Grant Proposal

U.S. Department of the Interior

Bureau of Reclamation, Policy and Administration
Funding Opportunity Announcement #BOR-D0-18-F006

MAY 10, 2018

Project Title:

Pilot Butte 27.0B Lateral and Wyoming 31.7 Laterals Rehabilitation Project
Conversion of open ditch Laterals to Buried PVC Pipeline

Applicant:

Midvale Irrigation District
PO Box 128, 305 Third Street
Pavillion, Wyoming 82523

Applicant Project Manager:

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Pilot Butte 27.OB and Wyoming 31.7 Laterals Rehabilitation Project

Conversion of Open Ditch Lateral to Buried PVC Pipeline
Midvale Irrigation District, Pavillion, Wyoming

Table of Contents

Title Page

Application (SF-424)

Budget (SF-424C)

Assurances (SF-424D)

Disclosure of Lobbying Activities (SF_LLL)

Technical Proposal and Evaluation Criteria

- Executive Summary
- Background Data
- Technical Project Description
- Project Location
- Evaluation Criteria

Budget Summary

Budget Worksheet

Appendix A – Scope of Work and Project Schedule

Appendix B – Maps & Drawings

Appendix C – Letters of Support (Wyoming Water Development Commission Recommendation Document)

Appendix D – Consultant's Cost Estimate

Table of contents (cont.)

Appendix E – Resolution of the Board of Commissioners Pilot Butte 27.OB and WY 31.7 Laterals

Appendix F – Additional Backup Information

- Cover Page – Master Plan Report dated June 30, 2007
- Sand Butte 2 Lateral Measurement Data
- Wyoming 15.1 Lateral Measurement Data

TECHNICAL PROPOSAL

Pilot Butte 27.OB and Wyoming 31.7 Laterals Rehabilitation Project

Conversion of Open Ditch Laterals to Buried PVC Pipe

Note: Midvale Irrigation District is applying under Funding Group 1 for an amount of

$300,000.00

1. Executive Summary
   - May 10, 2018; Midvale Irrigation District; Pavillion, Fremont County, Wyoming
   - Midvale Irrigation District (MID) proposes converting approximately 2.5 miles of open ditch laterals into PVC pipe. A 1.5 mile long section will be on the Pilot Butte 27.OB lateral and a 1.0 mile section on the Wyoming 31.7 lateral. Wyoming state grant funds will be used to offset the cost of construction materials (e.g. PVC pipe, concrete, steel, fittings, valves, etc.) WaterSMART grant funds will be used to accomplish construction activities, project management, equipment, labor, etc.), administration activities (project management, time card accounting, etc.), outside services activities (engineering, surveying, plans, specification publishing, bid lettering, construction materials, testing, etc.)
   -
2. Background Data
   a. General: In 1921 (completion of Diversion Dam), Midvale Irrigation District (MID) was organized as a Bureau of Reclamation project (commonly referred to as the "Riverton Project"). The source of all water entering the MID system is the Wind River at Diversion Dam, which is located approximately 4 miles downstream from the confluence of the Wind River and Bull Lake Creek in Fremont County, Wyoming. Appropriation of water to MID is under State of Wyoming Permit 7300. MID is one of the successor parties to entities which signed the Agreement and Conveyance contracts referred to as the "Tripartite Agreements" of 1917. Reclamation owned and operated MID until 1931, when the "Repayment Contract" was executed. The contract specified that Reclamation would maintain ownership of the infrastructure while MID would be responsible for operation and maintenance of the District. MID infrastructure consists of 3 dam structures, 2 storage reservoirs, 2 primary canal systems and thousands of check drops, diversion, distribution, and head gate structures. The Wyoming Canal is approximately 60 miles long. The Pilot Canal is approximately 40 miles long. An additional 400 – 600 miles of water conveyance is possible by means of hundreds of laterals and sublaterals supplied from both major canals. MID currently provides water to over 900 water user customers irrigating approximately 74,000 acres with a combined total average annual delivery volume of under 200,000 acre-feet. MID (Irrigation District) is an eligible applicant as

defined under Section C, item A., C.I. Eligible Applicant (page 7) of the Funding Opportunity document for Federal Fiscal Year 2018. MID affects water operations from Reclamation's "Riverton Project" in Fremont County, Wyoming, which are located within the area covered by Reclamation's Wyoming Area Office. The activities proposed for the Pilot Butte 27.OB and Wyoming 31.7 Laterals Rehabilitation are eligible for the following reasons:

i. These sections of the above-referenced laterals have never been in a pipe.
ii. Conversion of these sections of laterals from open earth ditch walls and failing concrete lining to buried PVC pipe will result in significant reductions in seepage/evaporation water loss and increased efficiency and effectiveness of water distribution over the expected life of the conversion.
iii. This part of the system is expected to improve conveyance and delivery operations as compared with the original design.

b. The proposed Pilot Butte 27.0B and Wyoming 31.7 laterals pipeline conversion is an open-channel and/or pressure system design with PVC pipe linked to reinforced concrete turn-out boxes where water surfaces for farm and/or ranch turn-outs. Preliminary design calls for approximately 2.5 miles of PVC pipe ranging in size from 24 inch diameter to 42 inch diameter and approximately nine concrete boxes. We estimate that we will be able to complete the entire project in one "off-season". The purposes and objective of this pipe conversion project is to decrease water seepage and evaporation loss, reduce water flow limitations caused by open earth and failing concrete liners, increase water distribution and delivery efficiency, reduce water delivery time and delays, and reduce continued maintenance. In our opinion, water loss in this section of the above referenced laterals can be attributed to seepage through open earthen ditch walls and failure of the concrete liner. Evaporation is considered to be insignificant in comparison. In order to establish a baseline for water loss in the portion of the lateral to be converted to pipe, we have used information gained from open laterals, Wyoming 15.1 and Sand Butte 2, with similar conditions. Wyoming 15.1 and Sand Butte 2 laterals were converted from failing concrete-lined ditch to buried PVC pipe for approximately one mile each. The conversion to Wyoming 15.1 was constructed during the winter of 2013-14. The conversion to Sand Butte 2 was constructed during the winter of 216-2017. Prior to the conversions, conditions of the liner and problems associated with inhibited water flow and reduced capacity were very similar to those currently being experienced on the lateral sections proposed for conversion. Since the pipe conversion, water savings of up to 20% have been documented on the converted laterals. Although a design flows range from 40 to 45 cfs will be utilized for sizing the pipe proposed for this project, MID has documented flows within the 30 cfs

range. Consequently, we estimate seepage losses on the order of 6 to 10 cfs. In addition, failure of the concrete liner in some areas has also caused additional flow losses of approximately 2 cfs due to overtopping. Since installation of the PVC Pipe will correct both of these issues, we believe that water savings on the order of 6,000 to 9,000 acre-feet per year could be possible for a 150 day irrigation season.

c. Contact Information: Midvale Irrigation District, P. O. Box 128, 305 3rd Street, Pavillion, WY 82523, Attn: Jon Howell M.S., P.E., Manager. Phone: 307-856-6359, Cell: 307-850-5441

d. In addition to saving a significant quantity of water every year, we believe there are many other compelling reasons for the proposed pipe conversion project. First, the failing condition and on-going deterioration of the concrete liner has and will continue to interrupt and hinder MID efforts to deliver water to adequately meet the irrigation demand in terms of quantity, efficiency and timeliness. In some areas of the proposed conversion, concrete deterioration rubble had to be removed completely so water flow could continue unobstructed. In addition, ditch geometry changed because of sloughing of the ditch wall and/or liner deterioration due to subsequent erosion, creep and sloughing which caused overtopping in localized areas.

3. Technical Project Description

a. Scope of work- The work required to construct the pipe conversion will consist of placing approximately 2.5 miles of PVC pipe ranging in size from 24 inch to 42 inch in diameter. Reinforced concrete structures will be constructed to direct water into the pipe, provide farm turnouts and to provide measurement and distribution of water. In addition, reinforced concrete turn-out boxes will be constructed at each individual farm water-user turnout along the proposed pipeline conversion alignment. We anticipate that approximately nine turn-out boxes will be required. Each concrete structure will be equipped with the necessary head gates, weirs, railings and grates as needed. See Appendix B for attached drawings for preliminary alignment, including major features and components proposed for the conversion project.

4. Project Description

a. Midvale Irrigation District will perform all construction tasks using in-house personnel and equipment. A summary of the "Scope of Work and Project Schedule" has been enclosed in this Grant Proposal as Appendix A. A site location Map (Sheet 1 of 5) and Profile Drawings (Sheets 2 through 5) are enclosed as Appendix B.

b. Engineering, Surveying and Materials Testing services will be contracted out to Apex Surveying, Incorporated (Riverton, WY). All materials will be contracted out and will be procured under the normal bidding process (note: all material costs will be covered by State of Wyoming, Wyoming Water Development Commission grant funds). All other project tasks will be performed by MID personnel and equipment.

c. Cost estimates for outside services (Apex Surveying, Inc.) were developed and submitted by the consultant. Material costs were estimated by MID using rates and markups from supplies on past pipeline conversion projects. Construction costs were estimated using MID equipment rates and anticipated MID personnel hours estimates of quantities of hours and personnel were based on experience with many similar past pipe conversion projects. A copy of the consultant's cost estimate is enclosed in Appendix D.

d. See attached Budget Summary and Budget Worksheet

e. See attached Scope of Work and Project Schedule (Appendix A)

D.2.2.6. Environmental and Cultural Resource Compliance

a. No, water trucks will be used to mitigate and eliminate potential dust generated on the project. Animal habitat will not be affected because they can find many other sources of drinking water in the area.

b. MID is not aware of species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area.

c. There are no wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "waters of the US".

d. The water delivery system was constructed in the 1920s and 1950s.

e. The pipe will replace the open ditch and reinforced concrete boxes will replace existing turn-out head gates (new head gates and weirs will be installed in the new turn-out boxes as part of this project).

f. There are no buildings, structures or features within the project area.

g. There are no known archeological sites in the proposed project area.

h. The project will have no adverse effect on low income or minority populations.

i. The project will not limit access to ceremonial use of Indian sacred sites not will it result in other impacts on tribal lands.

j. MID implements an annual noxious weed mitigation program which is carried out by a licensed third-party contractor and includes the project area. The program will continue after the completion of the project.

D.2.2.7. Required Permits or Approvals

To our knowledge, there are no permits or approvals required for upgrading the irrigation infrastructure. We understand this type of work is considered to be part of the "operation and maintenance" agreement which MID has with Reclamation.

D.2.2.8. Letters of Support

A copy of Wyoming Water Development Commissioner (WWDC) recommendation document (Appendix C) represents WWDC financial support for this project. The WWDC financial commitment for this project is $995,000.00.

D.2.2.9. Official Resolution

A copy of the official resolution for this project is included in Appendix E. This resolution was approved by MID board of commissioners on August 10, 2017.

Technical Proposal : (5) Evaluation Criteria

E.1.1. Quantifiable Water Savings

As has been previously described, our project will consist of converting approximately 2.5 miles of open ditch into PVC pipeline of various sizes ranging from 24 inch to 42 inch diameter. The Pilot Butte 27.OB lateral and Wyoming 31.7 laterals were originally designed by the Bureau of Reclamation to carry 40 cfs and 45 cfs respectively.

Water saving estimates are based on an assumed correlation between our proposed project and two similar projects:

WY 15.1 PVC pipe conversion – Technical Proposal: Evaluation Criteria

a) completed during the winter of 2013-2014.
b) WY Sand Butte 2 – completed during the winter of 2016-2017 (note: this project was partially funded by a Water Smart grant from Reclamation in 2016.)

This assumption regarding seepage loss correlation was made for three primary reasons:

a) Similarities include the type and relative length of the pipe conversion, geometry, operating flow rates and pre-conversion ditch conditions (earth walls, tailing liner, etc.
b) The similarities in geology of exposed subsoils.

Technical Proposal: (5) Evaluation Criteria

E.1.1. Quantifiable Water Savings (continued)

c) Conclusions derived from evaluation of estimated pre-conversion flow data as compared with post-conversion measured flows for both the WY 15.1 and WY Sand Butte 2 lateral conversion projects.

Data available from previous similar pipeline conversion projects are as follows:

WY 15.1 project:
Pre-conversion capacity flow rate = 17 cfs
Post-conversion capacity flow rate = 25 cfs
Difference = 8 cfs or 32%
Midvale assumptions: 20% due to seepage loss, 12% due to failing liner obstructions
Midvale Conclusion: Expect approximately 20% average water loss in open ditches before conversion.

WY Sand Butte 2 (currently/pre-conversion):
Pre-conversion capacity flow rate =30 cfs
Conclusion: expected current seepage loss in Sand Butte 2 = 0.2 x 30 cfs = **6 cfs**
Estimated daily water savings = 6 cfs x (2 acre-ft/day per 1cfs) = **12 acre-ft per day**
Estimated seasonal water savings = 150 days per season x 12 acre-ft per day = **1800 acre-ft. per water season.**
Note: Backup measurement data is included in Appendix F.

The estimated annual water savings that will result from our proposed pipe conversion project has been determined as follows:

The 2 similar projects listed above were approximately one-mile pipe conversions. Our project will be approximately 2.5 miles. Consequently, we expect approximately 2.5 times the water savings as compared with the above projects.

Midvale Assumptions:
Average operating flows = 35 cfs
20% loss due to seepage
12% loss due to earth bank & structure failure

(0.32) 35 cfs (2.5) (2 acre-ft./day per cfs) = 56 acre ft./day

Estimated loss per season = 150 day (56)
= 8400 acre-ft.

Generally speaking, post-conversion data collected on past projects seems to support the expectation that any pre-conversion losses are virtually eliminated when PVC pipe is utilized for the conversion. (See Appendix F for supporting raw data).

Technical Proposal: (5) Evaluation Criteria

E.1.1. Quantifiable Water Savings, (continued)

As has been previously discussed, anticipated annual transit loss reductions are anticipated to be equal to current losses. Consequently, reduction of water loss within the post-conversion of our proposed project is calculated as follows:

8400 (acre-ft.) ÷ 2.5 miles = 3360 acre-ft. / mile (annually)

Actual canal loss seepage reductions will be verified using conventional measurement devices such as weirs to measure water flows through conversion intervals. Weirs will be constructed within reinforced concrete transition boxes (in gravity conversions) and/or flow meters in pressure pipe systems.

In addition to water savings, additional benefits have been observed from post-conversion projects:

- Much quicker delivery times to individual users.
- Reduction in maintenance of the laterals.
- Hydraulic pressure available at some individual turnouts as local topography dictates.

E.1.2. Water Supply Reliability

At Midvale Irrigation District, water supply reliability seems to be determined by at least three primary factors:

1) The quantity of water available in the Wind River for diversion at any specific time during irrigation season.
2) The quantity of usable storage water available in Bull Lake and Pilot Butte reservoirs at the beginning of the irrigation season.
3) The functionality of the water conveyance and delivery infrastructure.

The first two factors listed above are essentially controlled by "acts of God" such as weather. Upgrading and improving water conveyed and delivery infrastructure becomes the priority with respect to improving water supply reliability. Collaboration among parties is vital for the continuing improvement of District infrastructure. For example, collaboration between the District and the Wyoming Water Development Commission (WWDC) resulted in a "Master Plan" developed by a third party engineering consultant. The final report outlining the Master Plan was issued to Midvale Irrigation District on June 30, 2007. The Plan outlined recommended improvements over a 20 year period. Our proposed project is a recommended portion of the upgrades and improvements contained in the Master Plan. Pipeline conversions result in a more reliable water supply because they do the following:

- Eliminate water loss in the lateral.
- Eliminate impedance of water flow due to sloughing of open ditch walls.
- Eliminate impedance of water flow due to failing liners and structures.

Technical Proposal: (5) Evaluation Criteria

E.1.2. Water Supply Reliability

- Typically, there is widespread support for pipeline conversion projects because most water users have either experienced or are aware of the benefit of these conversions as has been described herein.
- Collaboration / support from entities such as the WWDC are very significant in terms of making financing of these projects possible.
- The more pipeline conversion projects Midvale Irrigation District constructs the more water that is saved, thus making more water available to all water users. Since Midvale Irrigation District and the water users are motivated by the benefits of these projects, possibility of future water conservation improvements is greatly enhanced.
- Most recently, infrastructure has been a major deterrent to water reliability due to increasing age.
- The concept of conserved water at Midvale Irrigation District is simple. Diversion of water from the Wind River is directly related to demand. Consequently, any water saved in conveyance and delivery will result in more water left in the Wind River which can be used by other Districts downstream.
- PVC pipeline conversions address water reliability by eliminating negative factors that reduce and/or impede the water flow (these factors were previously described herein).
- Anytime water can be saved and left in the river system, generally tensions and litigations are reduced.
- Conserved water will be available to other Districts downstream and be able to be diverted by mechanisms of their choice.
- Partners in this process will be WWDC, Midvale Irrigation District, and hopefully, the Bureau of Reclamation (Water Smart).
- See above calculations for anticipated quantities of conserved water.
- Midvale Irrigation District has several water users who are members of one or more of the local Indian tribes. So those members will benefit individually, but not necessarily the entire tribe as a whole.
- This project is located in rural communities and will benefit water users in these places.
- Midvale Irrigation District is not aware of any species that will benefit from this project.

E.1.3 Implementing Hydro-power

This project will not be implementing hydro-power.

E.1.4 Complementing On-Farm Irrigation Improvements

In recent years, "On-Farm Irrigation Improvements" have been trending into technologies which are conducive to pipeline turnouts. For example, technologies such as gated pipe, center pivot,

Technical Proposal: (5) Evaluation Criteria

E.1.4. Complementing On-Farm Irrigation Improvements (continued)

and drip systems are probably the most popular improvement technologies being implemented in the District at this time.

Midvale Irrigation District is not currently aware of any specific planned or ongoing projects by water users located within the service area of this project. We do believe, however, that this pipeline conversion project will compliment any on-farm improvement project.

This project may directly facilitate the on-farm improvement by delivering water directly to the farm in a contained pipeline. Pipeline turnouts allow direct hookups to technologies which use pipeline water conveyance, such as gated pipe, center pivot and dripline systems. If existing topography allows some useful pressure could be available at the on-farm turnout as well, which could further enhance improvement technologies.

E.1.5 Department of the Interior Priorities

1. a. Science is an integral part of pipeline conversion projects. Since the invention and development of Poly-Vinyl Chloride (PVC) pipe, water loss has been virtually eliminated pressure utilized as topography dictates and delivery aspects and efficiencies has continued to increase.

b. Better decisions regarding land use planning exist with pipeline conversions.

c. The benefits of these conversions become obvious, which, in turn streamlines the environmental and regulatory review process.

d. Conflicts are reduced and capacities are expanded when there is more water available for everyone.

e. Better farm and ranch irrigation technologies results in better relationships with conservation organizations.

f. Conservation of water and improvement of water quality provides improved habitat for wildlife in all its forms.

g. Less regulations means less restrictions and better stewardship.

2. d. More efficient use of water for irrigation will always enhance grazing resources, thus, less complications.

5. a. pipeline conversions of open – ditch water conveyance is a perfect example of modernizing infrastructure.

b. Pipelines definitely remove impediments to infrastructure development and motivate private water users to do the same.

c. Midvale Irrigation has a "Master Plan" for upgrading / replacing failing infrastructures. We are currently 10 years into a 20 year plan. This project will consist of completely replacing approximately 2.5 miles of failing open ditch with PVC pipe.

Note: Priorities not addressed in this section were considered not applicable to this project.

Technical Proposal: (5) Evaluation Criteria

E.1.6 Implementation and Results

1) Project Planning

As previously mentioned, Midvale Irrigation District currently has a "Master Plan" which is used as a "road map" for decision making and planning of projects such as the project which is the subject of this application.

A.) In terms of recommendations given in the Master plan, this project ranks high in terms of what projects have been constructed in the last 10 years, and what projects should be constructed in the future.
B.) This project conforms well to recommendations given in the Master Plan.

The Master Plan is entitled "Midvale Conservation Program – Level II" and is dated June 30, 2007. The entire report is 2 to 3 hundred pages in length and was prepared by Anderson Consulting Engineers, Inc. (a third party engineering consultant). A copy of the title page is included in Appendix F. A full copy of the report can be provided, if requested by Reclamation.

2) Performance Measures

In order to verify the water saved and improved water management after completion of this project, water measurement devices (weirs) will be installed at the beginning and end of each pipeline conversion and regular measurements will be taken to provide actual data supporting water savings and management. This method worked well on our previous water smart pipeline project (Sand Butte 2 approximately 2 years ago).

E.1.7. Nexus to Reclamation Project Activities

As has been discussed previously herein, Midvale Irrigation District began as a "Reclamation Project" which was commonly referred to by Reclamation as the "Riverton Project." Midvale Irrigation District receives Reclamation Project water. Midvale Irrigation District is on Reclamation Project lands and utilizes Reclamation Facilities such as Bull Lake, Pilot Butte and Diversion Dam. The project is in the same basin as a Reclamation Project. The project (proposed work) will contribute water to the Riverton Project.

E.1.8. Additional Non-Federal Funding

Non-Federal Funding for this project will be used to pay for all materials required for the project. Non-Federal Funding for materials will be provided by the Wyoming Water Development Commission. Preliminary design estimates indicate that up to $950,000 has been committed to by the State of Wyoming for this project. The non-Federal commitment of $995,000 is estimated to be greater than 50% of the Total Project Cost as follows:

$ 950,000.00 (WWDC Commitment)
$1,381,232.00 (Estimate of total project cost)
= 0.72 (72%)

Technical Proposal: (5) Evaluation Criteria (continued)

A detailed explanation of the distribution of the financial obligations for this project is presented in: Budget Summary and Budget Worksheet sections of this Grant Proposal.

In Summary, this BOR grant opportunity would cover the majority of hard costs not covered by the State of Wyoming WWDC grant, with MID providing the balance primarily through in-kind services.

The Pilot Butte 27.OB Lateral and Wyoming 31.7 Laterals Rehabilitation Project is not only important to our District, but provides benefits that meet BOR WaterSMART and WCFSP program objectives. MID appreciates the assistance we received in preparation of this application and we ask for your serious consideration of this grant opportunity. On behalf of Midvale Irrigation District Board of Commissioners, I appreciate the opportunity to present this proposal/application to you.

Sincerely,

Jon C. Howell M.S., P.E.

Manager, Midvale Irrigation District

Pilot Butte 27.0B and Wyoming 31.7

Conversion of Open Ditch Laterals to Buried PVC Pipeline
Midvale Irrigation District, Pavillion, Wyoming

Budget Summary

Description		Unit Cost
Engineering		
Balance to Apex Surveying for Project Manager	$	**28,589.00**
Administrative Costs		
District Project Manager (General Manager)	$	13460.00
Administration & Bookkeeping (District Office Manager and Staff)	$	15645.00
Total District Administrative Costs	**$**	**29,105.00**
Materials (provided by WWDC grant)		
PVC Pipe and Fittings (per preliminary est.)	$	943,108.00
Concrete	$	32,000.00
Steel Rebar	$	7,335.00
Iron (angle Iron & expanded metal)	$	2240.00
Miscellaneous steel and gates	$	10,317.00
Total Materials *	**$**	**995,000.00**
Site Work (Demolition, Excavation, Backfill, Grading		
Labor	$	22,439.00
Equipment	$	73,950.00
Total Site Work	**$**	**96,389.00**
Construction and Installation		
Labor to Construct Concrete Structures and Install Pipe	$	85,380.00
Equipment to Construct Concrete Structures and Install Pipe	$	112,631.00
Total Construction and Installation	**$**	**198,011.00**
Miscellaneous		
Fringe Benefits (19.82% of labor fees)	$	27,138.00
Environmental compliance (consultant)	$	5000.00
Total Miscellaneous	$	**32,138.00**
Sub Total	**$**	**1,379,232.00**
Contingencies		
Unforeseen Expenses	$	2000.00
Total Project Cost	**$**	**1,381,232.00**
*State of Wyoming Cost Share	$	995,000.00
Federal Cost Share	$	300,000.00
MID Cost Share	$	86,232.00

*Note: Materials estimate includes a 15 percent contingency of approximately $150,000.00

Pilot Butte 27.0B and Wyoming 31.7

Conversion of Concrete-Lined Lateral to Buried PVC Pipeline
Midvale Irrigation District, Pavillion, Wyoming

Budget Worksheet

EQUIPMENT ESTIMATE

Description	Unit	Rate	Total
Demolition, Excavation and Site Work			
Motor Grader	48	$53.00	$2544.00
Track hoe Excavator	160	$55.00	$8800.00
Water Truck	8	$97.00	$776.00
Front End Loader	80	$45.00	$3600.00
End-Dump Truck	56	$112.00	$6272.00
Pickups	20,000	$1.00	$20,000.00
Semi Tractors & Trailers	1200	$ 4.50	$5400.00
Other Heavy Equipment	253	$105.00	$26,558.00
Total			**$73,950.00**
Construction & Installation			
Motor Grader	72	$53.00	$3816.00
Track hoe Excavator	240	$55.00	$13,200.00
Water Truck	12	$97.00	$1164.00
Front End Loader	120	$45.00	$5400.00
End-Dump Truck	84	$112.00	$9408.00
Pickups	30,000	$1.00	$30,000.00
Semi Tractors & Trailers	1800	$ 4.50	$8100.00
Other Heavy Equipment	396	$105.00	$41,543.00
Total			**$112,631.00**

Labor Estimate

Demolition, Excavation & Side Work			
Construction Manager	109	$26.44	$2882.00
Track Hoe Operator	84	$28.50	$2394.00
Truck Driver	40	$21.00	$840.00
Grader Operator	25	$29.40	$735.00
Front End Loader Operator	50	$21.50	$1075.00
Concrete Crew	168	$64.45	$10,828.00
General Laborer	84	$20.18	$1695.00
Total			**$20,449.00**

(Budget Worksheet Cont.)

Construction & Installation			
Construction Manager	411	$26.44	$10,867.00
Track Hoe Operator	316	$28.50	$9006.00
Truck Driver	120	$21.50	$2580.00
Grader Operator	95	$29.40	$2793.00
Front End Loader Operator	190	$21.50	$4085.00
Concrete Crew	632	$64.45	$40,732.00
General Laborer	316	$20.18	$6377.00
Pipe Crew	160	$54.65	$8744.00
Grade Staking Crew	40	$54.65	$2186.00
Total			**$87,370.00**

ADMINISTRATION ESTIMATE

District Project Manager (hours)	400	$33.65	$13,460.00
Office Manager/Bookkeeper	300	$24.15	$7,245.00
Office Staff (hours per 2 people)	300	$28.00	$8,400.00
Total Administration Estimate			**$29,105.00**

Fringe Benefits (Const. & Admin Labor **$27,138.00**
(at 19.82%)

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	$/Unit	Quantity		
Salaries and Wages				**$136,924**
General Manager	$33.65	400	Hours	$13,460
Office Manager/ Bookkeeper	$24.15	300	Hours	$7,245
Construction Manager	$26.44	520	Hours	$13,749
Office Staff #1	$18.00	300	Hours	$5,400
Office Staff #2	$10.00	300	Hours	$3,000
Track hoe Operator	$28.50	400	Hours	$11,400
Truck Driver #2	$21.00	40	Hours	$840
Truck Driver #1	$21.50	120	Hours	$2,580
Grader Operator	$29.40	120	Hours	$3,528
Front End Loader Operator	$21.50	240	Hours	$5,160
Concrete Crew - Forman	$23.50	800	Hours	$18,800
Concrete Crew - Construction/ ?Elect19.95	$19.95	800	Hours	$15,960
Concrete Crew - Construction/ Ditch	$21.00	800	Hours	$16,800
General Labor	$20.18	400	Hours	$8,072
Pipe Crew- construction manager	$33.65	160	Hours	$5,384
Pipe Crew - Constrcution/ Ditch	$21.00	160	Hours	$3,360
Grade Staking - Construction Manager	$33.65	40	Hours	$1,346
Grade Staking (2 people)	$21.00	40	Hours	$840
Fringe Benefits (19.82 %)				**$27,138**
(Unemployment, Workers Comp, FICA, Medicare, Pension, Dental, and Vision)	$136,923.80	20%	**employee cost**	$27,385
District-owned Equipment				**$186,581**
Motor Grader -155 HP	$53.18	120		$6,382
Excavator 143 HP	$55.21	400		$22,084
Water Truck	$96.91	20		$1,938
Front End loader	$45.13	200		$9,026
End Dump Truck	$111.92	140		$15,669
Pickups	$1.13	50000		$56,500
Semi Tractors and Trailers	$4.32	3000		$12,960
Other Heavy Equipment	$103.37	600		$62,022
Contractual				**$1,025,588**
Pipe & Fittings Contractor (Const. supplies)	$943,108.00	1		$943,108
Concrete	$160.00	200		$32,000
Rebar	$489.00	15		$7,335
Iron (Angle Iron & Expanded Metal)	$746.55	3		$2,240
Water Gates	$1,031.66	10		$10,317
Unforseen Expenses	$2,000.00	1		$2,000
Engineering (Apex Surveing Inc)	$28,589.00	1		$28,589
Enviornmental Compliance				**$5,000**
Recl. Environ. & Cult. Compliance Review				$5,000
TOTAL DIRECT COSTS (excluding fringe benefits)				**$1,354,092.65**
TOTAL DIRECT COSTS (including fringe benefits)				**$1,381,230.95**

Appendix A

Scope of Work and Project Schedule

Appendix A

Pilot Butte 27.OB and Wyoming 31.7 Laterals Rehabilitation Project

Midvale Irrigation District, Pavillion Wyoming

Scope of Work and Project Schedule

The construction phase of this project is estimated to take approximately 150 calendar days to complete.

Pre-construction work already completed:

- Preliminary site survey
- Preliminary design engineering
- Preliminary construction drawings

Pre-construction work to be completed:

- Distribution of materials bid package, bid letting and bid opening
- Selection of successful bidder, award materials bid
- ordering of steel and PVC pipeline and fittings

The following breakdown is a plan of action for the construction phase based on previous experience with similar work. Some variation is likely to occur. Except where noted, labor personnel, heavy equipment, fuel and tools will be furnished by Midvale Irrigation District.

Initial Site Work and Materials Delivery (45 Days) September 15 – November 1, 2018

- **Pipeline** and fittings delivered
- Delivery of steel rebar for reinforced concrete structures
- Dry backfill material delivered and placed
- Demolition and removal of existing concrete structures
- Backfill of existing lateral ditch prior to excavation (to prevent ground freeze)

Installing PVC Pipeline (30 days) November 1, 2018 – November 30, 2018

- Excavate trench to design pipe invert grade shape
- Place bedding for pipe
- Place pipe and confirm pipe slope
- Place and compact backfill, set final grade over pipe alignment

Appendix A
(Continued)

Pilot Butte 27.OB and Wyoming 31.7 Laterals Rehabilitation Project

Midvale Irrigation District, Pavillion Wyoming

Scope of Work and Project Schedule

Construction of Concrete Turnout Boxes (90 days) November 15, 2018 – February 28, 2019

(All labor forms and ties for concrete work will be furnished by Midvale Irrigation District. All inspections shall be performed by engineering consultant and project manager. The following breakdown is typical of each structure.)

- Determine correct structure elevations
- Form structure floor
- Observe forming and steel reinforcement
- Pour floor and test concrete
- Form structure walls around pipe inlet and outlet fittings
- Inspect forming and reinforcement of walls
- Pour walls and test concrete
- Remove forms
- Install weir plates where applicable
- Final structure inspection

Final backfill and Grading (30 days) February 15, 2019 – March 17, 2019

Reporting

Reporting will be conducted per program schedule and requirements as needed.

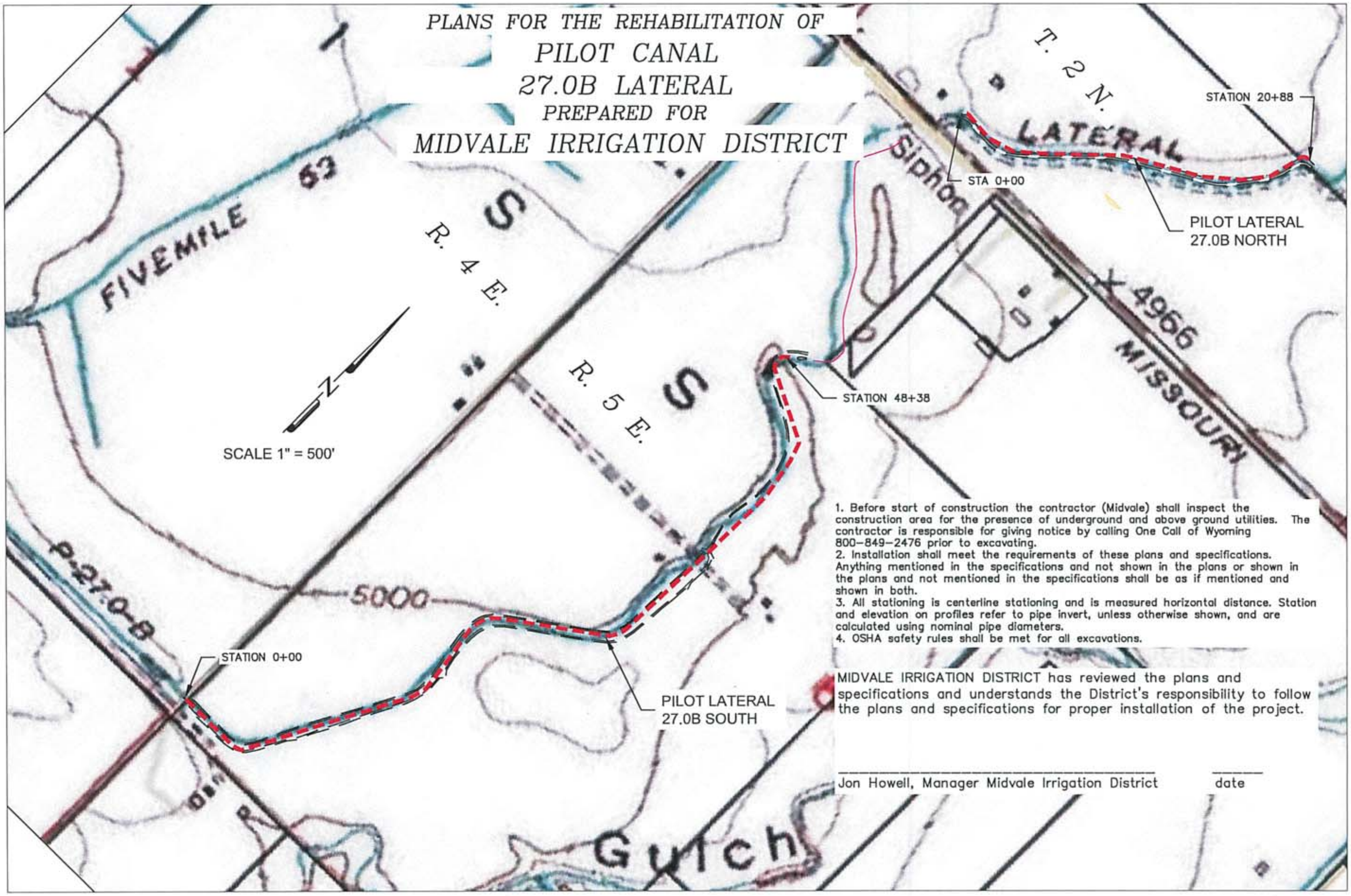
Measurement and Evaluation

Measurement and evaluation will be conducted throughout the 2019 irrigation season following project completion. Primary measurements to evaluate system efficiency will be conducted at an existing measurement structure located above the first turnout on the lateral and a new measurement device(s) that will be installed at the end of the project. Efficiency will be evaluated by comparing records of total water diversion for both Laterals for the previous irrigation seasons.

Appendix B

Maps and Drawings

PLANS FOR THE REHABILITATION OF
PILOT CANAL
27.0B LATERAL
PREPARED FOR
MIDVALE IRRIGATION DISTRICT



1. Before start of construction the contractor (Midvale) shall inspect the construction area for the presence of underground and above ground utilities. The contractor is responsible for giving notice by calling One Call of Wyoming 800–849–2476 prior to excavating.
2. Installation shall meet the requirements of these plans and specifications. Anything mentioned in the specifications and not shown in the plans or shown in the plans and not mentioned in the specifications shall be as if mentioned and shown in both.
3. All stationing is centerline stationing and is measured horizontal distance. Station and elevation on profiles refer to pipe invert, unless otherwise shown, and are calculated using nominal pipe diameters.
4. OSHA safety rules shall be met for all excavations.

MIDVALE IRRIGATION DISTRICT has reviewed the plans and specifications and understands the District's responsibility to follow the plans and specifications for proper installation of the project.

______________________________ ________
Jon Howell, Manager Midvale Irrigation District date

APEX SURVEYING, INC.
ENGINEERING AND LAND SURVEYING
407 West Adams Avenue, Box 1751
Riverton, Wyoming 82501
(307)856-1847

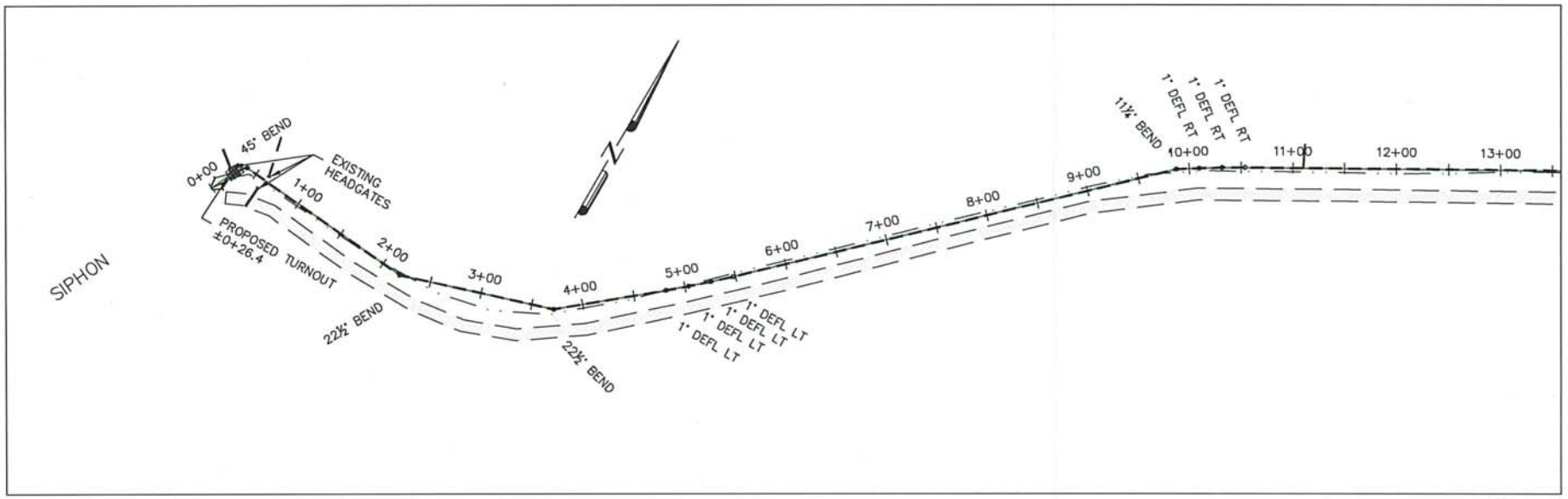
MIDVALE IRRIGATION DISTRICT
PILOT 27.0B LATERAL NORTH
SECTION 11, T.3N., R.5E., W.R.M., FREMONT COUNTY, WY

SHEET TITLE: COVER
DATE: 12/8/17

NO.	REVISION	DATE

JOB NO: 17218
DESIGNED BY: TAZ
DRAWN BY: TAZ
CHECKED BY:
PLOT DATE:

SHEET
COVER



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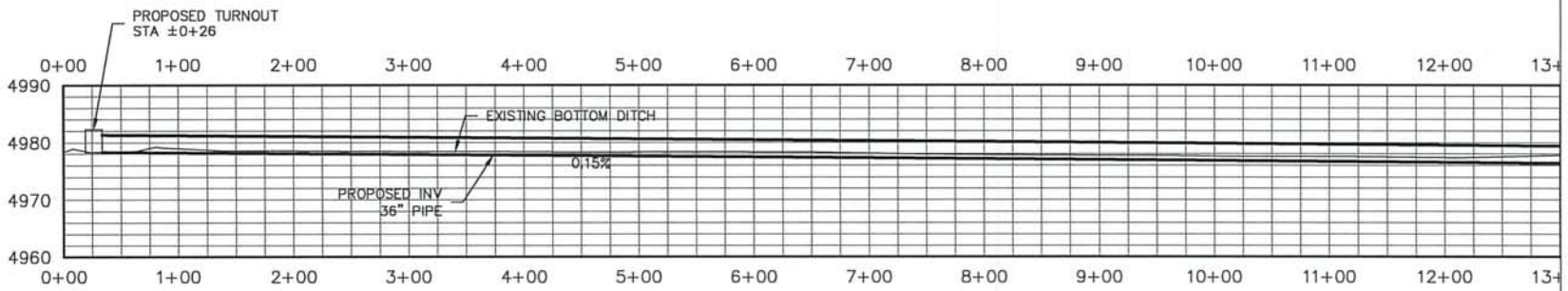
VERT. SCALE 1"=20'

DESIGN Q = 40 CFS



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407 Meadowlark Lane, Box 1751
Riverton, Wyoming 82501
(307)856-1847

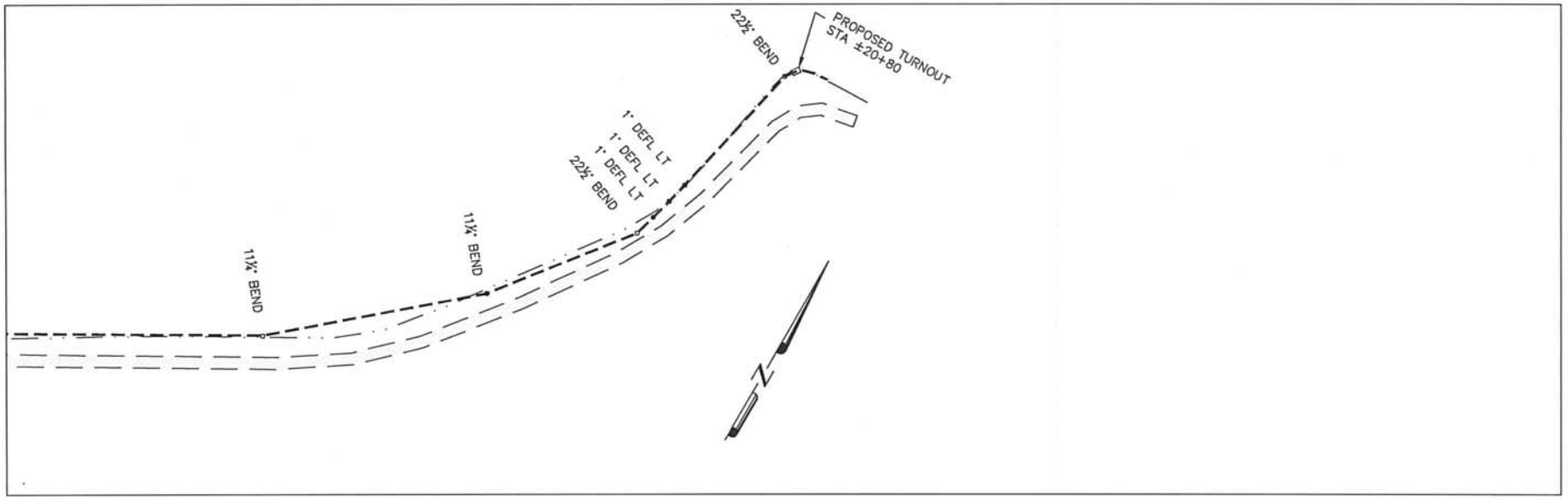
MIDVALE IRRIGATION DISTRICT
PILOT 27.0B LATERAL NORTH
SECTION 11, T.3N., R.5E., W.R.M., FREMONT COUNTY, WY

SHEET TITLE:
0+00 TO 13+00
27.0B NORTH
DATE: 12/6/17

NO.	REVISION	DATE

JOB NO. 17216
DESIGNED BY: TAZ
DRAWN BY: TAZ
CHECKED BY:

SHEET
1 OF 6



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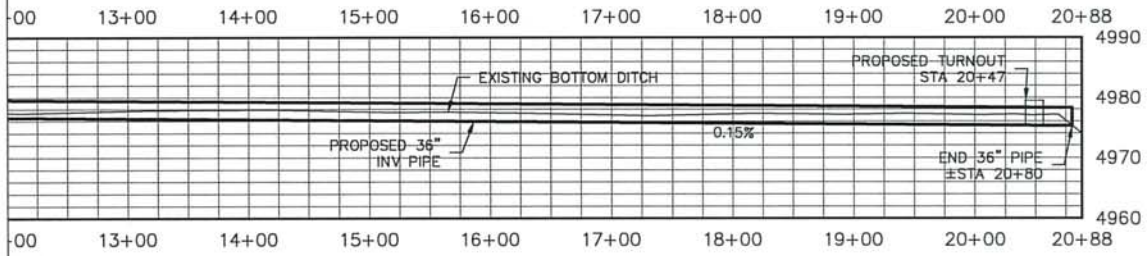

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407 West Adams Avenue, Box 1751
Riverton, Wyoming 82501
(307)856-1147

MIDVALE IRRIGATION DISTRICT
PILOT 27.0B LATERAL NORTH
SECTION 11, T.3N., R.6E., W.R.M., FREMONT COUNTY, WY

SHEET TITLE:
13+00 TO 20+88
27.0B NORTH

DATE: 10/9/17

NO.	REVISION	DATE

JOB NO. 17218
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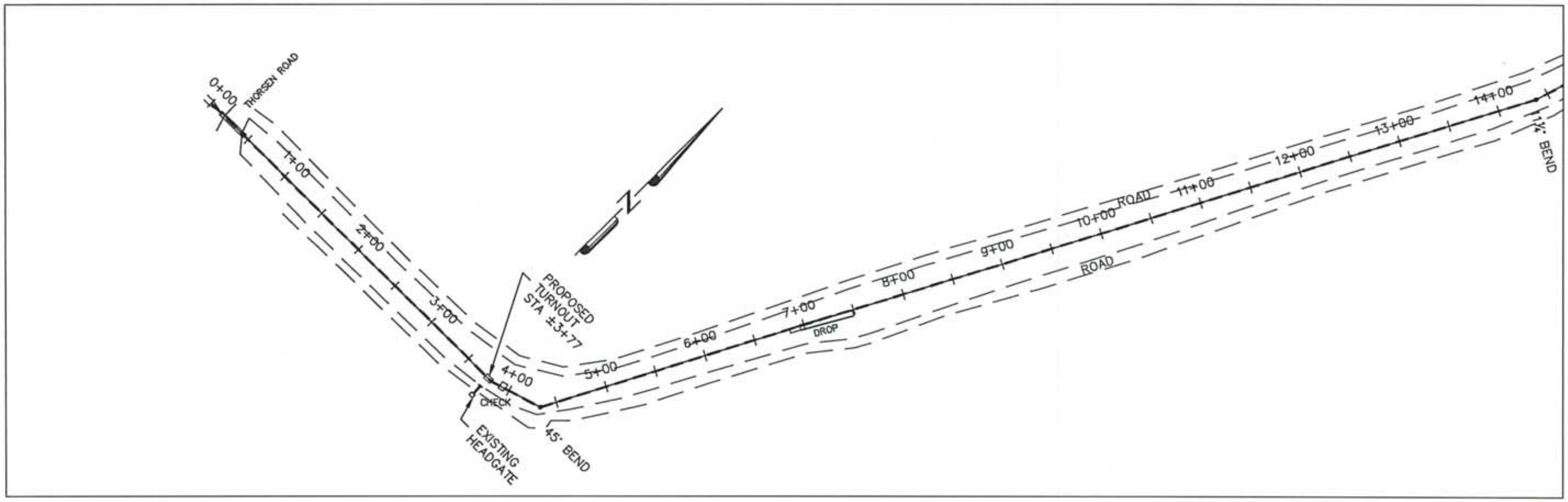

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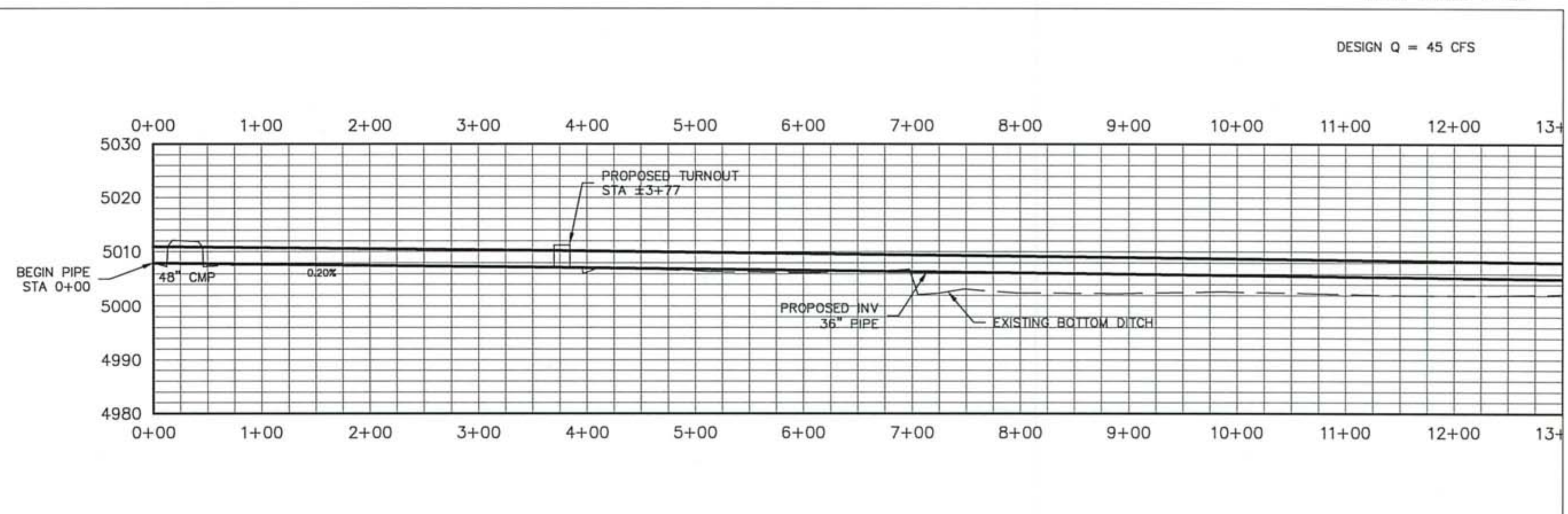

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ENGINEERING AND LAND SURVEYING
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Riverton, Wyoming 82501
(307)856-1847

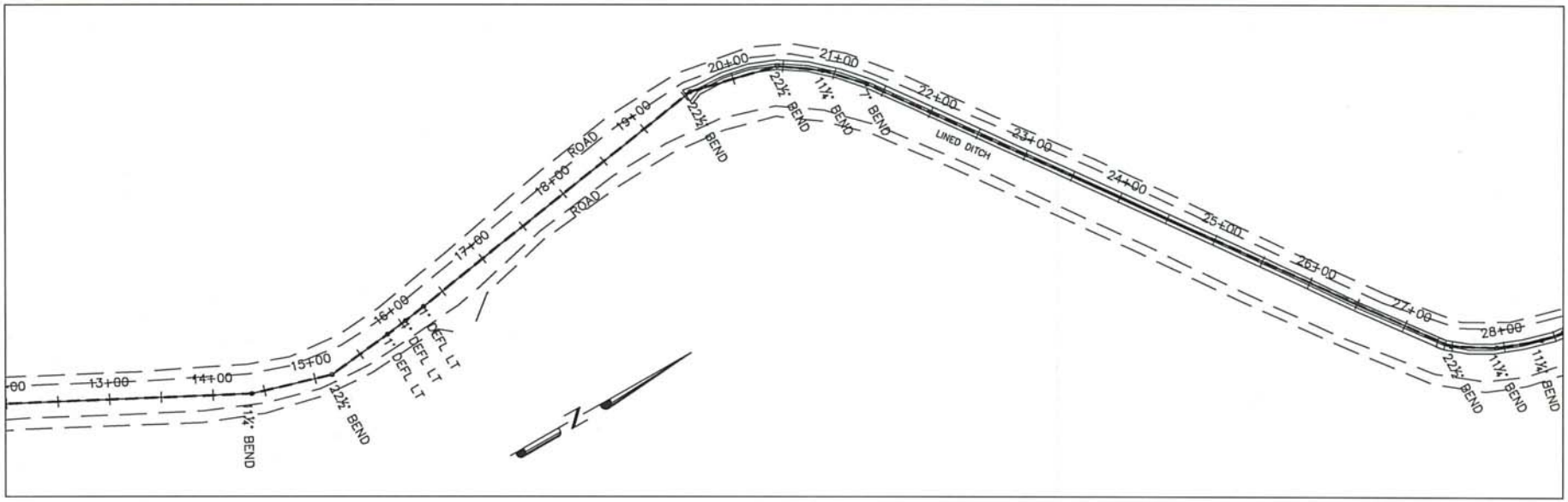
MIDVALE IRRIGATION DISTRICT
PILOT 27.0B LATERAL NORTH
SECTION 11, T.3N., R.5E., W.R.M., FREMONT COUNTY, WY

SHEET TITLE:
0+00 TO 13+00
27.0B SOUTH
DATE: 12/8/17

NO.	REVISION	DATE

JOB NO. 17219
DESIGNED BY: TAZ
DRAWN BY: TAZ
CHECKED BY:

SHEET 3 OF 6



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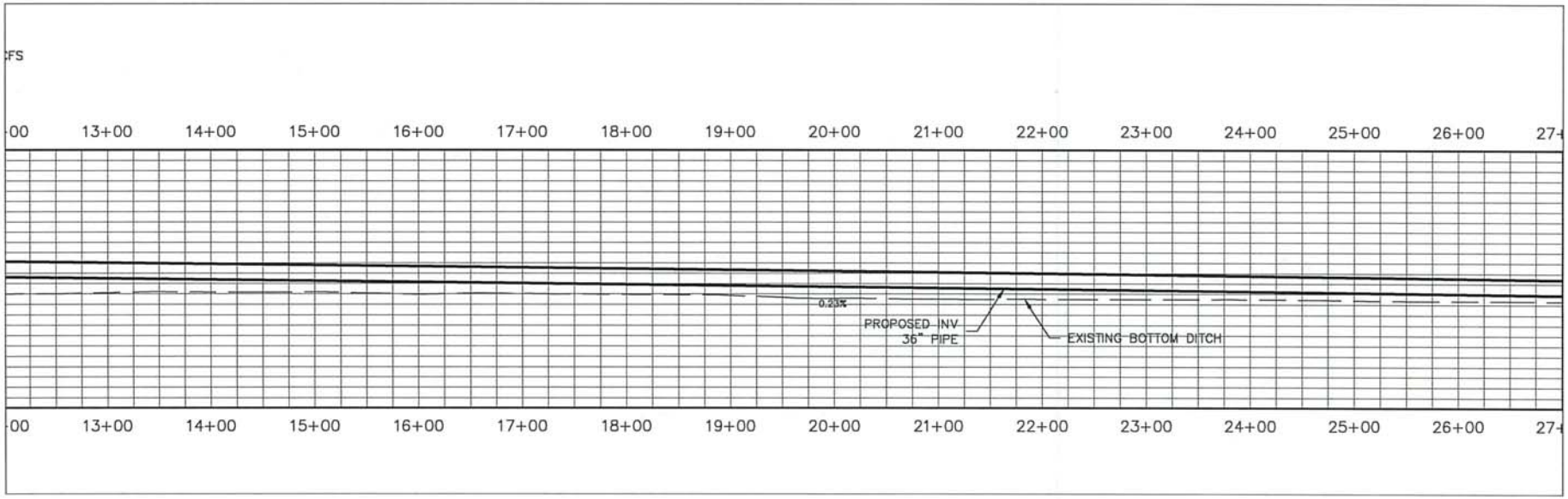

APEX SURVEYING, INC.
ENGINEERING AND LAND SURVEYING
407 West Main Street, Box 1251
Riverton, Wyoming 82501
(307)856-1847

MIDVALE IRRIGATION DISTRICT

PILOT 27.0B LATERAL NORTH
SECTION 11, T.3N., R.5E., W.R.M., FREMONT COUNTY, WY

SHEET TITLE:
13+00 TO 27+00
27.0B SOUTH
DATE: 12/6/17

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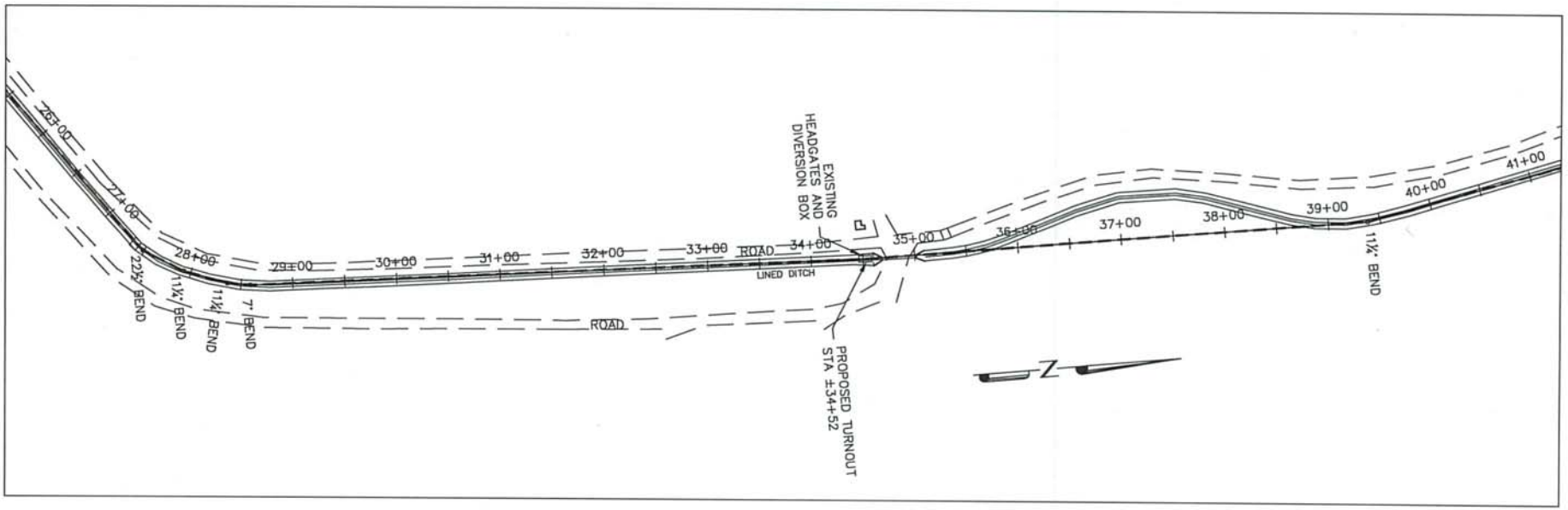

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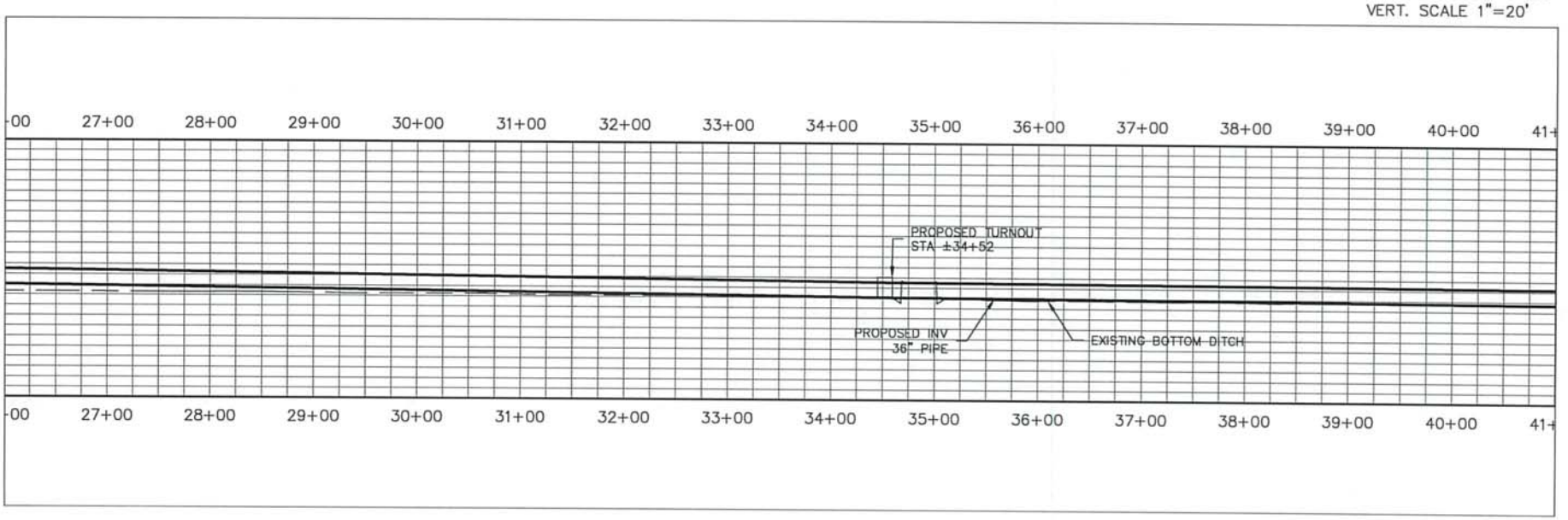

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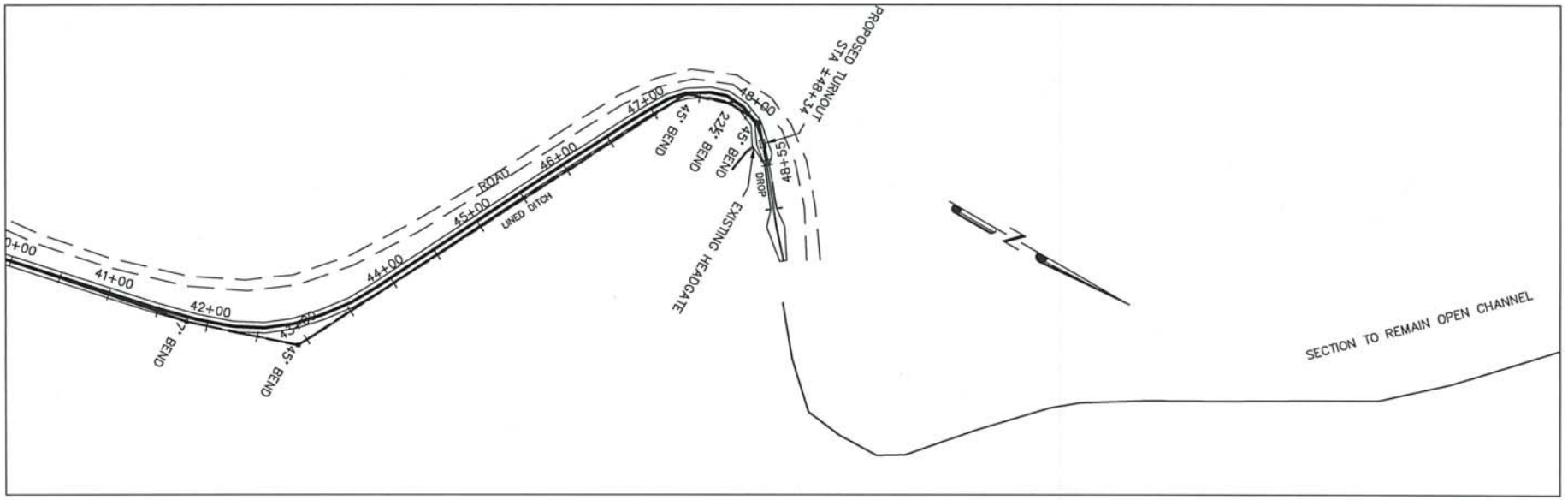
ENGINEERING AND LAND SURVEYING
407 Williams Street, Suite 4, P.O. Box 1751
Riverton, Wyoming 82501
(307)856-1847

MIDVALE IRRIGATION DISTRICT
PILOT 27.0B LATERAL NORTH
SECTION 11, T.3N., R.6E., W.R.M., FREMONT COUNTY, WY

SHEET TITLE:
27+00 TO 41+00
27.0B SOUTH
DATE: 10/5/17

NO.	REVISION	DATE

JOB NO. 17218
DESIGNED BY: TAZ
DRAWN BY: TAZ
CHECKED BY:



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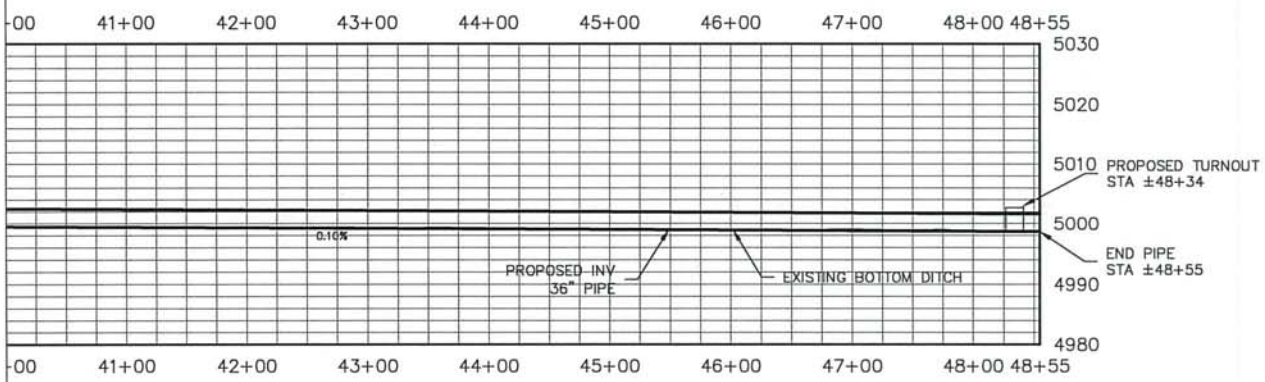

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Riverton, WY 82501
(307)856-1347

MIDVALE IRRIGATION DISTRICT
PILOT 27.0B LATERAL NORTH
SECTION 11, T.3N., R.5E., W.R.M., FREMONT COUNTY, WY

SHEET TITLE:
27+00 TO 41+00
27.0B SOUTH
DATE: 12/4/07

NO. | REVISION | DATE

JOB NO. 17219
DESIGNED BY: TAZ
DRAWN BY: TAZ
CHECKED BY:

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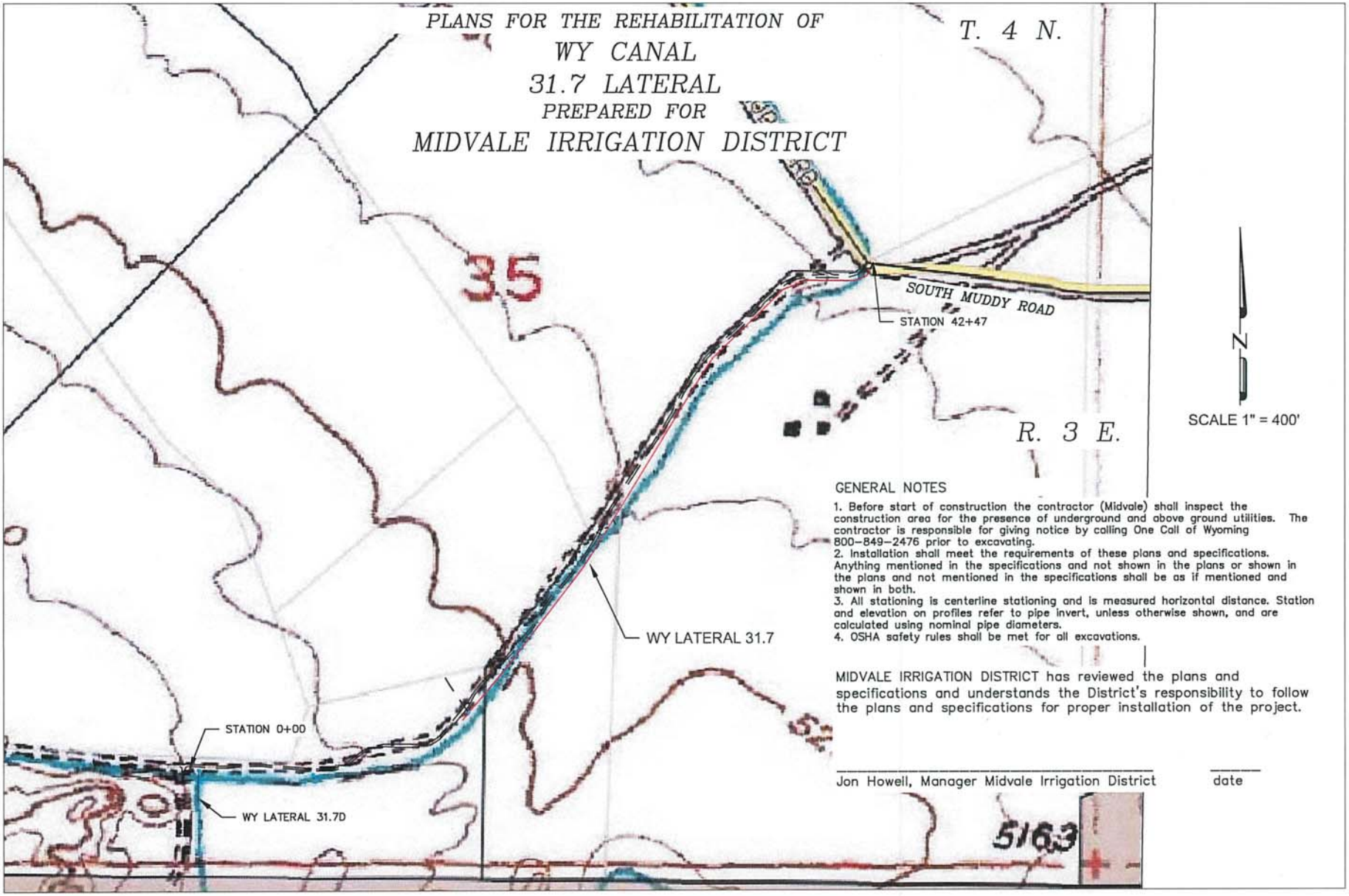
6 OF 6

PLANS FOR THE REHABILITATION OF
WY CANAL
31.7 LATERAL
PREPARED FOR
MIDVALE IRRIGATION DISTRICT



SCALE 1" = 400'

GENERAL NOTES

1. Before start of construction the contractor (Midvale) shall inspect the construction area for the presence of underground and above ground utilities. The contractor is responsible for giving notice by calling One Call of Wyoming 800-849-2476 prior to excavating.
2. Installation shall meet the requirements of these plans and specifications. Anything mentioned in the specifications and not shown in the plans or shown in the plans and not mentioned in the specifications shall be as if mentioned and shown in both.
3. All stationing is centerline stationing and is measured horizontal distance. Station and elevation on profiles refer to pipe invert, unless otherwise shown, and are calculated using nominal pipe diameters.
4. OSHA safety rules shall be met for all excavations.

MIDVALE IRRIGATION DISTRICT has reviewed the plans and specifications and understands the District's responsibility to follow the plans and specifications for proper installation of the project.

Jon Howell, Manager Midvale Irrigation District _____ date _____

APEX SURVEYING, INC.
407 West Adams Avenue, Box 1731
Riverton, Wyoming 82501
(307)856-1847

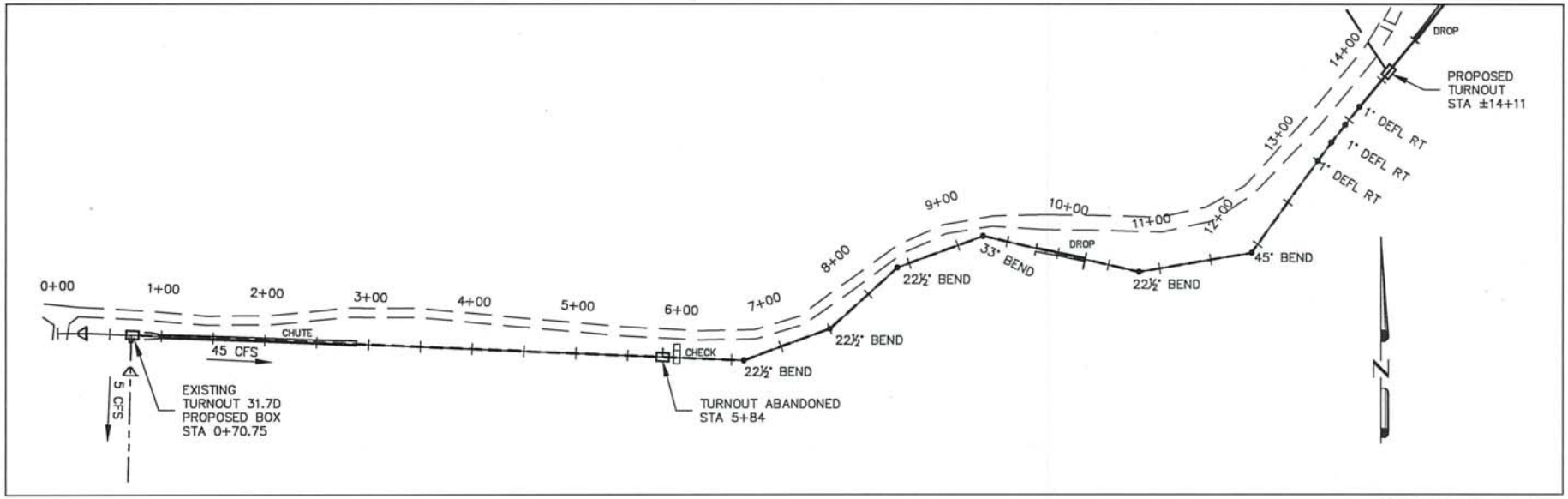
MIDVALE IRRIGATION DISTRICT
WY LATERAL 31.7
SECTION 36, T.4 N., R.3 E., W.R.M. FREMONT COUNTY, WY

SHEET TITLE: COVER SHEET
DATE: 10/4/17

NO.	REVISION	DATE

JOB NO: 17319
DESIGNED BY: TAZ
DRAWN BY: TAZ
CHECKED BY:
PLOT DATE:

SHEET COVER



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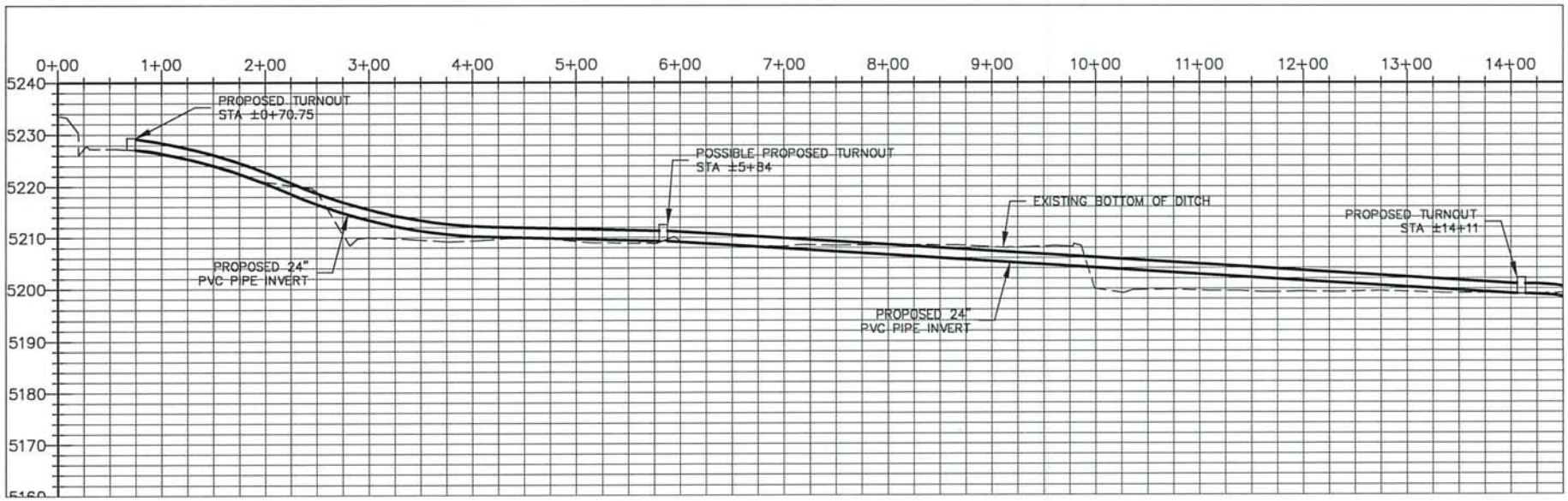

APEX SURVEYING, INC.
457 West Adams Avenue, Box 1751
Riverton, Wyoming 82501
(307)856-1547

MIDVALE IRRIGATION DISTRICT
WY LATERAL 31.7
SECTION 35, T.4 N., R.3 E., W.R.M. FREMONT COUNTY, WY

SHEET TITLE:
0+00 TO 14+50

DATE: 10/9/07

NO.	REVISION	DATE

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DRAWN BY: TAZ
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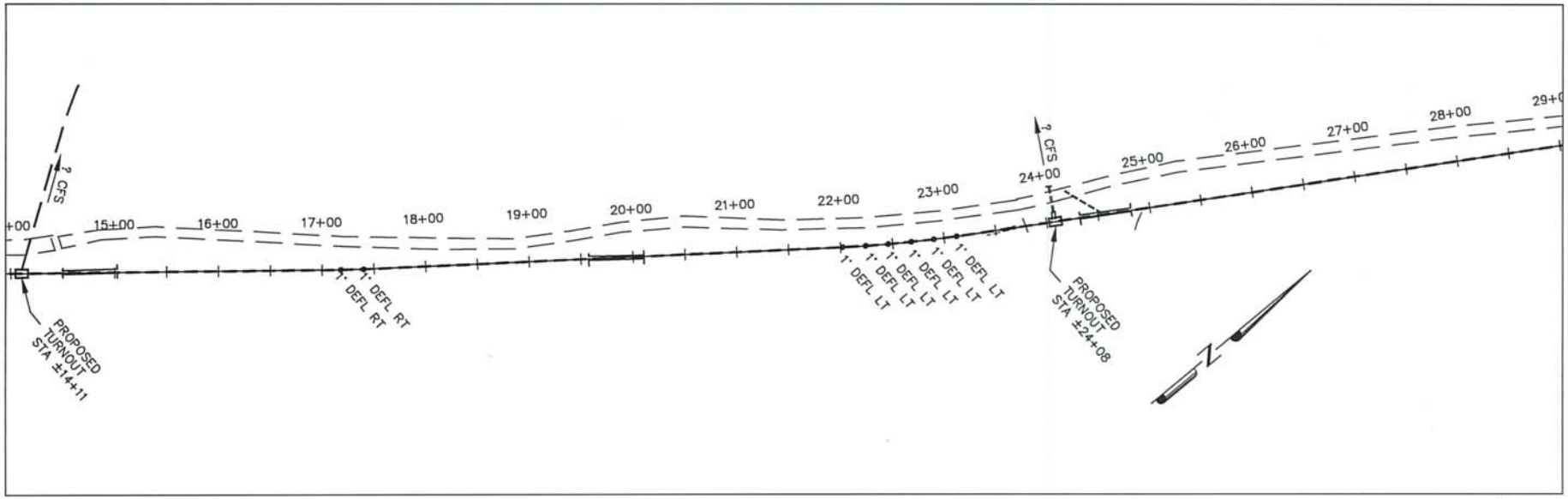

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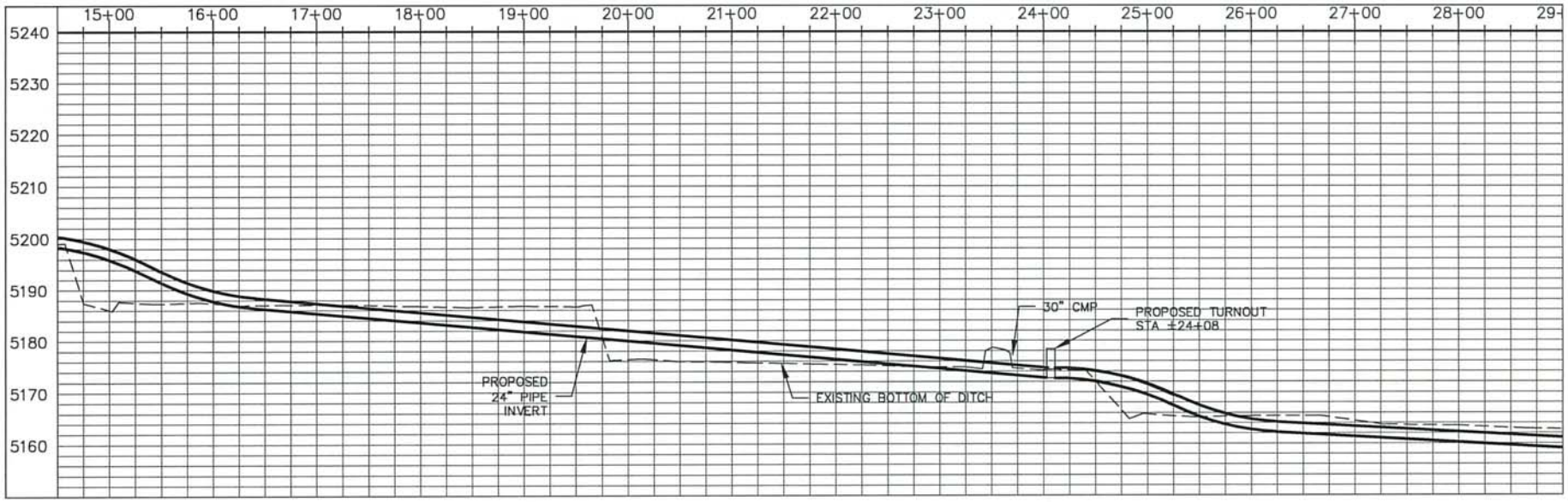

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407 West Adams Avenue, Box 1751
Riverton, Wyoming 82501
(307)856-1847

MIDVALE IRRIGATION DISTRICT

WY LATERAL 31.7

SECTION 36, T.4 N., R.3 E., W.R.M. FREMONT COUNTY, WY

SHEET TITLE:
14+50 TO 29+00

DATE: 10/5/07

NO.	REVISION	DATE

JOB NO. 17218
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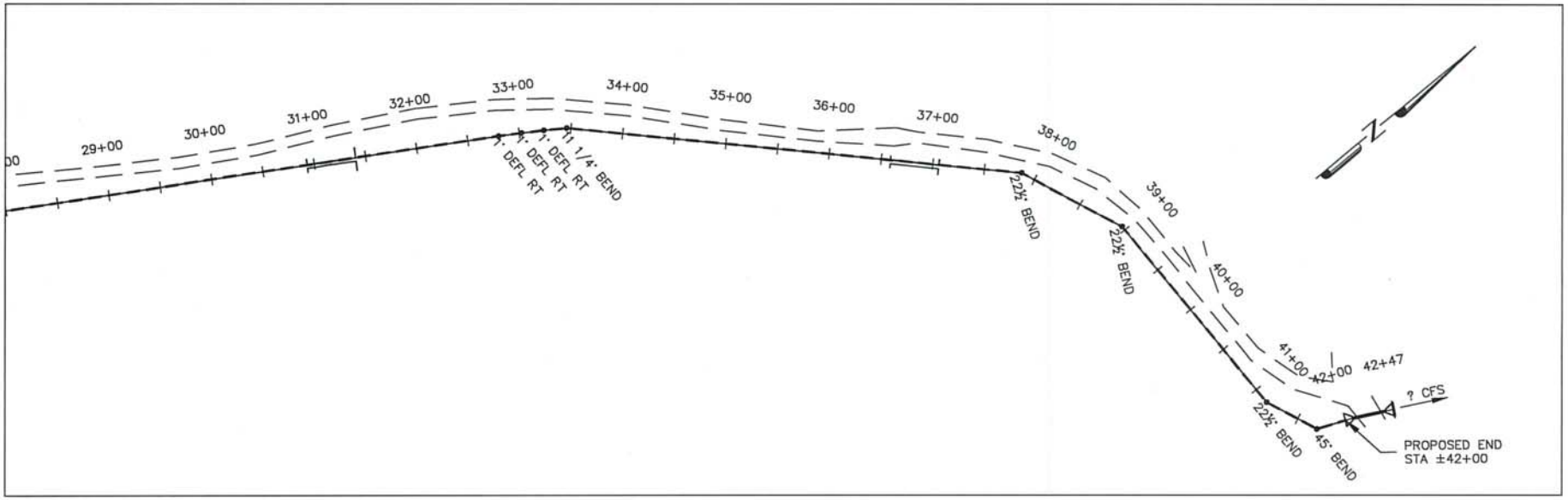

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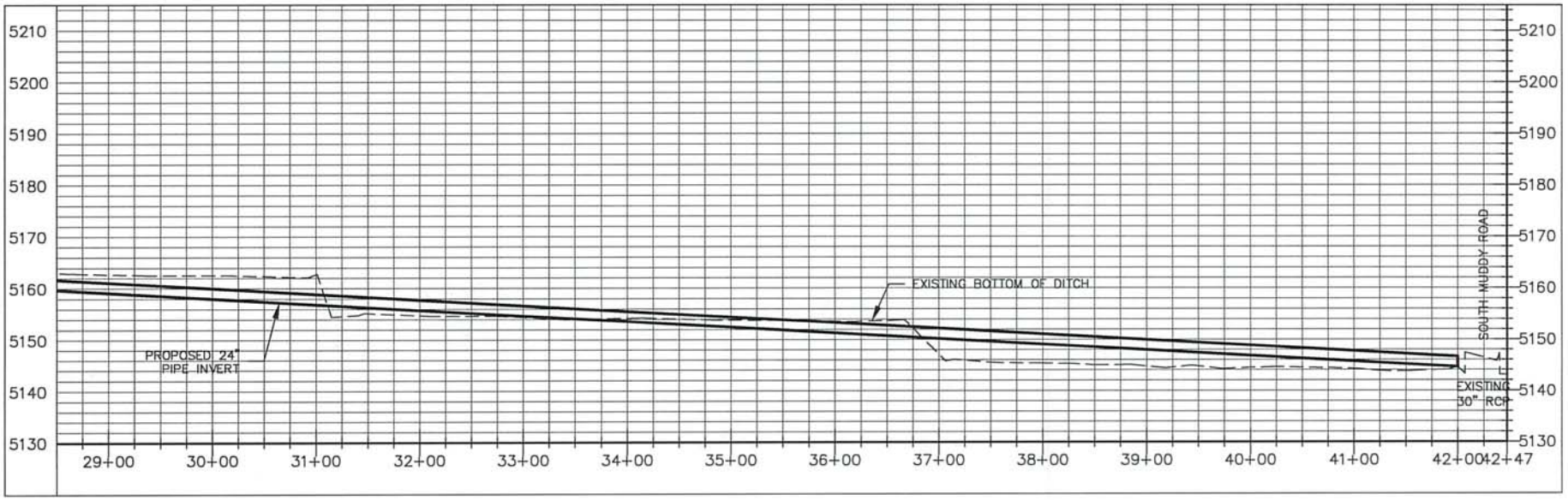


APEX SURVEYING, INC.
ENGINEERS AND SURVEYORS
407 West Adams Avenue, Box 1751
Riverton, Wyoming 82501
(307)856-9547

MIDVALE IRRIGATION DISTRICT
WY LATERAL 31.7
SECTION 35, T.4 N., R.3 E., W.R.M. FREMONT COUNTY, WY

SHEET TITLE:
28+50 TO 42+47

DATE: 10/6/17

NO.	REVISION	DATE

JOB NO. 17218
DESIGNED BY: TAZ
DRAWN BY: TAZ
CHECKED BY:

Appendix C

Letters of Support
(WWDC Recommendation Documents)

2018 RECOMMENDATION-CONSTRUCTION PROJECTS

Project Name: Midvale Irrigation District Rehabilitation 2018 **Program:** Rehabilitation

Project Type: Agricultural Irrigation **County:** Fremont

Sponsor: Midvale Irrigation District

WWDO Recommendation: Level III **Proposed Budget:** $995,000

WWDC Grant[1]	$ 995,000
Sponsor[2]	$ 495,000
Total	$ 1,490,000

[1] Materials Grant Only
[2] Sponsor share is all costs excluding materials.

Project Manager: Dale Anderson

Project Description: This project is to replace open ditch with pvc pipe on two lateral segments.

1. **Describe existing status in the program and previous appropriations.**
   Prior Legislation

Year	Project	Appropriation
2003, 04	Level II, Midvale Conservation	$ 375,000
2015	Level III, Midvale Bull Lake Rehabilitation 2015	$ 2,653,200
2016	Level III, Midvale Sand Butte 2 Lateral	$ 770,000
2017	Level III, Midvale Pilot Canal 27.0 A Lateral 2017	$ 355,000

2. **Describe existing water supply using information in the application.**
   Direct flow water from the Wind River and stored water from Bull Lake on Bull Lake Creek is diverted from the Wind River and travels through canals and pipelines to the sponsor's irrigators.

3. **Summarize the request.**
   The request is for 100% grant funding to finance the purchase of invoiced materials to replace open ditch with pipe. The Pilot 27.0 B Lateral segment is approximately 1.5 miles long and serves 700 acres. The Wyoming 31.7 Lateral segment is about 1 mile in length and serves 641 acres. The sponsor will provide engineering design and inspection services and construct the project. All project expenses other than invoiced materials will be the sponsor's responsibility. The sponsor will meet these obligations from its operating budget.

4. **Summarize the reasons for the request.**
   Both laterals have open ditch with deteriorated concrete structures that have been repaired and need to be replaced. Both segments also include failing concrete lining and both the earth ditch and lined section experience considerable seepage. For seepage abatement, the Wyoming 31.7 Lateral was ranked eighteenth in lowest cost per acre-foot of seepage in the Level II Study completed in 2007. The sponsor has completed projects on three higher ranking laterals and applied for materials funding on a fourth lateral that was denied. The Pilot 27.0 B Lateral was also evaluated and recommended for rehabilitation due primarily to deteriorated concrete lining and structures. Completion of this project will reduce maintenance costs, reduce seepage, and improve operations through more precise control of the water.

Estimated Level III WWDC Eligible Costs:

Cost of Project Components – Invoiced Materials

Pilot 27.0 B Lateral, 24"-42" diameter pvc pipe	$ 475,000	
Pilot 27.0 B Lateral, other materials	$ 160,000	
Wyoming 31.7 Lateral, 24"-27" diameter pvc pipe	$ 150,000	
Wyoming 31.7 Lateral, other materials	$ 80,000	
Construction Cost (Subtotal #1)		$ 865,000
Contingency (Subtotal #1 x 15%)		$ 129,750
Construction Cost Total (Subtotal #2)		**$ 994,750**
Total Project Costs Rounded		**$ 995,000**
Estimate Sponsor's Costs:		**$ 495,000**

The sponsor is responsible for all project costs that are not materials invoices. This includes, but is not limited to, design, permitting, land rights, legal fees, construction labor and equipment, and construction engineering costs.

PROJECT INFORMATION:

A. FINANCIAL INFORMATION

1. Service Area Information.	Pre-Project	Post-Project
a. Total acres are in the District?	258,000	258,000
b. Assessed acres?	74,000	74,000
c. Irrigated acres?	74,000	74,000
d. Average annual water delivery (acre-feet/acre assessed)?	1.75 - 3.0	1.75 - 3.0
e. How many individual landowners receive water?	820	820

f. What type(s) of on-farm irrigation water application is used? Flood, center pivots, side rolls, and gated pipe.

g. Briefly describe the main crops and cropping patterns: Alfalfa hay, corn, miscellaneous grains, sugar beets, beans, potatoes, and irrigated pasture. Growing season is from April to October.

h. Describe the water measuring devices currently in use: Cipoletti weirs, constant head orifice boxes, and measured pump turn outs.

2. Water Usage	Pre-Project	Post-Project
a. Total water (AF) provided by the system annually:	300K-370K	300K-370K
b. Average Day Demand (AF):	2,057	2,057
c. Peak Day Demand (AF):	3,635	3,635

3. System Capacity:	Pre-Project	Post-Project
a. Maximum capacity of the water supply system (acre feet per day)	3,570	3,570
b. What is the factor (bottleneck) limiting the ability to provide water (supply, canals, etc.):	Deteriorating structures that include risk of failure and consequent inability to deliver water and excessive seepage losses in open ditches.	
c. Increased capacity needed (acre feet per day):	0	0
d. Estimated system water losses (percentage):	30-32%	30-32%

4. District Financing

a. Is the assessment based on acres, acre-feet delivered, acre-feet of storage space, or other? Acres

b. How is voting authority delegated to water users? One vote per irrigable acre.

	Pre-Project	Post-Project
c. What is the per unit amount of the current assessment?	$ 17.50	$ 17.50
d. If there is a basic service charge in addition to assessments, how much is it?	$350 first acre	$350 first acre

5. Financial Statement	Pre-Project	Post-Project
Annual revenues generated from assessments:	$ 2,153,956	$ 2,153,956
Annual revenues from other sources:	$ 83,078	$ 83,078
Total annual revenues:	$ 2,237,034	$ 2,237,034
Annual budget for operation and maintenance expenses:	$ 2,153,956	$ 2,153,956
Annual payments for debt retirement:	$ 83,078	$ 83,078
Annual payments to a repair and replacement fund:	$ 0	$ 0
Annual payments to an emergency fund:	$ 0	$ 0
Annual payments for other purposes:	$ 0	$ 0
Total annual payments:	$ 2,237,034	$ 2,237,034
Balance in repair and replacement fund	$ 200,000	$ 200,000
Balance in emergency fund	$ 800,000	$ 800,000

B. COMPARISON WITH OPERATING CRITERIA

1. Project Priority according to the Criteria? 4. - Irrigation and Municipal Water Supply Systems.

2. Will the project serve at least 2,000 water righted acres? Yes Number of acres 74,000

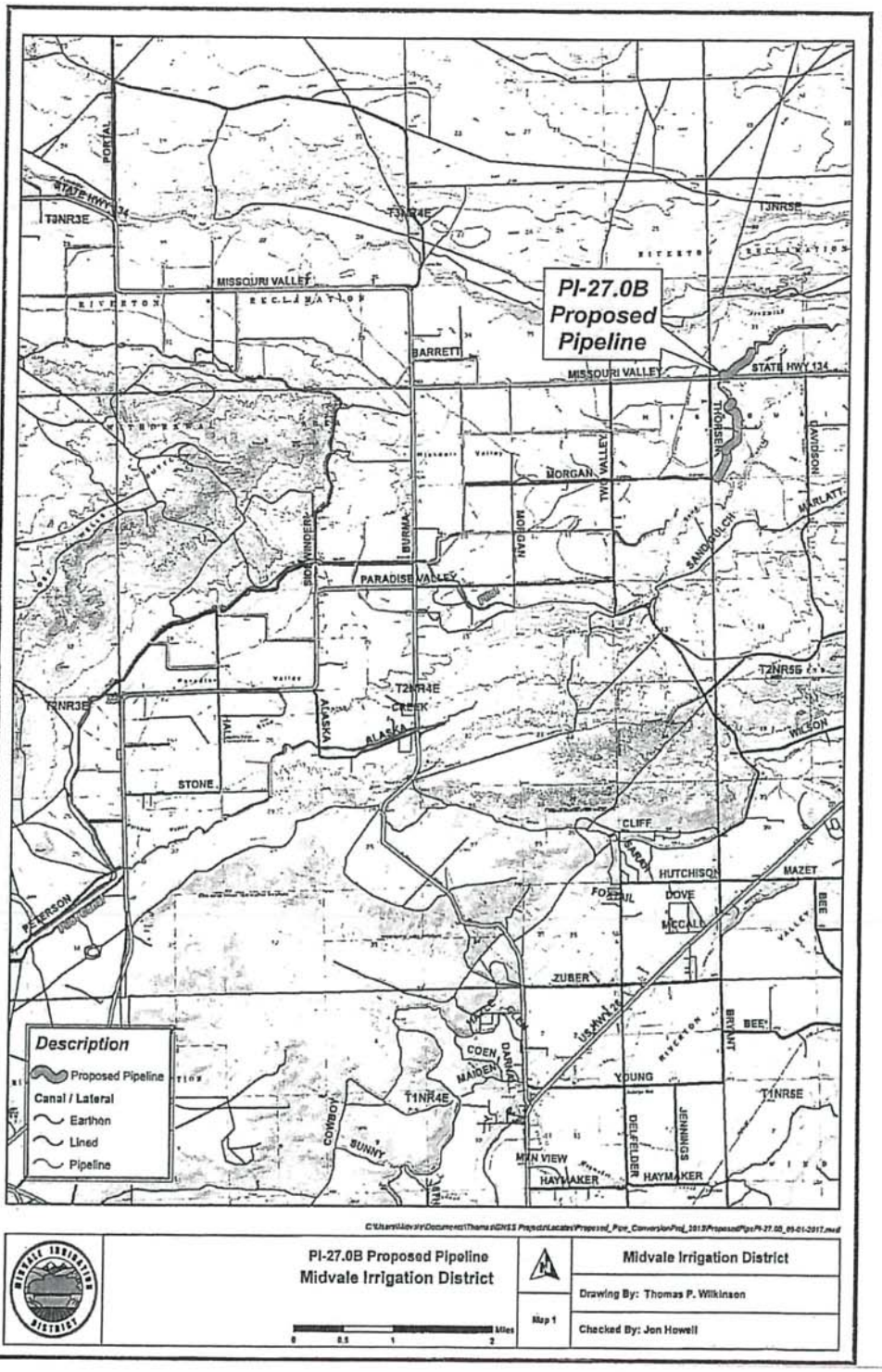
3. Is the sponsor eligible for funding from other state or federal programs? Yes
If so, what are they? U. S. Bureau of Reclamation WaterSMART program.

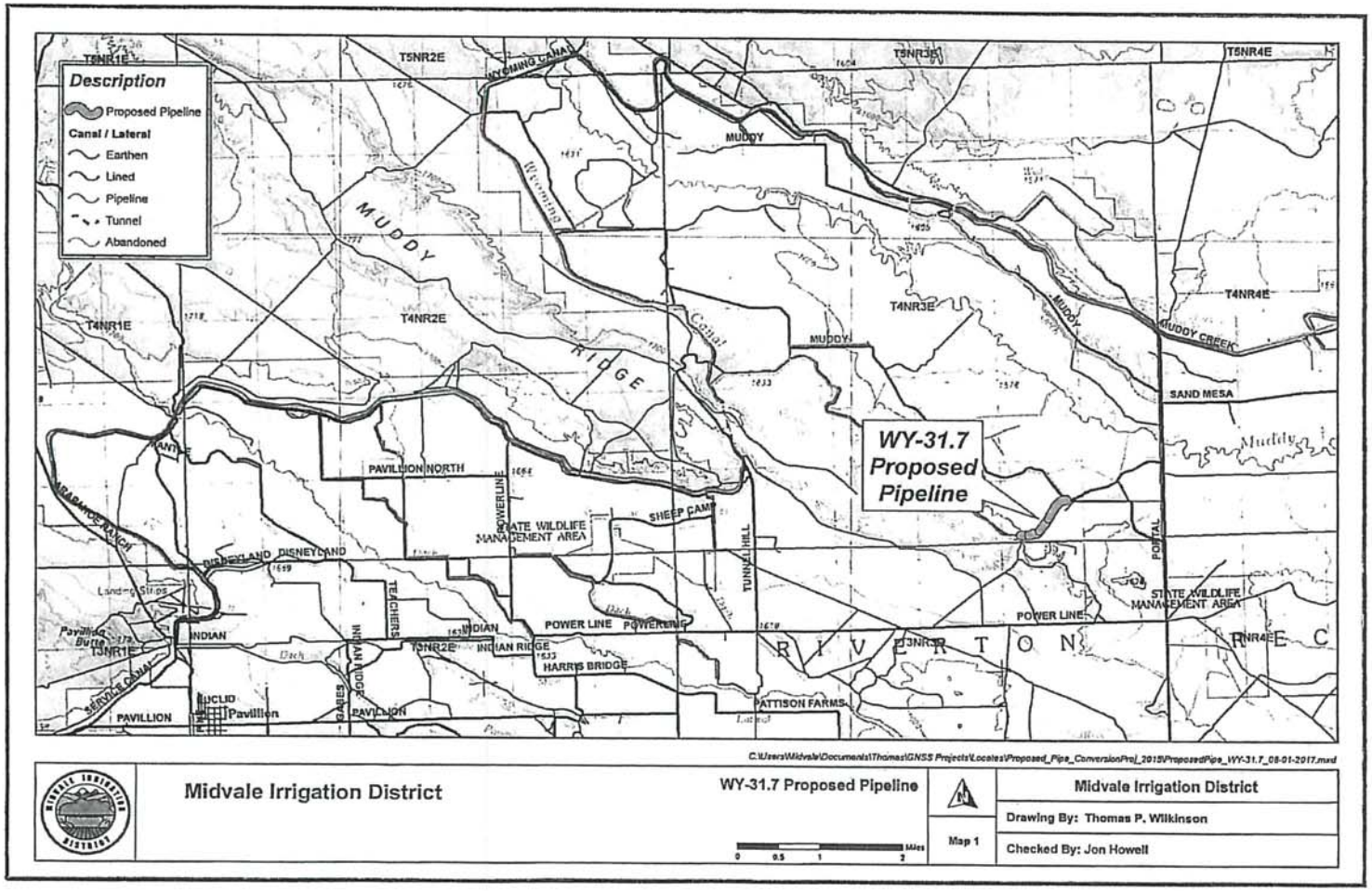
4. What water conservation measures are employed by the sponsor? Canal lining and pipelines, and on-farm it's sprinkler systems, center pivots, and pipe conversions.

5. Is the operation of the water supply system self supporting in terms of revenues offsetting costs for operation, maintenance, debt retirement, replacement funds and emergency funds? Yes

6. Can the project be delayed or staged? Yes, delayed and staged Should it be? No, neither delayed nor staged. This sponsor has expected system construction expenses built into its budget and assessment. This project funding gives the sponsor more bang for its budgeted buck. The project is scheduled for construction in the winter of 2018 – 2019.

7. Basis for the funding recommendation: The sponsor has successfully completed similar projects and this project is in compliance with the WWDC program.


PI-27.0B
Proposed
Pipeline
MISSOURI VALLEY
BARRETT
MORGAN
TWO VALLEY
PARADISE VALLEY
STONE
CLIFF
HUTCHISON
MAZET
DOVE
ZUBER
YOUNG
HAYMAKER
MAIN VIEW
T3NR3E
T2NR4E
T1NR4E
T1NR5E
T2NR5E
Description
Proposed Pipeline
Canal / Lateral
Earthen
Lined
Pipeline
PI-27.0B Proposed Pipeline
Midvale Irrigation District
Midvale Irrigation District
Drawing By: Thomas P. Wilkinson
Map 1
Checked By: Jon Howell
Miles
0
0.5
1
2


Description
Proposed Pipeline
Canal / Lateral
Earthen
Lined
Pipeline
Tunnel
Abandoned
WY-31.7
Proposed
Pipeline
T5NR1E
T5NR2E
T5NR3E
T5NR4E
T4NR1E
T4NR2E
T4NR3E
T4NR4E
MUDDY
MUDDY CREEK
SAND MESA
PAVILION NORTH
STATE WILDLIFE MANAGEMENT AREA
SHEEP CAMP
TUNNEL HILL
POWERLINE
POWER LINE
INDIAN
INDIAN RIDGE
HARRIS BRIDGE
PATTISON FARMS
PAVILION
EUCLID
TEACHERS
BARES
PORTAL
SERVICE CANAL
RIVERTON
C:\Users\Midvale\Documents\Thomas\GNSS Projects\Locates\Proposed_Pipe_ConversionProj_2015\ProposedPipe_WY-31.7_08-01-2017.mxd
Midvale Irrigation District
WY-31.7 Proposed Pipeline
0 0.5 1 2 Miles
Midvale Irrigation District
Drawing By: Thomas P. Wilkinson
Map 1
Checked By: Jon Howell

Appendix D

Consultant's Cost Estimate

APEX SURVEYING, INC.

407 WEST ADAMS ● P.O. BOX 1751 ● RIVERTON, WYOMING 82501
(307) 856-1647 FAX (307) 856-6620

TERRY A. ZENK, P.E.
ROBERT J. HATLE, P.E.
GARY L. HATLE, P.L.S., CFEDS
THOMAS A. JOHNSON, P.L.S., CFEDS

4-5-18

Midvale Irrigation District
P.O. Box 128
Pavillion, WY 82523
Attn: Jon Howell

Re: Engineering Estimate for Pilot Butte 27.0B and Wyoming Canal 31.7 Laterals Rehabilitation project.

Jon,

In response to your request for an engineering cost estimate, I have the prepared the following breakdown for the project:

• **Preliminary work** – including survey work completed, preliminary plan preparation and questions for landowners	$ 6,650
• **Design** – Preparation of final plan and profile documents, details and specifications.	$10,330
• **Bid Documents** – Preparation of quantity estimates, final bid document review, attendance at bid opening, review of bids and preparation of bid tabulation.	$ 1,930
• **Construction Management** – including construction staking and inspection trips (8 estimated).	$ 5,950
Total engineering estimate	**$24,860**
Contingency for changes (15%)	$ 3,729
Not-to-exceed total	$28,589

I have attempted to include all anticipated costs in this estimate with the exception of soil and concrete testing. I am confident that the estimated cost presented is adequate to complete this project. If you have any questions regarding this estimate, please contact me.

Sincerely,
Terry Zenk, P.E.

Appendix E

Resolution of the Board of Commissioners

RESOLUTION OF THE BOARD OF COMMISSIONERS
MIDVALE IRRIGATION DISTRICT

RE: Midvale Pilot 27.0 B Lateral & Wyoming 31.7 Lateral Rehabilitation Projects

WHEREAS, the Bureau of Reclamation's Riverton Unit water conveyance facilities were initially constructed between 1921 and 1948, utilizing the best available technology of the time, and;

WHEREAS, the Riverton Unit is managed under repayment contract #14-06-600-444A by Midvale Irrigation District, and;

WHEREAS, Pilot 27.0 B Lateral and Wyoming 31.7 Lateral were identified as losing water due to seepage, evaporation and operational waste, and;

WHEREAS, the Board of Commissioners of Midvale Irrigation District desire to seek assistance in the implementation of improvements to Midvale's conveyance facilities from the Wyoming Water Development Commission, a "materials only" grant if requested for consideration for these projects, and;

WHEREAS, Midvale Irrigation District will construct the Pilot 27.0 B Lateral and Wyoming 31.7 Lateral and will provide the funding (excluding materials) to do so, and;

WHEREAS, Midvale Irrigation District will maintain a Wyoming Water Development Commission repair fund of $200,000.00 and an emergency fund of not less than $800,000 for the repair and maintenance of the entire water delivery system, and;

BE IT RESOLVED at their August 10, 2017 Regular Meeting and upon a motion duly made and seconded, the Board unanimously approved the submittal of the Project Application – Agricultural Water Projects, to the Wyoming Water Development Commissioner requesting such assistance and;

BE IT RESOLVED: the President and Secretary of the Board of Commissioners of Midvale Irrigation District, are authorized to execute any and all legal documents related to this application, and;

WHEREAS, the President and the Secretary authorize Jon C. Howell, Manager of Midvale Irrigation District, to sign payment requests submitted to Wyoming Water Development Commission.

RESPECTFULLY SUBMITTED THIS 10th DAY OF AUGUST OF THE YEAR 2017

Dustin L. Taylor, President

READ & APPROVED:

Richard Pingetzer, Secretary/Treasurer

STATE OF WYOMING)
COUNTY OF FREMONT)

The foregoing instrument was acknowledged before me by Dustin L. Taylor and Richard Pingetzer, this 10th day of August, 2017.

Witness my hand and official seal:

Patricia J. Rorabaugh, Notary Public

Patricia J. Rorabaugh - Notary Public
County of Fremont (Seal) State of Wyoming
My Commission Expires April 16, 2019

My Commission Expires April 16, 2019

Appendix F

Additional Backup Information

- Cover Page – Master Plan Report Dated June 30, 2007
- Sand Butte 2 Lateral Measurement Data
- Wyoming 15.1 Lateral Measurement Data

FINAL REPORT

MIDVALE CONSERVATION PROGRAM
LEVEL II

Prepared for:

Wyoming Water Development Commission
6920 Yellowtail Road
Cheyenne, WY 82002

Prepared by:

Anderson Consulting Engineers, Inc.
772 Whalers Way, Suite 200
Fort Collins, CO 80525
(ACE Project No. WYWDC20)

In Association with:

Harvey Economics
600 South Cherry Street, Suite 220
Denver, CO 80246

Inberg-Miller Engineers
124 East Main Street
Riverton, WY 82501

Water & Earth Technologies, Inc.
1225 Red Cedar Circle, Suite A
Fort Collins, CO 80524

June 30, 2007

SBII -- New 42" PVC Pipe Delivery

	MEASUREMENT (cfs)		DELIVERY / TURNOUTS (cfs)				CALCULATION (cfs)	DIFFERENCE (cfs)
DATE	DIV	END	SB2-0.7	SB2-0.9	SB2A	TOTAL	END (DIV - TOTAL)	END (MEASUREMENT) - END (CALCULATION)
4/26/2017	4.9	4.8				0.0	4.9	-0.1
4/27/2017	4.2	4.2				0.0	4.2	0.0
4/28/2017	Too Wet					UNK	UNK	UNK
4/29/2017	--					0.0	--	--
4/30/2017	--					0.0	--	--
5/1/2017	4.2	4.0				0.0	4.2	-0.2
5/2/2017	4.1	4.1				0.0	4.1	0.0
5/3/2017	4.2	4.0				0.0	4.2	-0.2
5/4/2017	4.2	4.2				0.0	4.2	0.0
5/5/2017	4.1	4.0				0.0	4.1	-0.1
5/6/2017	--					0.0	--	--
5/7/2017	--					0.0	--	--
5/8/2017	4.2	4.2				0.0	4.2	0.0
5/9/2017	7.0	5.0			1.8	1.8	5.2	-0.2
5/10/2017	7.0	5.0			1.8	1.8	5.2	-0.2
5/11/2017	7.5	5.5	UNK		2.3	UNK	UNK	UNK
5/12/2017	7.9	4.0	1.2		2.4	3.6	4.3	-0.3
5/13/2017	7.7	4.0	1.3		2.3	3.6	4.1	-0.1
5/14/2017	--					0.0	--	--
5/15/2017	7.5	5.0	UNK			UNK	UNK	UNK
5/22/2017	10.2	9.5			1.3	1.3	8.9	0.6
5/23/2017	10.4	9.8			1.3	1.3	9.1	0.7
5/24/2017	12.2	10.0			2.7	2.7	9.5	0.5
5/25/2017	15.2	12.8			3.3	3.3	11.9	0.9
5/26/2017	18.1	15.4			3.4	3.4	14.7	0.7
5/27/2017	18.3	15.4			3.4	3.4	14.9	0.5

ORANGE TEXT = **Submerged Weir (DIV** estimated) and **DIFFERENCE** may not be accurate.

SBII -- New 42" PVC Pipe Delivery

	MEASUREMENT (cfs)		DELIVERY / TURNOUTS (cfs)				CALCULATION (cfs)	DIFFERENCE (cfs)
DATE	DIV	END	SB2-0.7	SB2-0.9	SB2A	TOTAL	END (DIV - TOTAL)	END (MEASUREMENT) - END (CALCULATION)
8/16/2017	19.5	14.4			5.1	5.1	14.4	0.0
8/17/2017	19.4	13.6			5.8	5.8	13.6	0.0
8/18/2017	19.4	18.6			0.5	0.5	18.9	-0.3
8/19/2017	19.4	18.6			0.5	0.5	18.9	-0.3
8/20/2017	--					0.0	--	--
8/21/2017	19.4	19.0	0.3			0.3	19.1	-0.1
8/22/2017	19.7	19.7				0.0	19.7	0.0
8/23/2017	19.7	19.2			0.3	0.3	19.4	-0.2
10/3/2017	11.0	11.9				0.0	11.0	0.9
10/4/2017	11.0	12.2				0.0	11.0	1.2
10/5/2017	11.3	11.4				0.0	11.3	0.1
10/6/2017	11.3	11.4				0.0	11.3	0.1
10/7/2017	11.0	11.9	0.3			0.3	10.7	1.2
10/8/2017	--					0.0	--	--
10/9/2017	11.7	12.2				0.0	11.7	0.5
10/10/2017	11.5	13.1				0.0	11.5	1.6
10/11/2017	12.2	12.8				0.0	12.2	0.6
10/12/2017	11.7	12.8				0.0	11.7	1.1

ORANGE TEXT = **Submerged Weir (DIV** estimated) and **DIFFERENCE** may not be accurate.

Daily Check - Top End and Waste

		Monday 8/10	Tuesday 8/11	Wednesday 8/12	Thursday 8/13	Friday 8/14	Saturday 8/15	Sunday 8/16
SB - Top Diverted	59.5	59.4	57.5	60.4	59.5	53.3	55.2	51.2
Total	30.4	25.1	26.2	24.9	24.0	19.8	19.5	19.5
Waste (Shady Lane)	2	4	4.1	3.5	3.3	2	2.7	2.7
SB 2 J - Diverted	26.3	29.1	30.9	33.3	33.3	27.8	26.4	25.7
Total	21.2	20	24.2	25.7	23.7	21.5	19.9	19.9
Waste	1	0.9	1	1.1	2.7	0.2	1	1
SB G - Diverted (Mo.Vly.Box)	12.5	9.9	9.4	9.4	9.1	9.0	9.0	9.3
Total	5.3	5.2	5.2	5.2	4.3	4.3	5.9	5.9
Waste	2	0.6	1.3	1.5	1.2	2.2	0.9	0.9
11.9 - Diverted	3	3	—	—	—	—	—	—
Total	2	2	—	—	—	—	—	—
Waste	-	-	—	—	—	—	—	—
12.6 - Diverted	16	11.9	11.5	11.5	11	12	10	10
Total	10.6	8.4	7.4	7.4	7.4	8.3	6.5	6.3
Waste	0.3	0.1	0	0	0	.3	.2	.2
15.1 - Diverted	25	25	23.5	22	17.7	13.3	14.1	14.1
Total	18	16.3	15.0	14.9	15.4	16.6	8.6	9
Waste	1	1.3	1.2	2.2	2.5	0.4	1.9	.9
16.1 - Diverted	4.3	4.4	4.3	4.4	3.3	3.3	2.7	1.8
Total	2.3	2.4	2.4	2.2	2.2	1.9	0.6	0.6
Waste - behind school	0.8	1	0.9	0.7	0.9	0.8	1.2	0.8
18.0 - Diverted	18.1	17.2	17.2	17.2	16.1	16.4	15.8	15.8
Total	13	13	13	13	13	13	13	13
Waste	0.9	1.6	1.2	1.5	0.9	1.2	.4	.4
22.4 - Diverted	9.2	6.4	6.3	9.0	9.0	9.2	9.2	9.2
Total		3.1	3.1	5.8	5.8	5.8	3.8	3.1
Waste		0.1	0.3	0.1	.3	.2	.2	2.4
Totals - Diverted								

PVC PIPE

WY 15.1

DATA Sheet ⇒ 2015 Water Season

note: use 25 cfs

Daily Check - Top End and Waste

		Monday 8/12	Tuesday 8/13	Wednesday 8/14	Thursday 8/15	Friday 8/16	Saturday 8/17	Sunday 8/18
SB II J - Diverted	17.8	16.6	17.0 (+1.0 ✓)	17.3	18.9 (+1.5 ✓)	22.8 (+2.0 ✓)	23.0	23.0
Total								
Run	15.0	14.0	13.8	14.3	14.9	15.2	15.3	15.3 (+0.5)
Waste	1.5	3.0	0.9	0.1	0	0	2.2	2.4
SB - Top Diverted	64.4	65.2 (-1.0)	65.2	61.2 (-3.0 ✓)	64.4 (+2.0 ✓)	71.6 (+3.0 ✓)	68.4	68.4
Total								
Run	33.1	29.85	31.45	23.55	25.55	25.45	29.95	30.95
Waste (Shady Lane)	6.3	5.4	5.9	7.5	5.9	4.2	3.9	3.0
SB G - Diverted (Mo.Vly.Box)	10.9	10.7	10.7	10.7	13.3 (+2.5 ✓)	15.5 (+2.0 ✓)	15.5	15.5
Total								
Run	6.5	6.9	7.3	5.7	7.7	7.8	9.3	9.3
Waste	3.0	1.5	1.3	0.3	0.1	0.3	0.3	0.3
15.1 - Diverted	13.2	17.4 (+1.0 ✓)	17.0	15.5 (-1.7)	15.5	14.9	14.4	14.4
Total								
Run	12.2	15.2	13.8	14.7	15.4	16.2	15.7	15.7
Waste -East of Gabes Rd. (open ditch)	0.6	20.1	2.7	2.3	2.2	2.3	1.6	1.6
18.0 - Diverted	11.3	10.6 (+0.5)	9.9	9.6	13.9	16.1 (+2.0 ✓)	16.1	16.1
Total								
Run	8.0	9.7	7.95	11.95	11.95	13.95	12.25	12.25
Waste on Ind.Ridge Rd.	1.3	0.2	0.9	1.2	0.8	1.0	0.4	0.4
22.4 - Diverted	9.9	7.8 (-2.0 ✓)	6.6	6.7	13.5	13.4	12.5	12.5
Total								
Run	5.0	5.0	5.0	5.0	10.0	10.0	10.0	10.0
Waste-below 22.4 #2.4	3.3	1.3	1.2	0.9	0.8	2.2	2.0	2.0
16.1 - Diverted	6.6	5.6 (-1.5 ✓)	5.6	5.9 (-1.0 ✓)	4.9	4.4	5.1	5.6
Total								
Run	3.6	2.0	2.5	3.0	1.3	1.3	2.2	2.2
Waste - behind school	1.0	1.0	1.0	0.5	1.0	1.2	0.9	0.9
12.6 - Diverted	10.5	11.0	11.0	11.0	12.0	12.5	12.5	12.5
Total								
Run	5.1	6.3	6.3	6.3	8.2	9.0	9.0	8.7
Waste - behind Westlings								
WY - Diverted								
Total								
Run	8.2	7.3	7.3	6.1	6.5	6.5	6.1	5.9 (-0.8)
Waste								
Totals - Diverted								
Total Runs								

WY 15.1

DATA Sheet ⇒ 2013 Water Season

Note: use 17 cfs

Daily Check - Top End and Waste

		Monday 8/17	Tuesday 8/18	Wednesday 8/19	Thursday 8/20	Friday 8/21	Saturday 8/22	Sunday 8/23
SB - Top Diverted	51.2	50.0	54.6	63.8	67.5	71	71	65.5
Total	19.5	19.9	27.9	31.7	31.7	36.3	27.9	37.9
Waste (Shady Lane)	2.7	3.1	5.4	5.4	3.5	5.1	6.1	2
SB 2 J - Diverted	23.7	24.8	26.3	29.4	29.7	29.7	27.5	23
Total	19.4	19.2	16.7	19.8	27.9	20.3	17.8	17.8
Waste (open ditch)	1	3.2	1.9	3.5	2	1.6	3.7	1
SB G - Diverted (Mo.Vly.Box)	13	8.0	10.7	15.3	16.7	17.4	16	14
Total	5.9	4.6	9.6	8.7	11.5	11.5	10.5	10.5
Waste	0.9	.2	.1	.9	.3	2.2	1.8	1
11.9 - Diverted			2	2	2	2	2	2
Total	–	–	1.5	1.5	1.5	1.5	1.5	1.5
Waste			–	–	–	–	–	–
12.6 - Diverted	10	10	12.5	12	11.5	11.5	11.5	11.5
Total	8.3	6.3	8.0	8	8	7.7	7.2	7.2
Waste	2	0.1	0.3	1	.5	1.6	1.5	1.5
15.1 - Diverted	14	14.1	14.6	14.1	18.1	17.7	18.6	19.6
Total	9	9.8	9.8	11.4	12.2	11.8	11.6	11.6
Waste	.9	1	2.1	2.3	1.2	1.5	1	1
16.1 - Diverted	1.8	1.6	1.6	5.4	6.4	8.4	10.4	10.4
Total	.6	.9	5.0	5.1	5.4	7.51	7.5	7.5
Waste - behind school	.8	.4	.7	1.2	.5	.4	1.2	1.2
18.0 - Diverted	15.8	15.6	17.8	17.8	19.9	19.9	19.9	19.0
Total	13	13	14.8	16.8	16.8	13.8	13.8	13.4
Waste	.1	.8	1.2	.5	1.5	1.6	1.6	0.6
22.4 - Diverted	9.2	9	9	6.8	19.2	10.1	16.8	16.8
Total	3.1	3.8	3.1	3.1	5.8	10.1	10.1	10.1
Waste	2.9	.1	1.6	.8	.2	.8	.3	.3
Totals - Diverted								

SB2

DATA Sheet 109 ⟹ 2015 Water Season

note: use 30 cfs