000.00	\$ 129,000.00
<b>TOTAL ESTIMATED PROJECT COST (Alternate 2)</b>					<b>\$ 130,000.00</b>		<b>\$ 135,000.00</b>		<b>\$ 129,000.00</b>
<b>ALTERNATE 3 (Roberts Street)</b>									
999999998	WAYSIDE HORN	1	LS	\$ 130,000.00	\$ 130,000.00	\$ 135,000.00	\$ 135,000.00	\$ 129,000.00	\$ 129,000.00
<b>TOTAL ESTIMATED PROJECT COST (Alternate 3)</b>					<b>\$ 130,000.00</b>		<b>\$ 135,000.00</b>		<b>\$ 129,000.00</b>



Montana Rail Link, Inc.  
101 International Drive (406) 523-1500  
Post Office Box 16390 (800) 338-4750  
Missoula, Montana www.montanarail.com  
USA 59808

June 9, 2015

Mr. Brad Koon, PE  
Kadrmass, Lee, & Jackson, Inc.  
2969 Airport Road, Suite 1B  
Helena, MT 59601

Subject: Draft Notice of Intent (NOI) to Establish a Railroad Quiet Zone under 49 CFR Parts 222 and 229

Montana Rail Link (MRL) has reviewed the NOI dated June 1, 2015 prepared by your office and submitted on behalf of the City of Helena. MRL has the following comments on this NOI:

1. The language of 49 CFR Parts 222 and 229 clearly places the responsibility for creation, implementation and maintenance of a railroad quiet zone with the public authorities having jurisdiction over the public grade crossings within the limits of the desired quiet zone. It is MRL's understanding that the State of Montana is the public authority for the railroad grade crossing on Montana Avenue (DOT #060 193 P) and may share jurisdiction with the City of Helena for the railroad grade crossings on Carter Drive (DOT #060 190 U), Benton Avenue (DOT #060 199 F), and Joslyn Street (DOT #098 742 R). This will require that any notice of establishment for this desired quiet zone include statements from both the City of Helena and the State of Montana, which comply with 49 CFR 222.43 Part B (ix), specifically:

*"A statement signed by the chief executive officer of each public authority participating in the establishment of the quiet zone, in which the chief executive officer shall certify that the information submitted by the public authority is accurate and complete to the best of his/her knowledge and belief."*

2. While use of the Nationwide Significant Risk Threshold (NSRT), Risk Index with Horns (RIWH) and Propose Quiet Zone Risk Index (QZRI) as described and calculated in the NOI is allowed in 49 CFR Parts 222 and 229 to permit establishment of railroad quiet zones, MRL believes it to be ill-advised to use these concepts to avoid installing any type of safety enhancements at the Roberts Street and National Avenue crossings. Regardless of the overall risk index ratings for the railroad crossings within this

C-43....Quiet Zone

Mr. Brad Koon, PE

June 9, 2015

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desired quiet zone, the fact remains that the actual risk for users of the railroad crossings on National Avenue and Roberts Street may increase with the elimination of the regular sounding of train horns. Installation of some type of street or signal improvements to mitigate the loss of routine sounding of train horns within this desired quiet zone would seem to be in the best interest of the users of these two grade crossings.

3. It is also noteworthy that the establishment of a railroad quiet zone does not mean that the sounding of locomotive horns will be completely eliminated within the limits of the zone. There are many railroad operations, including the backing of equipment, which require the use of locomotive horns for the benefit and safety of railroad employees. Train horns may also be sounded if any of the railroad crossing signals within the quiet zone are reported or observed to be malfunctioning, if an emergency situation occurs, or if the public appears to be unaware of the approach of railroad equipment. All of these soundings of the train horn are permitted by 49 CFR Parts 222 and 229.

4. Lastly, there has historically been a significant problem with trespassing onto and over MRL's right of way in the vicinity, but outside the limits, of the Benton Avenue crossing (DOT # 060 199 F). It is MRL's opinion that failing to discuss or address the aggravation of this problem due to the elimination of train horns is a serious omission in the planning and design of this proposed quiet zone.

If you wish to discuss any of these comments in more detail, please feel free to contact me or MRL's Chief Engineer, Randy Gustin. You can reach Mr. Gustin at 406-523-1442 or by email at [rgustin@mtrail.com](mailto:rgustin@mtrail.com).

Sincerely,



Thomas J. Walsh  
President

pc John Althof, MDT

# City of Helena

## Wastewater Effluent Disposal Study

Presentation to:  
Water Quality Protection District  
October 25, 2016



City of Helena

# Permit Status

- Surface Water Discharge Permit
  - Renewal: September 2017
  - Metals Limits:
    - Copper = 9 ug/l, Zinc = 110 ug/l
  - Probable Nutrient Limits:
    - TN=4 mg/l, TP=1 mg/l, Year-Round
    - Based on nutrient variance (will expire in approx 15 years)
  - Numeric Nutrient Standards:
    - TN=0.3 mg/l, TP=0.03 mg/l, Year-Round

\*Numeric Nutrient Standards and Probable Nutrient Limits are based on:

Lake Helena TMDL (Volumes 1 and 2), Circular DEQ-12A, Circular DEQ-12B, MDEQ Base Numeric Nutrient Standards Implementation Guidance, meetings and phone conversations with MDEQ, review of Kalispell MPDES Permit and Fact Sheet

# Helena WWTP

- Flow
  - Current - 3.4 mgd, Design - 5.4 mgd
- Nutrient Removal
  - At current flow - TN=5-7 mg/l, TP=0.5-1.5 mg/l
  - At design flow - TN=9-10 mg/l, TP=3.5 mg/l
- Metals
  - Copper: ave 10 ug/l, max 30 ug/l
  - Zinc: ave 60 ug/l, max 100 mg/l

# Permit Compliance Options

- Apply for a new groundwater discharge permit
- Upgrade WWTP and continue to discharge to existing outfall
- Add a groundwater discharge outfall to existing permit
- Use effluent for crop irrigation (seasonal)
- Build scalping plants within collection system and use effluent for irrigation of golf courses, parks, etc. (purple pipe)
- Move discharge location to the Missouri River
- Groundwater discharge at Emerald Ridge (or similar)
- Deep Well Injection

# Groundwater Discharge

- In the past, MDEQ developed groundwater permits based on the limits in the “groundwater” column of DEQ-7 (Numeric Water Quality Standards)
- In January 2015, the Bitterrooters for Planning and the Bitterroot River Protective Association sued DEQ for violating water quality protection laws.
- In May 2016, a court ruled that DEQ must consider cumulative impacts before making a determination of non-significance.
- In effect, groundwater permits must now include an analysis of the impact of the discharge at the point where the groundwater containing the discharge enters a surface water. At that point, surface water standards must also be met.
- This has effectively eliminated this option for Helena

# Discharge to Existing Outfall

## WWTP Upgrades Required:

- Phosphorus
  - Enhanced biological phosphorus removal (EBPR), TP<1 mg/l
  - Chemical precipitation (ferric chloride or alum), TP<1 mg/l
- Nitrogen
  - Addition of a post-anoxic treatment tank, TN<4 mg/l (supplemental carbon might be required)
- Copper and Zinc
  - Proprietary treatment systems (e.g., East Helena)
  - Chemical precipitation (ferric chloride or alum) (bench testing required to determine if this is feasible without filtration)

# Add Groundwater Outfall

## Groundwater Treatment

- Mixing (unfortunately not significant at this location)
- Phosphorus soil adsorption (50-year breakthrough)
- Metals soil adsorption (pilot test needed to confirm)

## WWTP Upgrades Required:

- Phosphorus
  - Enhanced biological phosphorus removal (EBPR), TP<1 mg/l
  - Chemical precipitation (ferric chloride or alum), TP<1 mg/l
- Nitrogen
  - Addition of a smaller post-anoxic treatment tank, TN<7.5 mg/l
- Copper and Zinc
  - No additional treatment required (pilot test needed to confirm)

# GROUNDWATER DISCHARGE

I-15

LENGTH=  
8,472 FT

PRICKLY  
PEAR  
CREEK

LENGTH=  
8,240 FT

LENGTH=  
10,604 FT

HELENA  
VALLEY  
CANAL

OPTION 2  
DISPOSAL  
AREA  
17 AC

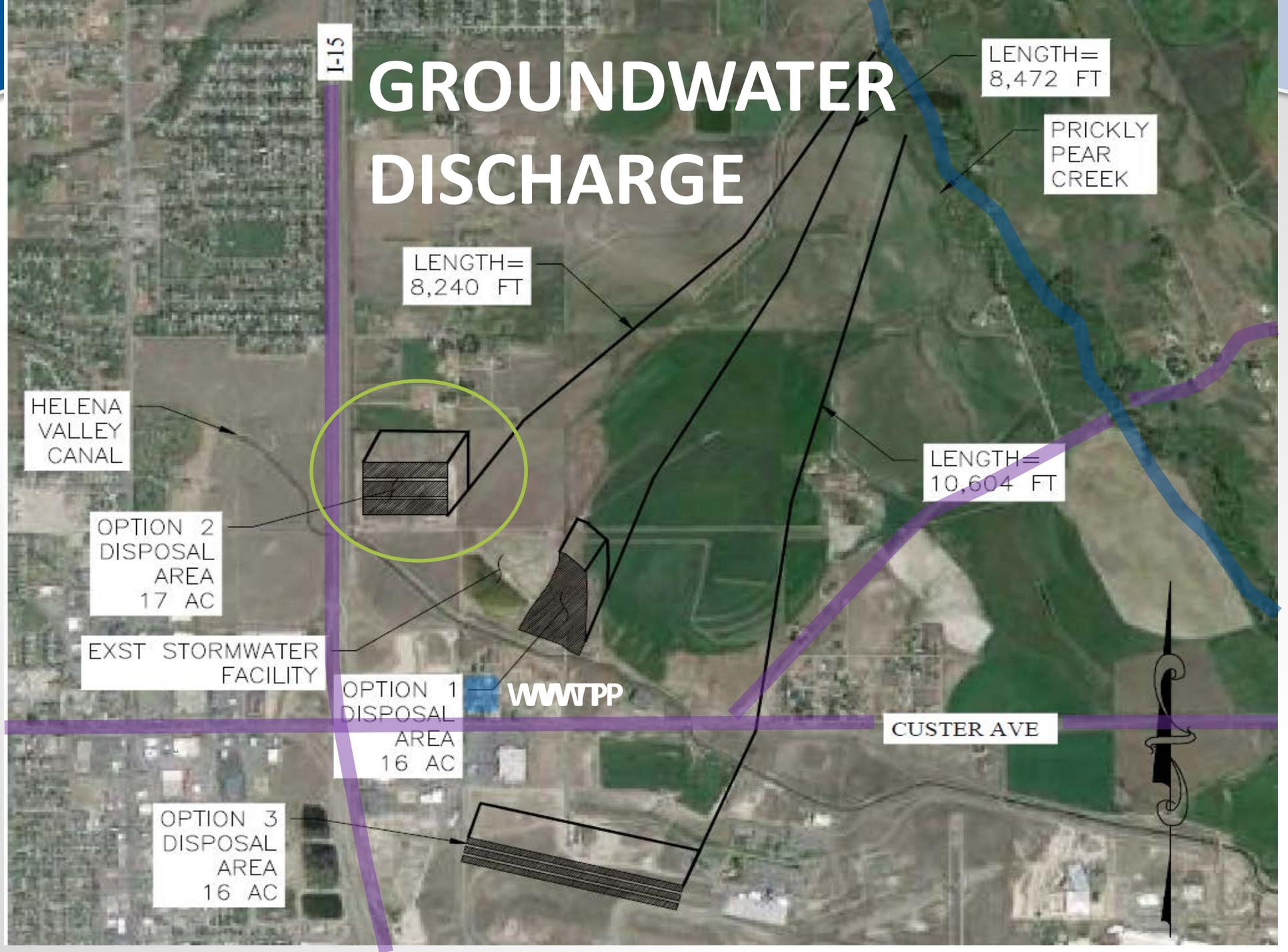
EXST STORMWATER  
FACILITY

OPTION 1  
DISPOSAL  
AREA  
16 AC

WWTPP

CUSTER AVE

OPTION 3  
DISPOSAL  
AREA  
16 AC



# Crop Irrigation

- Seasonal solution only for nutrients
- Nearby properties can use approx 50% of effluent during growing season
- Greater distance from WWTP offers more capacity options
- While not a complete solution, crop irrigation should be utilized where possible to reduce nutrient load

# IRRIGATION

IRRIGATION  
AREA #1  
220 AC

IRRIGATION  
AREA #2  
278 AC

IRRIGATION  
AREA #3  
130 AC

IRRIGATION  
AREA #4  
246 AC

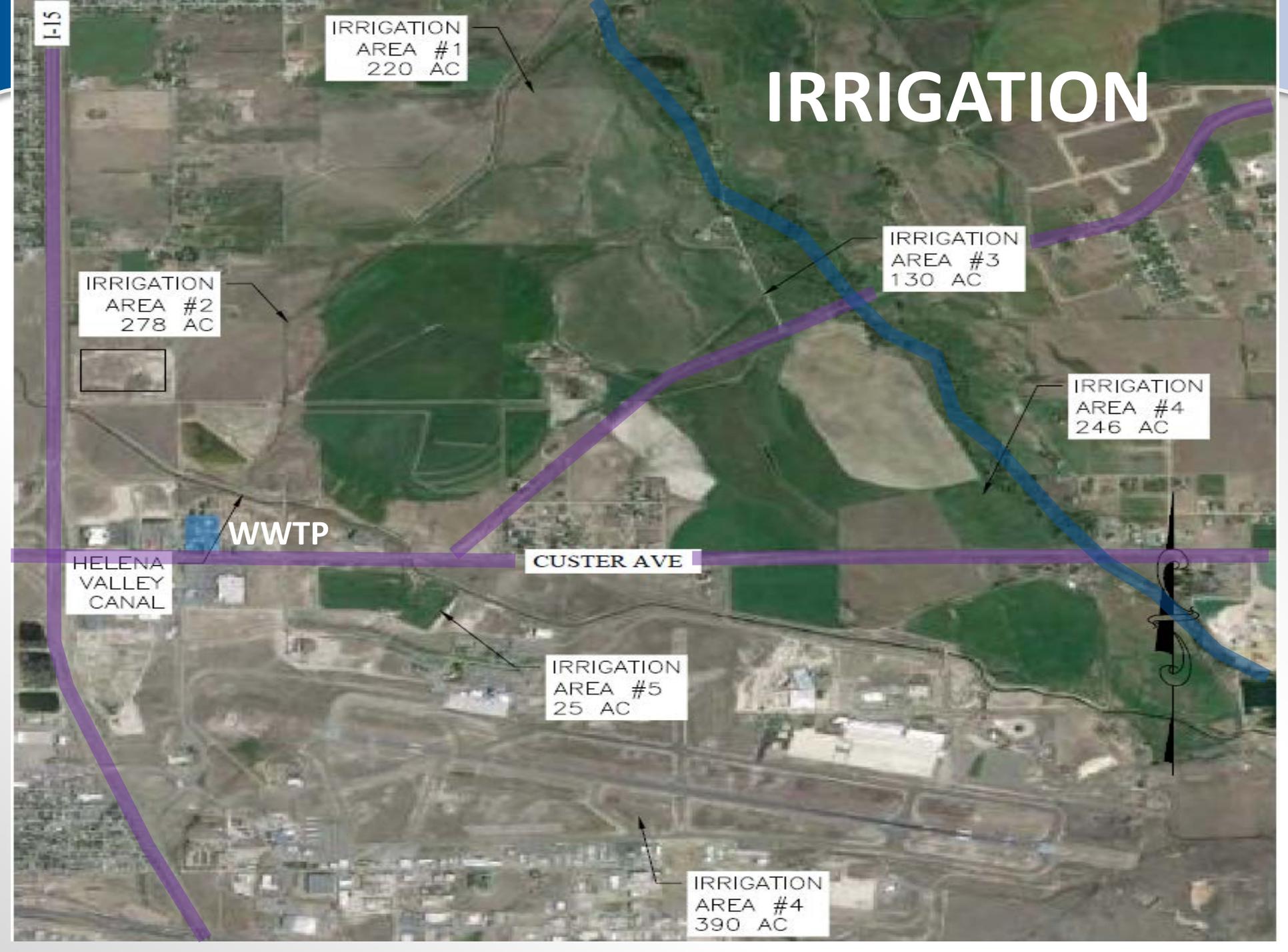
WWTP

HELENA  
VALLEY  
CANAL

CUSTER AVE

IRRIGATION  
AREA #5  
25 AC

IRRIGATION  
AREA #4  
390 AC



# Scalping Plants

- “Treat it Where You Need It”
- Construct small treatment “package” plants near golf courses or large parks and use effluent for irrigation
- Liquid treatment only, solids are returned to the sewer
- Helena has limited opportunities for this but there might be some sites to evaluate

# Move Discharge to Missouri

- Construct pump station and pipeline to pump effluent 15 miles from existing plant to the Missouri River
- Advantages:
  - Large mixing zone (metals)
  - If discharge is not upstream of a lake, year-round limits will change to seasonal limits
  - Get out of Lake Helena / Prickly Pear

# Other Options

- Groundwater Discharge at Emerald Ridge
  - Groundwater would surface at the Missouri River which would help with a larger mixing zone and seasonal limits instead of year-round.
  - This option was eliminated due to the high clay content of the soils in the area, precluding the use of infiltration cells.
- Deep Well Injection
  - This option was eliminated because wells would need to be over 10,000 feet deep.

# Project Status

- Co-precipitation bench testing
  - Test Ferric Chloride, Alum, and Polymer to determine removal efficiency for phosphorus, copper, and zinc.
- Stakeholder interaction
  - Meet with land owners to discuss MDEQ requirements for crop irrigation
- Groundwater discharge pilot test
  - Build a small infiltration pond near WWTP
- Complete alternative evaluation / recommendation
- Permit application