Ouray City Council Regular Meeting
Monday, April 4, 2022 6:00 PM

Massard Auditorium -
https://zoom.us/j/9349389230 password 491878
or dial 408-638-0968
320 6th Ave
Ouray, CO 81427

Agenda

1. CALL TO ORDER
2. ROLL CALL
3. PLEDGE OF ALLEGIANCE
4. CEREMONIAL/INFORMATIONAL - Public Information Regarding the Proposed Water Treatment Plant Project - Element Engineering
5. PUBLIC HEARING - Regarding the Proposed Water Treatment Plant Project
6. CITIZENS' COMMUNICATION
7. CITY COUNCIL REPORTS/INFORMATION - Tamara Gulde, Peggy Lindsey, John Wood, Josh Smith, and Ethan Funk
8. DEPARTMENT REPORTS
   - 8.a. City Administrator
   - 8.b. Police Chief
   - 8.c. Fire Chief
   - 8.d. Public Works Director
   - 8.e. City Resources Director
9. CONSENT AGENDA - Liquor License Renewal - Alpenglow Properties Ouray, Inc. dba Twin Peaks Lodge & Hot Springs
10. ACTION ITEMS
    - 10.a. Approval of Engagement Letter with Butler Snow LLP for Bond Attorney Services
    - 10.b. Resolution 08, Series 2022 - Adopting Juneteenth City Holiday
    - 10.c. Resolution 09, Series 2022 - Adopting a Public Hearing Procedure for City Council
    - 10.d. Resolution 10, Series 2022 - Approving the Ouray Trail Group's Perimeter Trail Master Plan for Submission to the U.S. Forest Service
11. DISCUSSION ITEMS
    - 11.a. Future Agenda Items
    - 11.b. Short-term Rental Reporting and Cap Evaluation
12. EXECUTIVE SESSION - Executive session pursuant to C.R.S. 24-6-402(4)(b) and (4)(e) for a conference with the City attorney for the purpose of receiving legal advice on specific legal questions and for the purpose of determining positions relative to matters that may be subject to negotiations, developing strategy for negotiations, and/or instructing negotiators regarding the IGA between the City and County concerning Urban Growth Areas
13. ADJOURMENT

CITY OF OURAY
WATER TREATMENT PLANT

PUBLIC MEETING

APRIL 4, 2022

SWITZERLAND
OF AMERICA

ELEMENT
ENGINEERING LLC
DILIGENT • INNOVATIVE • RESPONSIVE

PROJECT NEED

ELEMENT ENGINEERING LLC
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- March 2, 2021: City's Water Source (Weehawken Spring) was classified as Groundwater Under Direct Influence of Surface Water (GWUDI)

- Sources classified as GWUDI must comply with the Surface Water Treatment Rules (SWTR)

- Treatment must include a physical barrier to comply with SWTR. Existing water treatment does not meet these requirements, necessitating a water treatment plant improvements project.

WATER QUALITY

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- The city's water quality is generally very good
- All primary drinking water standards are met
- The city experiences no significant issues with corrosion or toxic metals
- This project is only required because of the source water's proximity to a surface water body, not due to poor water quality

Project Overview

ELEMENT ENGINEERING LLC
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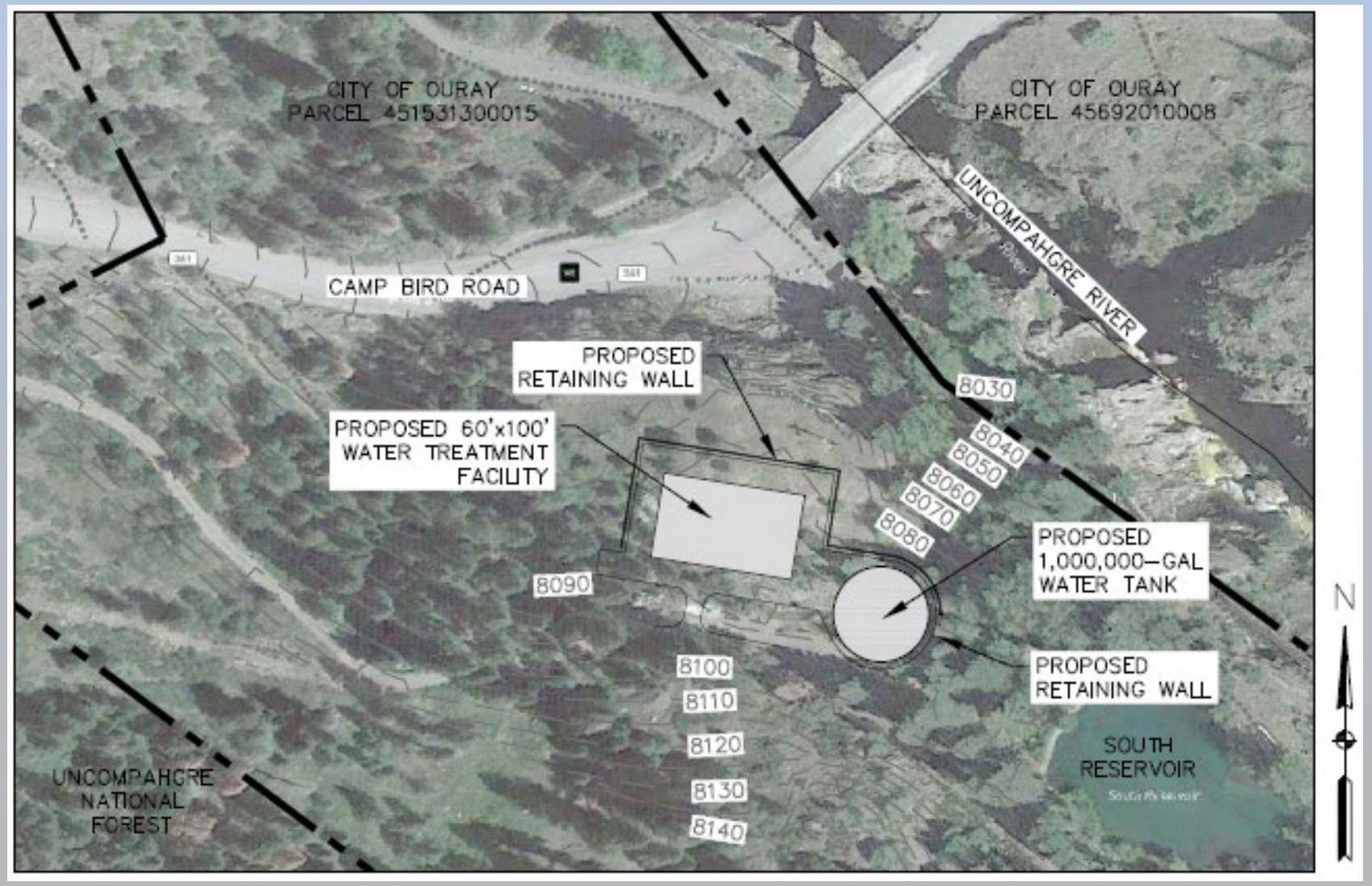
- Construction of New Water Treatment Plant
  - (3) 700 gpm Ultra-Filtration Treatment Skids
  - (1) Ultra-Filtration Recycle Skid to Increase Recovery Rate of Treatment Plant
  - Liquid Sodium Hypochlorite Disinfection
  - Preliminary Design of Future Treatment Plant Expansion

- Construction of New 1,000,000 Gallon Finished Water Storage Tank
  - Provide storage to ensure the city meets the demands of the users, including during high usage and fire conditions

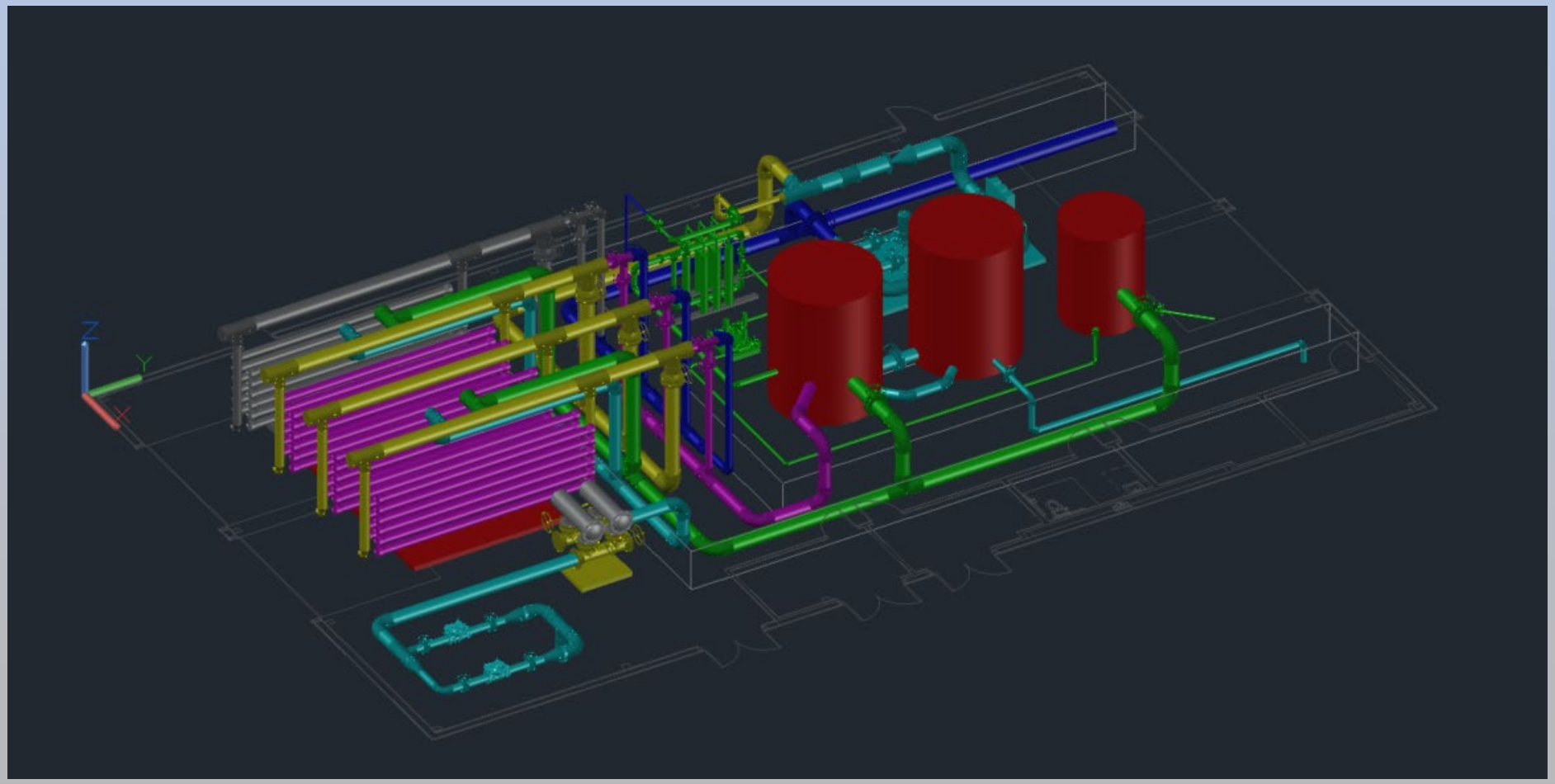
- Continued Operation of Existing (2) Raw Water Storage Tanks

- No significant effects on distribution system pressures or operation. The city users will not experience noticeable differences at their homes and businesses as a result of the project.

PROJECT OVERVIEW – SITE PLAN



Project Overview – Water Treatment Plant



Environmental Assessment

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- An Environmental Assessment (EA) is required by CDPHE to allow for State Revolving Fund funding of the project
- A draft Environmental Assessment is complete and available for public review
- No environmental concerns have been raised by any agencies

PROJECT SCHEDULE

ELEMENT ENGINEERING LLC
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- Design & Permitting June 2021 – July 2022
- Funding June 2022 – September 2022
- Construction September 2022 – January 2024

60% CMAR PLANS

CITY OF OURAY

WATER TREATMENT PLANT

PWSID NO: CO0146588, OURAY COUNTY, CO

SECTION 31, TOWNSHIP 44 NORTH, RANGE 7 WEST OF THE NEW MEXICO P.M.

FEBRUARY 2022

PREPARED FOR

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

SILAS CLARKE
CITY ADMINISTRATOR
970.325.7060

EMERGENCY CONTACT

JOE COLEMAN
PUBLIC WORKS DIRECTOR
970.325.7074

CIVIL ENGINEERING

NICK MARCOTTE, P.E.
P.E. NO. 47164
ELEMENT ENGINEERING, LLC
12687 W. CEDAR DR., SUITE 300
LAKEWOOD, CO 80228
303.378.2969

ARCHITECT

JEFFREY SCOTT, NCARB
ARC NO. 406544
EV STUDIOS
5335 W 48TH AVE, STE 300
DENVER, CO 80212
303.670.7242

STRUCTURAL ENGINEERING

ELECTRICAL ENGINEERING

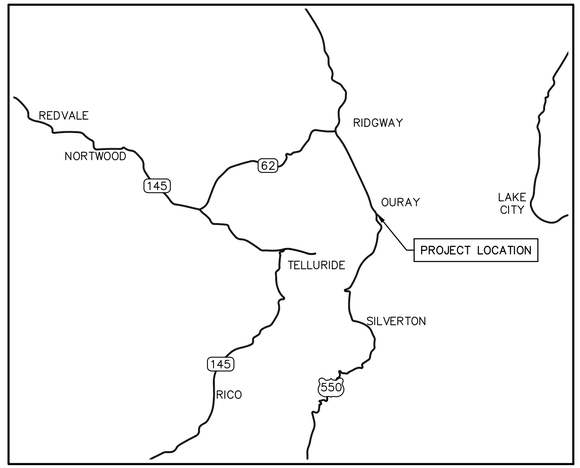
MECHANICAL ENGINEERING

SURVEY

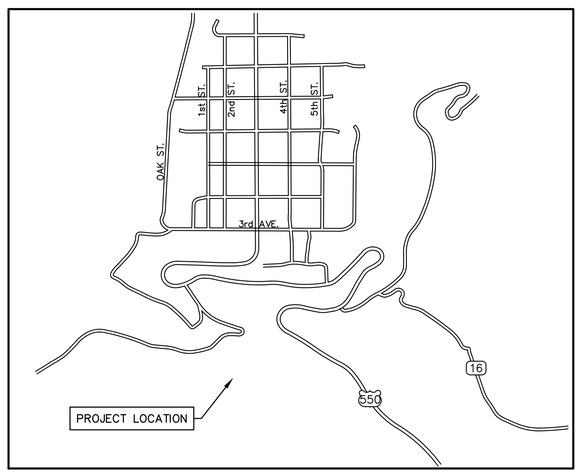
GOFF ENGINEERING & SURVEYING, INC.
126 ROCK POINT DR, STE A
DURANGO, CO 81301
970.247.1705

UTILITIES

SEWER – CITY OF OURAY
WATER – CITY OF OURAY
ELECTRICITY – XXX
CABLE – XXX



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

SHEET INDEX

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C5	TOPOGRAPHIC SURVEY	S2.2
C6	SITE PLAN	ELECTRICAL
C7	GRADING PLAN	E1
C8	ACCESS ROAD PLAN & PROFILE	E2
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C11	YARD PIPING PLAN & PROFILE	
C12	PROCESS BUILDING – PLAN VIEW	MECHANICAL – HVAC
C13	PROCESS BUILDING – ISOMETRIC	M1
C14	PROCESS BUILDING – ELEVATION VIEW	M2
C15	PROCESS BUILDING – ELEVATION VIEW	M3
C16	PIPE SIZE & CHEMICAL NOTES AND DETAILS	M4
C17	CHEMICAL INJECTION, ANALYZERS, AND SAMPLE POINTS	M5
C18	ULTRA FILTRATION SKID DETAILS	
C19	PRE-STRAINER & RECYCLE FEED PUMPS DETAILS	MECHANICAL – PLUMBING
C20	RECYCLE SKID DETAILS	P1
C21	BACKWASH PUMP DETAILS	P2
C22	CHEMICAL FEED PANELS DETAILS	P3
C23	TANK DETAILS	P4
C24	TANK DETAILS	
C25	GENERAL DETAILS	CONTROLS
C26	GENERAL DETAILS	CT1

ARCHITECTURAL

UTILITY LOCATE NOTE:

CONTRACTOR TO CALL AND VERIFY EXISTING UTILITY CROSSING DEPTH, SIZE, MATERIAL, AND LOCATION PRIOR TO CONSTRUCTION, INCLUDING BUT NOT LIMITED TO ELECTRIC, GAS, TELEPHONE, FIBER OPTIC, WATER, FIRE, AND SEWER SYSTEMS.

DATE

THESE PLANS HAVE BEEN APPROVED BY THE CITY OF OURAY. A REPRESENTATIVE WILL OBSERVE THE WORK FOR COMPLIANCE WITH THE APPROVED PLANS, BUT DOES NOT GUARANTEE THE CONTRACTOR'S PERFORMANCE. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF THE FACILITIES IN ACCORDANCE WITH THE APPROVED PLANS AND WITH APPLICABLE RULES AND REGULATIONS. WORK NOT PERFORMED IN ACCORDANCE WITH THE APPROVED PLANS WILL NOT BE ACCEPTED. ACCEPTANCE OF THE WORK DOES NOT RELIEVE THE CONTRACTOR OF THEIR OBLIGATIONS UNDER APPLICABLE WARRANTEES.

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300 720.749.4165
LAKEWOOD, CO 80228 WWW.ELEMENTENGINEERING.NET

REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

COVER

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
FEB 2022

JOB NUMBER
0111.0001

SCALE
NTS

EDITION
60% CMAR

SHEET
C1 OF C26

GENERAL CIVIL CONSTRUCTION NOTES:

1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

2. THE CONTRACTOR SHALL PROVIDE ALL BONDS AND INSURANCE REQUIRED BY THE CONTRACT DOCUMENTS.

3. UNLESS OTHERWISE APPROVED BY THE ENGINEER AND OWNER CONSTRUCTION SHALL BE LIMITED TO HOURS BETWEEN 7:00 AM AND 5:00 PM, MONDAY THROUGH FRIDAY. IF THE CONTRACTOR WISHES TO WORK ON SATURDAY OR SUNDAY THE ENGINEER MUST BE NOTIFIED BY WEDNESDAY NOON PRIOR TO THAT WEEKEND FOR APPROVAL.

4. THE CONTRACTOR IS TO PROVIDE A DETAILED CONSTRUCTION SCHEDULE DELINEATING CONSTRUCTION MILESTONES AND THE NATURE OF WORK BEING PERFORMED. THE SCHEDULE SHALL DETAIL ACTIVITIES FROM THE START OF CONSTRUCTION THROUGH STARTUP. THIS SCHEDULE SHALL BE PROVIDED TO THE ENGINEER TWO (2) WEEKS PRIOR TO CONSTRUCTION AND UPDATED WEEKLY.

5. THE CONTRACTOR SHALL PERFORM ALL WORK NECESSARY TO COMPLETE THE PROJECT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DRAWINGS INCLUDING SUCH INCIDENTALS AS MAY BE NECESSARY TO MEET APPLICABLE AGENCY REQUIREMENTS AND PROVIDE A COMPLETED PROJECT.

6. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR AND EQUIPMENT AND PERFORM WORK SHOWN OR IMPLIED AS NECESSARY FOR THE COMPLETED TREATMENT, PUMPING, AND DISTRIBUTION SYSTEM, READY FOR USE.

7. THE ENGINEER HAS ATTEMPTED TO LOCATE EXISTING SUBSURFACE UTILITIES, HOWEVER, SOME MAY EXIST THAT ARE NOT SHOWN. THE CONTRACTOR SHALL POTHOLE AS NECESSARY AND EXERCISE CARE IN HIS WORK SO AS TO AVOID DAMAGE TO ANY UTILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL CONSIDER EXPLORATORY POTHOLING AS NECESSARY TO LOCATE ALL EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK. THIS IS INCIDENTAL TO THE PROJECT AND IS NOT CONSIDERED A SEPARATE PAY ITEM.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING. ALL DIMENSIONS, ELEVATIONS, AND LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO BEGINNING THE WORK.

9. ANY SUBSURFACE CONDITIONS ENCOUNTERED THAT ARE UNUSUAL OR DIFFERENT THAN THOSE INDICATED BY THE ENGINEER SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.

10. CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL PERMITS REQUIRED OF THIS WORK AND SHALL FAITHFULLY ADHERE TO THE ALL PERMIT REQUIREMENTS.

11. TEMPORARY AND PERMANENT EROSION CONTROL STRUCTURE METHODS SHALL BE IN ACCORDANCE WITH ADAMS COUNTY REGULATIONS AND ARE TO BE UTILIZED DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AN ADAMS COUNTY AND CDPHE SWMP/PERMIT, AND SHALL COMPLY WITH ALL REQUIREMENTS OF THESE PERMITS.

12. ALL EROSION CONTROL STRUCTURES SHOWN OR AS REQUIRED DURING CONSTRUCTION SHALL BE CONTINUOUSLY MAINTAINED THROUGH WARRANTY PERIOD AND UNTIL RE-VEGETATION TAKES HOLD. CONTRACTOR IS NOT REQUIRED TO MAINTAIN THE SITE AFTER RE-VEGETATION HAS TAKEN HOLD.

13. CONTRACTOR SHALL CLEAN UP, SEED, AND RESTORE DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF THE WORK IN THE AFFECTED AREA.

14. ALL EXISTING FACILITIES SHALL BE MAINTAINED IN-PLACE BY THE CONTRACTOR UNLESS OTHERWISE SHOWN OR DIRECTED. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO SUPPORT, MAINTAIN, OR OTHERWISE PROTECT EXISTING UTILITIES AND OTHER FACILITIES AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR TO LEAVE EXISTING FACILITIES IN AN EQUAL OR BETTER-THAN-ORIGINAL CONDITION.

15. THE CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES, WARNING SIGNS, CONES IN ACCORDANCE WITH STATE, LOCAL AND FEDERAL GUIDELINES TO ENSURE THE SAFETY OF WORKERS AND THE PUBLIC. ALL BARRICADES, SIGNS SHALL BE IN PLACE PRIOR TO THE BEGINNING OF ANY CONSTRUCTION ACTIVITY.

16. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL FOR A TRAFFIC CONTROL PLAN. THE TRAFFIC CONTROL PLAN MUST BE SUBMITTED AND APPROVED BY ADAMS COUNTY AND THE OWNER'S REPRESENTATIVE.

17. UNLESS OTHERWISE GRANTED PERMISSION BY THE OWNER IN WRITING, THE CONTRACTOR MUST ALLOW ACCESS TO ALL PROPERTIES FOR BOTH RESIDENTS AND EMERGENCY VEHICLES.

18. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE CLEANLINESS AND SAFETY OF ALL ROADWAYS ADJACENT TO THE PROJECT SITE. IF AT ANY TIME, THESE ROADWAYS ARE FOUND TO BE DANGEROUS OR NOT PASSABLE DUE TO DEBRIS OR MUD, THE COUNTY MAY SHUT THE PROJECT DOWN.

19. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER OF ANY PROBLEM IN CONFORMING TO THE APPROVED PLANS FOR ANY ELEMENT OF THE PROPOSED IMPROVEMENTS PRIOR TO ITS CONSTRUCTION.

20. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AND THE FACILITY OPERATOR FOR LOCATION OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, AS WELL AS ANY INDEPENDENT LOCATOR FOR PRIVATE LINES.

21. THE CONTRACTOR SHALL NOTIFY THE INSPECTOR AT LEAST 48 HOURS PRIOR TO ANY DESIRED INSPECTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

22. SERVICE TRENCHES AND UTILITY MAIN TRENCHES SHALL BE COMPACTED THROUGHOUT THE DEPTH OF THE TRENCH PER THE SPECIFICATIONS.

23. THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF APPROVED DRAWINGS ON THE CONSTRUCTION SITE AT ALL TIMES WHEREON HE WILL RECORD ANY APPROVED DEVIATIONS IN THE CONSTRUCTION FROM THE APPROVED DRAWINGS AS WELL AS THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES. THESE FIELD RECORD DRAWINGS SHALL BE KEPT UP TO DATE AT ALL TIMES AND SHALL BE AVAILABLE FOR INSPECTION BY THE OWNER'S REPRESENTATIVE UPON REQUEST.

24. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO INITIAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL SUBMIT A CLEAN SET OF FIELD RECORD DRAWINGS CONTAINING ALL AS-BUILT INFORMATION TO THE ENGINEER. ALL INFORMATION SHOWN ON THE CONTRACTOR'S FIELD RECORD DRAWINGS SHALL BE SUBJECT TO VERIFICATION BY THE ENGINEER. IF SIGNIFICANT ERRORS OR DEVIATIONS ARE NOTED BY THE ENGINEER, AN AS-BUILT SURVEY PREPARED AND STAMPED BY A REGISTERED PROFESSIONAL LAND SURVEYOR SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE.

25. ALL SUBMITTAL RECORDS ARE TO BE KEPT ONSITE AS WELL AS ALL DAILY INSPECTION REPORTS, INCLUDING, BUT NOT LIMITED TO, COMPACTION TESTS, CONCRETE TESTS, ETC.

26. ALL EQUIPMENT AND MATERIAL IS TO BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS. ALL EQUIPMENT STARTUP SHALL BE PROVIDED BY A MANUFACTURER APPROVED FIELD REPRESENTATIVE. MANUFACTURER FIELD TRAINING FOR THE OPERATIONS STAFF SHALL ALSO BE PROVIDED AT EITHER THE TIME OF STARTUP OR AT ANOTHER TIME AS APPROVED BY THE OPERATOR.

27. MANHOLE VAULT/EXTERIOR JOINTS SHALL BE WRAPPED IN 12" WIDE CONSEAL CS 2012 OR APPROVED EQUAL.

28. MEGALUGS AND CONCRETE THRUST BLOCKS WILL BE REQUIRED FOR ALL MAIN LINES. TRACER WIRE IS REQUIRED ON ALL PIPES. TRACER WIRE SHALL BE 12 GAUGE DIRECT BURY SOLID SINGLE STRAND COPPER WIRE WITH TEST STATIONS AT TERMINATIONS OF PROPOSED PIPE.

29. PIPE BEDDING SHALL BE SQUEEGEE 6" BELOW THE BOTTOM OF THE PIPE AND 12" ABOVE THE PIPE.

30. ALL BURIED DUCTILE IRON PIPE, FITTINGS, VALVES AND OTHER APPURTENANCES SHALL BE WRAPPED WITH POLYETHYLENE SHEETING.

31. FOR ALL VALVES TO BE ABANDONED: CLOSE VALVE, REMOVE AND DISPOSE OF VALVE BOX AND COVER, FILL HOLE WITH APPROVED MATERIAL AND RESTORE SITE.

32. FOR ALL PIPE TO BE ABANDONED: AT A MINIMUM, UNLESS OTHERWISE NOTED ON THE PLANS, ALL ENDS ARE TO BE CAPPED WITH CONCRETE. ABANDONED WATERLINES ABOVE OR BELOW THE NEW WATERLINE ADN/OR CONFLICTS WITH CLEARANCES SHALL BE REMOVED (18" BEYOND O.D.) AND CAPPED WITH CONCRETE. ACTIVE WATERLINES WILL REQUIRE PLUGS/CI CAPS AND THRUST BLOCKS. THE COST FOR THIS WILL BE INCLUDED IN THE INSTALLATION OF THE WATERLINE.

33. NO TEMPORARY OR PERMANENT THRUST BLOCKS ALLOWED AGAINST NEW OR EXISTING PIPE. TEMPORARY THRUST BLOCKS (4X4 AGAINST TRENCH WALL) WILL BE ALLOWED.

34. ALL BOLTS FOR ABOVE GRADE FITTINGS SHALL BE ASTM 316 STAINLESS STEEL.

35. CONTRACTOR SHALL FIELD VERIFY INVERTS PRIOR TO COMPLETING CONNECTIONS TO EXISTING STRUCTURES. IF ANY DISCREPANCIES ARE FOUND THE ENGINEER SHALL BE CONTACTED IMMEDIATELY.

36. ALL YARD VALVES SHALL HAVE EXTENSIONS THAT TERMINATE 4-FOOT BELOW THE TOP OF THE VALVE BOX.

37. CONTRACTOR SHALL HAUL OFF AND DISPOSE OF ANY EXCESS SPOIL MATERIAL, ANY MISCELLANEOUS DEBRIS, AND ANY STRUCTURES, PIPING OR OTHER DEBRIS CALLED OUT TO BE DEMOLISHED AT HIS OWN EXPENSE. ALL MATERIAL MUST BE DISPOSED OF IN AN APPROVED OFFSITE LOCATION.

38. PIPE, FITTINGS, AND ACCESSORIES SHALL BE HANDLED IN SUCH A MANNER THAT WILL ENSURE INSTALLATION IN SOUND, UNDAMAGED CONDITION. EQUIPMENT, TOOLS, AND METHODS USED IN HANDLING AND INSTALLING PIPE AND FITTINGS SHALL NOT DAMAGE THE PIPE AND FITTINGS.

39. THE INTERIOR OF ALL PIPE AND FITTINGS SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER PRIOR TO INSTALLATION. BEFORE JOINTING, ALL JOINT CONTACT SURFACES SHALL BE WIRE BRUSHED IF NECESSARY, WIPED CLEAN, AND KEPT CLEAN UNTIL JOINTING IS COMPLETED.

40. PRECAUTIONS SHALL BE TAKEN TO PREVENT FOREIGN MATERIAL FROM ENTERING THE PIPE DURING INSTALLATION. DEBRIS, TOOLS, CLOTHING, OR OTHER OBJECTS SHALL NOT BE PLACED IN OR ALLOWED TO ENTER THE PIPE. END OF LINES TO BE PLUGGED TO PREVENT DEBRIS OR ANIMALS FROM ENTERING PIPE.

41. CUTTING SHALL BE DONE IN A NEAT MANNER, WITHOUT DAMAGE TO THE PIPE OR THE LINING. CUTS SHALL BE SMOOTH, STRAIGHT, AND AT RIGHT ANGLES TO THE PIPE AXIS. AFTER CUTTING, THE ENDS OF THE PIPE SHALL BE DRESSED WITH A FILE OR POWER GRINDER TO REMOVE ALL ROUGHNESS AND SHARP EDGES. THE CUT ENDS OF PUSH-ON JOINT PIPE SHALL BE SUITABLY BEVELED.

42. NO DEFLECTION SHALL BE PERMITTED ON INTERIOR PIPE AND FITTINGS.

43. DIAMETRICALLY OPPOSITE NUTS SHALL BE TIGHTENED PROGRESSIVELY AND EVENLY.FINAL TIGHTENING SHALL BE DONE WITH A TORQUE LIMITING WRENCH SET FOR THE TORQUE RECOMMENDED BY THE MANUFACTURER FOR ALL FITTINGS AND SERVICE SADDLES.

44. BEFORE THE JOINT IS ASSEMBLED, THE FLANGE FACES SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATERIAL WITH A POWER WIRE BRUSH. THE GASKET SHALL BE CENTERED AND THE CONNECTING FLANGES DRAWN UP WATERTIGHT WITHOUT UNNECESSARY STRESSING OF THE FLANGES. ALL BOLTS SHALL BE TIGHTENED IN A PROGRESSIVE DIAMETRICALLY OPPOSITE SEQUENCE USING TORQUE WRENCHES AT SETTINGS RECOMMENDED BY THE MANUFACTURER. WHERE DISSIMILAR FLANGES ARE CONNECTED, AN INSULATING CONNECTION SHALL BE PROVIDED.

45. ALL JOINTS SHALL BE WATERTIGHT AND FREE FROM LEAKS. EACH LEAK WHICH IS DISCOVERED WITHIN THE CORRECTION PERIOD STIPULATED IN THE GENERAL PROVISIONS SHALL BE REPAIRED BY AND AT THE EXPENSE OF THE CONTRACTOR.

46. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PUMPING EQUIPMENT; PIPING CONNECTIONS BETWEEN THE PIPING AND THE NEAREST AVAILABLE SOURCE OF TEST WATER; PRESSURE GAUGES; AND OTHER EQUIPMENT, MATERIALS, AND FACILITIES NECESSARY FOR THE TESTS.

47. ALL CONTRACTOR INSTALLED PIPE, FITTINGS, VALVES, PIPE JOINTS, AND OTHER MATERIALS WHICH ARE FOUND TO BE DEFECTIVE SHALL BE REMOVED AND REPLACED WITH NEW AND ACCEPTABLE MATERIALS, AND THE AFFECTED PORTION OF THE PIPING RETESTED BY AND AT THE EXPENSE OF THE CONTRACTOR.

48. FLEXIBLE COUPLINGS AND FLANGE ADAPTERS SHALL BE DESIGNED TO RELIVE STRESS IN PIPELINES DUE TO THERMAL EXPANSION/CONTRACTION, DIFFERENTIAL SETTLEMENT OR MISALIGNMENT AND MECHANICAL VIBRATION. FLEXIBLE COUPLINGS SHALL CONSIST OF A SLEEVE WHICH SHALL FIT OVER THE ENDS OF THE TWO PIPE SECTIONS TO BE JOINED. THE COUPLING SHALL FORM A WATER TIGHT SEAL BY COMPRESSING RESILIENT WEDGE-SHAPED GASKETS BETWEEN THE ENDS OF THE SLEEVE AND THE PIPE SECTIONS. THE GASKETS SHALL BE COMPRESSED BY TWO RETAINER RINGS BOLTED TO ONE ANOTHER ON THE OUTSIDE OF THE COUPLING SLEEVE. FLANGE ADAPTERS SHALL BE EQUIVALENT TO FLEXIBLE COUPLINGS EXCEPT THAT ONE RETAINER RING AND GASKET SHALL BE REPLACED WITH A FLANGED CONNECTION ON THE COUPLING SLEEVE.

49. ALL VALVES SHALL HAVE THE MANUFACTURER AND SIZE OF THE VALVE VISIBLY CAST ON THE BODY OR ON A PLATE ATTACHED TO THE BODY OF THE VALVE. VALVES AND REQUIRED OPERATING APPURTENANCES SHALL BE THE PRODUCT OF THE SAME MANUFACTURER. VALVE SEALS SHALL BE ABLE TO PROVIDE TIGHT CLOSURE AND PREVENT METAL-TO-METAL CONTACT. VALVES SHALL OPEN RIGHT. ALL VALVES OVER 6-FEET HIGH NEED CHAINS.

50. VALVE COMPONENTS SHALL WITHSTAND THE ENVIRONMENTAL CONDITIONS AND PROVIDE CONTINUOUS TROUBLE-FREE SERVICE.

51. ANY MATERIAL TO BE IN CONTACT WITH POTABLE WATER SHALL BE NSF 61 CERTIFIED.

52. THE CONTRACTOR IS RESPONSIBLE FOR:

52.1. NOTIFYING CUSTOMERS WHO MAY BE AFFECTED BY A WATER OUTAGE DURING CONSTRUCTION BY FACE TO FACE CONTACT AND DOOR HANGAR.

52.2. OBTAINING, AT THE CONTRACTORS EXPENSE, APPLICABLE LICENSES, PERMITS, BONDS, ETC.

53. CONTRACTOR SHALL CONTACT ELECTRIC COMPANY TWO WEEKS IN ADVANCE OF ANY EXCAVATION WITHIN 10 FEET OF A UTILITY POLE.

54. CONTRACTOR TO LOCATE AND EXPOSE EXISTING SERVICE LINES, VERIFY SIZE AND MATERIAL, HAVE NECESSARY PARTS ON SITE FOR TEMPORARY WATER HOOKUP. CONNECTION TO SERVICE LINE IMMEDIATELY AFTER CUTTING TO PREVENT WATER FROM DRAINING FROM THE HOUSE.

55. THE CONTRACTOR SHALL SUBMIT, FOR RECORD, PRODUCT INFORMATION AND LAYOUTS FOR THE FOLLOWING ASSEMBLIES. THE SELECTION, SIZING, AND LAYOUT OF THESE ASSEMBLIES IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL MEET THE SPECIFICATION AND MANUFACTURER'S REQUIREMENTS. THESE SUBMITTALS SHALL CLEARLY INDICATE THE BASIS OF DESIGN, LOCATION OF ATTACHMENT POINTS TO THE STRUCTURE, AND MAGNITUDE OF THE LOADS IMPOSED ON THE STRUCTURAL SYSTEM.
55.1. PIPE SUPPORTS AND PIPE HANGERS
55.2. METAL GRATING

TESTING AND INSPECTION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL REQUIRED OR NECESSARY INSPECTIONS ARE COMPLETED BY AUTHORIZED INSPECTORS PRIOR TO PROCEEDING WITH THE SUBSEQUENT WORK WHICH COVERS OR THAT IS DEPENDENT ON THE WORK TO BE INSPECTED. FAILURE TO OBTAIN NECESSARY INSPECTION(S) AND APPROVAL(S) SHALL RESULT IN THE CONTRACTOR BEING FULLY RESPONSIBLE FOR ANY ISSUES ARISING FROM UN-INSPECTED WORK.

2. NEWLY INSTALLED WATER MAINS SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH THE SPECIFICATIONS.

3. NEWLY INSTALLED WATER MAINS, PIPING, EQUIPMENT, ETC. MUST BE DISINFECTED PER AWWA STANDARD C651 (LATEST EDITION). THE WATER STORAGE TANK SHALL BE DISINFECTED PER AWWA STANDARD C652 (LATEST EDITION). THE PREFERRED METHOD FOR CHLORINATION OF WATER MAINS IS TO USE SUFFICIENT CHLORINE TABLETS TO PRODUCE A 25 MG/L SOLUTION. TABLETS SHOULD BE ATTACHED TO THE TOP OF THE PIPE WITH AN APPROVED ADHESIVE CERTIFIED TO NSF STANDARD 61, PRIOR TO THE PIPE INSTALLATION IN THE TRENCH. CHLORINATION OF ANY FINISHED PIPELINE SHALL BE COMPLETED PRIOR TO HYDROSTATIC TESTING.

4. CONTRACTOR IS REQUIRED TO PERFORM CLEAR WATER SAMPLING. ENGINEER MUST SEE PASSING LAB RESULTS PRIOR TO CONNECTING SERVICE LINES TO ALL TEMPORARY AND NEW LINES.

5. THE WATER QUALITY CONTROL DIVISION OF THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REQUIRES ALL WATER LINE CONTRACTORS POSSESS A CURRENT DISCHARGE PERMIT FOR THE DISCHARGES OF CHLORINATED AND PROCESS WATERS ASSOCIATED WITH THE INSTALLATION OF NEW MAINS, TANKS, ETC.

BACKFILLING AND COMPACTION NOTES:

A. ALL TRENCHES SHALL BE BACKFILLED AFTER PIPE, FITTINGS AND APPURTENANCES HAVE BEEN INSTALLED, INSPECTED AND APPROVED BY THE city ENGINEER.

B. WHENEVER A COMPACTION REQUIREMENT VALUE IS SPECIFIED HEREIN, THE OPTIMUM MOISTURE CONTENT AND STANDARD PROCTOR DENSITY SHALL BE DETERMINED IN ACCORDANCE WITH ASSHTO T-99 FOR NINETY-FIVE PERCENT (95%).

DENSITY REQUIREMENTS IN TRENCH – THE CONTRACTOR SHALL OBTAIN A STANDARD PROCTOR DENSITY OF NINETY-FIVE (95%) STANDARD PROCTOR FOR THE TOTAL DEPTH OF ALL TRENCHES IN OPEN FIELDS AND IN DEDICATED ROWS. BACKFILLING SHALL BE DONE WITH GOOD SOUND EARTH, SAND OR GRAVEL, AND NO BITUMINOUS PAVEMENT, CONCRETE, ROCK OR OTHER LUMPY MATERIAL SHALL BE USED IN THE BACKFILL UNLESS THESE MATERIALS ARE SCATTERED AND DO NOT EXCEED SIX INCHES (6") IN ANY DIMENSION AND NOT PLACED WITHIN ONE FOOT OF THE 2-1/2' LIMIT. MATERIAL OF PERISHABLE, SPONGY OR OTHERWISE IMPROPER NATURE SHALL NOT BE USED IN BACKFILLING AND NO MATERIAL GREATER THAN TWO INCHES (2") IN ANY DIMENSION SHALL BE PLACED WITHIN ONE FOOT (1') OF ANY PIPE OR ROADWAY SURFACE, MANHOLE OR STRUCTURE. BACKFILLING SHALL BE ACCOMPLISHED IN THE ZONE IN LAYERS NOT TO EXCEED TWO FEET (2') OR AS RECOMMENDED BY TESTER. ALL BACKFILL MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE city ENGINEER.

COMPACTED FILL – COMPACTION SHALL BE DONE BY THE USE OF VIBRATORY EQUIPMENT, TAMPING ROLLERS, PNEUMATIC TIRE ROLLERS OR OTHER MECHANICAL TAMPERS OF THE TYPE AND SIZE APPROVED THE OWNERS. HAND TAMPERS SHALL BE USED AROUND ALL MANHOLES, VALVE BOXES, AND ANY SURFACE STRUCTURE. THE BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS OF SUCH DEPTHS AS ARE CONSIDERED PROPER FOR THE TYPE OF COMPACTING EQUIPMENT BEING USED IN RELATION TO THE BACKFILL MATERIAL BEING PLACED. EACH LAYER SHALL BE EVENLY SPREAD, PROPERLY MOISTENED AND COMPACTED. ANY DAMAGE TO THE PIPE AS A RESULT OF CONTRACTOR'S OPERATION SHALL BE REPAIRED AND/OR REPLACED.

PROCEDURE AT STREET ZONE – THE TOP TWO AND ONE-HALF-FOOT (2-1/2') FROM FINISH STREET GRADE OR GROUND SURFACE, AS THE CASE MAY BE, SHALL BE COMPACTED IN HORIZONTAL LAYERS NOT EXCEEDING EIGHT INCHES (8") IN THICKNESS, USING APPROVED HAND PNEUMATIC OR MECHANICAL TYPE TAMPERS TO OBTAIN A STANDARD PROCTOR DENSITY OF NINETY-FIVE PERCENT (95%) FLOODING AND JETTING ARE NOT PERMITTED.

COMPACTION TESTS – COMPACTION TESTS WILL BE TAKEN BY AN APPROVED TESTING LABORATORY AT LOCATIONS DESIGNATED BY THE city ENGINEER. ALL EXPENSES INVOLVED IN THESE TESTS WILL BE BORNE BY THE CONTRACTOR. RESULTS OF THE TESTS WILL BE MADE AVAILABLE TO THE OWNERS ENGINEER IMMEDIATELY AND COPIES OF TEST RESULTS WILL BE SUPPLIED TO THE OWNERS ENGINEER ONCE PER WEEK. A FINAL TYPED BOUND COPY OF FINAL TEST RESULTS MUST BE SUBMITTED TO THE city ENGINEER AT THE END OF THE PROJECT. IN ALL CASES WHERE THE TESTS INDICATE COMPACTION LESS THAN THAT REQUIRED IN THESE STANDARDS, ADDITIONAL COMPACTION AND TESTS WILL BE REQUIRED UNTIL THESE SPECIFICATIONS ARE MET. PROBATIONARY ACCEPTANCE OF THE LINES BY THE city WILL BE CONTINGENT UPON SATISFACTORY COMPACTION RESULTS. NO HYDROSTATIC TESTING OF THE FORCE MAIN WILL BE ALLOWED UNTIL SATISFACTORY COMPACTION IS OBTAINED FREQUENCY OF TESTING WILL BE AS FOLLOWS:

A. ONE (1) TEST AT EVERY ABOVE GROUND APPURTENANCE (I.E. VALVE BOX, MANHOLE) AT TWO-FOOT (2.0') INCREMENTS.
B. ONE (1) TEST EVERY TWO-HUNDRED (200) LF OF MAINLINE AND 1 TEST PER SERVICE LINE TRENCHES AT TWO-FOOT (2.0') INCREMENTS BEGINNING TWO FEET (2') ABOVE SQUEEGE TO FINAL GRADE AND ONE TEST AT FINAL GRADE.

ABBREVIATIONS:

CL	CHLORINE
M	METER
PS	PUMP SKID
UF	ULTRAFILTRATION
XX	XXX
XX	XXX
XX	XXX

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LAKEWOOD, CO 80228 WWW.ELEMENTENGINEERING.NET

REVISIONS

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WATER TREATMENT PLANT

GENERAL NOTES

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
FEB 2022

JOB NUMBER
0111.0001

SCALE
NTS

EDITION
60% CMAR

SHEET
C2 OF C26

RAW WATER AND EXISTING TREATMENT AREA PIPING

TK-101
EXISTING 0.5 MG RAW WATER STORAGE TANK
LE 101
LT 101

TK-102
EXISTING 0.5 MG RAW WATER STORAGE TANK
LE 102
LT 102

BV-201
PT 201
PRV-201
PT 202
BV-202
BV-203
PT 203
PRV-202
PT 204
BV-204
ARV-201
AN-201
RAW WATER TURBIDIMETER
M
FM-201

PRE-STRAINER SKID
PI 301
PI 303
BV-301
BV-303
ST-301
ST-302
BV-302
BV-304
PI 302
PI 304

BV-802
NEUTRALIZATION TANK 13,000 GALLONS
TK-802
RECYCLE BUFFER TANK 3,000 GALLONS
TK-801
BV-801
WASTE TANK 1,000 GALLONS
TK-803
PU-801
RECYCLE SKID-900

BW SUPPLY
UF-BW
RW
FW
UF SKID-400
UF SKID-500
UF SKID-600
UF SKID-700

BACKWASH PUMP SKID - 1000

TK-XXX
PROPOSED 1 MG FINISHED WATER STORAGE TANK

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REVISIONS

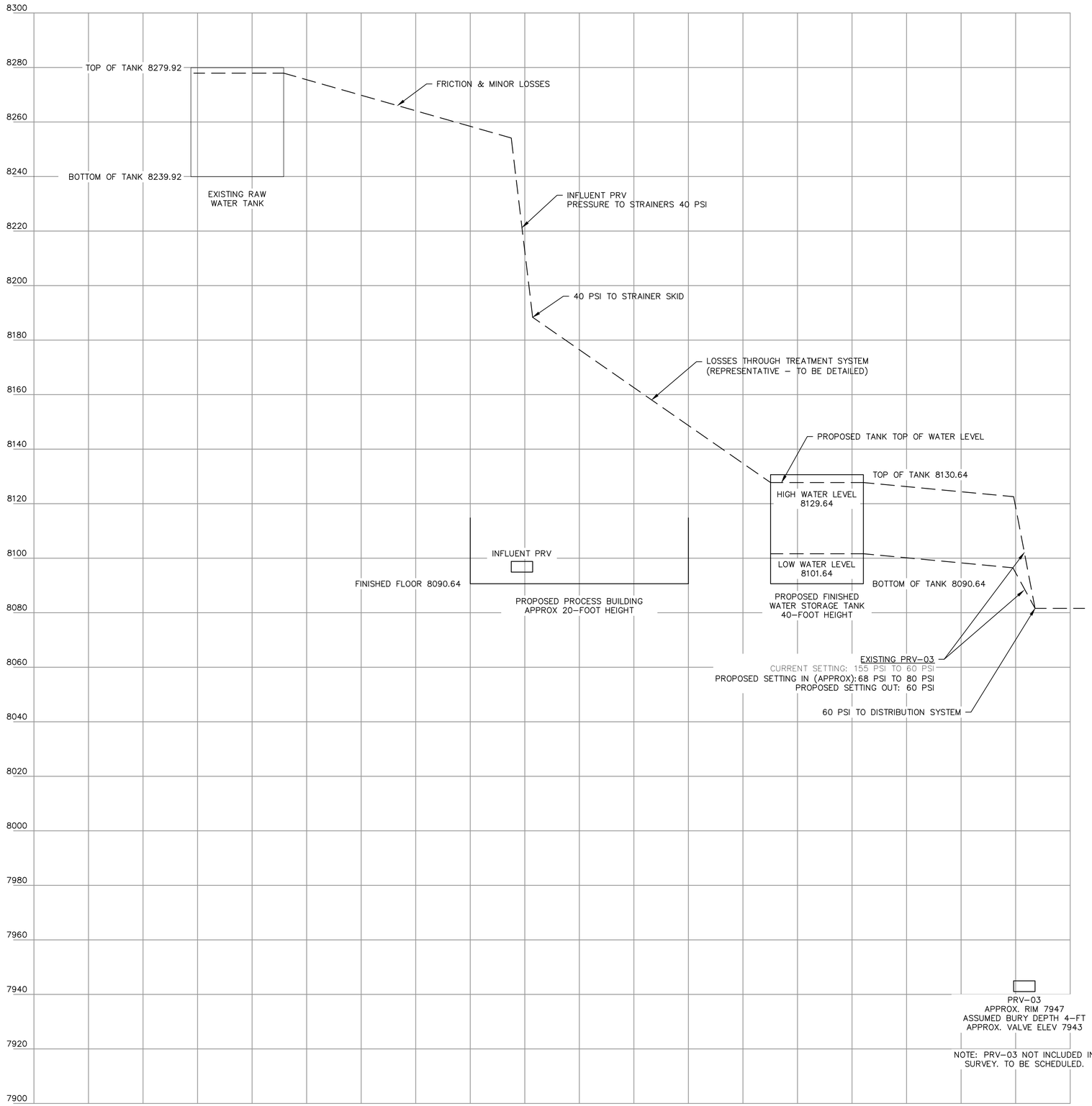
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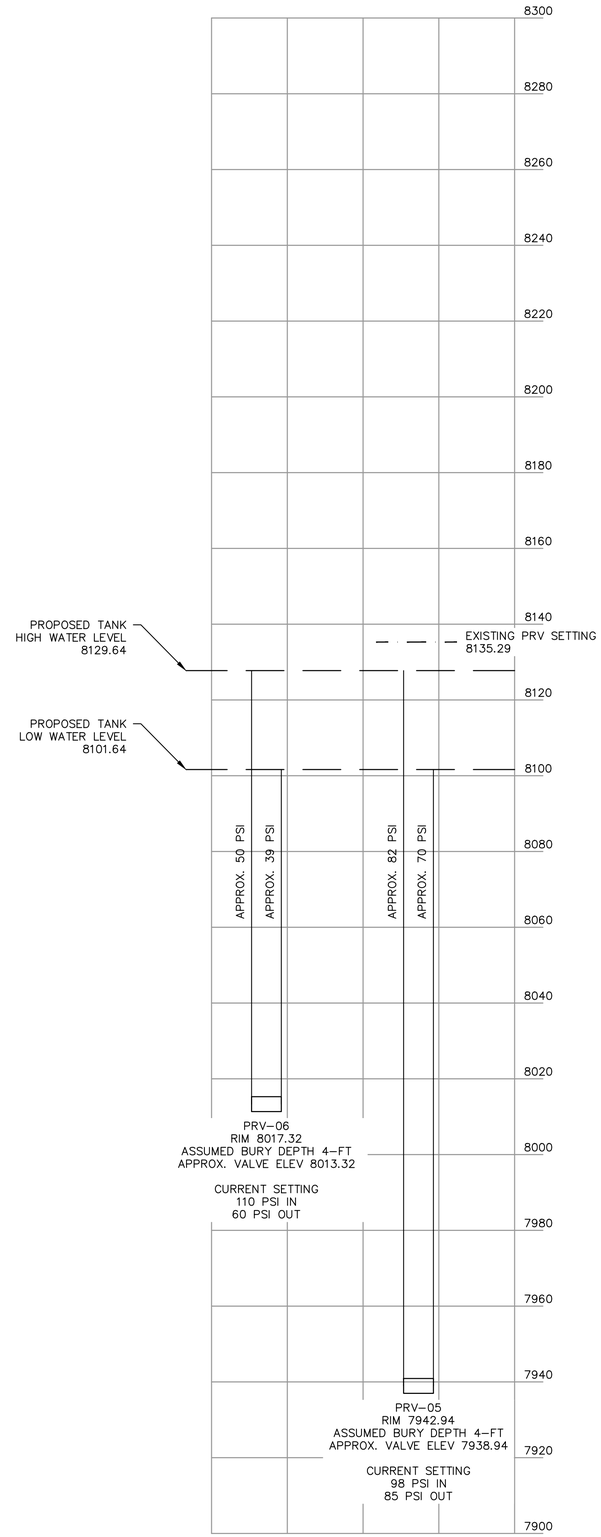
WATER TREATMENT PLANT
PROCESS & INSTRUMENTATION DIAGRAM
CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE: FEB 2022
JOB NUMBER: 0111.0001
SCALE: NTS
EDITION: 60% CMAR
SHEET: C3 OF C26





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WATER TREATMENT PLANT

HYDRAULIC PROFILE

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

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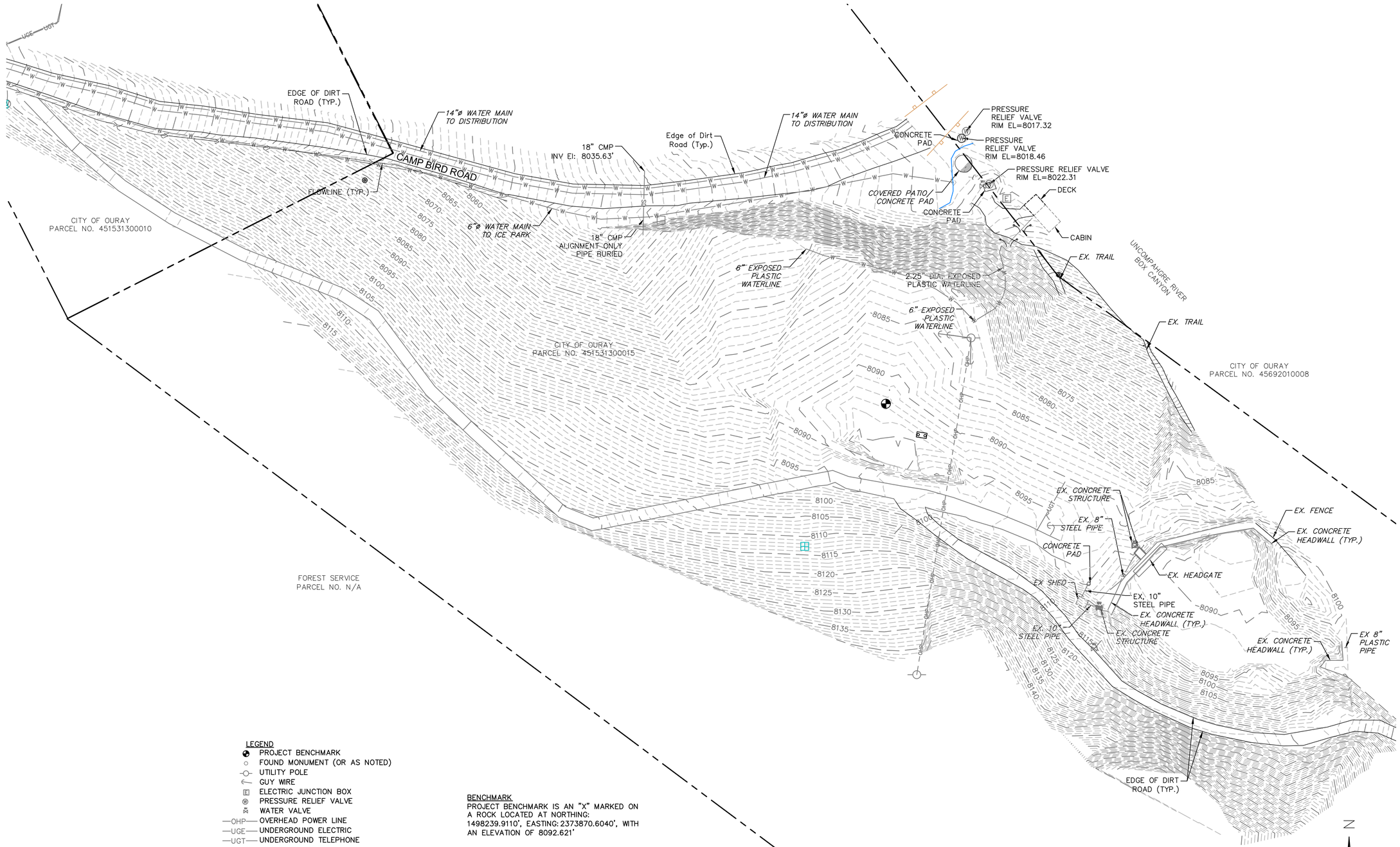
DATE
FEB 2022

JOB NUMBER
0111.0001

SCALE
NTS

EDITION
60% CMAR

SHEET
C4 OF C26



LEGEND

- PROJECT BENCHMARK
- FOUND MONUMENT (OR AS NOTED)
- UTILITY POLE
- GUY WIRE
- ELECTRIC JUNCTION BOX
- PRESSURE RELIEF VALVE
- WATER VALVE
- —OHP— OVERHEAD POWER LINE
- —UGE— UNDERGROUND ELECTRIC
- —UGT— UNDERGROUND TELEPHONE
- TC TOP OF CONCRETE
- FL FLOW LINE
- B/ BOTTOM OF
- T/ TOP OF
- FG FINISHED GRADE

BENCHMARK

PROJECT BENCHMARK IS AN "X" MARKED ON A ROCK LOCATED AT NORTHING: 1498239.9110', EASTING: 2373870.6040', WITH AN ELEVATION OF 8092.621'

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WATER TREATMENT PLANT

TOPOGRAPHIC SURVEY

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE: JAN 2022
JOB NUMBER: 0111.0001
SCALE: 1" = 40'
EDITION: PERMITTING
SHEET: C5 OF C26

CAMP BIRD ROAD

CITY OF OURAY
PARCEL NO. 451531300010

CITY OF OURAY
PARCEL NO. 451531300015

CITY OF OURAY
PARCEL NO. 45692010008

FOREST SERVICE
PARCEL NO. N/A

UNCOMPAHGRE RIVER
BOX CANYON

FINISHED WATER OUT SEE
SHEET C10 FOR DETAILS

14" RAW WATER INTAKE LINE
SEE SHEET C9 FOR DETAILS

PROPOSED 12' ROAD BASE
(GRAVEL) ACCESS DRIVE

PROPOSED ROAD
BASE AREA

PROPOSED CONCRETE
APRON GRADE @ 2%
AWAY FROM BLDG.

PROP. RETAINING
WALL HEIGHT VARIES

PROTECT EX. POLE &
ELECTRIC LINE DURING
CONSTRUCTION

FINISHED WATER LINE SEE
SHEET C11 FOR DETAILS

PROPOSED 60'x100'
WATER TREATMENT
FACILITY

PROPOSED
1,000,000 GALLON
WATER TANK

18'x18' SNOW
STORAGE AREA

1000 GALLON SEPTIC HOLDING TANK WITH LEVEL
INDICATOR INSTALLED AT 75% MAXIMUM HEIGHT
SEPTIC HOLDING TANK TO BE MAXIMUM 4 FT BELOW
GRADE WITH RISERS AND RINGS TO GRADE
CONTRACTOR TO TEST AND PROVE TANK IS WATERTIGHT
SEE DETAIL ON SHEET C19

N 1498312.93
E 2373801.81

N 1498316.76
E 2373799.05

N 1498291.29
E 2373936.08

N 1498235.93
E 2373789.40

N 1498240.41
E 2373786.74

N 1498238.79
E 2373771.63

N 1498238.52
E 2373927.57

N 1498221.02
E 2373768.76

N 1498192.51
E 2374010.64

N 1498180.00
E 2374008.61

N 1498184.36
E 2373820.91

N 1498179.72
E 2373850.57

N 1498175.25
E 2373930.87

3' TYP
18' TYP
136.0'
13'
78.0'
5' TYP.
10'
58.4'
48.0'
3'-0"
56.0'
18.0'
70.3'
21.1'
8'
7.8'
8.0'
10'R
38.5'R
OHP
UGT
UGE
W
SS
D
E

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 INCH = 40 FT

N

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-	-	-	-

WATER TREATMENT PLANT

SITE PLAN

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

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ELEMENT ENGINEERING, LLC

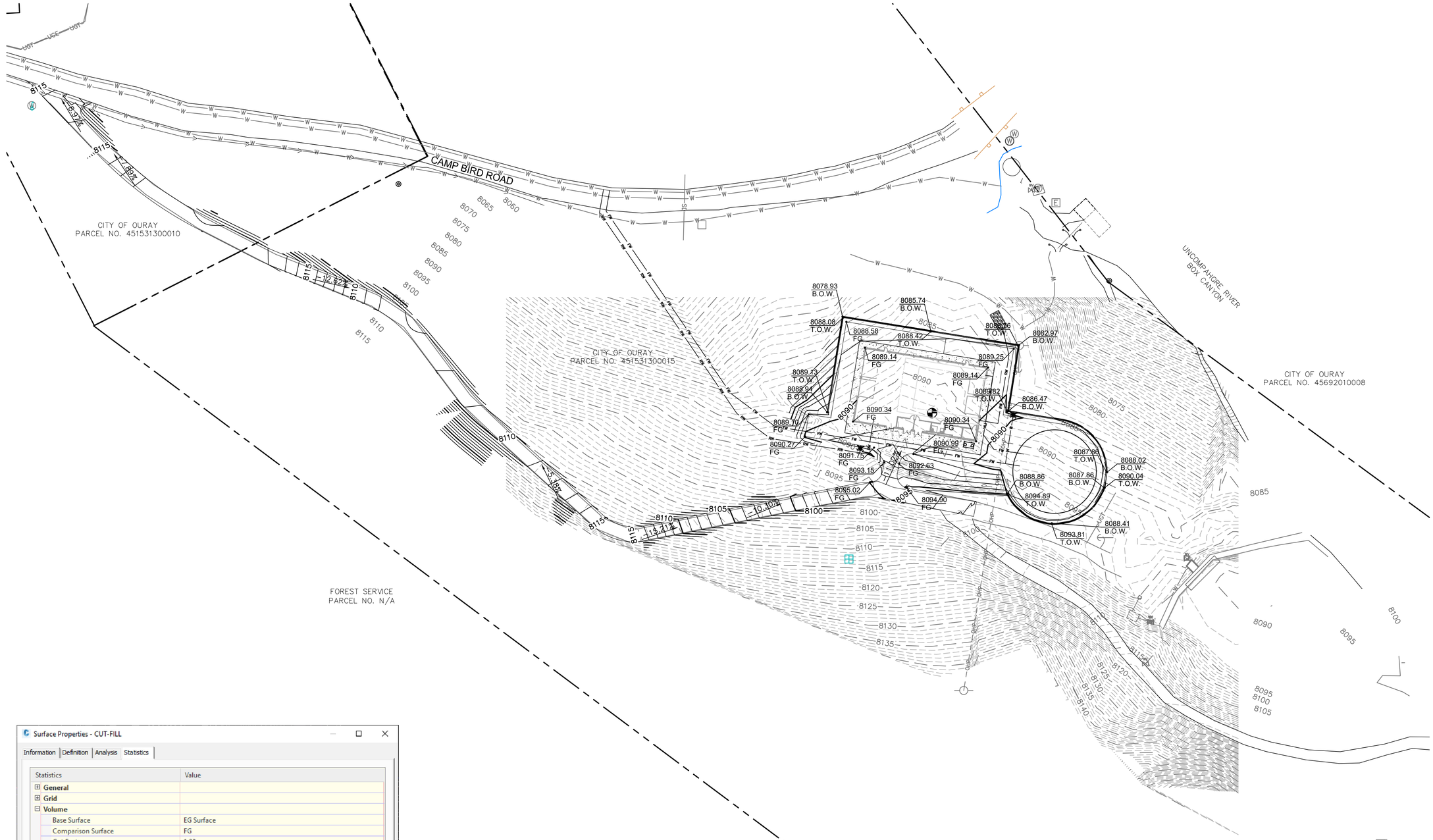
DATE
JAN 2022

JOB NUMBER
0111.0001

SCALE
1" = 40'

EDITION
PERMITTING

SHEET
C6 OF C26



Surface Properties - CUT-FILL

Information | Definition | Analysis | Statistics

Statistics	Value
General	
Grid	
Volume	
Base Surface	EG Surface
Comparison Surface	FG
Cut Factor	1.00
Fill Factor	1.15
Cut volume (adjusted)	363.45 Cu. Yd.
Fill volume (adjusted)	64.52 Cu. Yd.
Net volume (adjusted)	298.93 Cu. Yd.<Cut>
Cut volume (unadjusted)	363.45 Cu. Yd.
Fill volume (unadjusted)	56.11 Cu. Yd.
Net volume (unadjusted)	307.34 Cu. Yd.<Cut>

OK | Cancel | Apply | Help

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WATER TREATMENT PLANT

GRADING PLAN

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

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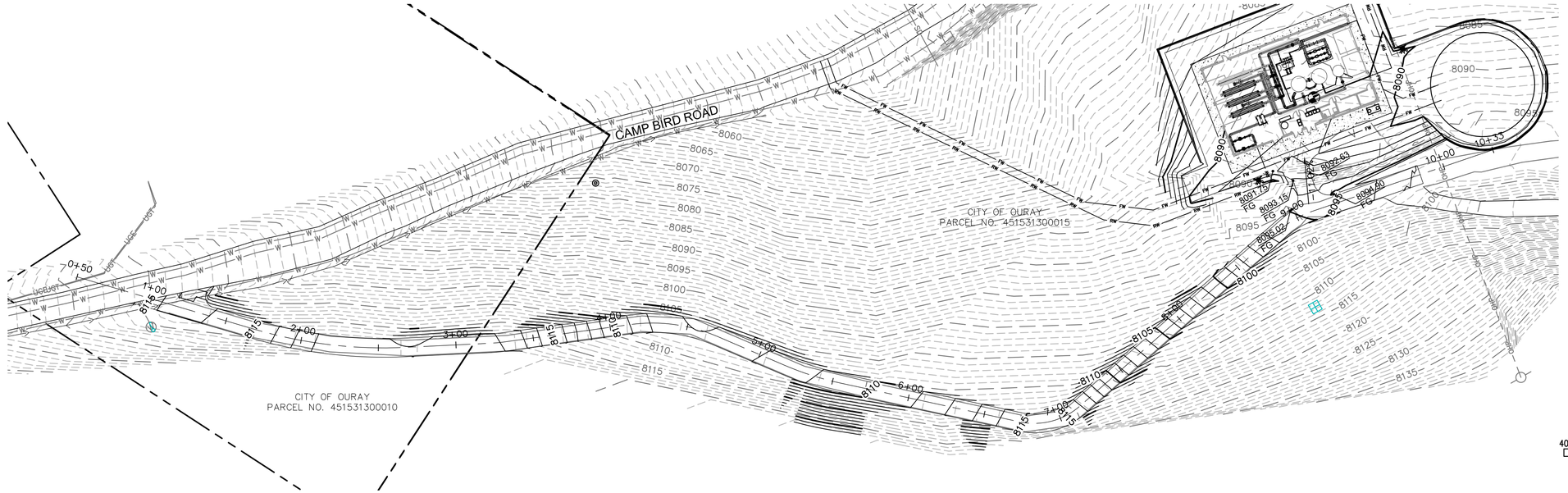
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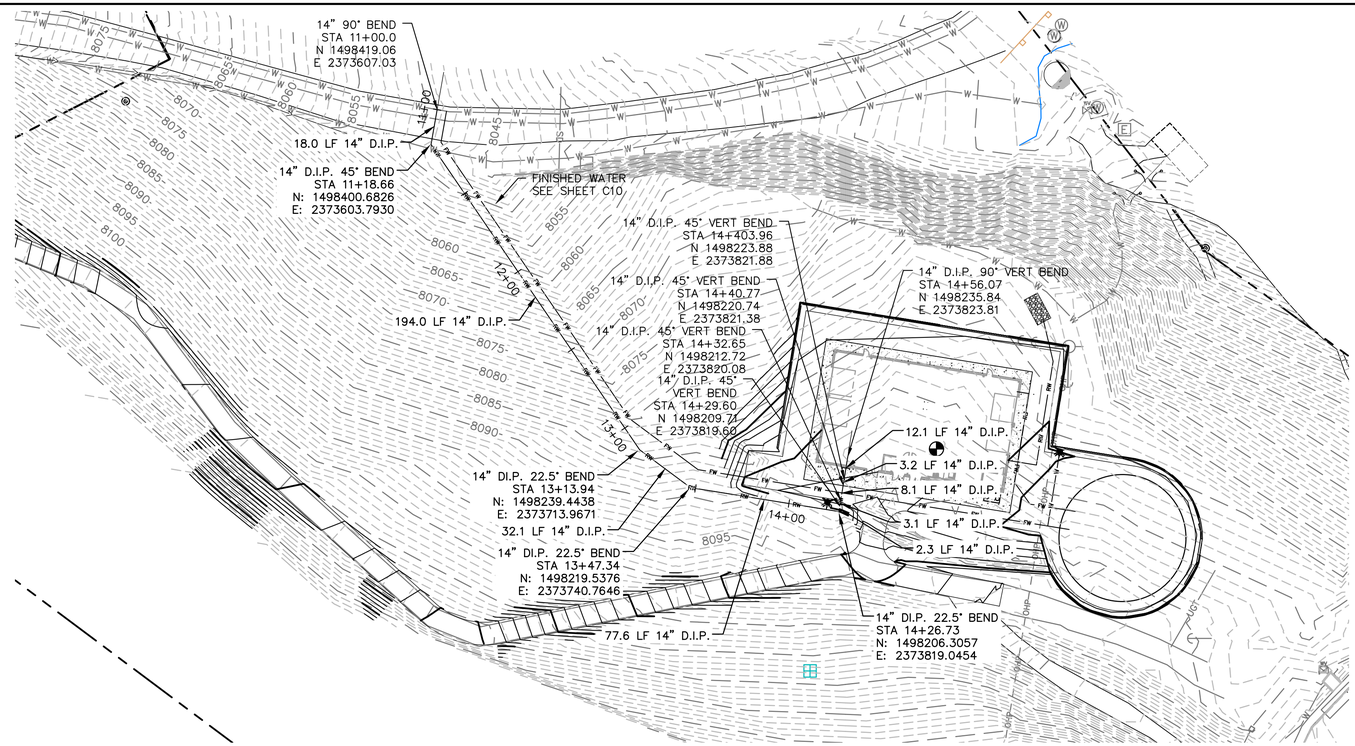
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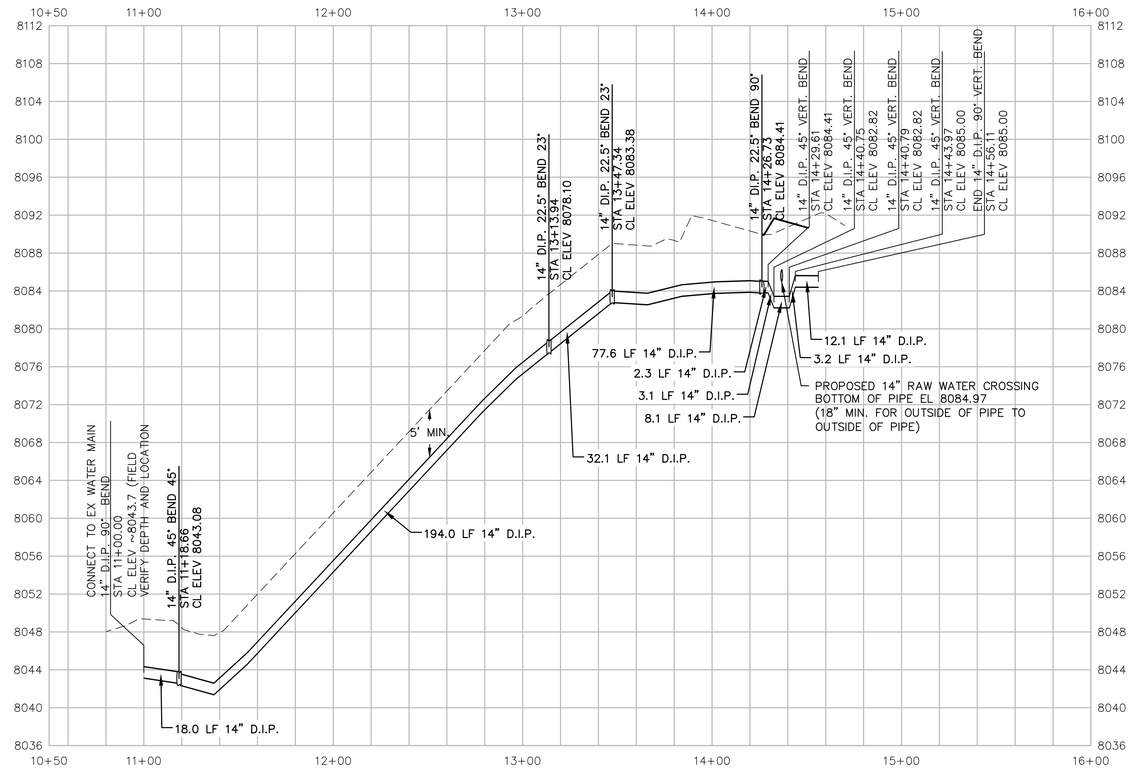
SCALE
1" = 40'

EDITION
PERMITTING

SHEET
C7 OF C26


CAMP BIRD ROAD
CITY OF OURAY
PARCEL NO. 451531300010
CITY OF OURAY
PARCEL NO. 451531300015
0+50
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
8+35
9+00
10+00
10+35
8060
8065
8070
8075
8080
8085
8090
8095
8100
8105
8110
8115
8120
8125
8130
8135
8090
8095
8100
8105
8110
8115
8090.63 FG
8091.75 FG
8093.15 FG
8093.80 FG
8095.00 FG
8093.02 FG
8090.80 FG
8104.00 FG
8115.00 FG
8115.00 FG
8115





HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1" = 8'

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WATER TREATMENT PLANT

YARD PIPING PLAN AND PROFILE

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC

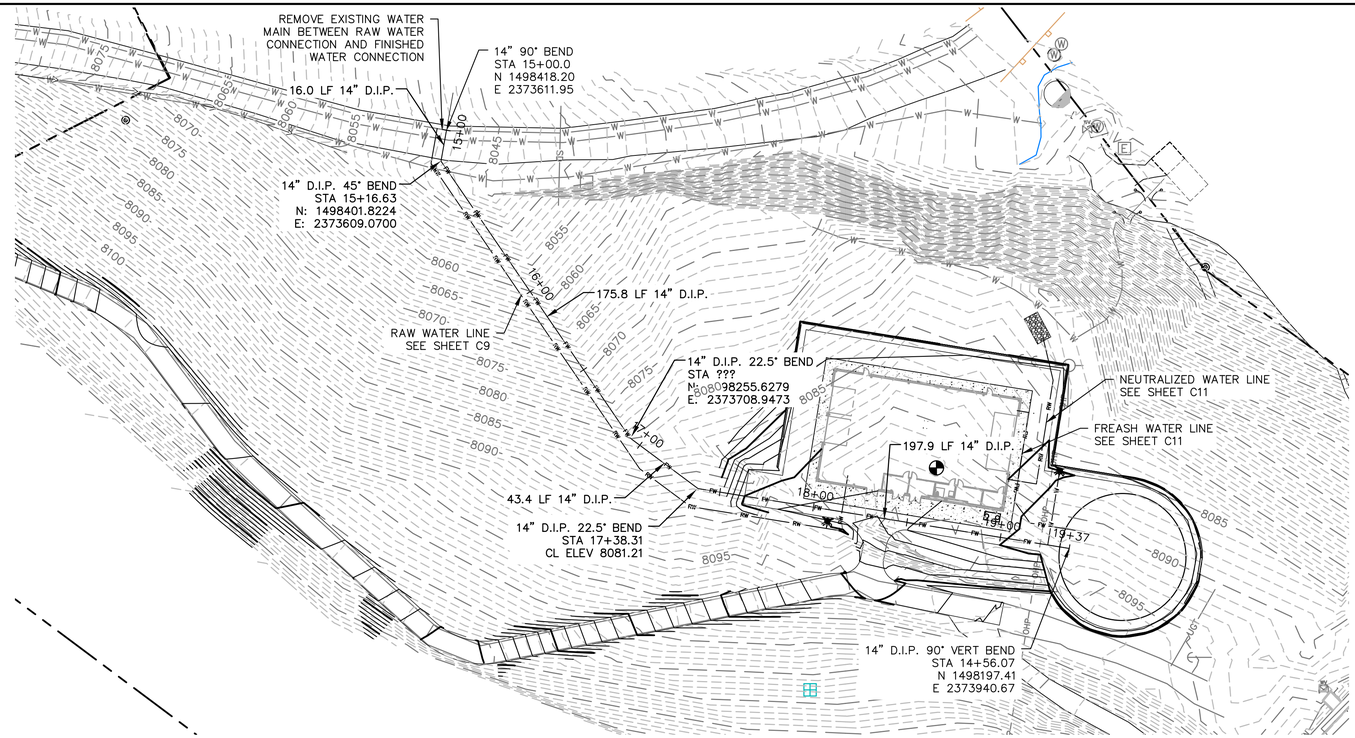
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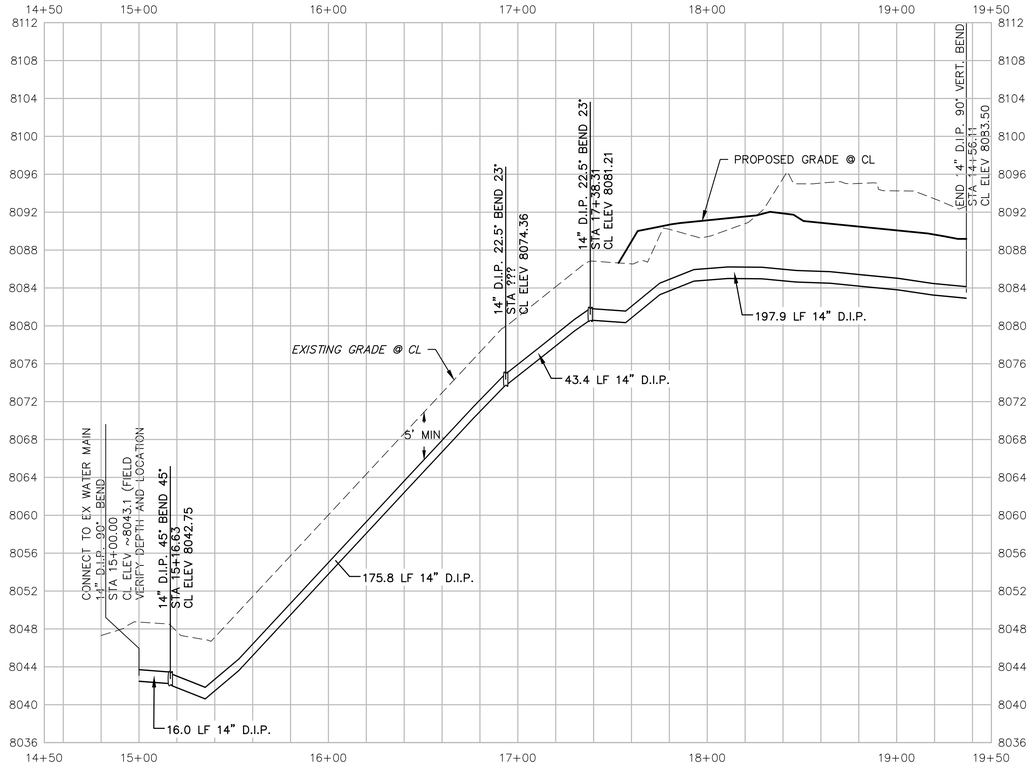
JOB NUMBER
0111.0001

SCALE
1" = 40'

EDITION
PERMITTING

SHEET
C9 OF C26





HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1" = 8'

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WATER TREATMENT PLANT
YARD PIPING PLAN AND PROFILE
CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

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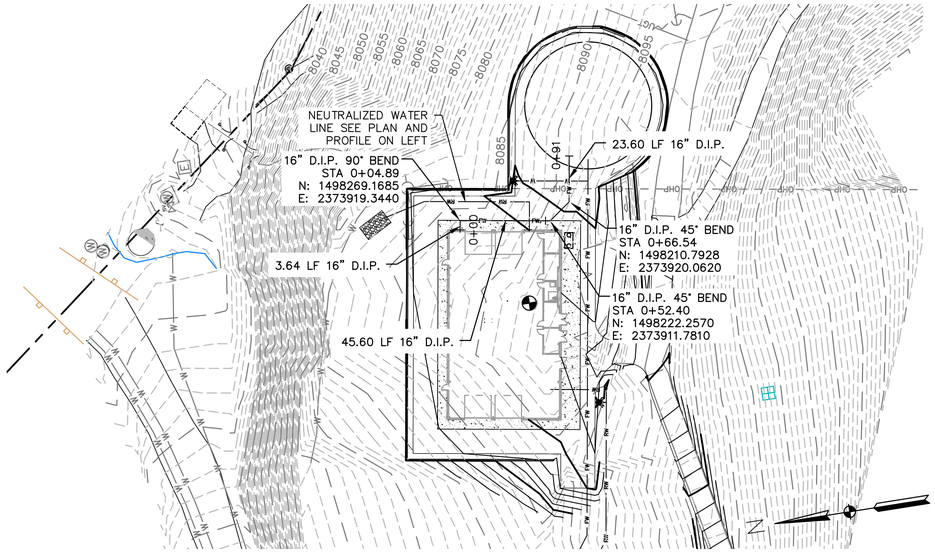
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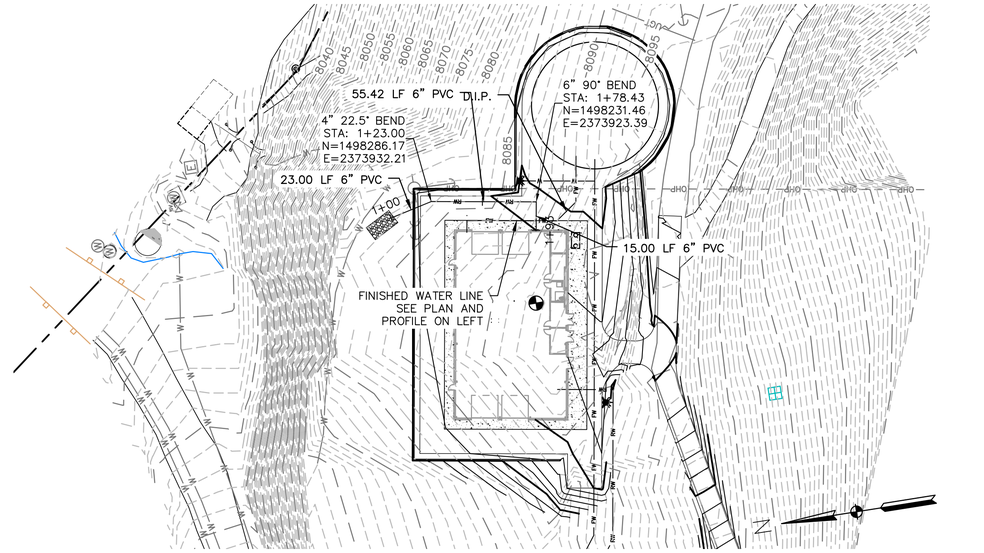
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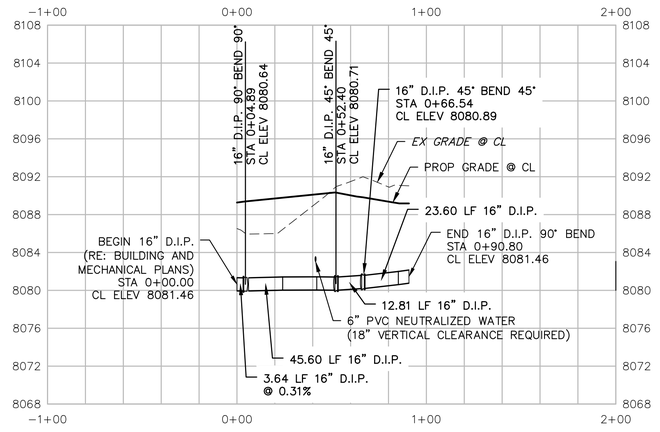
SCALE
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EDITION
PERMITTING

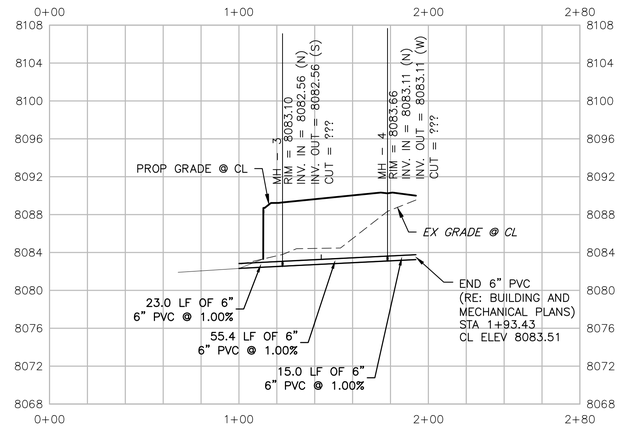
SHEET
C10 OF C26







HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1" = 8'



HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1" = 8'

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WATER TREATMENT PLANT

YARD PIPING PLAN AND PROFILE

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

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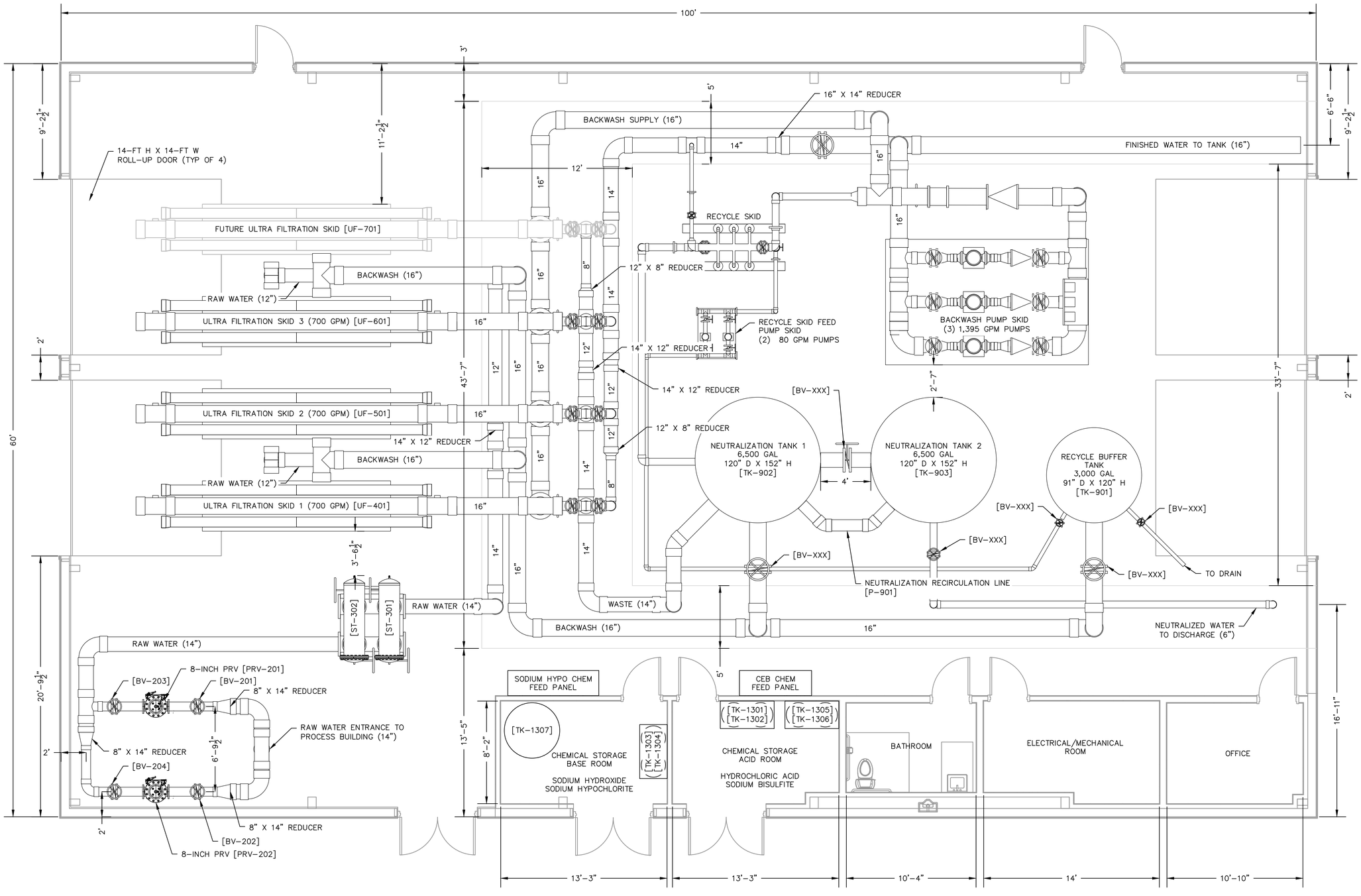
DATE
JAN 2022

JOB NUMBER
0111.0001

SCALE
1" = 40'

EDITION
PERMITTING

SHEET
C11 OF C26



A / C12 PROCESS BUILDING – PLAN VIEW
1/4" = 1'

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WATER TREATMENT PLANT
PROCESS BUILDING PLAN VIEW
CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

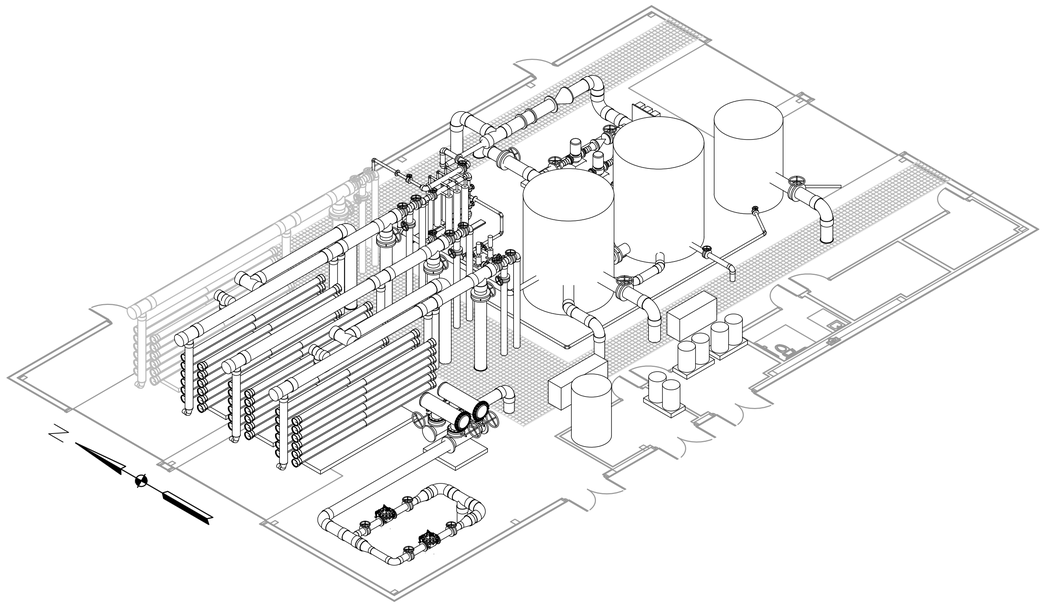
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FEB 2022

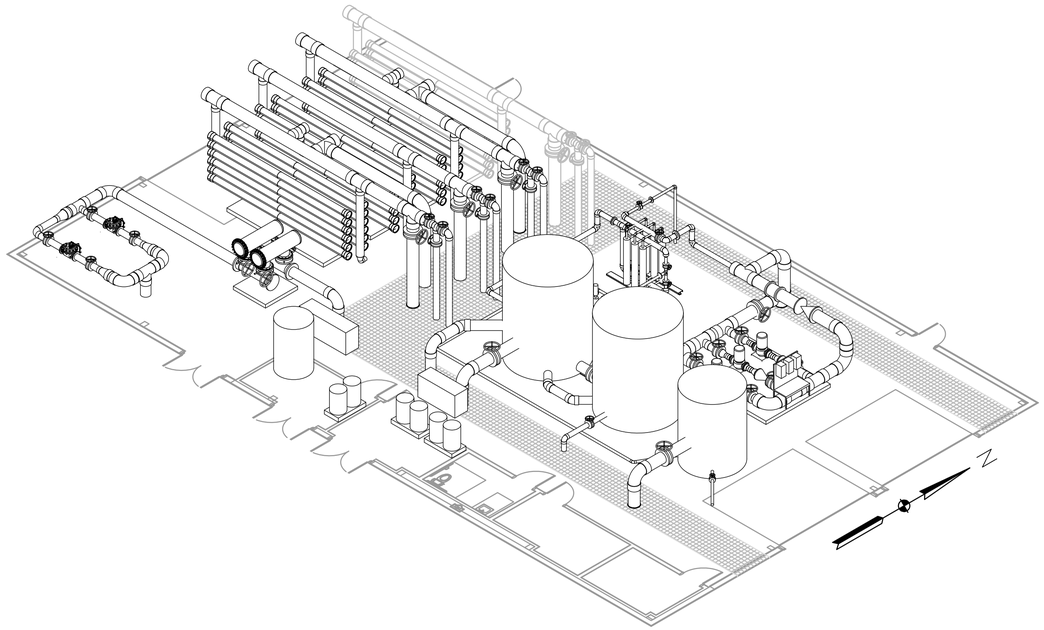
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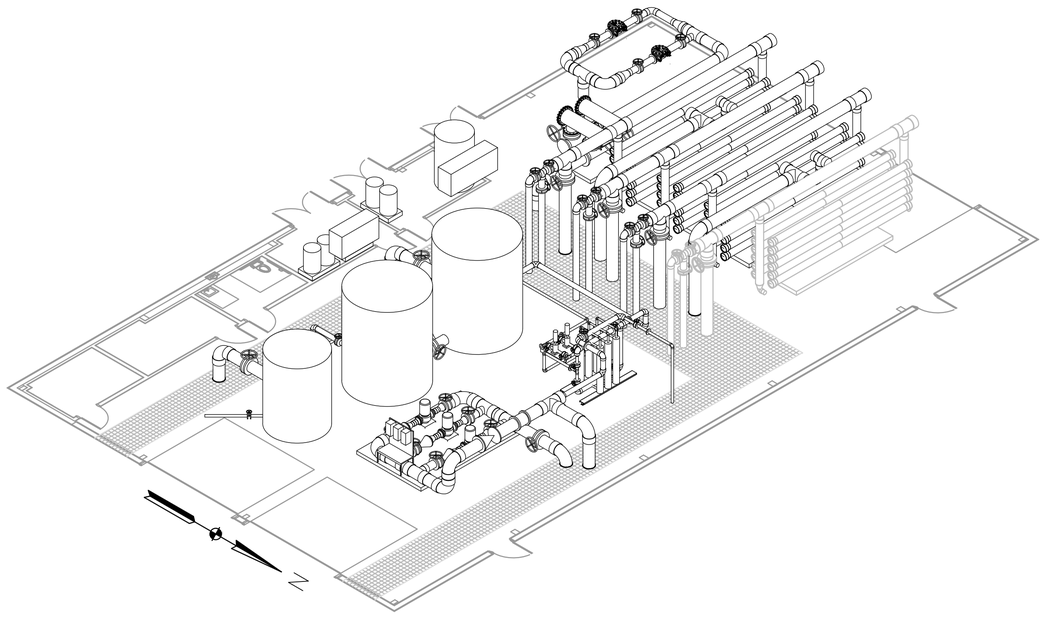
SCALE
1/4" = 1'

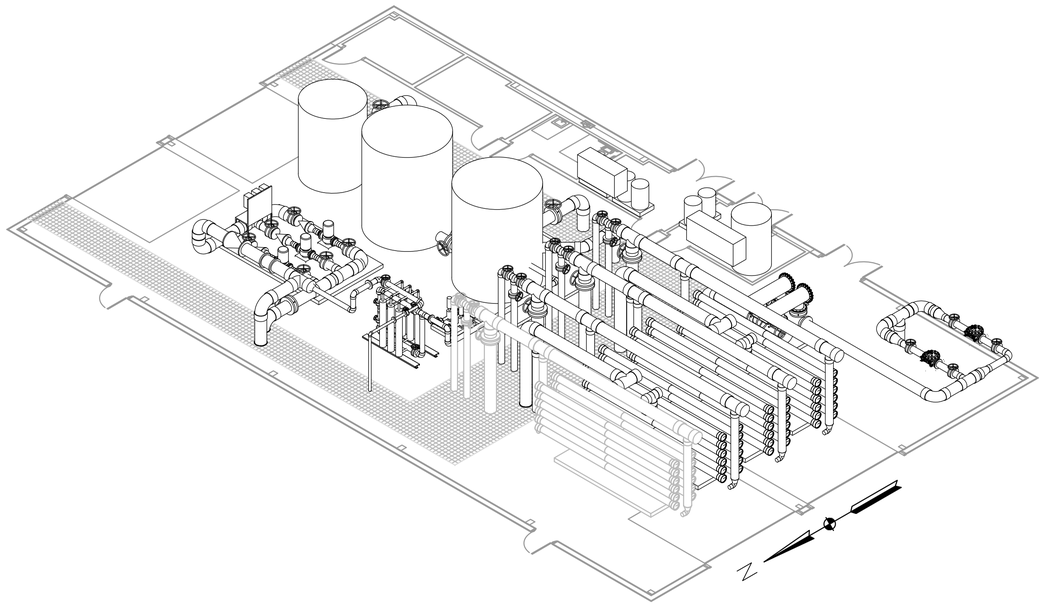
EDITION
60% CMAR

SHEET
C12 OF C26









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WATER TREATMENT PLANT

PROCESS BUILDING ISOMETRIC VIEWS

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

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FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

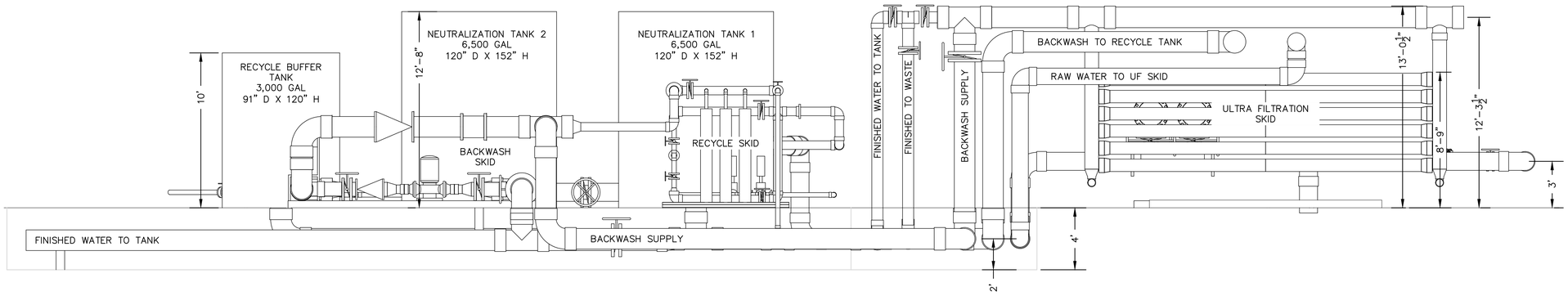
DATE
FEB 2022

JOB NUMBER
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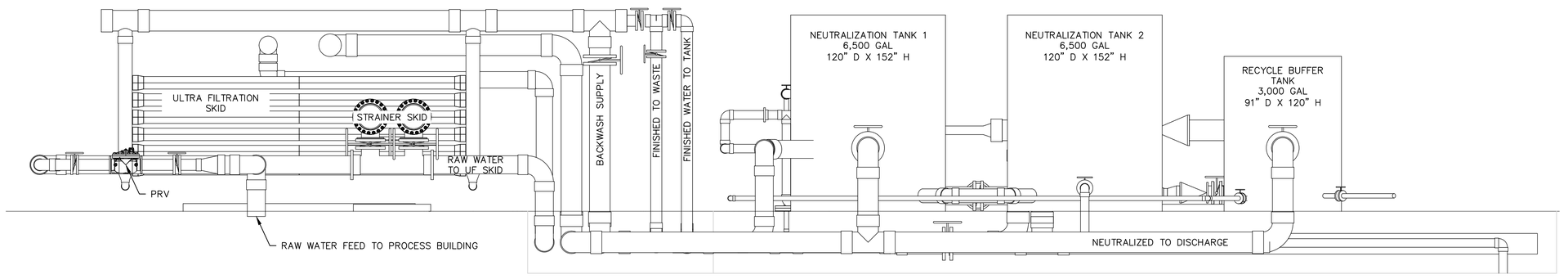
SCALE
NTS

EDITION
60% CMAR

SHEET
C13 OF C26



A / XXX — PROCESS BUILDING – NORTH ELEVATION VIEW
1/4" = 1'



B / XXX — PROCESS BUILDING – SOUTH ELEVATION VIEW
1/4" = 1'

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
WWW.ELEMENTENGINEERING.NET

REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

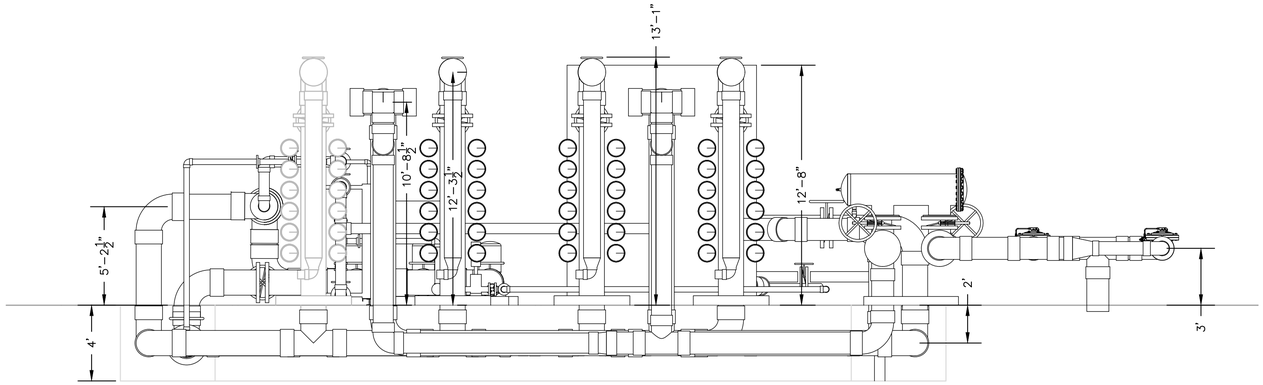
PROCESS BUILDING ELEVATION VIEW

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

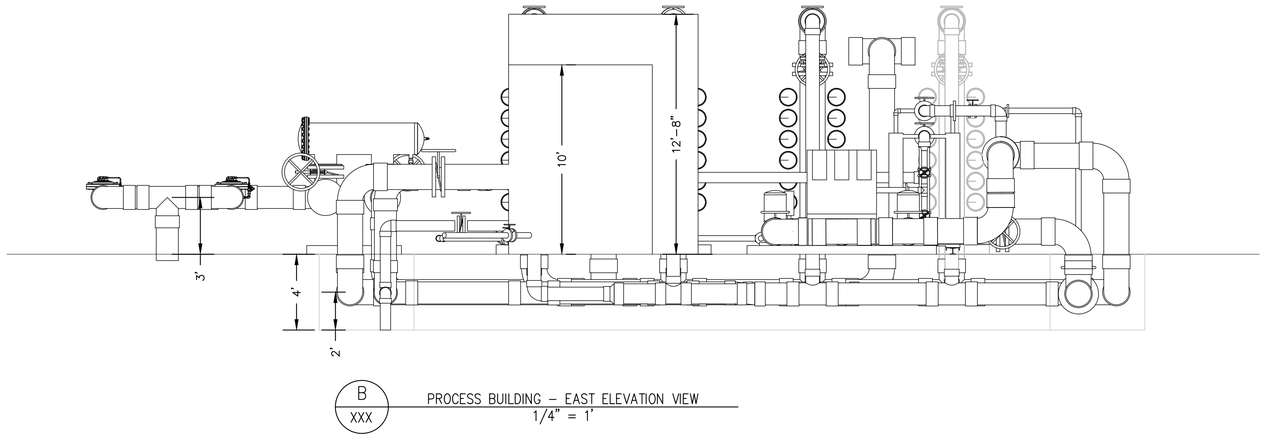
FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE: FEB 2022
JOB NUMBER: 0111.0001
SCALE: 1/4" = 1'
EDITION: 60% CMAR
SHEET: C14 OF C26



A
XXX

PROCESS BUILDING – NORTH ELEVATION VIEW
1/4" = 1'



B
XXX

PROCESS BUILDING – EAST ELEVATION VIEW
1/4" = 1'

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NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

PROCESS BUILDING ELEVATION VIEW

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
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JOB NUMBER
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SCALE
1/4" = 1'

EDITION
60% CMAR

SHEET
C15 OF C26

Process Piping Description	Design Flow (gpm)	Max Flow (gpm)	Pipe Diameter (inch)	Design Flow (cfs)	Max Flow (cfs)	Schd 80 PVC ID (inch)	Area (sf)	Design Velocity (fps)	Max Velocity (fps)
Influent to Building	2,100	2,800	**14**	4.68	6.24	12.41	0.840	**5.57**	**7.43**
PRV	2,100	2,800	**8**	4.68	6.24	7.57	0.312	**14.99**	**19.99**
Connection to Strainer Skid	2,100	2,800	**14**	4.68	6.24	12.41	0.840	**5.57**	**7.43**
Raw to Four Skids	2,100	2,800	**14**	4.68	6.24	12.41	0.840	**5.57**	**7.43**
Raw to Two Skids	1,400	1,400	**12**	3.12	3.12	11.29	0.696	**4.48**	**4.48**
Raw to One Skid	700	700	**8**	1.56	1.56	7.57	0.312	**5.00**	**5.00**
Backwash from One Skid	2,790	2,790	**16**	6.22	6.22	14.21	1.102	**5.64**	**5.64**
Backwash from 2, 3, or 4 Skids	2,790	2,790	**16**	6.22	6.22	14.21	1.102	**5.64**	**5.64**
Backwash Supply to One Skid	2,790	2,790	**16**	6.22	6.22	14.21	1.102	**5.64**	**5.64**
Backwash Supply to 2, 3, or 4 Skids	2,790	2,790	**16**	6.22	6.22	14.21	1.102	**5.64**	**5.64**
Recycle Buffer Tank to Recycle Skid	80	80	**3**	0.18	0.18	2.86	0.045	**3.98**	**3.98**
Recycle Skid Backwash Feed	350	350	**6**	0.78	0.78	5.71	0.178	**4.39**	**4.39**
Recycle Skid Backwash to Waste	350	350	**6**	0.78	0.78	5.71	0.178	**4.39**	**4.39**
Recycle Skid to Treated Water	80	80	**3**	0.18	0.18	2.86	0.045	**3.98**	**3.98**
Treated Water (One Skid)	700	700	**8**	1.56	1.56	7.57	0.312	**5.00**	**5.00**
Treated Water (Two Skids)	1,400	1,400	**12**	3.12	3.12	11.29	0.696	**4.48**	**4.48**
Treated Water (Three Skids)	2,100	2,100	**14**	4.68	4.68	12.41	0.840	**5.57**	**5.57**
Treated Water (Four Skids)	2,100	2,800	**14**	4.68	6.24	12.41	0.840	**5.57**	**7.43**
Treated Water (Four Skids and Recycle)	2,180	2,880	**16**	4.86	6.42	14.21	1.102	**4.41**	**5.82**
Waste (One Skid)	700	700	**8**	1.56	1.56	7.57	0.312	**5.00**	**5.00**
Waste (Two Skids)	1,400	1,400	**12**	3.12	3.12	11.29	0.696	**4.48**	**4.48**
Waste (Three Skids)	2,100	2,100	**14**	4.68	4.68	12.41	0.840	**5.57**	**5.57**
Waste (Four Skids)	2,100	2,800	**14**	4.68	6.24	12.41	0.840	**5.57**	**7.43**

Sodium Bisulfite - Dechlorination

Chlorinated Water per CEB	Estimated Chlorine Conc.	Chlorine Loading per CEB	Removal Ratio	Sodium Bisulfite Loading per CEB	Sodium Bisulfite Conc.	Sodium Bisulfite Solution Density	Sodium Bisulfite Feed per CEB
gal	*mg/L*	*lbs*	*lb HSO3/ lb OCl*	*lbs*		*lbs/gal*	*gal*
1,395	200	2.3	1.6	3.72	38%	10.8	0.9

Sodium Bisulfite - Dechlorination - Storage

Sodium Bisulfite Feed per CEB	No. CEB per Week per Skid	No. Skids	Est. Sodium Bisulfite Feed per Month	Provided Storage	Spill Containment Available Storage
gal		*ea*	*gal*	*gal*	
0.9	1	3	11.8	55	Two (2) 55 gallon drums

Chemically Enhanced Backwash - Dosage Rate and Pump Sizing

	Chemical Information				Dosage Calculations						Chemical Usage		Pump Info	
	Specific Gravity	Weight	Chemical Strength	Chemical Strength	Max Flowrate of Receiving Pipe	Max Flowrate of Receiving Pipe	Estimated Dosage	Chemical Feed	Dosage Rate	Dosage Rate	CEB Dose Time	Amount of Chemical per CEB	Dosing Pump Capacity	Pump Capacity Used
		lbs per gallon		*lbs per gallon*	*gpm*	*MGD*	*mg/L*	*lbs per day*	*gpd*	*gpm*	*sec*	*gal*	*gph*	*%*
Sodium Hypochlorite (12.5%)	1.197	9.98	12.5%	1.25	1,395	2.009	200	3,351	2,685	1.86	60	1.86	158.5	70.6%
Sodium Hydroxide (Caustic Soda) (25%)	1.278	10.66	25%	2.66	1,395	2.009	500	8,377	3,144	2.18	60	2.18	158.5	82.6%
Hydrochloric Acid (25%)	1.126	9.39	25%	2.35	1,395	2.009	450	7,539	3,211	2.23	60	2.23	158.5	84.4%
Chemical Pump (All CEB Applications): Blue White Peristaltic, Model M-424-BNP | 0.015 - 158.5 GPH														

Chemically Enhanced Backwash - Storage

	Est. CEB per Week	Required Storage (1 Month Supply)	No. Skids	Total Storage (1 Month Supply)	Provided Storage	Spill Containment Available Storage	Chemical Shelf Life
		gal per skid	*ea*	*gal*	*gal*		*months*
Sodium Hypochlorite (12.5%)	1	8.1	3	24.2	--	See Disinfection Storage	
Sodium Hydroxide (Caustic Soda) (25%)	1	9.5	3	28.4	55	Two (2) 55 gallon drums	24
Hydrochloric Acid (25%)	1	9.7	3	29.0	55	Two (2) 55 gallon drums	24

Disinfection - Dosage Rate and Pump Sizing

	Chemical Information				Dosage Calculations						Pump Info	
	Specific Gravity	Weight	Chemical Strength	Chemical Strength	Max Flowrate of Receiving Pipe	Max Flowrate of Receiving Pipe	Max Dosage	Chemical Feed	Dosage Rate	Dosage Rate	Dosing Pump Capacity	Pump Capacity Used
Sodium Hypochlorite (12.5%)		*lbs per gallon*		*lbs per gallon*	*gpm*	*MGD*	*mg/L*	*lbs per day*	*gpd*	*gph*	*gph*	*%*
Three 700 gpm Skids	1.197	9.98	12.5%	1.25	2,100	3.024	2.0	50.4	40.4	1.68	2.1	80.2%
Two 700 gpm Skids	1.197	9.98	12.5%	1.25	1,400	2.016	2.0	33.6	26.9	1.12	2.1	53.5%
One 700 gpm Skids	1.197	9.98	12.5%	1.25	700	1.008	2.0	16.8	13.5	0.56	2.1	26.7%
Minimum - 100 gpm	1.197	9.98	12.5%	1.25	100	0.144	2.0	2.4	1.9	0.08	2.1	3.8%
Chemical Pump: Blue White Peristaltic, Model M-324-SND | 0.0002 - 2.1 GPH												

Disinfection - Storage

	Water Demand	Max Dosage	Chemical Feed	Chemical Strength	Dosage Rate	Provided Storage	Provided Storage	Storage Notes
Sodium Hypochlorite (12.5%)	*gpd*	*mg/L*	*lbs per day*	*lbs per gallon*	*gpd*	*gal*	*days*	
Average Demand	691,555	2.0	11.5	1.25	9.2	500	54	500 gallon tank
Max Demand	1,053,140	2.0	17.6	1.25	14.1	500	36	500 gallon tank
Summer Average (June, July, Aug)	983,796	2.0	16.4	1.25	13.2	500	38	500 gallon tank
Winter Average (Nov, Dec, Jan, Feb)	512,086	2.0	8.5	1.25	6.8	500	73	500 gallon tank
Note: Sodium Hypochlorite for CEB will be provided from same storage as disinfection. CEB requirements are minimal compared to disinfection requirements.								

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WATER TREATMENT PLANT

PIPE SIZE & CHEMICAL NOTES AND DETAILS

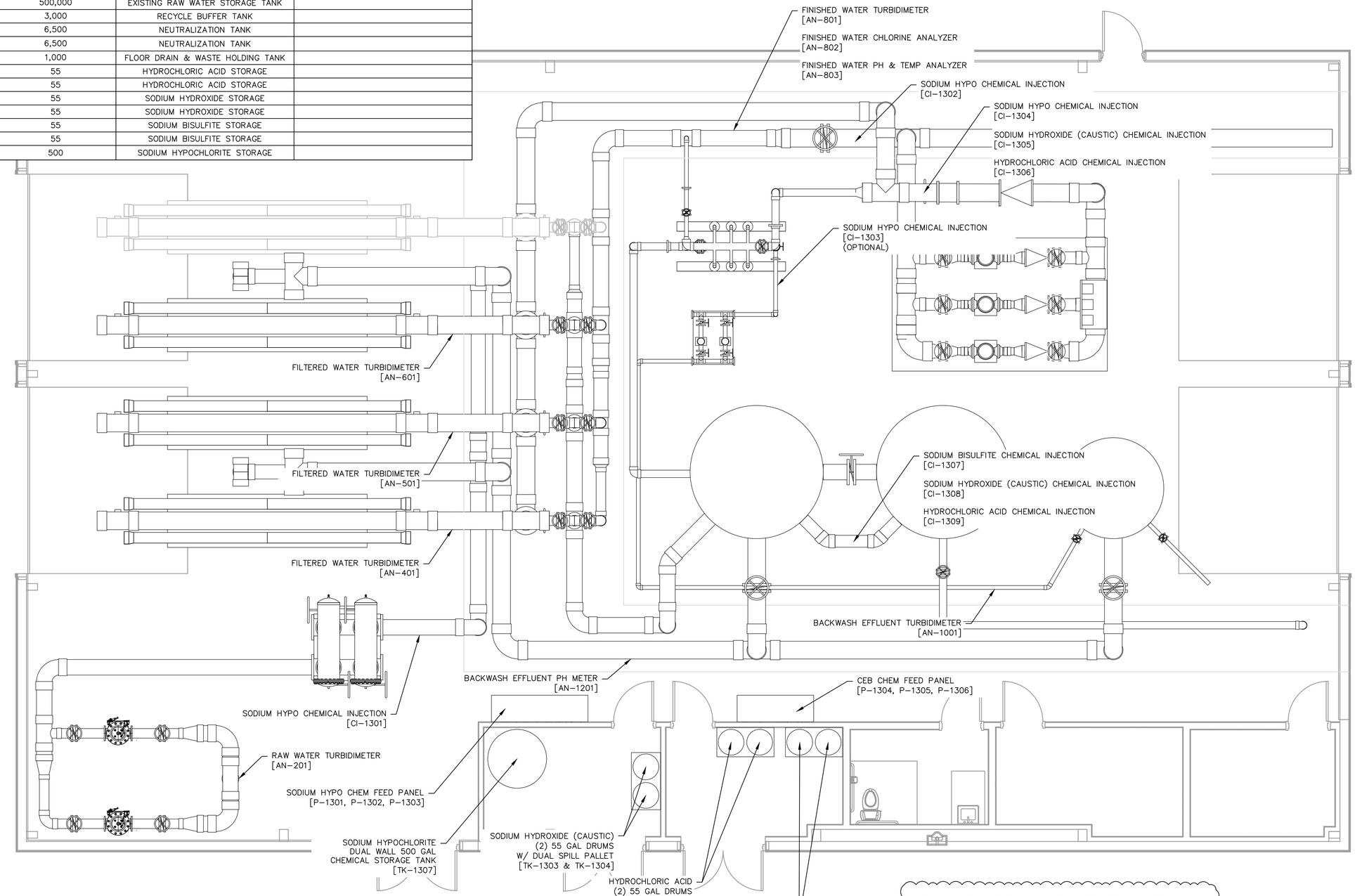
CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

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JOB NUMBER: 0111.0001
SCALE:
EDITION: 60% CMAR
SHEET: C17 OF C26

TANK TAG NO.	TANK SIZE (GAL)	TANK DESCRIPTION	TANK MATERIAL
TK-101	500,000	EXISTING RAW WATER STORAGE TANK	
TK-102	500,000	EXISTING RAW WATER STORAGE TANK	
TK-901	3,000	RECYCLE BUFFER TANK	
TK-902	6,500	NEUTRALIZATION TANK	
TK-903	6,500	NEUTRALIZATION TANK	
TK-904	1,000	FLOOR DRAIN & WASTE HOLDING TANK	
TK-1301	55	HYDROCHLORIC ACID STORAGE	
TK-1302	55	HYDROCHLORIC ACID STORAGE	
TK-1303	55	SODIUM HYDROXIDE STORAGE	
TK-1304	55	SODIUM HYDROXIDE STORAGE	
TK-1305	55	SODIUM BISULFITE STORAGE	
TK-1306	55	SODIUM BISULFITE STORAGE	
TK-1307	500	SODIUM HYPOCHLORITE STORAGE	



CHEMICAL INJECTION	CHEMICAL FEED PUMP	CHEMICAL	CHEMICAL TANK	APPLICATION
CI-1301	P-1301	SODIUM HYPOCHLORITE	TK-1307	PRE-FILTER CHLORINATION
CI-1302	P-1302	SODIUM HYPOCHLORITE	TK-1307	POST-FILTER CHLORINATION
CI-1303	P-1303	SODIUM HYPOCHLORITE	TK-1307	PRE-RECYCLE SKID CHLORINATION
CI-1304	P-1304	SODIUM HYPOCHLORITE	TK-1307	CHEMICALLY ENHANCED BACKWASH
CI-1305	P-1305	SODIUM HYDROXIDE (CAUSTIC)	TK-1303 OR TK-1304	CHEMICALLY ENHANCED BACKWASH
CI-1306	P-1306	HYDROCHLORIC ACID	TK-1301 OR TK-1302	CHEMICALLY ENHANCED BACKWASH
CI-1307	P-1307	SODIUM BISULFITE	TK-1305 OR TK-1306	NEUTRALIZATION
CI-1308	P-1305	SODIUM HYDROXIDE (CAUSTIC)	TK-1303 OR TK-1304	NEUTRALIZATION
CI-1309	P-1306	HYDROCHLORIC ACID	TK-1301 OR TK-1302	NEUTRALIZATION

POTABLE WATER LINE FROM FINISHED WATER PIPE DOWNSTREAM OF FINISHED WATER TANK TO BE BROUGHT INTO BUILDING. SIZE TBD. INCLUDE WATER METER, CHLORINE ANALYZER [AN-1401], AND SAMPLE TAP [SAM-1401] (DISTRIBUTION SYSTEM ENTRY POINT SAMPLE)

A / C14 CHEMICAL INJECTION, ANALYZERS, AND SAMPLE POINTS
1/4" = 1'

NOTEI CONTRACTOR TO PROVIDE TWO (2) DRUM PALETIZERS CAPABLE OF LIFTING FULL 55 GALLON DRUM ONTO SPILL PALLETS

ELEMENT ENGINEERING LLC
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WATER TREATMENT PLANT

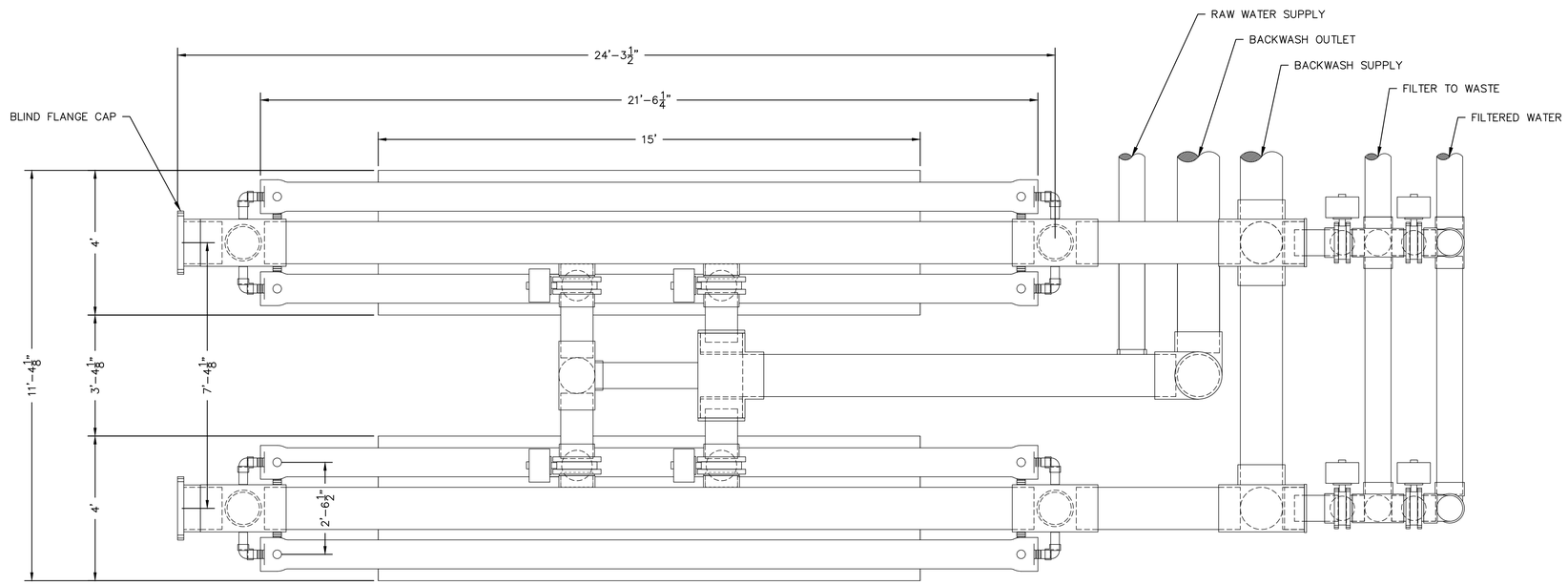
CHEMICAL INJECTION, ANALYZERS, AND SAMPLE POINTS

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320 6TH AVE
OURAY, CO 81427

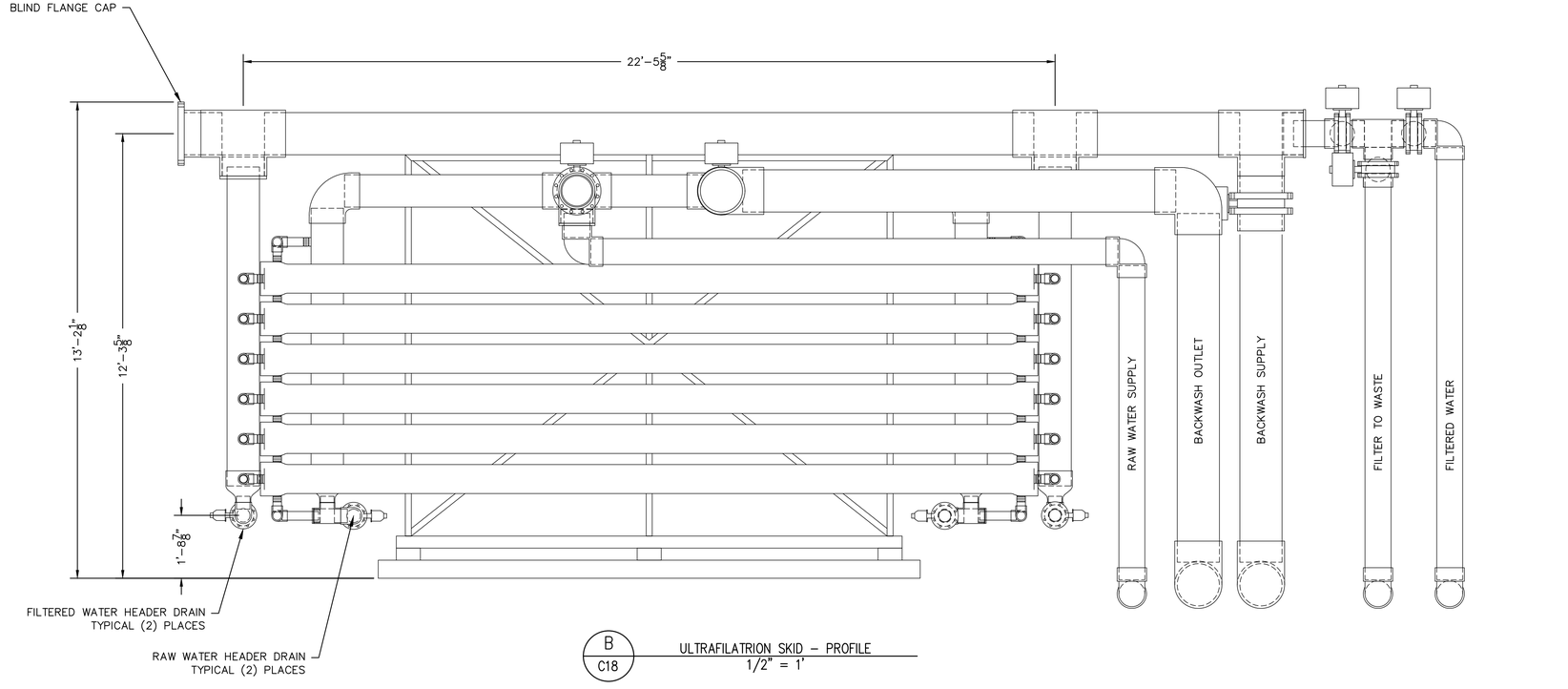
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SCALE: 1/4" = 1'
EDITION: 60% CMAR
SHEET: C14 OF C26



A / C18 ULTRAFILATRION SKID – PLAN
1/2" = 1'



B / C18 ULTRAFILATRION SKID – PROFILE
1/2" = 1'

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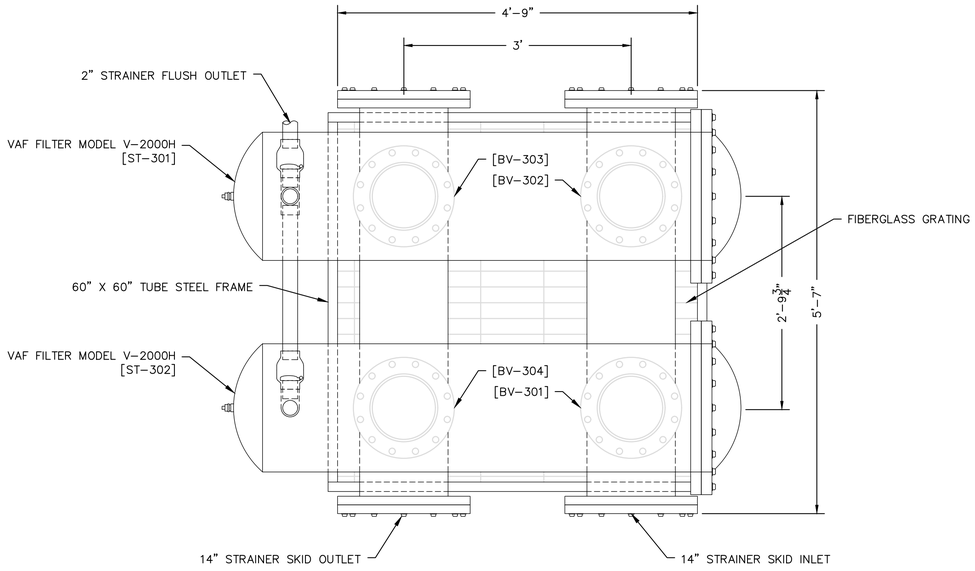
ULTRA FILTRATION SKID DETAILS

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

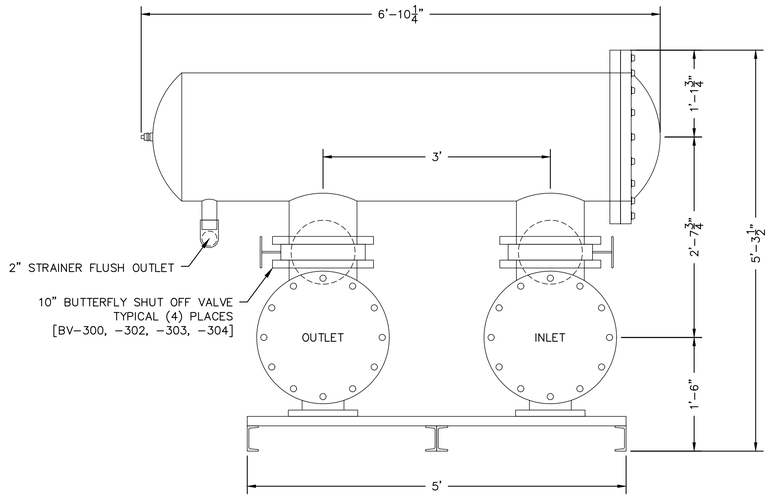
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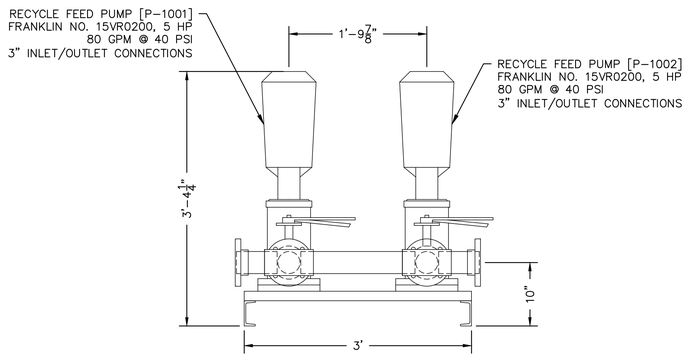
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JOB NUMBER: 0111.0001
SCALE: 1/2" = 1'
EDITION: 60% CMAR
SHEET: C18 OF C26



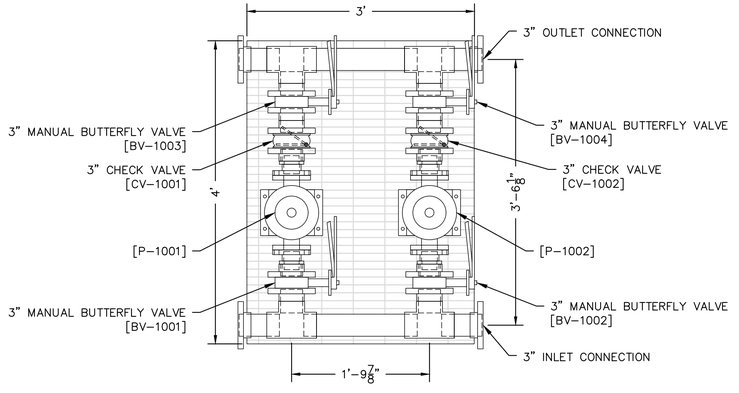
A C19 PRE-STRAINER SKID - PLAN
1" = 1'



B C19 PRE-STRAINER SKID - PROFILE
1" = 1'



C C19 RECYCLE FEED PUMP SKID - PLAN
1" = 1'



D C19 RECYCLE FEED PUMP SKID - PROFILE
1" = 1'

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WATER TREATMENT PLANT

PRE-STRAINER & RECYCLE FEED PUMP DETAILS

CITY OF OURAY
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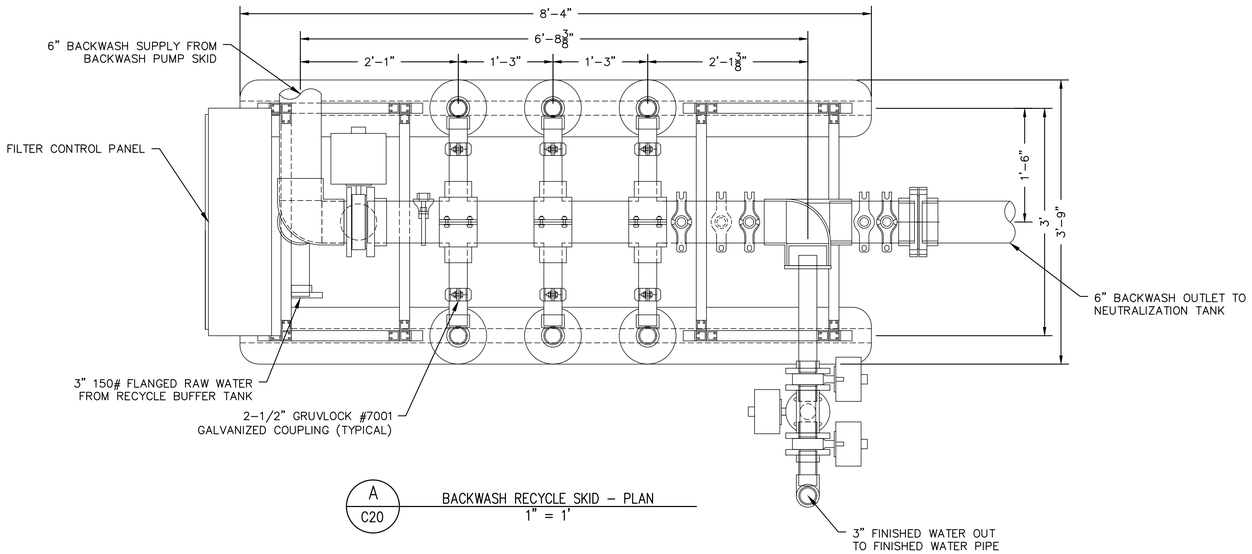
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SCALE
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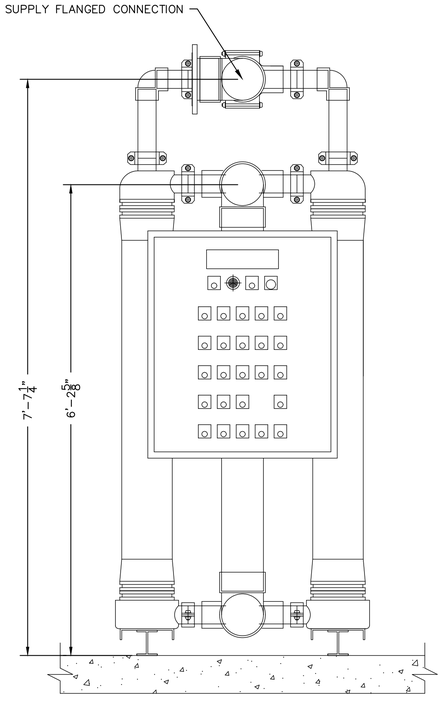
EDITION
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SHEET
C19 OF C26

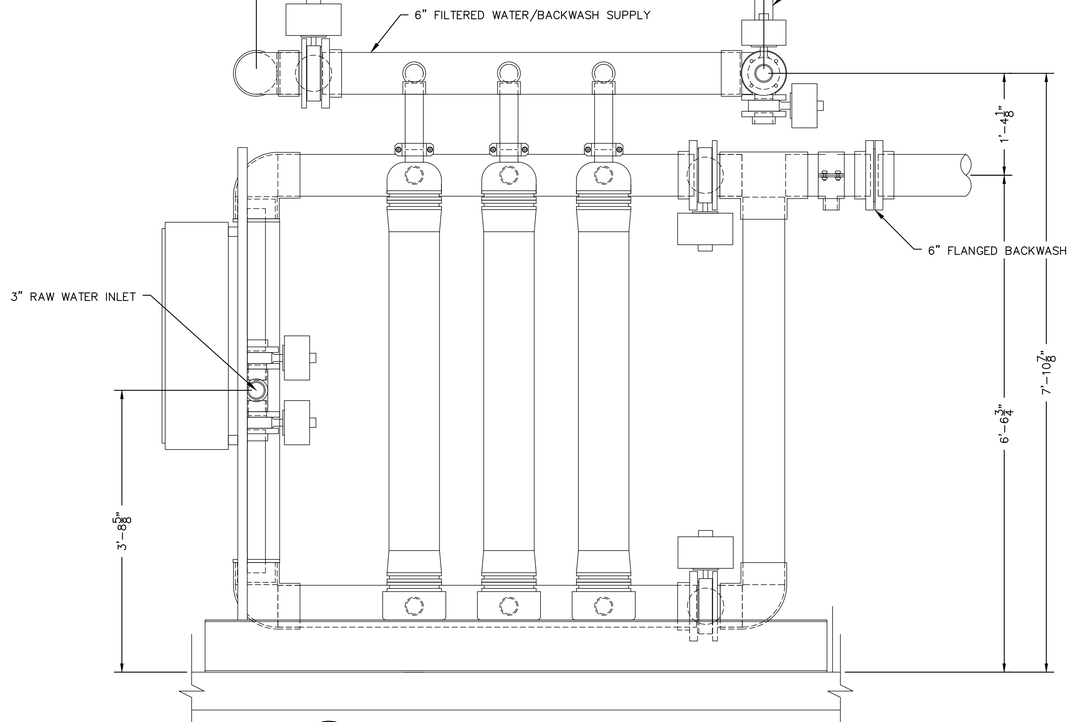
ID'S TO BE ADDED TO THIS SHEET



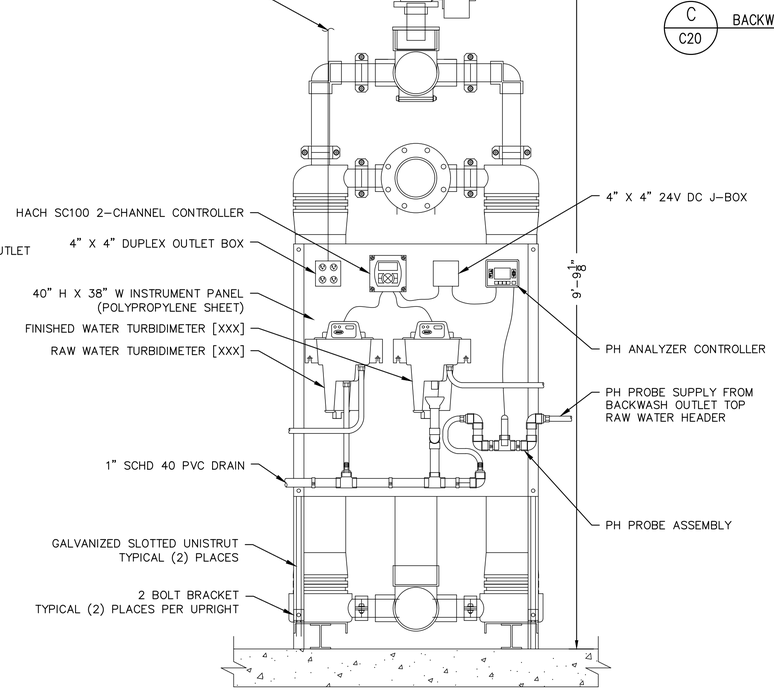
A / C20 BACKWASH RECYCLE SKID – PLAN
1" = 1'



C / C20 BACKWASH RECYCLE SKID – INFLUENT END
1" = 1'



B / C20 BACKWASH RECYCLE SKID – PROFILE
1" = 1'



D / C20 BACKWASH RECYCLE SKID – EFFLUENT END
1" = 1'

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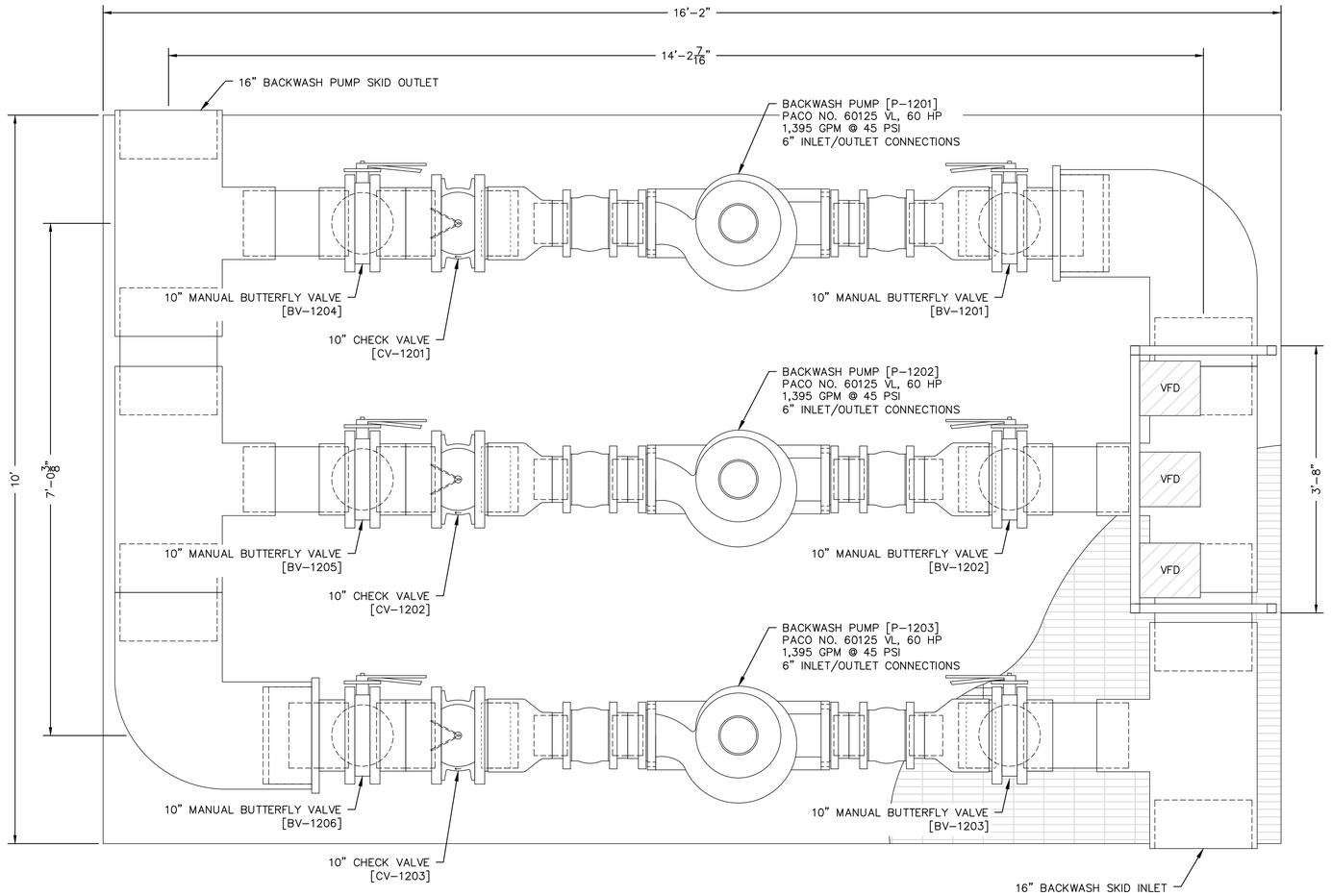
RECYCLE SKID DETAILS

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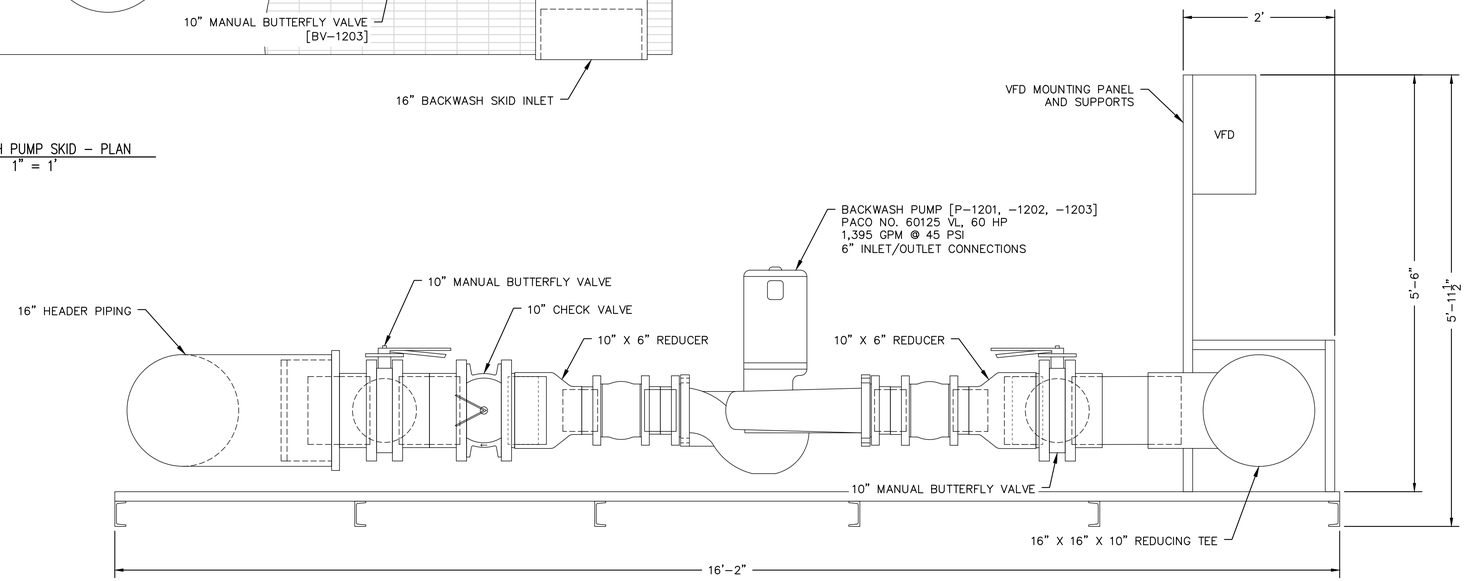
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DATE: FEB 2022
JOB NUMBER: 0111.0001
SCALE: 1" = 1'
EDITION: 60% CMAR
SHEET: C20 OF C26



A C21 BACKWASH PUMP SKID – PLAN
1" = 1'



B C21 BACKWASH PUMP SKID – PROFILE
1" = 1'

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BACKWASH PUMP SKID DETAILS

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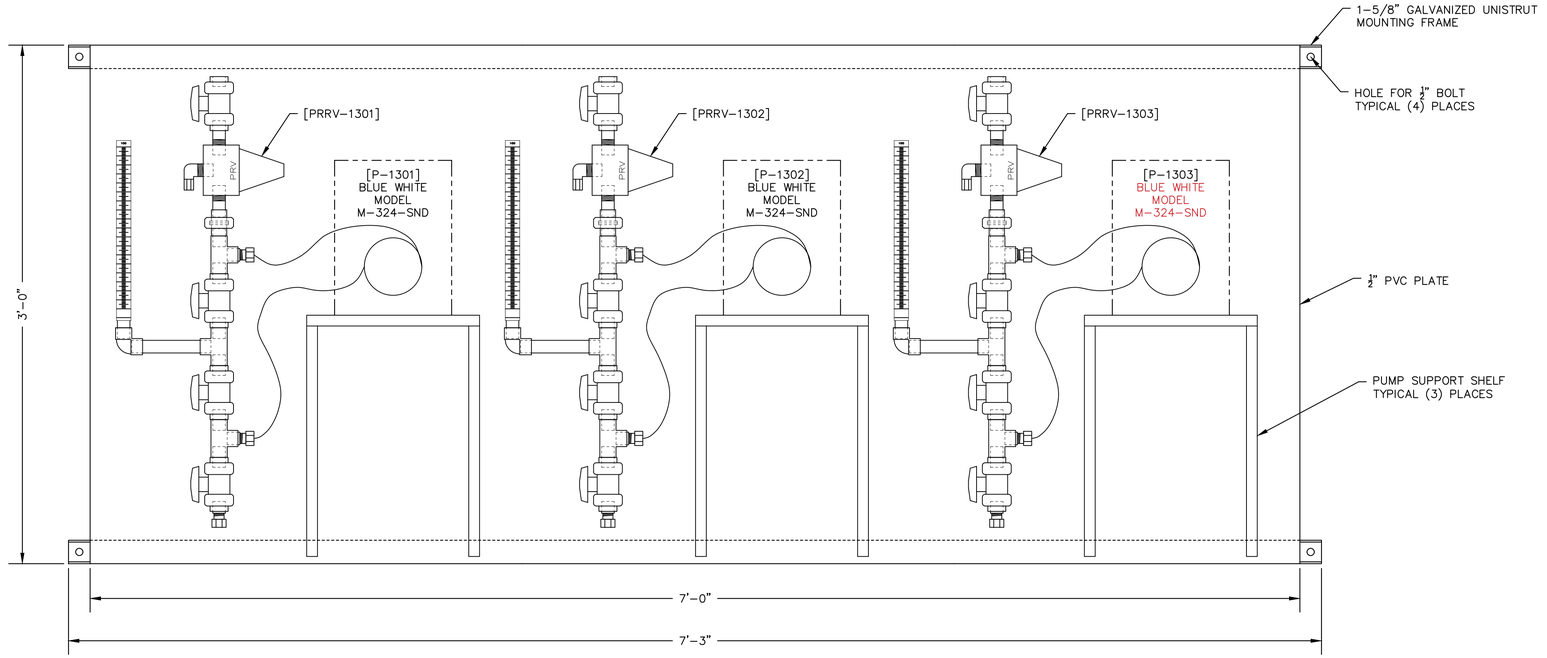
DATE
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JOB NUMBER
0111.0001

SCALE
1" = 1'

EDITION
60% CMAR

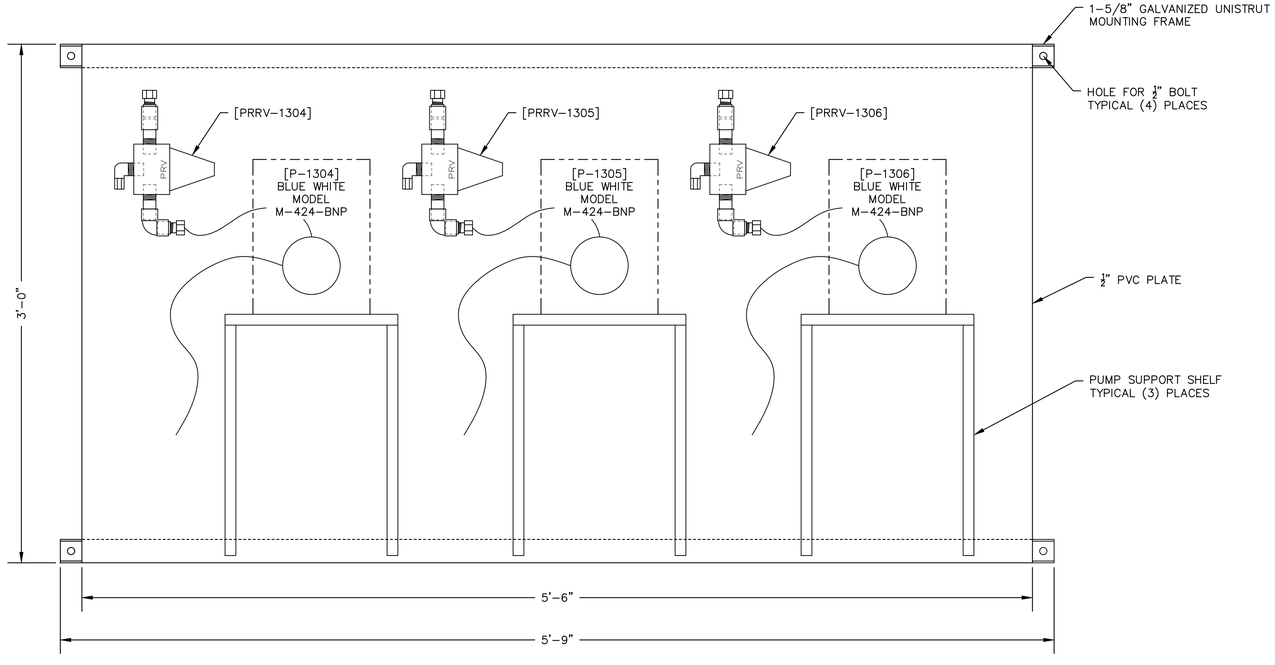
SHEET
C21 OF C26



A / C22 SODIUM HYPOCHLORITE PUMP PANEL DETAILS
NTS

CHEMICAL FEED PUMP	CHEMICAL
P-1301	SODIUM HYPOCHLORITE
P-1302	SODIUM HYPOCHLORITE
P-1303	SODIUM HYPOCHLORITE
P-1304	SODIUM HYPOCHLORITE
P-1305	SODIUM HYDROXIDE (CAUSTIC)
P-1306	HYDROCHLORIC ACID
P-1307	SODIUM BISULFITE

NEED TO INCLUDE SODIUM BISULFITE FEED PUMP



B / C22 CHEMICALLY ENHANCED BACKWASH PUMP PANEL DETAILS
NTS

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12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
WWW.ELEMENTENGINEERING.NET

REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

CHEMICAL FEED PANEL DETAILS

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

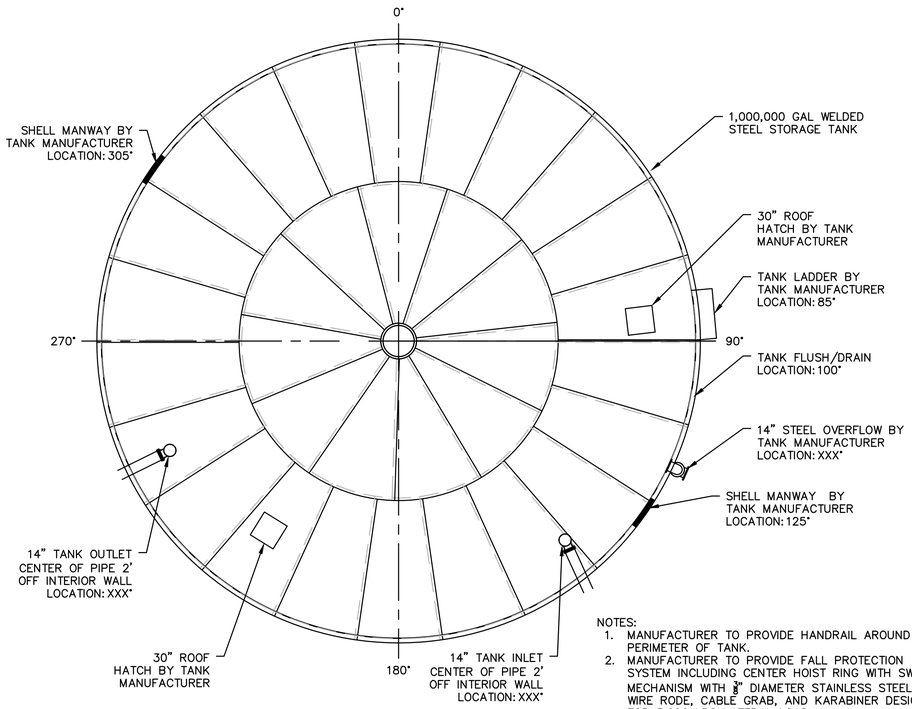
DATE
FEB 2022

JOB NUMBER
0111.0001

SCALE
NTS

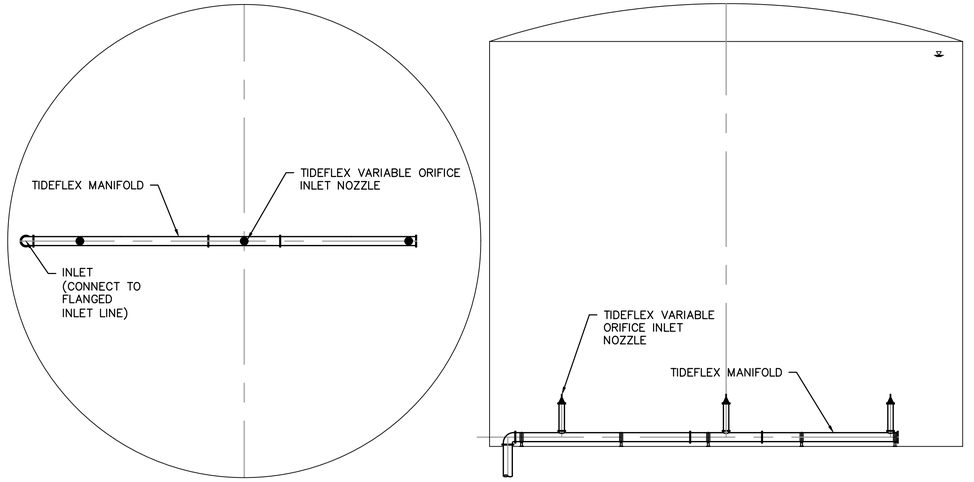
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SHEET
C22 OF C26



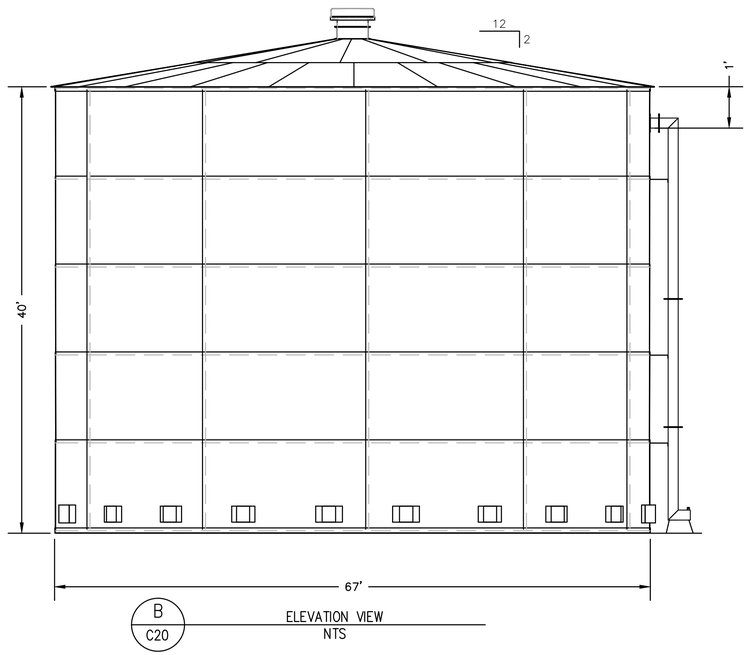
A / C20 PLAN VIEW
NTS

NOTES:
1. MANUFACTURER TO PROVIDE HANDRAIL AROUND PERIMETER OF TANK.
2. MANUFACTURER TO PROVIDE FALL PROTECTION SYSTEM INCLUDING CENTER HOIST RING WITH SWIVEL MECHANISM WITH $\frac{3}{8}$" DIAMETER STAINLESS STEEL WIRE RODE, CABLE GRAB, AND KARABINER DESIGNED FOR 5,000 LBS LATERAL LOAD.
3. MANUFACTURER TO PROVIDE LIQUID LEVEL INDICATOR WITH GAUGE BOARD AND HIGH VISIBILITY TARGET.
4. ULTRASONIC LEVEL TRANSDUCER TO BE INSTALLED ON ROOF SEE DETAIL ON SHEET THIS SHEET. MANUFACTURER TO PROVIDE FLANGE AND COVER PLATE FOR INSTALL OF CONDUIT

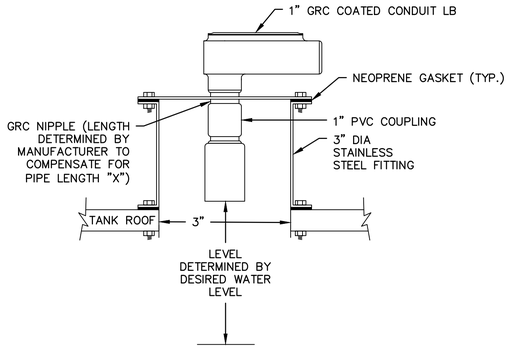


1 / C20 TANK MIXER LAYOUT
NTS

NOTE: INSTALL MIXING SYSTEM PER MANUFACTURER REQUIREMENTS. MANUFACTURER CERTIFIED REPRESENTATIVE SHALL APPROVE INSTALLATION PRIOR TO STARTUP OF TANK. SEE TECHNICAL SPECIFICATIONS FOR INFORMATION ON MIXING SYSTEM.

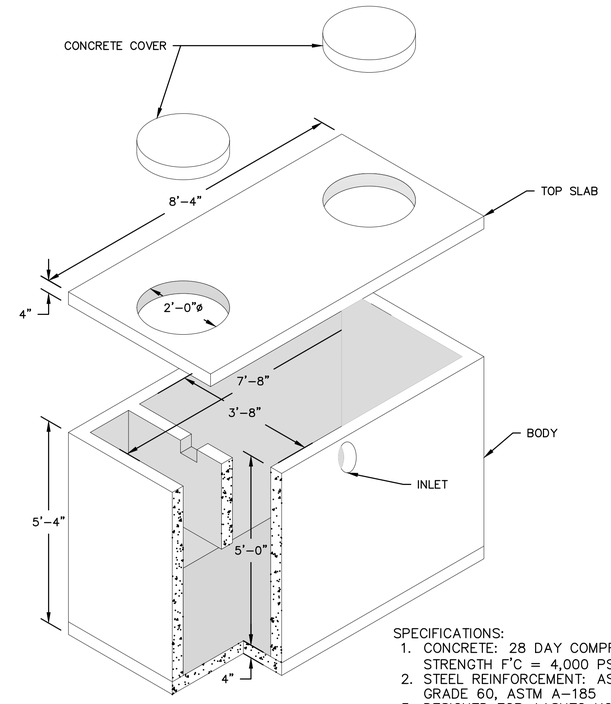


B / C20 ELEVATION VIEW
NTS



NOTES:
1. DISTANCE FROM TRANSDUCER SENSOR HEAD TO MAXIMUM LIQUID LEVEL AS REQUIRED BY TRANSDUCER MANUFACTURER FOR PROPER LEVEL MEASUREMENT, MINIMUM TO INCHES.
2. PROVIDE AN UNOBSTRUCTED SOUND PATH PERPENDICULAR TO THE LIQUID SURFACE PER TRANSDUCER MANUFACTURER INSTRUCTIONS.
3. MOUNT TRANSDUCER PER WATER STORAGE TANK AND TRANSDUCER MANUFACTURER REQUIREMENTS.

2 / C20 LEVEL SENSOR INSTALLATION DETAIL
NTS



SPECIFICATIONS:
1. CONCRETE: 28 DAY COMPRESSIVE STRENGTH F'C = 4,000 PSI
2. STEEL REINFORCEMENT: ASTM A-615, GRADE 60, ASTM A-185
3. DESIGNED FOR AASHTO H2-20 LOADING WITH 24" COVER
4. TO BE TESTED FOR WATER TIGHTNESS

3 / C20 1000 GALLON SEPTIC HOLDING TANK
NTS

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12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
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REVISIONS

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-	-	-	-

WATER TREATMENT PLANT

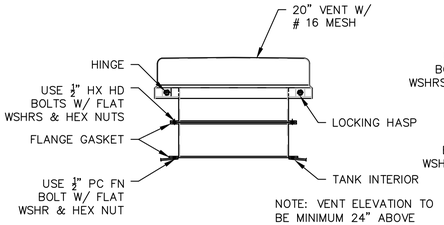
TANK DETAILS

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

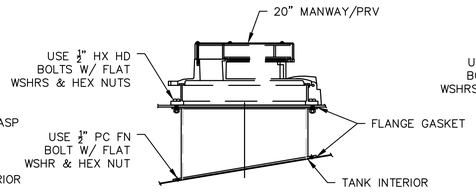
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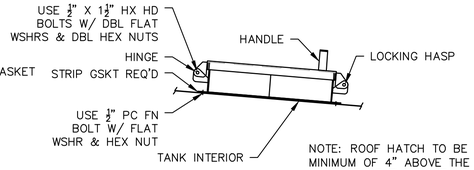
DATE: JAN 2022
JOB NUMBER: 0111.0001
SCALE: NTS
EDITION: PERMITTING
SHEET: C23 OF C26



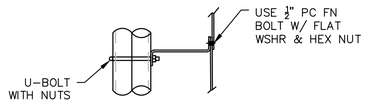
1 / C15 CENTER DOME WITH VENT DETAILS
NTS



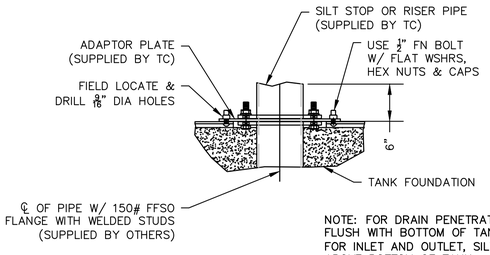
2 / C15 20" MANWAY/PRV DETAIL
NTS



3 / C15 30" ROOF HATCH DETAIL
NTS

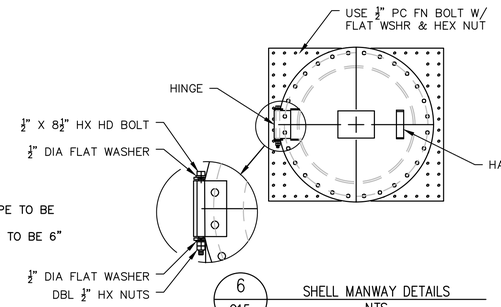


4 / C15 PIPE SUPPORT DETAIL
NTS

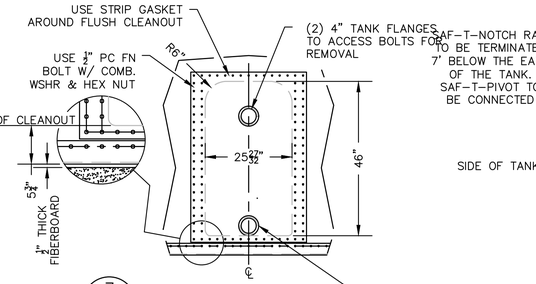


NOTE: FOR DRAIN PENETRATION PIPE TO BE FLUSH WITH BOTTOM OF TANK.
FOR INLET AND OUTLET, SILT STOP TO BE 6" ABOVE BOTTOM OF TANK.

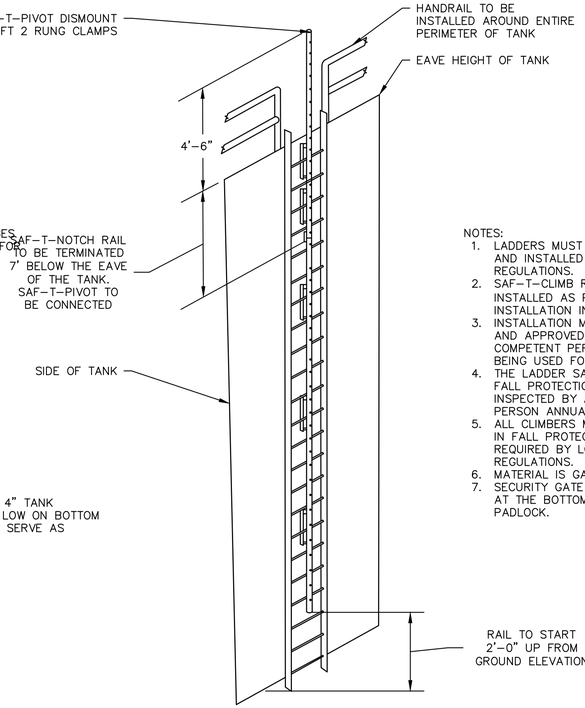
5 / C15 TYP. BOTTOM PENETRATION
NTS



6 / C15 SHELL MANWAY DETAILS
NTS

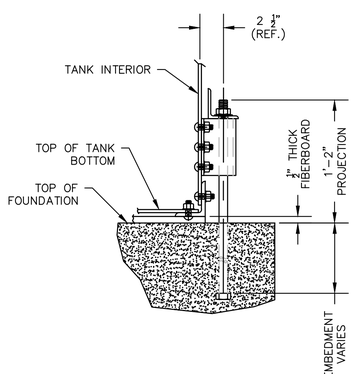


7 / C15 FLUSH CLEANOUT DETAIL
NTS

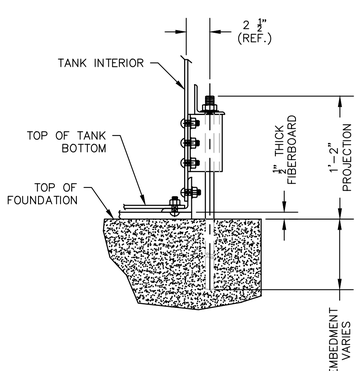


NOTES:
1. LADDERS MUST BE DESIGNED AND INSTALLED AS PER LOCAL REGULATIONS.
2. SAF-T-CLIMB RAIL MUST BE INSTALLED AS PER NORTH'S INSTALLATION INSTRUCTIONS.
3. INSTALLATION MUST BE REVIEWED AND APPROVED BY A COMPETENT PERSON BEFORE BEING USED FOR THE FIRST TIME.
4. THE LADDER SAFETY SYSTEM FOR FALL PROTECTION MUST BE INSPECTED BY A COMPETENT PERSON ANNUALLY.
5. ALL CLIMBERS MUST BE TRAINED IN FALL PROTECTION AS REQUIRED BY LOCAL REGULATIONS.
6. MATERIAL IS GALVANIZED.
7. SECURITY GATE TO BE INSTALLED AT THE BOTTOM OF LADDER WITH PADLOCK.

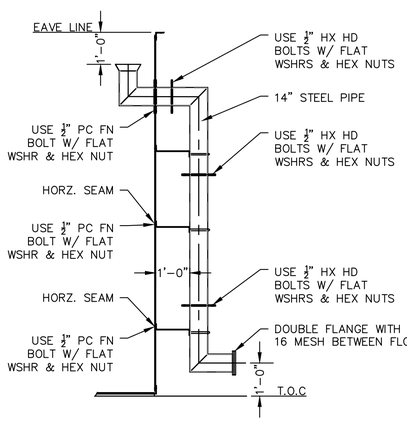
11 / C15 SAF-T-CLIMB DETAIL
NTS



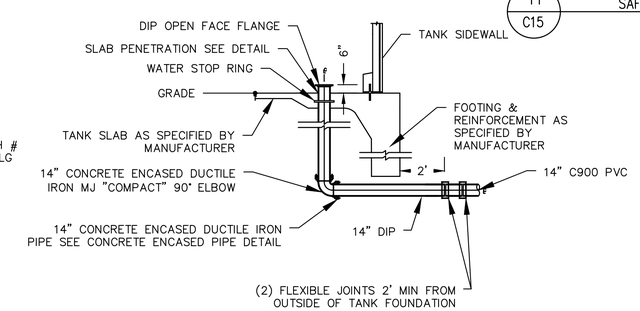
8 / C15 CAST IN PLACE ANCHOR BOLT DETAIL
NTS



9 / C15 EPOXY ANCHOR BOLT DETAIL
NTS



10 / C15 OVERFLOW ASSEMBLY
NTS



12 / C15 INLET | OUTLET PIPING DETAIL
NTS

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12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
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REVISIONS

NO.	DESCRIPTION	DATE	BY
-		-	-

WATER TREATMENT PLANT

TANK DETAILS

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC

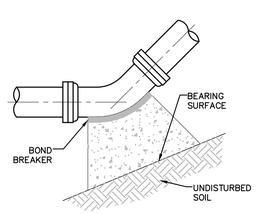
DATE
JAN 2022

JOB NUMBER
0111.0001

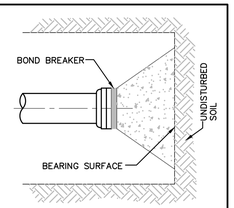
SCALE
NTS

EDITION
PERMITTING

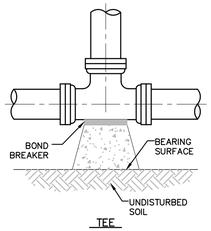
SHEET
C24 OF C26



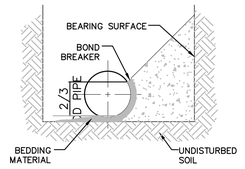
11 1/4°, 22 1/2°, 45° AND 90° BENDS



DEAD END



TEE



TYPICAL CROSS SECTION

NOTES:

1. ON 16" AND 20" TRANSMISSION MAINS, ALL BENDS SHALL BE BOTH RODDED AND KICKBLOCKED.
2. BEARING SURFACES SHOWN IN CHART ARE MIN.
3. BASED ON 150 PSI INTERNAL PIPE PRESSURE PLUS WATER HAMMER.
   2" – 4", 6", 8", 12" WATER HAMMER = 110 PSI
   16", 20" AND 24" WATER HAMMER = 70 PSI
4. BASED ON 3,000 PSF SOIL BEARING CAPACITY.
5. ALL VALVES, TEES, BENDS AND PLUGS SHALL BE BOTH RODDED AND KICKBLOCKED.

MINIMUM BEARING SURFACE AREA
(IN SQUARE FEET)

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11 1/4°	22 1/2°	45°	90°	
4" & LOWER	1.00	1.00	1.00	N/A	1.50
6"	1.00	1.25	2.25	N/A	3.00
8"	1.00	2.00	4.00	N/A	5.25
12"	2.25	4.50	8.75	N/A	11.25
16"	3.75	7.50	14.50	27.00	19.00
20"	5.00	10.00	19.50	35.50	25.00
24"	7.00	14.00	27.75	51.00	36.00

CITY OF OURAY

CONCRETE KICKBLOCKS
BEARING SURFACES & INSTALLATION

Scale: *NONE* | Date: *SEPTEMBER 2021*

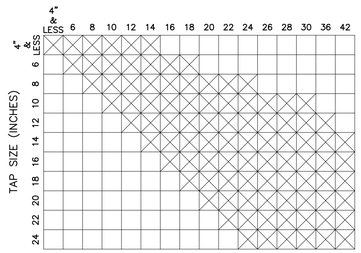
Revised:

CONCRETE KICKBLOCKS

WATER MAIN AND TAP SIZE COMBINATIONS WHICH REQUIRE A CONC KICKBLOCK BEHIND THE MAIN AT THE TAPPING SLEEVE OR SADDLE

ALL WATER MAINS

☒ INDICATED CONC KICKBLOCK REQD
MAIN SIZE (INCHES)



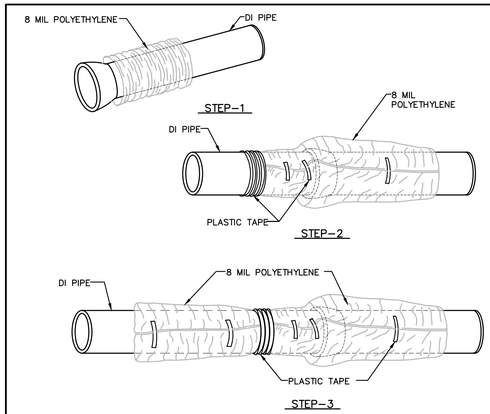
ANY KICKBLOCK REQUIREMENTS FOR WATER MAIN AND TAP SIZE COMBINATIONS OTHER THAN THOSE SHOWN ABOVE WILL REQUIRE SPECIAL DESIGN APPROVAL BY THE COMPANY ENGINEER.

CITY OF OURAY

CONCRETE KICKBLOCKS TABLE

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



FIELD INSTALLATION–POLYETHYLENE WRAP

STEP–1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

STEP–2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF TWO–INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

STEP–3 ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FT INTERVALS.

ALL FITTINGS, VALVES, BELL JOINT RESTRAINTS TO BE WRAPPED.

CITY OF OURAY

POLYETHYLENE WRAP

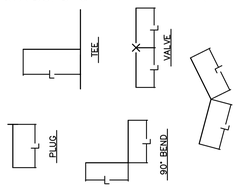
Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

ROD DIAMETER, GRADE & LENGTH OF RESTRAINED PIPE

PIPE SIZE	4" AND LESS			6"			8"			12"			16"			20"			24"		
FITTING	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G
90° BEND, TEE, PLUG, VALVE	3/4"	50'	MS	3/4"	71'	MS	3/4"	94'	MS	3/4"	134'	HS	1"	173'	HS	1 ¼"	212'	HS	–	250'	–
45° BEND	3/4"	25'	MS	3/4"	35'	MS	3/4"	46'	MS	3/4"	66'	HS	1"	85'	HS	1 ¼"	104'	HS	–	122'	–
22 1/2° BEND	3/4"	12'	MS	3/4"	17'	MS	3/4"	23'	MS	3/4"	32'	HS	1"	41'	HS	1 ¼"	50'	HS	–	59'	–
11 1/4° BEND	–	–	–	–	–	–	–	7'	MS	3/4"	10'	HS	1"	13'	HS	1 ¼"	15'	HS	–	18'	–

NOTES:
1. LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. CLAMPS, RODS AND MEGALUGS NOT ALLOWED FOR 24" & LARGER PIPES.
3. D=ROD DIAMETER, L=LENGTH, G=GRADE, MS=MILD STEEL, HS=HIGH STRENGTH.
4. BASED ON 5.0' MIN. COVER AND REQUIRED 350 PSI PRESSURE PLUS WATER HAMMER.
5. LENGTH OF RESTRAINED PIPE SHALL BE SYMMETRICAL ABOUT THE FITTING.
6. MS = MILD STEEL ROD ASTM A 36.
7. HS = HIGH STRENGTH ROD ASTM A 193 GRADE B7.
8. NUTS SHALL BE ASTM A563 GRADE A OR B HEAVY HEX FOR MILD STEEL AND GRADE DH HEAVY HEAVY HEXAGON HEAVY SERIES. HS NUTS SHALL CONFORM TO ASTM A194 GRADE 2H.
9. SEE TIED PIPE DETAIL W-24.
10. LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED TOGETHER AND IS NOT NECESSARILY THE LENGTH OF THE RODS.
11. USE THE RESTRAINED PIPE CHART TO ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.
12. CROSSES MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.
13. ALL MECHANICAL JOINTS SHALL BE RESTRAINED. USE MEGALUG MECHANICAL JOINT RESTRAINT DEVICE ON EACH SIDE OF THE FITTING OR VALVE. MECHANICAL JOINT RESTRAINT DEVICE SHALL BE PER DETAIL W-24.
14. A VALVE WELL WILL BE REQUIRED TO BE CLOSED WHEN EXCAVATING NEXT TO AN EXISTING VALVE.
15. ON PLUGS, TEES AND BENDS, KICKBLOCKS SHALL BE USED IN ADDITION TO RESTRAINT.
16. WHERE THE RESTRAINED PIPE LENGTH EXCEEDS THE LENGTH OF PIPE, THE VALVE(S) SHALL BE BASED ON THE SIZE OF THE PIPE NOT THE SIZE OF THE VALVE.
17. IF INTERNAL PRESSURE EXCEEDS 250 PSI OR IF PIPE DIAMETER IS OVER 10", THE DESIGN ENGINEER WILL PROVIDE LENGTH OF RESTRAINED PIPE FOR REVIEW.

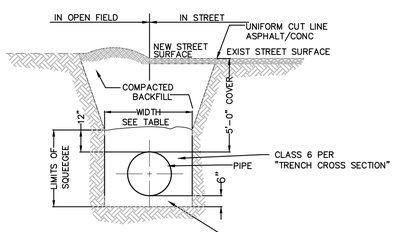


CITY OF OURAY

LENGTH OF RESTRAINED PIPE

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



TYPICAL TRENCH SECTION

IN ALL LOCATIONS & SERVICE LINES UP TO CURB STOP

PIPE ø	MIN WIDTH	MAX WIDTH
4" & LESS	1'–4"	2'–4"
6"	1'–6"	2'–6"
8"	1'–8"	2'–8"
12"	2'–0"	3'–0"
16"	2'–4"	3'–4"
20"	2'–8"	3'–8"
24"	4'–0"	5'–0"

NOTES:

1. MIN COVER TO BE 5.0' BELOW GRADE.
2. TRENCH WALLS TO BE SUPPORTED AS REQUIRED BY OSHA.
3. PIPE SHALL BE BEDDED WITH SQUEEGEE FROM 6" BELOW THE BOTTOM OF THE PIPE TO 12" ABOVE THE TOP OF THE PIPE.
4. COMPACTION SHALL BE IN ACCORDANCE WITH SPECIFICATIONS
5. TAPPING SADDLES REQUIRED IN AREAS WHERE THE BEDDING SECTION IS USED.
6. NEW STREET SURFACE SHALL COMPLY WITH COUNTY STANDARDS.

CITY OF OURAY

TYPICAL TRENCH SECTION
PIPE PROTECTION

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

PIPE BEDDING:

(A) INSTALLATION OF BEDDING AND PIPE: AFTER COMPLETION OF THE TRENCH EXCAVATION AND PROPER PREPARATION OF THE FOUNDATION, SIX INCHES (6") OF BEDDING MATERIAL SHALL BE PLACED ON THE TRENCH BOTTOM FOR SUPPORT UNDER THE PIPE. BELL HOLES SHALL BE DUG DEEP ENOUGH TO PROVIDE A MINIMUM OF TWO INCHES (2") OF CLEARANCE BETWEEN THE BELL AND BEDDING MATERIAL. ALL PIPE SHALL BE INSTALLED IN SUCH A MANNER AS TO ENSURE FULL SUPPORT OF THE PIPE BARREL OVER ITS ENTIRE LENGTH. AFTER THE PIPE IS ADJUSTED FOR LINE AND GRADE, AND THE JOINT IS MADE, THE BEDDING MATERIAL SHALL BE CAREFULLY PLACED AND TAMPED UNDER THE HAUNCHES OF THE PIPE AND IN THE PREVIOUSLY DUG BELL HOLES.

TAMPING IS HEREIN DEFINED AS THE ACT OF PLACING APPROVED BEDDING MATERIAL UNDER THE HAUNCHES OF THE PIPE, PAYING PARTICULAR ATTENTION TO VOIDS, BELL HOLES, AND SLING HOLES. THE PURPOSE OF TAMPING IS TO ENSURE UNIFORM SUPPORT FOR THE PIPE.

THE LIMITS OF BEDDING SHALL BE FROM SIX INCHES (6") BELOW THE BOTTOM OF THE PIPE TO TWELVE INCHES (12") ABOVE THE TOP OF THE PIPE. APPROVED BACKFILL MAY THEN BE INSTALLED TO THE GROUNDLINE. SEE SECTION 6 OF THESE STANDARDS FOR BACKFILL AND COMPACTION OF BACKFILL. COMPACTION OF BEDDING IS NOT REQUIRED. THE ONLY REQUIREMENT IS SUFFICIENT TAMPING TO ACHIEVE UNIFORM SUPPORT UNDER THE PIPE. SEE THE DETAILS FOR A TYPICAL TRENCH CROSS SECTION.

(B) BEDDING MATERIAL: THE BEDDING MATERIAL SHALL BE A CLEAN WELL–GRADED SAND OR SQUEEGEE SAND AND SHALL CONFORM TO THE FOLLOWING LIMITS WHEN TESTED BY MEANS OF LABORATORY SIEVES:

WELL–GRADED SAND

SIEVE SIZE	TOTAL PERCENT PASSING BY WEIGHT
3/8 INCH	100
NO. 4	95–100
NO. 8	80–100
NO. 16	50–85
NO. 30	25–60
NO. 50	10–30
NO. 100	2–10
NO. 200	0

SQUEEGEE SAND

SIEVE SIZE	TOTAL PERCENT PASSING BY WEIGHT
3/8 INCH	100
NO. 100	0–5

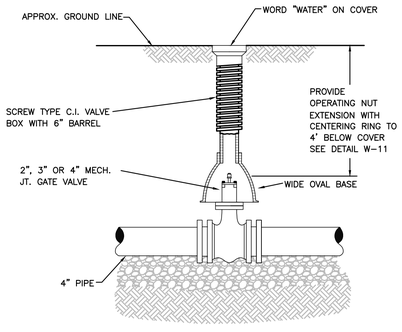
IF APPROVED BY THE DISTRICT, FINES FROM THE TRENCH WALLS AND SPOILS PILE MAY BE USED TO PROVIDE UNIFORM SUPPORT FOR THE PIPE. NO ROCK OR STONE LARGER THAN THAT ALLOWED BY THE SIEVE ANALYSIS, OR ANY OTHER DETRIMENTAL SUBSTANCE, SHALL BE PLACED CLOSER TO THE PIPE THAN SIX INCHES (6"). APPROVED BEDDING MATERIALS SHALL BE STOCKPILED ON THE JOBSITE TO BE USED IN THE EVENT NATURAL MATERIALS BECOME UNSATISFACTORY. THE DISTRICT RESERVES THE RIGHT TO REQUIRE THE USE OF THE SPECIFIED BEDDING MATERIAL AT ANY TIME.

CITY OF OURAY

PIPE BEDDING

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



6–INCH VALVE BOXES

MATERIALS:

VALVE BOX PARTS SHALL BE MADE FROM GRAY CAST IRON, ASTM A48 CLASS 20A.

USE OF AN ALUMINUM ALLOY AS A CASTING MATERIAL IS NOT ACCEPTABLE.

APPROVED PATTERNS:

VALVE BOXES SHALL BE THE THREE–PIECE ADJUSTABLE SCREW TYPE AND THE FOLLOWING TWO PATTERNS ARE ACCEPTABLE.

1. TYLER SCREW–TYPE 6–INCH CAST IRON VALVE BOX ASSEMBLY SERIES 6860 WITH NO. 160 LARGE OVAL BASE OR ENGINEER APPROVED EQUAL.

2. CLAY AND BAILEY SCREW–TYPE 6–INCH CAST IRON VALVE BOX ASSEMBLY NO. P–108 WITH NO. 160 LARGE OVAL BASE OR ENGINEER APPROVED EQUAL.

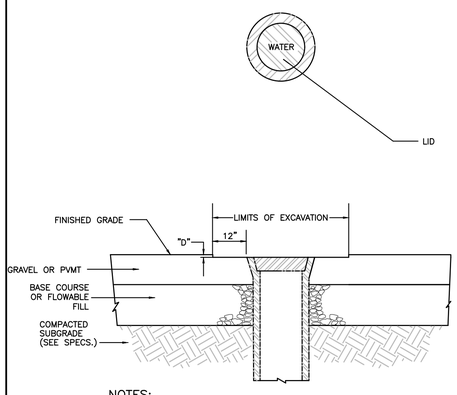
NOTES:
1. ALL C.I. SHALL BE WRAPPED WITH 8 MIL. MIN. THICKNESS POLYETHYLENE.
2. VALVE NUT SHALL BE CENTERED.
3. VALVE BOX SHALL BE PLUMB.

CITY OF OURAY

VALVE BOX DETAIL

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



NOTES:

1. "D" = 6" FOR GRAVEL ROADS (VALVE BOX COVERED)
2. VALVE BOX VEGETATED (NON ROADWAY) AREAS SHALL BE 6" ABOVE GRADE.

CITY OF OURAY

VALVE BOX FINISHING DETAIL

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300 720.749.4165
LAKEWOOD, CO 80228 WWW.ELEMENTENGINEERING.NET

REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

GENERAL DETAILS

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

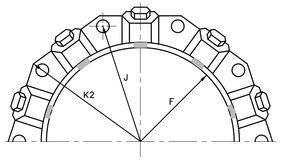
DATE
FEB 2022

JOB NUMBER
0111.0001

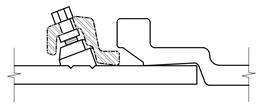
SCALE
NTS

EDITION
60% CMAR

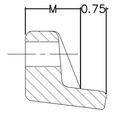
SHEET
C25 OF C26



MECHANICAL JOINT RESTRAINT



WEDGE DETAIL



BOLT HOLE DETAIL

DIMENSIONS

	NOMINAL PIPE SIZE	NO OF BOLTS	NO OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES	
DI	4" OR LESS	4	2					DI
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	
	16"	12	12	22.50	21.00	17.54	1.56	
	20"	14	14	27.00	25.50	21.74	1.69	

NOTES:

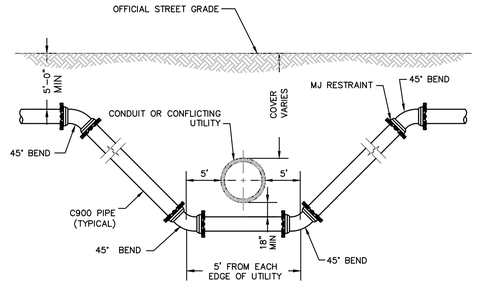
1. 2" PIPING RESTRAINTS SHALL BE EBBA IRON 6500 OR APPROVED EQUAL
2. OTHER MECHANICAL JOINT RESTRAINT DEVICES MUST BE APPROVED BEFORE INSTALLATION.

CITY OF OURAY

MECHANICAL JOINT RESTRAINT DETAILS

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



NOTES:

1) LENGTH OF EXTENSION OF PIPE AND RESTRAINED JOINTS SHALL BE IN ACCORDANCE WITH THESE ENGINEERING STANDARDS.

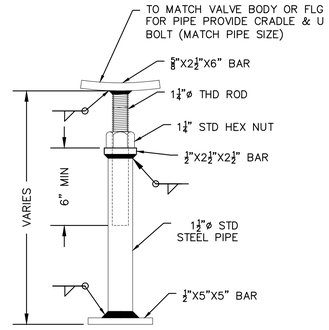
2) CATHODIC PROTECTION SHALL BE AS REQUIRED IN ACCORDANCE WITH THESE ENGINEERING STANDARDS.

CITY OF OURAY

OPEN CUT CROSSING BENEATH CONDUIT OR CONFLICTING UTILITY

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

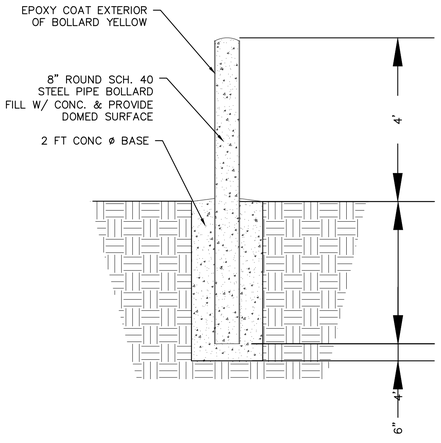


CITY OF OURAY

ADJUSTABLE PIPE SUPPORT

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

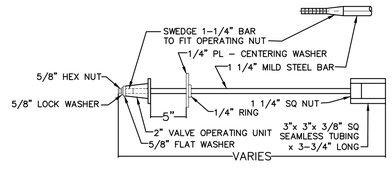


CITY OF OURAY

PIPE BOLLARD DETAIL

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



VALVE OPERATOR EXTENSION

EXTENSIONS ARE REQUIRED ON ALL VALVES WHERE TOP OF NUTS ARE GREATER THAN 5'. MULTIPLE EXTENSIONS ARE NOT ALLOWED.

CITY OF OURAY

VALVE OPERATOR EXTENSION

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300 720.749.4165
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WATER TREATMENT PLANT

GENERAL DETAILS

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
FEB 2022

JOB NUMBER
0111.0001

SCALE
NTS

EDITION
60% CMAR

SHEET
C26 OF C26

DESIGN PARAMETERS

1. JURISDICTION = OURAY COUNTY, COLORADO
2. BUILDING CODE
   - A. 2018 INTERNATIONAL BUILDING CODE
   - B. ASCE 7-16
3. DESIGN LOADS
   - A. DEAD LOADS (PROVIDED BY PRE ENGINEERED BUILDING MANUFACTURER)
     - a. MATERIAL WEIGHT AND COLLATERAL WEIGHT
   - B. LIVE LOADS (PROVIDED BY PRE ENGINEERED BUILDING MANUFACTURER)
   - C. WIND DESIGN DATA
     - a. ULTIMATE WIND SPEED, V_{ult} = **115** MPH (3 SECOND GUST)
     - b. RISK CATEGORY III
     - c. WIND EXPOSURE '**C**'
   - D. EARTHQUAKE DESIGN DATA
     - a. RISK CATEGORY III
     - b. SEISMIC IMPORTANCE FACTOR, I_e = 1.**0**
     - c. MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS
       - S_S = **=0.370**
       - S_1 =0.087
     - d. SITE CLASS **C**
     - e. DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS
       - S_{DS} = 0.325
       - S_{D1} = 0.088
     - f. SEISMIC DESIGN CATEGORY '**C**'

FOUNDATIONS

1. FOUNDATION DESIGN BASED ON PRELIMINARY GEOTECHNICAL ENGINEERING REPORT **XXX** PREPARED BY GROUND ENGINEERING, DATED FEBRUARY 24, 2022.
2. SPREAD FOOTING CRITERIA
   - A. ALLOWABLE BEARING PRESSURE = **X,XXX** PSF
   - B. MINIMUM DEAD LOAD PRESSURE = **X,XXX** PSF
   - C. MINIMUM FROST DEPTH = **3'-0"**
3. WALLS
   - A. EQUIVALENT LATERAL PRESSURES
     - a. AT REST = **XX** PCF
     - b. ACTIVE = **XX** PCF
     - c. PASSIVE = **XX** PCF
4. SLABS ON GRADE CRITERIA
   - A. MODULUS OF SUBGRADE REACTION = **XX** PCI
5. COEFFICIENT OF FRICTION = **0.XX**
6. ***PROVIDE ANY SPECIAL REQUIREMENTS WITH REGARDS TO OVER-EXCAVATION, ETC. AS REQUIRED PER GEOTECHNICAL REPORT. BE SPECIFIC***

CONCRETE

1. CONCRETE HAS BEEN DESIGNED IN ACCORDANCE WITH ACI-318 AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI-301 WITH TOLERANCES GIVEN IN ACI 117.
2. PROVIDE CONTROL JOINTS IN CONCRETE WALLS AT 30' MAXIMUM SPACING. RE: 2/S201
3. PROVIDE CONTROL JOINTS IN CONCRETE SLABS-ON-GRADE AT 12' MAXIMUM SPACING. RE: 3/S201
4. LOCATE CONSTRUCTION JOINTS AND CONTROL JOINT LOCATIONS WHERE POSSIBLE. SLABS AND BEAMS SHALL NOT HAVE A HORIZONTAL CONSTRUCTION JOINTS; VERTICAL CONSTRUCTION JOINTS SHALL BE LOCATED AT THIRD POINT OF SPAN AND SHALL BE MADE WITH VERTICAL BULKHEADS AND HORIZONTAL KEYS. ALL REINFORCING SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS. PROVIDE BONDING COMPOUND BETWEEN ADJACENT POURS.
5. PROPERLY CONSOLIDATE ALL CONCRETE DURING PLACEMENT. PROVIDE SPECIAL CONSOLIDATION EFFORTS TO WORK AROUND REINFORCING AND EMBEDDED ITEMS AND ALSO CORNERS OF FORMS FOLLOWING ACI RECOMMENDATIONS.
6. CURING SHALL BE IN ACCORDANCE WITH ACI 301. DURING HOT OR COLD WEATHER, CURING SHALL BE IN ACCORDANCE WITH ACI 305 AND ACI 306. INTERIOR SLABS THAT RECEIVE FLOOR FINISHES SHALL BE CURED USING MOISTURE-COVER CURING ONLY. ALL OTHER CONCRETE MAY BE CURED BY WET CURING, MOISTURE COVER CURING, OR LIQUID MEMBRANE CURING.
7. GENERAL CONTRACTOR IS RESPONSIBLE FOR DESIGN AND CONSTRUCTION OF ALL FORMWORK. FORMWORK SHALL BE SUFFICIENT TO SUPPORT THE WET WEIGHT OF CONCRETE PLUS A CONSTRUCTION LIVE LOAD OF 50 PSF.

CONCRETE MIX DESIGN					
USAGE	CEMENT	f'_c (PSI)	MAX. W/C	MAX AGG	AIR
FOOTINGS	I/II	4,000	0.45	3/4"	5%
WALLS/PILASTER	I/II	4,000	0.45	3/4"	5%
INTERIOR SLAB ON GRADE	I/II	4,000	N/A	3/4"	N/A

NOTES:
1. ALL CONCRETE SHALL BE MADE WITH NORMAL WEIGHT STONE AGGREGATE CONFORMING TO ASTM C33.
2. PORTLAND CEMENT SHALL CONFORM TO ASTM C150.
3. FLY ASH SHALL CONFORM TO ASTM C618, CLASS F OR C. FLY ASH MAY BE SUBSTITUTED FOR CEMENT UP TO 20% BY WEIGHT OF THE TOTAL CEMENTITIOUS MATERIAL.
4. AIR ENTRAINING AGENT SHALL CONFORM TO ASTM C260.
5. WATER REDUCING ADMIXTURE SHALL CONFORM TO ASTM C494, TYPE A. HIGH RANGE WATER REDUCING ADMIXTURE SHALL CONFORM TO ASTM C494, TYPE F OR G.
6. ACCELERATOR SHALL CONFORM TO ASTM C494, TYPE E.
7. RETARDING ADMIXURE SHALL CONFORM TO ASTM C494, TYPE D.

REINFORCING

1. REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60, U.N.O.
2. WELDING OF REINFORCING IS NOT ALLOWED UNLESS DETAILED IN THE DRAWINGS. WELDABLE REINFORCING SHALL CONFORM TO ASTM A706, GRADE 40 OR 60.
3. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A1064
4. ALL REINFORCING BAR BENDS SHALL BE MADE IN THE FABRICATORS SHOP UNLESS APPROVED BY THE ENGINEER.
5. REINFORCING FOR STRUCTURAL CONCRETE SHALL BE AS FOLLOWS:
   - A. ALL REINFORCING STEEL AND ACCESSORIES SHALL BE DETAILED, FABRICATED, AND PLACED IN ACCORDANCE WITH ACI.
   - B. REBAR INSTALLER SHALL USE THE STRUCTURAL DRAWINGS AND APPROVED SHOP DRAWINGS FOR PLACEMENT OF REINFORCING.
   - C. REINFORCING COVER SHALL BE AS FOLLOWS:
     - a. CONCRETE PLACED AGAINST EARTH = 3"
     - b. CONCRETE PLACED IN FORMS BUT EXPOSED TO EARTH OR WEATHER
       - #5 BARS AND SMALLER = 1-1/2"
       - BARS LARGER THAN #5 = 2"
     - c. COLUMNS, GIRDERS, BEAMS, GRADE BEAMS = 1-1/2"
     - d. SLABS AND WALLS = 3/4"
   - D. PROVIDE CORNER BARS TO MATCH THE SIZE AND SPACING OF ALL HORIZONTAL REINFORCING IN WALLS AND BEAMS.
   - E. PROVIDE DEVELOPMENT LENGTH AND LAP SPLICES FOR REINFORCING PER THE SCHEDULE ON THIS SHEET.
   - F. WELDED WIRE FABRIC SHALL HAVE A MINIMUM LAP SPLICE OF ONE FULL MESH + 2" (8" MINIMUM). SPLICES SHALL BE WIRE TIED.
   - G. SPLICE OF TOP BARS SHALL BE AT MID-SPAN AND BOTTOM BARS SHALL BE AT SUPPORTS FOR ALL BEAMS AND FOR GRADE BEAMS AND FOUNDATION WALLS WITH ISOLATED (I.E. NON-CONTINUOUS) FOUNDATIONS.
   - H. PROVIDE (2)#5 BARS (ONE EACH FACE) ALL SIDES AROUND OPENINGS IN SLABS AND WALLS. EXTEND BARS A DEVELOPMENT LENGTH PAST FACE OF OPENING.

CONCRETE REBAR: CLASS B LAP SPLICE SCHEDULE (ACI 318)		
BAR SIZE	LAP SPLICE (IN.); $f'c$ = 3000 PSI	LAP SPLICE (IN.); $f'c$ = 4000 PSI
#3	22	19
#4	29	25
#5	36	31
#6	43	37
#7	63	54
#8	72	62
#9	81	70
#10	91	79
#11	101	87

STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION AND CODE OF STANDARD PRACTICE.
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS, UNLESS NOTED OTHERWISE
   - A. PLATES AND BARS SHALL BE ASTM A36
   - B. SQUARE AND RECTANGULAR HSS SHALL BE ASTM A500, GRADE B (F_y = 46 KSI)
   - C. BOLTS SHALL BE ASTM A325, TYPE N
   - D. ANCHOR BOLTS SHALL BE ASTM F1554, GRADE 36
   - E. HEADED ANCHOR STUDS SHALL BE ASTM A108
3. ALL WELDS SHALL BE MADE IN ACCORDANCE WITH AWS, D1.1. WELDERS SHALL HAVE EVIDENCE OF PASSING THE STANDARD QUALIFICATION TESTS.
4. STRUCTURAL STEEL SHALL NOT BE FIELD MODIFIED WITHOUT ENGINEERS APPROVAL.
5. THE STEEL SUPPLIER SHALL PROVIDE ALL MISCELLANEOUS STRUCTURAL STEEL ITEMS NECESSARY TO FULFILL THE INTENT SHOWN IN THE DRAWINGS.

SUBMITTALS

1. THE CONTRACTOR SHALL SUBMIT THE FOLLOWING SUBMITTALS FOR STRUCTURAL ENGINEER'S REVIEW PRIOR TO FABRICATION OF SPECIFIC ELEMENTS:
   - A. CONCRETE MIX DESIGNS. MIX DESIGN SUBMITTAL SHALL INCLUDE THE FOLLOWING:
     - a. UNIQUE MIX IDENTIFICATION DESIGNATION FOR EACH MIX SUBMITTED.
     - b. STATEMENT OF INTENDED USE
     - c. MIX PROPORTIONS INCLUDING ALL ADMIXTURES USED
     - d. MANUFACTURERS DATA FOR ALL ADMIXTURES USED
     - e. WET AND DRY UNIT WEIGHT
     - f. ENTRAINED AIR CONTENT
     - g. DESIGN SLUMP
     - h. REQUIRED AVERAGE STRENGTH
     - i. STRENGTH TEST DATA
   - B. CAST-IN PLACE CONCRETE REINFORCING SHOP DRAWINGS INDICATING BAR SIZE, SPACING, LOCATIONS,
   - C. CONCRETE LAYOUT PLAN
   - D. CONCRETE CONTROL JOINT PLAN
   - E. STRUCTURAL STEEL
2. THE CONTRACTOR SHALL SUBMIT THE FOLLOWING DEFERRED SUBMITTALS TO THE BUILDING DEPARTMENT AFTER REVIEW BY THE ARCHITECT AND ENGINEERS OF RECORD. THE CONTRACTOR SHALL PROVIDE COMPLETE DRAWINGS AND CALCULATIONS FOR DEFERRED SUBMITTALS AND THESE DRAWINGS AND CALCULATIONS MUST BE PERFORMED BY, OR UNDER THE DIRECT SUPERVISION OF, A LICENSED ENGINEER IN THE PROJECT JURISDICTION AND SHALL BE SUBMITTED BEARING AN ENGINEERS SEAL AND SIGNATURE.
   - A. PRE-ENGINEERED METAL BUILDING DESIGN AND DRAWINGS
3. SUBMITTALS SHALL BE PROVIDED IN A TIMELY FASHION AS TO ALLOW 10 WORKING DAY REVIEW TIME BY THE DESIGN TEAM.
4. PRIOR TO SUBMITTAL TO THE DESIGN TEAM, THE GENERAL CONTRACTOR SHALL REVIEW ALL SUBMITTALS FROM THE SUBCONTRACTORS AND STAMP THEM ACCORDINGLY.
5. REPRODUCTION OF THE CONTRACT DOCUMENTS FOR SHOP DRAWINGS IS NOT PERMITTED.

GENERAL

1. THE ARCHITECT, STRUCTURAL ENGINEER AND OTHER DESIGN DISCIPLINES SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES WITHIN THE DRAWINGS PRIOR TO PROCEEDING WITH THE WORK.
2. CONFLICTS WITHIN THE STRUCTURAL DRAWINGS SHALL BE REPORTED TO THE STRUCTURAL ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
3. THE SIZE, WEIGHT AND LOCATIONS OF ALL EQUIPMENT, PADS, AND PENETRATIONS FOR MECHANICAL, ELECTRICAL, AND PLUMBING WORK SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO PROCEEDING WITH THE WORK.
4. THE STRUCTURAL DRAWINGS HAVE BEEN PREPARED USING AVAILABLE INFORMATION OF EXISTING CONDITIONS. DURING CONSTRUCTION, THE CONTRACTOR MAY ENCOUNTER EXISTING CONDITIONS WHICH WERE UNKNOWN DURING DESIGN. SUCH CONDITIONS MAY INTERFERE WITH NEW CONSTRUCTION OR REQUIRE PROTECTION AND/OR SUPPORT OF EXISTING WORK. THE CONTRACTOR SHALL VERIFY SITE CONDITIONS PRIOR TO STARTING THE WORK AND SHALL NOTIFY THE ENGINEER OF ALL DISCOVERIES NOT SHOWN WITHING THE STRUCTURAL DRAWINGS THAT MAY JEOPARDIZE THE EXISTING STRUCTURE OR INTERFERE WITH PROPER EXECUTION OF THE NEW CONSTRUCTION.
5. REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN IN THE STRUCTURAL DRAWINGS. DO NOT SCALE THE STRUCTURAL DRAWINGS.
6. THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL TEMPORARY BRACING AND/OR SUPPORT THAT MAY BE REQUIRED AS THE RESULT OF THE CONTRACTOR'S CONSTRUCTION MEANS, METHODS, AND SEQUENCING. THE DESIGN AND INSTALLATION OF ANY REQUIRED TEMPORARY BRACING SHALL BE BY THE CONTRACTOR.
7. ANY CONTRACTOR INDUCED CONSTRUCTION LOADING, INCLUDING BUT NOT LIMITED TO STOCKPILING OF MATERIAL OR EQUIPMENT, SHALL NOT EXCEED THE DESIGN LOADS LISTED IN THE DRAWINGS.
8. DO NOT PLACE BACKFILL AGAINST FOUNDATION WALLS UNTIL THE TOP AND BOTTOM OF WALLS ARE ADEQUATELY BRACED, EITHER BY PERMANENT STRUCTURAL FLOORS OR TEMPORARY BRACING PROVIDED BY THE CONTRACTOR.
9. ELECTRICAL CONDUIT CAST IN CONCRETE SLABS SHALL BE 1" (MAXIMUM) DIAMETER. CONDUIT RUNS CAN BE GROUPED WITH A MAXIMUM OF 3 PER GROUP AND ADJACENT GROUPS SHALL BE SPACED 12" O.C. MINIMUM. CONDUIT SHALL BE PLACED AT MID-DEPTH OF SLAB. NO MORE THAN TWO LAYERS OF CONDUIT CAN CROSS AT ANY LOCATION.
10. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF ELEVATED CONCRETE SLAB POURS AT LEAST 5 BUSINESS DAYS IN ADVANCE OF POUR.

TESTING

1. ALL TESTING SHALL BE DONE BY AN APPROVED TESTING LABORATORY SELECTED AND PAID FOR BY THE OWNER.
2. CAST IN PLACE CONCRETE TESTING SHALL BE AS FOLLOWS:
   - A. TEST CYLINDERS SHALL BE OBTAINED IN ACCORDANCE WITH ASTM C172.
   - B. MAKING, CURING, AND HANDLING OF TEST CYLINDERS SHALL BE IN ACCORDANCE WITH ASTM C31.
   - C. TESTING OF CYLINDERS SHALL BE IN ACCORDANCE WITH ASTM C39. TEST THE CYLINDERS AS FOLLOWS:
     - a. ONE CYLINDER 3 DAYS (POST-TENSIONED SLAB ONLY)
     - b. ONE CYLINDER AT 7 DAYS
     - c. TWO CYLINDERS AT 28 DAYS
     - d. ONE CYLINDER AT 56 DAYS, IF NECESSARY.
   - D. INDEPENDENT TESTING AGENCY SHALL TAKE AT LEAST ONE SET OF FOUR CYLINDERS FOR EACH 100 CUBIC YARDS OF CONCRETE OF EACH CLASS OF CONCRETE. TAKE FIVE CYLINDERS FOR POST-TENSIONED CONCRETE SLABS
   - E. SAMPLES FOR EACH SET OF TEST CYLINDERS SHALL BE TESTED FOR AIR CONTENT, TEMPERATURE, AND SLUMP. SLUMP AND AIR CONTENT MUST MEET PROJECT SPECIFICATIONS OR SHALL BE REJECTED PRIOR TO PLACEMENT.
   - F. SAMPLES SHALL BE COLLECTED AT POINT OF PLACEMENT.
   - G. TEST REPORTS SHALL BE SUBMITTED TO THE GENERAL CONTRACTOR AND EVSTUDIO AS SOON AS POSSIBLE, WITHIN FIVE DAYS OF LABORATORY TESTING

PRECONSRUCTION MEETINGS

1. THE GENERAL CONTRACTOR SHALL CONDUCT THE FOLLOWING PRECONSTRUCTION MEETINGS:
   - A. CAST-IN-PLACE CONCRETE CONSTRUCTION
2. REQUIRED ATTENDEES FOR ALL PRECONSTRUCTION MEETINGS INCLUDE THE FOLLOWING:
   - A. GENERAL CONTRACTOR
   - B. SUBCONTRACTOR PERFORMING THE WORK
   - C. STRUCTURAL ENGINEER
   - D. INDEPENDENT TESTING AGENCY
3. OPTIONAL ATTENDEES FOR ALL PRECONSTRUCTION MEETINGS INCLUDE THE FOLLOWING:
   - A. OWNER AND/OR OWNERS REPRESENTATIVE
   - B. ARCHITECT

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STRUCTURAL GENERAL NOTES

S000

TABLE 1705.3
REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD (a)	IBC REFERENCE
1. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	-	X	ACI 318 CH. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
2. REINFORCING BAR WELDING:			AWS D1.4 ACI318: 26.6.4	-
A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706;	-	X		
B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"; AND	-	X		
C. INSPECT ALL OTHER WELDS.	X	-		
3. INSPECT ANCHORS CAST IN CONCRETE.	-	X	ACI 318: 17.8.2	-
4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS. (b)			ACI 318: 17.8.2.4 ACI 318: 17.8.2	-
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X	-		
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.	-	X		
5. VERIFY USE OF REQUIRED DESIGN MIX.	-	X	ACI 318: CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF CONCRETE.	X	-	ASTM C172 ASTM C31 ACI 318: 26.5, 26.12	1908.1
7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	-	ACI 318: 26.5	1908.6, 1908.7, 1908.8
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	X	ACI 318: 26.5.3-26.5.5	1908.9
9. INSPECT PRESTRESSED CONCRETE FOR:			ACI 318: 26.10	-
A. APPLICATION OF PRESTRESSING FORCES; AND	X	-		
B. GROUTING OF BONDED PRESTRESSING TENDONS.	X	-		
10. INSPECT ERECTION OF PRECAST CONRETE MEMBERS.	-	X	ACI 318: CH. 26.9	-
11. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	X	ACI 318: 26.11.2	-
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED.	-	X	ACI 318: 26.11.2 (b)	-

a) WHERE APPLICABLE, SEE ALSO SECTION 1705.12, SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE.
b) SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH 17.8.2 IN ACI 318, OR OTHER QUALIFICATION PROCEDURES. WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED, SPECIAL INSPECTION REQUIREMENTS SHALL BE SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO THE COMMENCEMENT OF THE WORK.

TABLE 1705.6
REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	-	X
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	-	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	-	X
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	-
5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	-	X

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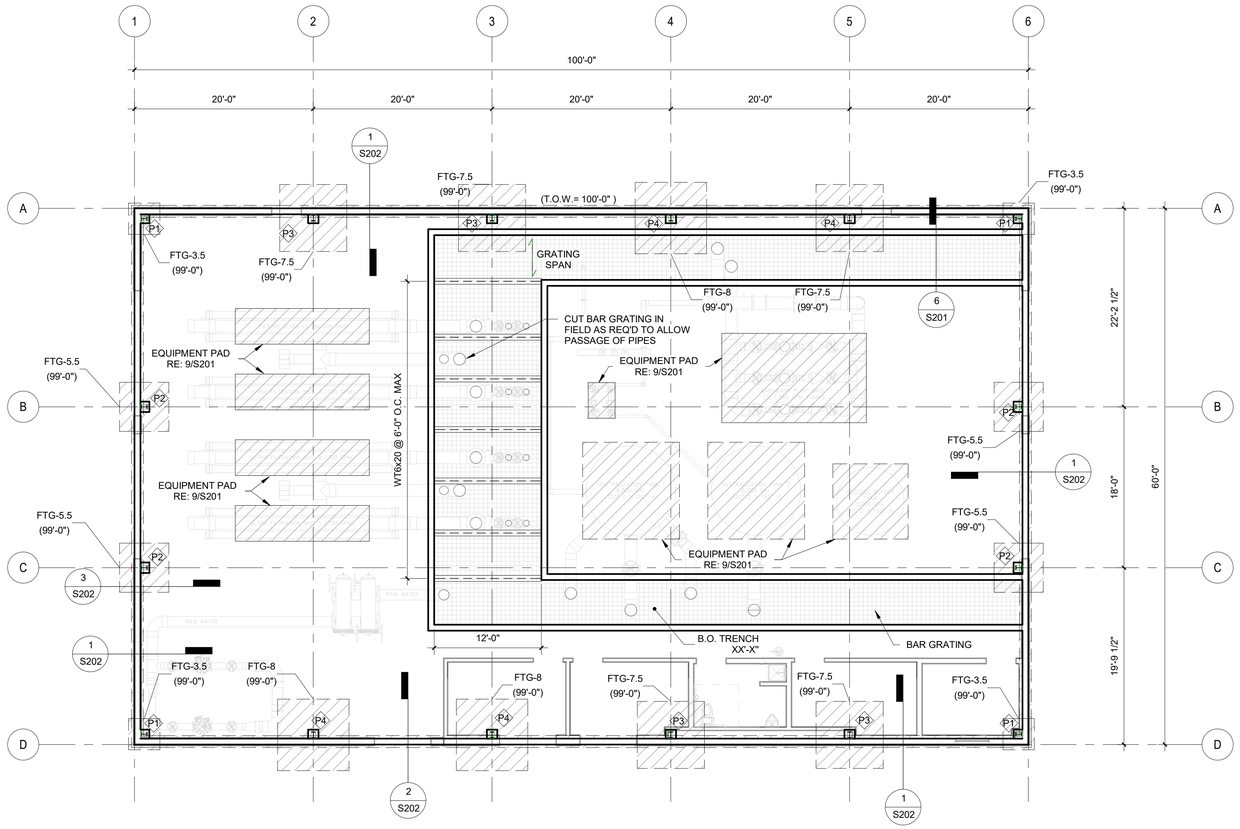
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STATEMENT OF SPECIAL INSPECTIONS
2018

S002



INDIVIDUAL FOOTING SCHEDULE				
TYPE	THICKNESS	WIDTH	LENGTH	REINFORCING
FTG-3	1'-0"	3'-0"	3'-0"	#5 @ 12" O.C. EA WAY (BOT)
FTG-3.5	1'-0"	3'-6"	3'-6"	#5 @ 12" O.C. EA WAY (BOT)
FTG-4	1'-0"	4'-0"	4'-0"	#5 @ 12" O.C. EA WAY (BOT)
FTG-4.5	1'-0"	4'-6"	4'-6"	#5 @ 12" O.C. EA WAY (BOT)
FTG-5	1'-0"	5'-0"	5'-0"	#5 @ 12" O.C. EA WAY (BOT)
FTG-5.5	1'-0"	5'-6"	5'-6"	#5 @ 12" O.C. EA WAY (BOT)
FTG-6	1'-0"	6'-0"	6'-0"	#5 @ 12" O.C. EA WAY (BOT)
FTG-6.5	1'-0"	6'-6"	6'-6"	#5 @ 12" O.C. EA WAY (BOT)
FTG-7	1'-0"	7'-0"	7'-0"	#5 @ 12" O.C. EA WAY (BOT)
FTG-7.5	1'-0"	7'-6"	7'-6"	#5 @ 12" O.C. EA WAY (BOT)
FTG-8	1'-0"	8'-0"	8'-0"	#5 @ 12" O.C. EA WAY (BOT)

FOUNDATION DESIGN BASED ON PRELIMINARY GEOTECH REPORT AND PARTIALLY COMPLETED BORINGS. FINAL FOUNDATION DESIGN TO BE COMPLETE UPON RECEIPT OF FINAL GEOTECH REPORT. POTENTIAL ADDITIONAL COSTS FOR EXCAVATION AND/OR BACKFILL MAY NEED TO BE ACCOUNTED FOR, RE: PRELIMINARY GEOTECH REPORT FOR ADD'L INFORMATION.

1 FOUNDATION PLAN

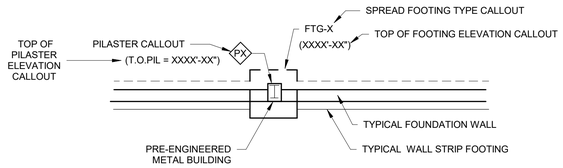
1/8" = 1'-0"

FOUNDATION PLAN NOTES

1. 100'-0" = USGS **XXXX.XX.**
2. TOS PER PLAN.
3. INTERIOR SLABS ON GRADE SHALL BE **4" THICK NORMAL WEIGHT CONCRETE REINFORCED WITH 4x4-W4.0xW4.0** WELDED WIRE FABRIC OR #3'S @ 12" O.C. AT MID-DEPTH & PLACED ON **4"** THICK GRANULAR LAYER. INTERIOR SLABS ON GRADE SHALL BE PLACED OVER A VAPOR BARRIER IF REQUIRED BY ARCHITECTURE OR GEOTECHNICAL ENGINEER.
4. ALL TOP OF WALLS ARE AT ELEVATION = **XXXX'-X"** U.N.O. ON PLAN. TOP OF WALL TO MATCH TOP OF INTERIOR SLAB ELEVATION U.N.O. ON PLAN.
5. ALL STRIP FOOTINGS ARE **1'-4" WIDE X 1'-0" DEEP** U.N.O. IN DETAILS
6. ALL TOP OF FOOTINGS ARE AT ELEVATION = **XXXX'-X"** U.N.O. ON PLAN. NOTE BOTTOM OF FOOTING ARE TO BE A MINIMUM OF 2'-6" BELOW ADJACENT GRADE. ALL TOPS OF FOOTINGS ARE INDICATED BASED ON ASSUMED GRADING. G.C. TO VERIFY ALL FOOTING ELEVATIONS WITH FINAL GRADING AND NOTIFY S.E.O.R. OF ANY DISCREPANCIES.
7. **RE: S203** FOR PILASTER SCHEDULE. RE: PLAN FOR PILASTER TAG. ALL TOP OF PILASTER ELEVATIONS TO MATCH TOP OF INTERIOR SLAB ELEVATIONS U.N.O. ON PLAN. TOP OF PILASTER ELEVATIONS INDICATED AS (T.O.PIL=XXXX'X") ON PLAN. (G.C. TO COORDINATE ALL TOP OF PILASTER ELEVATIONS WITH BASE PLATE ELEVATIONS PER PRE-ENGINEERED BUILDING MANUFACTURER)
8. RE: **PLAN** FOR FOOTING SCHEDULE.
9. RE: **3/S201** FOR TYPICAL SLAB ON GRADE JOINT DETAIL.
10. RE: **4/S201** FOR ADDN'L SLAB REINFORCING REQUIRED AT COLUMN BLOCKOUTS AND PILASTER REENTRANT CORNERS.
11. SEE **2/S201** FOR CONCRETE WALL JOINT DETAILS AND **1/S201** FOR TYPICAL CONCRETE WALL INTERSECTIONS.
12. FOR PENETRATIONS THROUGH FOUNDATION WALLS RE: **5/S201.** NOTIFY S.E.O.R WHEN LOCATING PENETRATIONS.
13. PROVIDE FINISH AT TOP OF PILASTERS TO MATCH EXPOSED SLAB FINISH PER ARCHITECTURAL DRAWINGS.
14. GRATING IN THE BUILDING SHALL BE 1 1/2" DEEP GALVANIZED STEEL GRATING WITH A NON-SLIP SURFACE.

PRE ENGINEERED METAL BUILDING NOTES

1. SEE PRE ENGINEERED METAL BUILDING DRAWINGS FOR ALL COLUMNS, BASEPLATES, ANCHOR BOLTS, GIRTS AND DESIGN LOADS. THE DESIGN OF THESE ELEMENTS IS THE RESPONSIBILITY OF THE PRE ENGINEERED METAL BUILDING MANUFACTURER
2. FOUNDATIONS HAVE BEEN DESIGNED BASED ON LOADS PROVIDED BY THE PRE-ENGINEERED METAL BUILDING MANUFACTURER
3. ALL FIELD FRAME OPENINGS REQUIRE 1/2" DIA X 15" LONG ANCHOR BOLTS (12" MIN EMBED). G.C. TO COORDINATE QUANITY AND LOCATION WITH PEMB AND ARCH.



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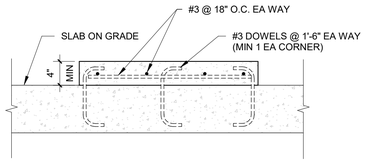
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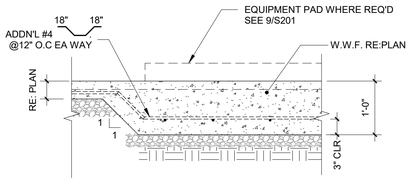
FOUNDATION PLAN

S100



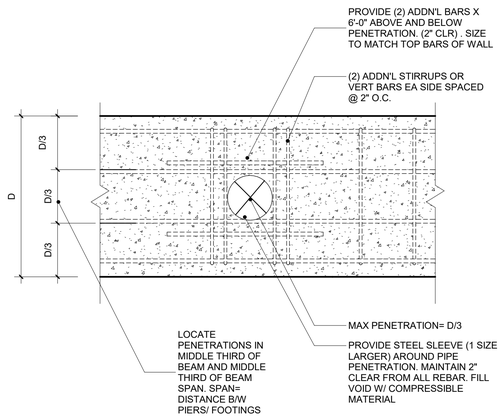
NOTES:
1. CONTRACTOR SHALL COORDINATE THE LOCATION, SIZE, AND EXTENT OF EQUIPMENT PADS WITH THE GENERAL ARRANGEMENT DRAWINGS AND THE EQUIPMENT PURCHASED

9 EQUIPMENT PAD
1" = 1'-0"

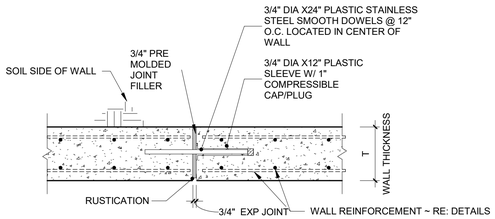


NOTES:
1. REINFORCING SHOWN ON PLAN IS IN ADDITION TO THE TYPICAL SLAB ON GRADE REINFORCING. SLAB ON GRADE REINFORCING SHALL BE CONTINUOUS THROUGH AREAS OF THICKENED SLAB

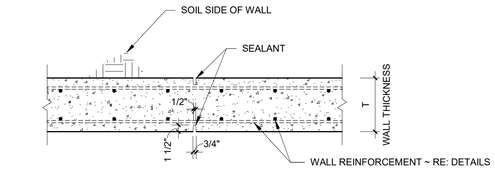
8 THICKENED SLAB AT EQUIPMENT PAD
3/4" = 1'-0"



5 WALL PENETRATION
3/4" = 1'-0"

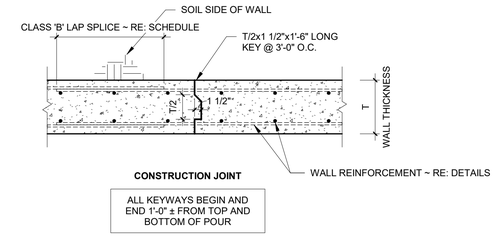


EXPANSION JOINT



CONTROL JOINT

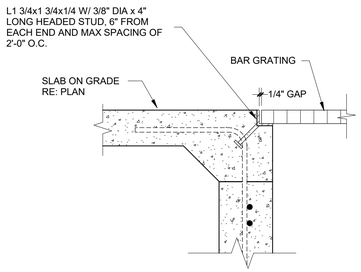
NOTE: PLACE CONTROL JOINTS AT 30'-0" O.C. MAX



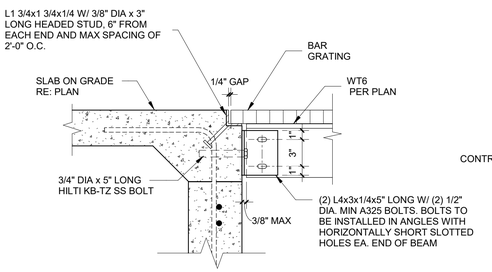
CONSTRUCTION JOINT

ALL KEYWAYS BEGIN AND END 1'-0" ± FROM TOP AND BOTTOM OF POUR

2 TYPICAL CONCRETE WALL JOINT DETAIL
3/4" = 1'-0"



AT 5'-0" WIDE TRENCH



AT 12'-0" WIDE TRENCH

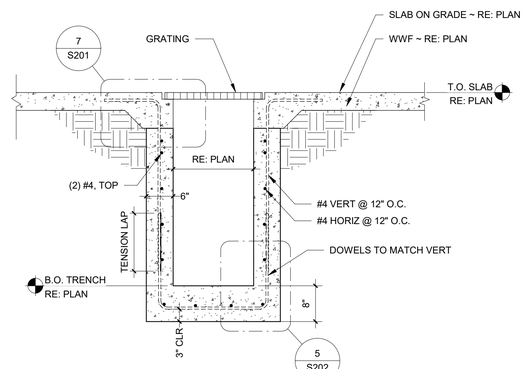
7 GRATING OVER TRENCH
1 1/2" = 1'-0"



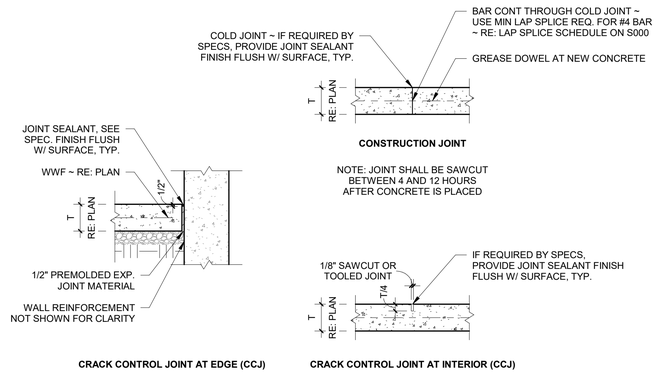
AT CORNER PILASTER

AT TYPICAL EXTERIOR PILASTER

4 S.O.G. JOINT AT COL/PILASTER
1/2" = 1'-0"



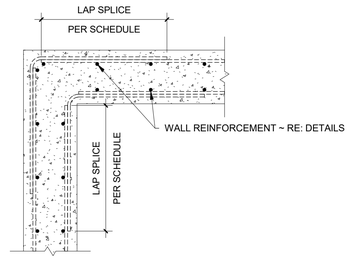
6 TYPICAL TRENCH DETAIL
3/4" = 1'-0"



CRACK CONTROL JOINT AT EDGE (CCJ)

CRACK CONTROL JOINT AT INTERIOR (CCJ)

3 TYPICAL SOG JOINT DETAIL
3/4" = 1'-0"



1 TYPICAL CONCRETE WALL INTERSECTIONS
3/4" = 1'-0"

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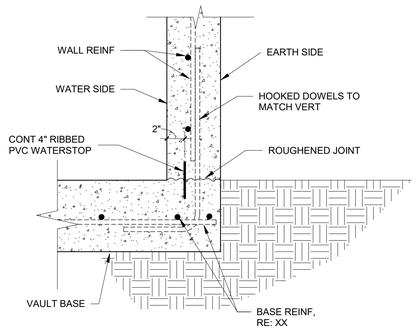
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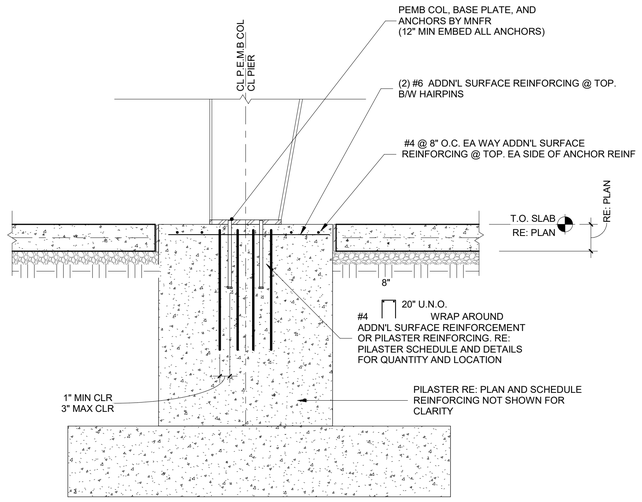
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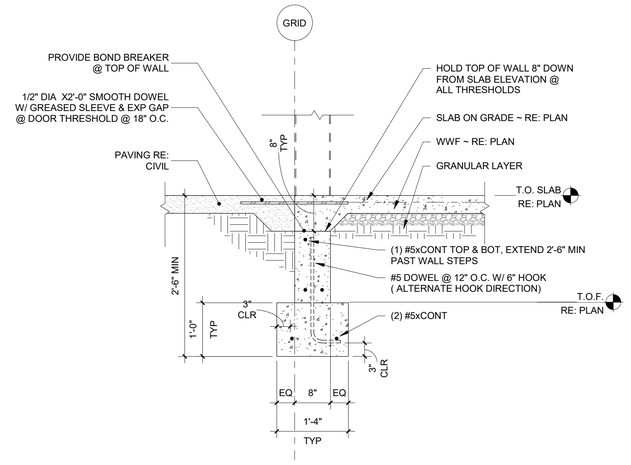
TYPICAL DETAILS
S201



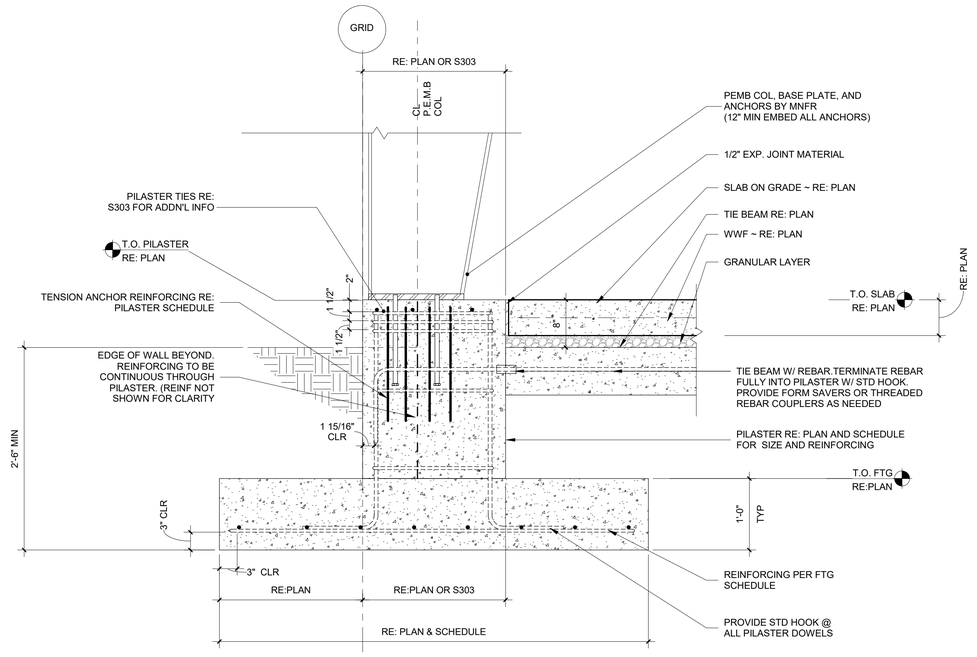
5 TRENCH WATERSTOP
1 1/2" = 1'-0"



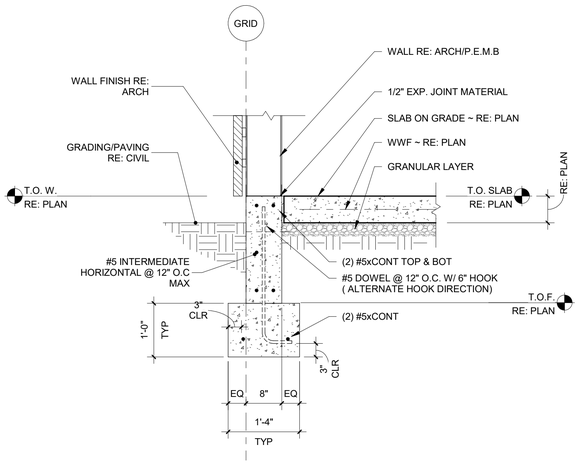
4 TENSION REINFORCEMENT
3/4" = 1'-0"



2 TYP FDN WALL @ ENTRY THRESHOLD
3/4" = 1'-0"



3 TYP INTERIOR PILASTER
1" = 1'-0"



1 TYP FDN WALL @ P.E.M.B.
3/4" = 1'-0"

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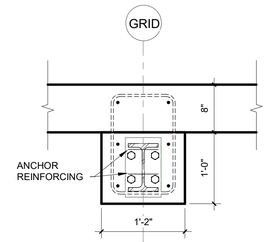
FOUNDATION DETAILS

S202

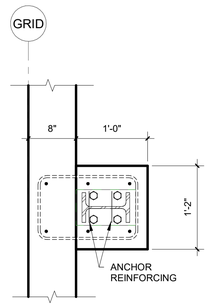
PILASTER SCHEDULE			
TYPE/DETAIL #	VERT REINF	TIES	ANCHOR REINFORCING
1	(8) #6 VERT	SEE NOTE 2	(2) #4 ⊓ 20"
2	(6) #6 VERT	SEE NOTE 2	(2) #4 ⊓ 20"
3	(6) #6 VERT	SEE NOTE 2	(2) #4 ⊓ 20"
4	(6) #6 VERT	SEE NOTE 2	(2) #4 ⊓ 20"

NOTES:
1.) G.C. TO VERIFY LOCATION OF ALL PEMB COLUMNS WITH MANUFACTURER. COORDINATE W/ PILASTER DIMENSIONS AND NOTIFY EVSTUDIO OF ANY DISCREPANCIES
2.) ALL PILASTER REINFORCING TIES TO BE #3 TIES SPACED AT 12" O.C. U.N.O. FIRST (3) TIES TO BE SPACED AT 1-1/2" O.C.. RE: DETAILS FOR ORIENTATION
3.) RE: 4/S202 FOR TYPICAL ANCHOR REINFORCING DETAIL. NOTED ON PILASTER AS ANCHOR REINFORCING
4.) RE: S202 FOR ALL APPLICABLE DETAILS AT PILASTERS. RE: PLAN FOR CALLOUTS
5.) TIES, VERTICAL BARS, ANCHOR REINFORCING MAY BE FIELD ADJUSTED TO PROVIDE 1" CLR AROUND ANCHOR BOLTS. ANCHOR REINFORCING LEGS NEED TO BE WITHIN 3" OF ANCHOR BOLTS

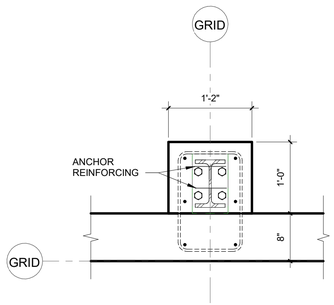
ANCHOR BOLT NOTES:
1.) SIZE, LOCATION, & **ANCHOR PROJECTION** TO BE DETERMINED BY PRE ENGINEER METAL BUILDING MANUFACTURER
2.) ALL ANCHOR BOLTS TO BE F1554 GR 36 W/ 12" MIN EMBED



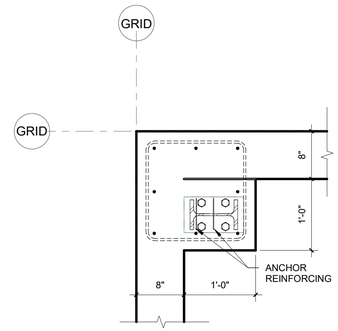
3 P3
1" = 1'-0"



2 P2
1" = 1'-0"



4 P4
1" = 1'-0"



1 P1
1" = 1'-0"

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EV Contact Phone

Element - Ouray

PROJECT ADDRESS

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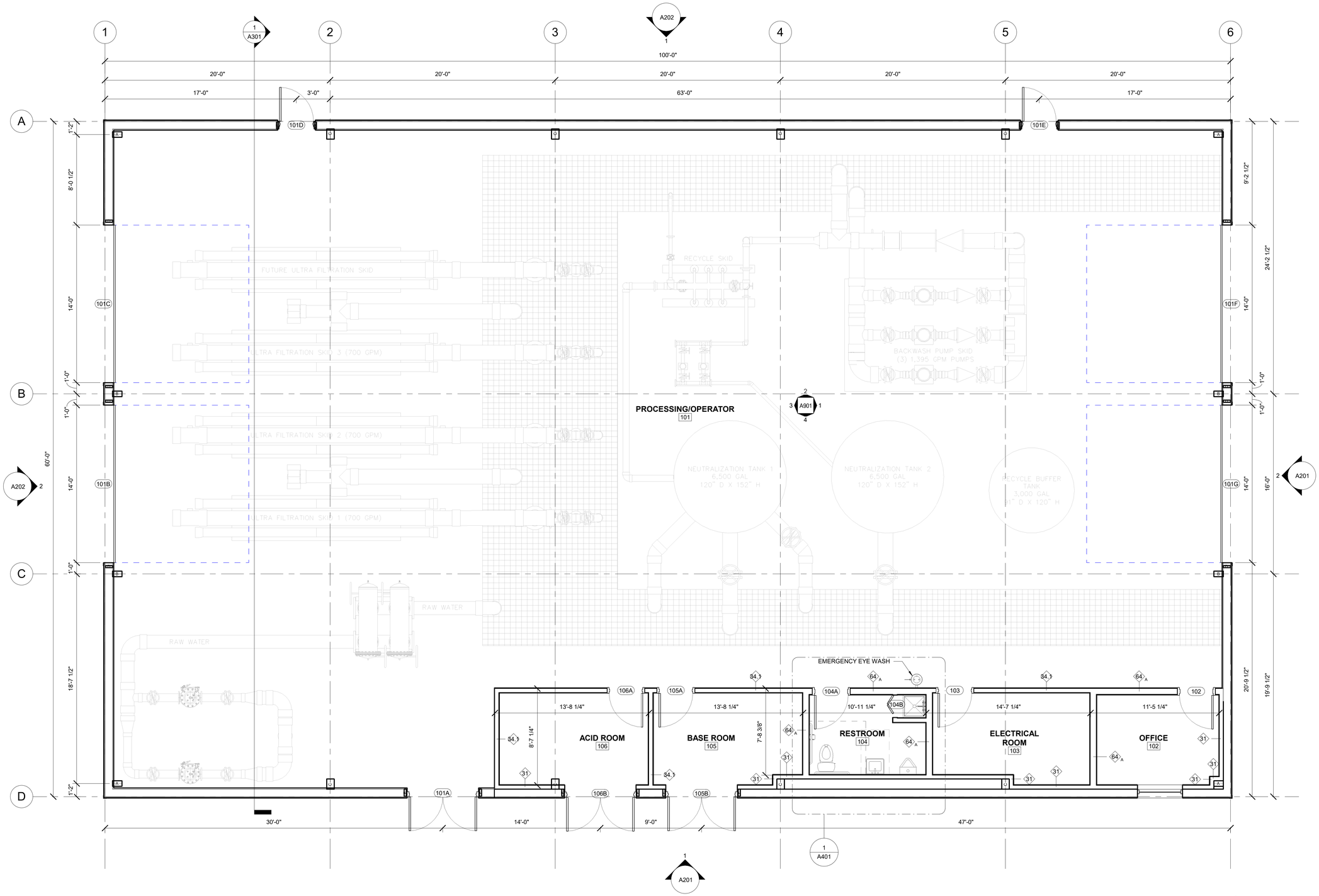
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DETAILS

S203



1 FLOOR PLAN
1/4" = 1'-0"

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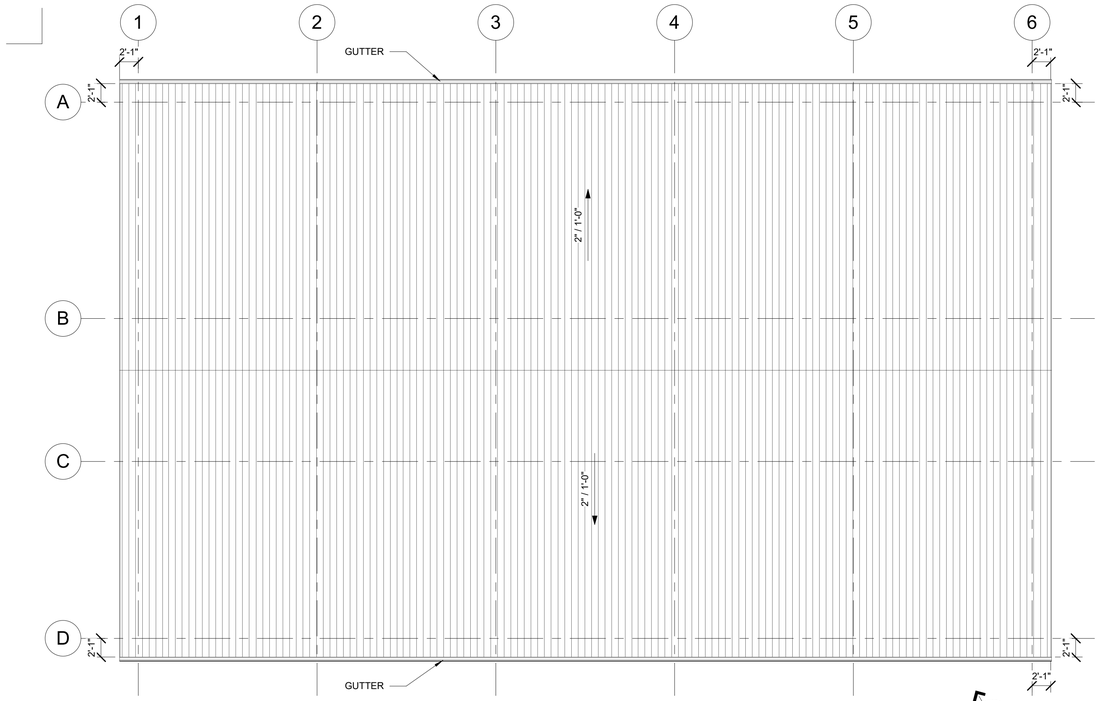
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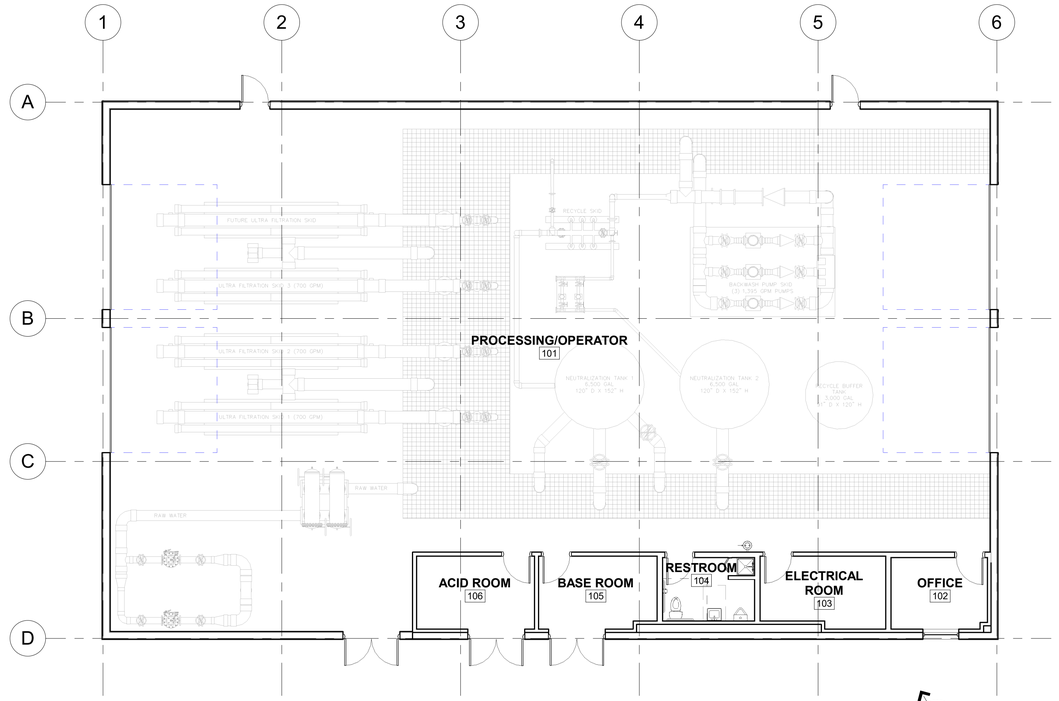
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FLOOR PLAN

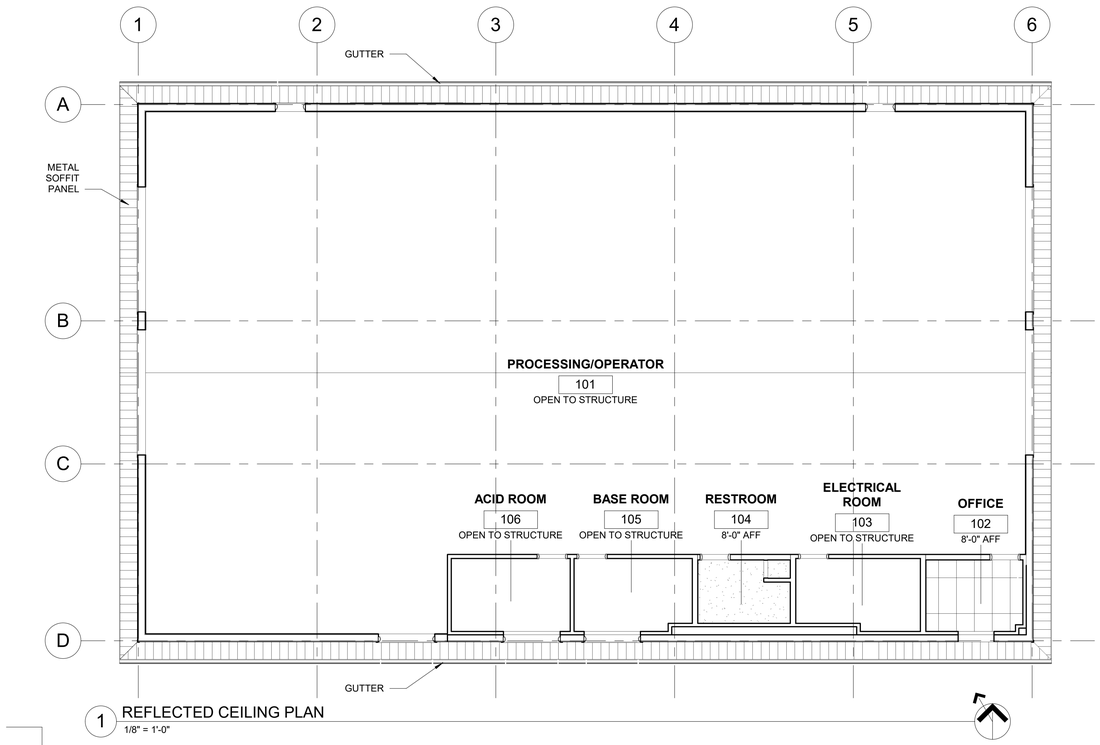
A101



2 ROOF PLAN
1/8" = 1'-0"



3 FLOOR FINISH PLAN
1/8" = 1'-0"



1 REFLECTED CEILING PLAN
1/8" = 1'-0"

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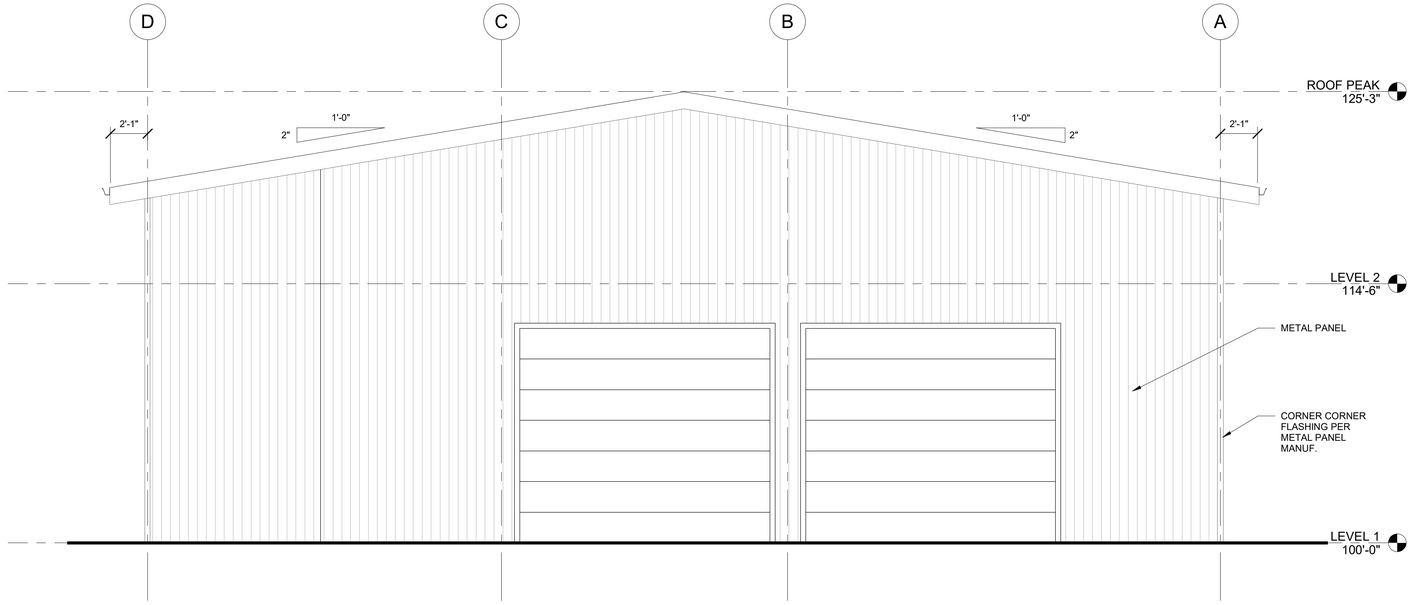
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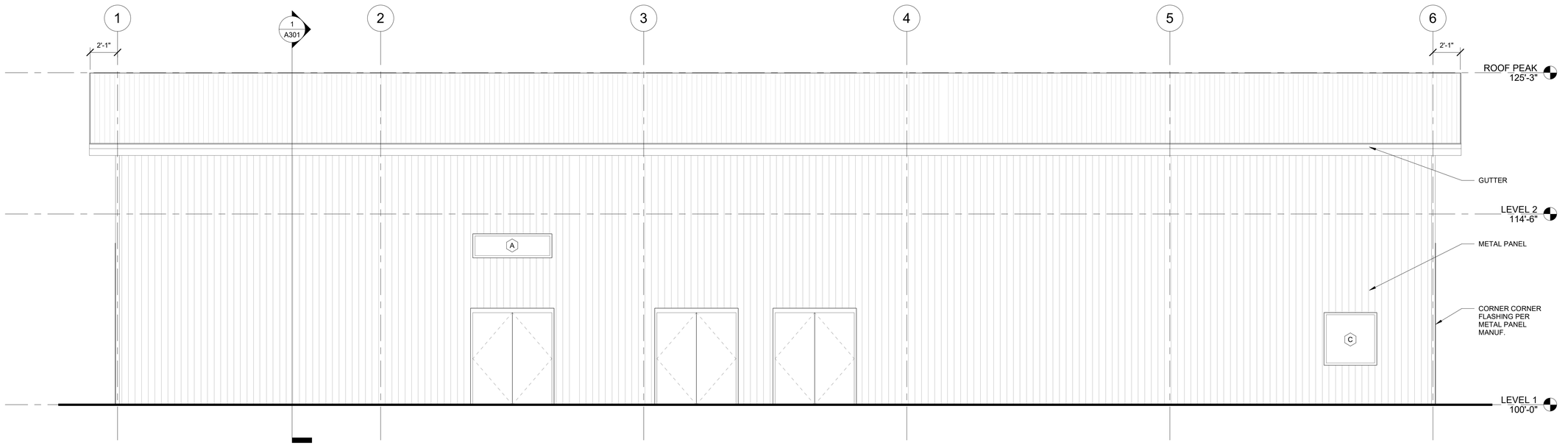
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DETAIL PLANS

A102



2 EAST ELEVATION
1/4" = 1'-0"



1 SOUTH ELEVATION
1/4" = 1'-0"

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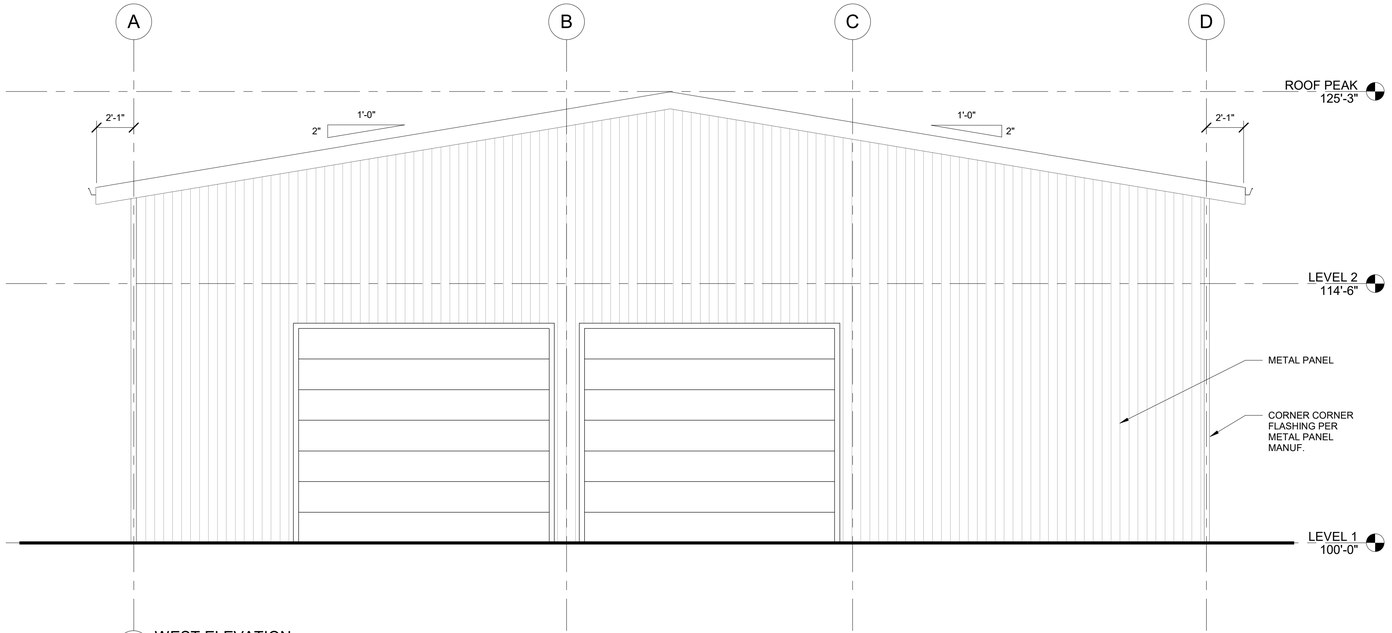
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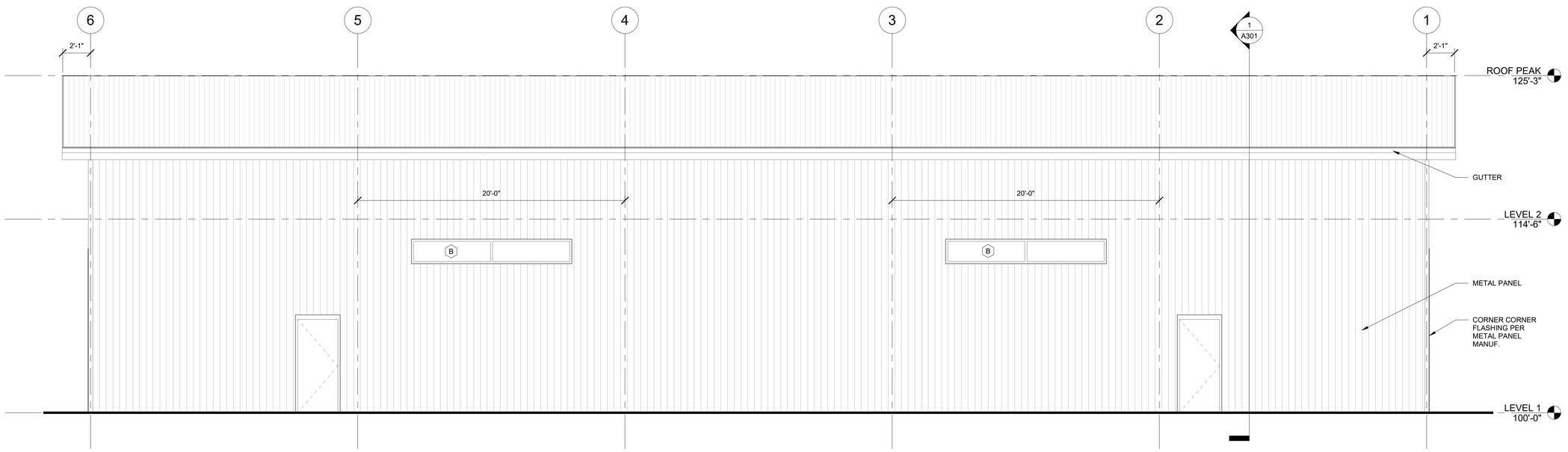
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BUILDING ELEVATIONS

A201



2 WEST ELEVATION
1/4" = 1'-0"



1 NORTH ELEVATION
1/4" = 1'-0"

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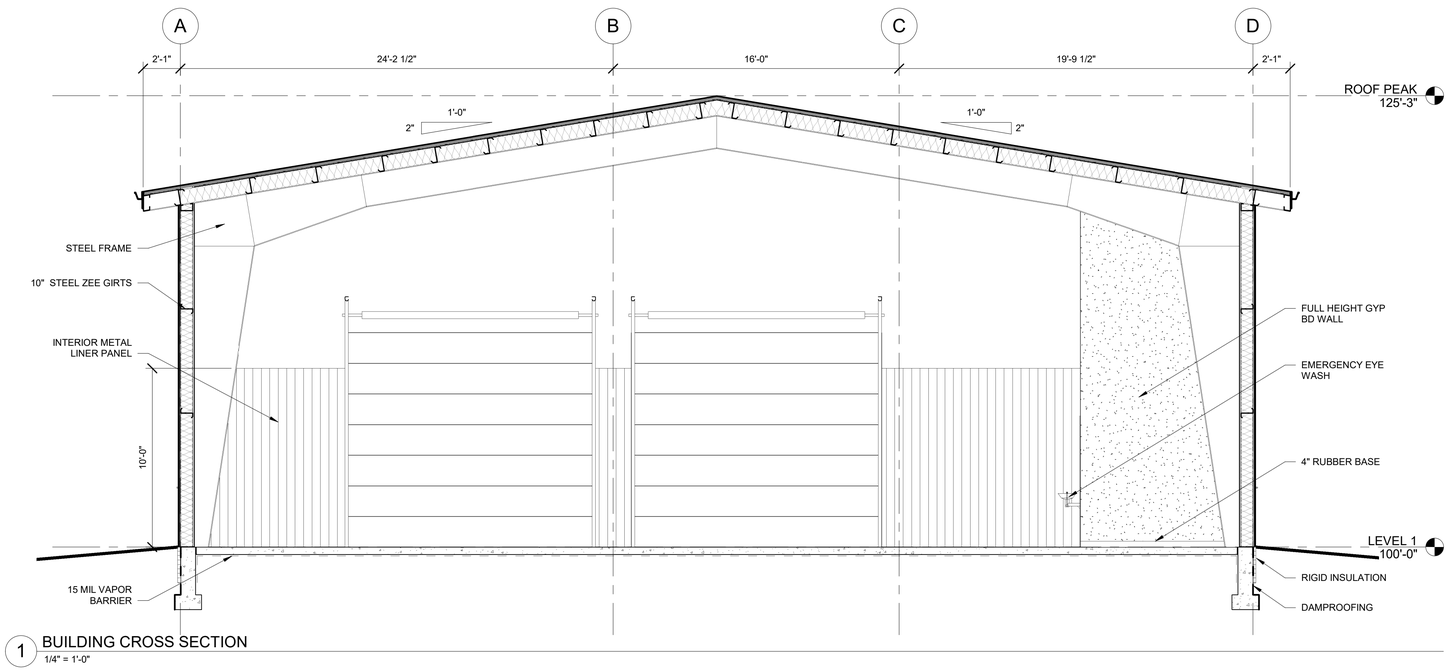
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BUILDING ELEVATIONS

A202



1 BUILDING CROSS SECTION
1/4" = 1'-0"

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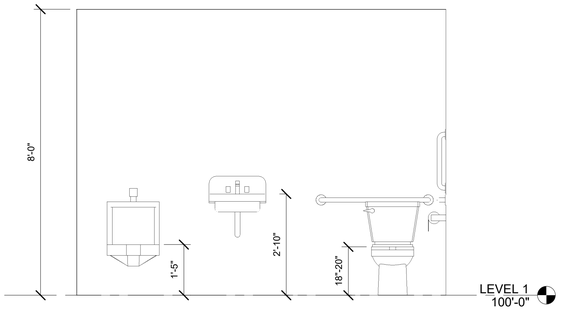
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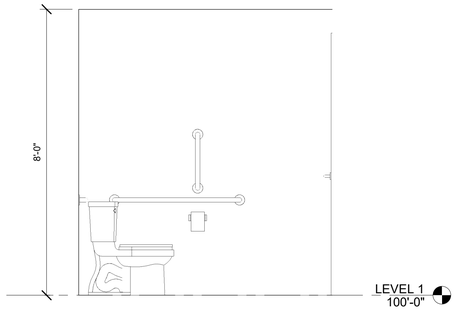
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BUILDING SECTIONS

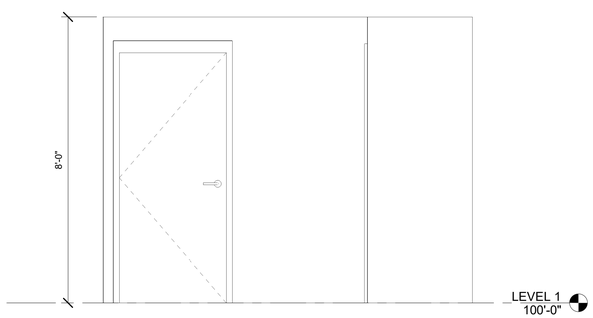
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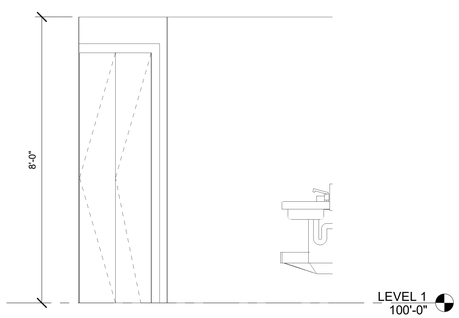
5 RESTROOM ELEVATION 4
1/2" = 1'-0"



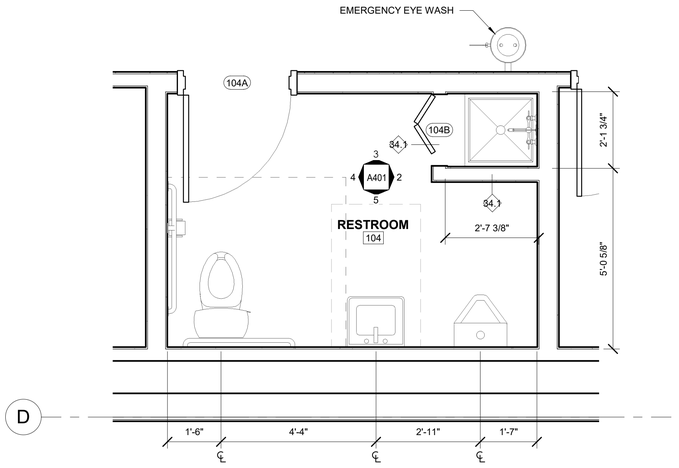
4 RESTROOM ELEVATION 3
1/2" = 1'-0"



3 RESTROOM ELEVATION 2
1/2" = 1'-0"



2 RESTROOM ELEVATION 1
1/2" = 1'-0"



1 ENLARGED RESTROOM PLAN
1/2" = 1'-0"

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ENLARGED RESTROOM PLAN & ELEVATIONS

A401

DOORS & HARDWARE

BASIS-OF-DESIGN:

DOOR HARDWARE FINISH:

- SATIN NICKEL

GENERAL NOTES:

A. ALL ENTRY LOCKSETS AND DEADBOLTS SHALL BE KEYED ALIKE.
B. EXTERIOR HOLLOW METAL DOOR FRAMES TO BE MITERED WITH WELDED CORNERS GROUND SMOOTH, GALVANIZED FRAMES.
C. INTERIOR HOLLOW METAL DOOR FRAMES TO BE KNOCK-DOWN TYPE.
D. HARDWARE PRODUCT DATA AND FINISHES TO BE APPROVED BY ARCHITECT PRIOR TO ORDERING.
E. DOOR AND FRAMES TO BE PAINTED WITH TWO COATS OF ENAMEL - COLOR TO BE SELECTED BY ARCHITECT.
F. ALL DOOR HARDWARE MUST BE COMMERCIAL QUALITY WITH LEVER HANDLES COMPLIANT WITH ACCESSIBILITY CODE.
G. PER IBC 1010.1.9.3.2.2 - MAIN DOORS ARE PERMITTED TO BE EQUIPPED WITH KEY-OPERATED LOCKING DEVICES FROM THE EGRESS SIDE PROVIDED A READILY VISIBLE DURABLE SIGN IS POSTED ON THE EGRESS SIDE ON OR ADJACENT TO THE DOOR STATING: *"THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED"*. THE SIGN SHALL BE IN LETTERS 1-INCH HIGH ON A CONTRASTING BACKGROUND.

SET 1

SINGLE EXTERIOR DOORS

1	LEVER LOCKSET (CLASSROOM FUNCTION)
1	DOUBLE CYLINDER DEADBOLT
1-1/2 PAIR	MORTISE HINGES W/ NON-REMOVABLE PINS
1	CLOSER W/ OVERHEAD STOP
1	WEATHERSTRIPPING KIT
1	DOOR SWEEP
1	ACCESSIBLE THRESHOLD
3	FRAME MOUNTED SILENCERS

SET 1A

SINGLE INTERIOR DOORS

1	LEVER LOCKSET (STOREROOM FUNCTION)
1	DEADBOLT (AT STORAGE ROOM ONLY)
1-1/2 PAIR	MORTISE HINGES W/ NON-REMOVABLE PINS
1	CLOSER W/ OVERHEAD STOP
1	WEATHERSTRIPPING/SOUND ISOLATION KIT (AT MECH. ROOM ONLY)
3	FRAME MOUNTED SILENCERS

SET 2

DOUBLE EXTERIOR DOORS

1	LEVER LOCKSET (CLASSROOM FUNCTION)
1	DOUBLE CYLINDER DEADBOLT
(2) 1-1/2 PAIR	MORTISE HINGES W/ NON-REMOVABLE PINS
1 SET	FLUSH BOLTS (INACTIVE LEAF)
2 EA	CLOSER W/ OVERHEAD STOP
1 EA	OH RAIN DRIP (DOUBLE DOOR)
1 EA	WEATHERSTRIPPING KIT
2 EA	DOOR SWEEP
1 EA	ACCESSIBLE THRESHOLD

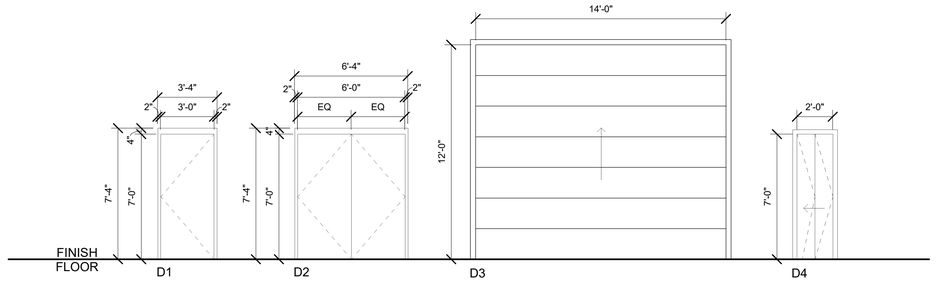
SET 3

OVERHEAD DOORS

1	CHAIN-OPERATED OVERHEAD TRACK, RETROFITTABLE WITH ELECTRIC MOTOR OPERATOR
1	LOCK
1	FULL RUBBER SEALS

DOOR SCHEDULE

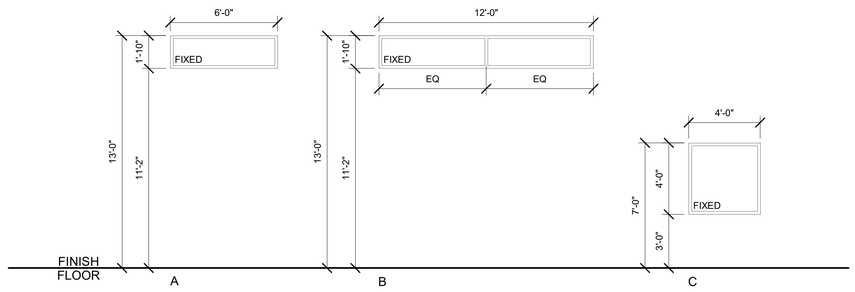
NUMBER	DOOR / FRAME TYPE	LOCATION	DOOR HEIGHT	DOOR WIDTH	DOOR PANEL THICKNESS	DOOR MATERIAL	FRAME MATERIAL	FRAME FINISH	HARDWARE SET	SWING	COMMENTS
101A	D2	PROCESSING	7'-0"	6'-0"	0'-1 3/4"	INSL HM	INSL HM	PAINT	SET 2	DOUBLE	
101B	D3	PROCESSING	12'-0"	14'-0"	0'-1 1/2"	SECTIONAL	MTL	FACTORY	SET 3	OH	
101C	D3	PROCESSING	12'-0"	14'-0"	0'-1 1/2"	SECTIONAL	MTL	FACTORY	SET 3	OH	
101D	D1	PROCESSING	7'-0"	3'-0"	0'-1 3/4"	INSL HM	INSL HM	PAINT	SET 1	LHR	
101E	D1	PROCESSING	7'-0"	3'-0"	0'-1 3/4"	INSL HM	INSL HM	PAINT	SET 1	LHR	
101F	D3	PROCESSING	12'-0"	14'-0"	0'-1 1/2"	SECTIONAL	MTL	FACTORY	SET 3	OH	
101G	D3	PROCESSING	12'-0"	14'-0"	0'-1 1/2"	SECTIONAL	MTL	FACTORY	SET 3	OH	
102	D1	OFFICE	7'-0"	3'-0"	0'-1 3/4"	HM	HM	PAINT	SET 1A	RHR	
103	D1	ELECTRICAL ROOM	7'-0"	3'-0"	0'-1 3/4"	HM	HM	PAINT	SET 1A	LHR	
104A	D1	RESTOOM	7'-0"	3'-0"	0'-1 3/4"	HM	HM	PAINT	SET 1A	LHR	
104B	D4	RESTOOM	7'-0"	2'-0"	0'-1 1/2"	HOLLOW	WD	PAINT		BI-FOLD	
105A	D1	BASE ROOM	7'-0"	3'-0"	0'-1 3/4"	HM	HM	PAINT	SET 1A	LHR	
105B	D2	BASE ROOM	7'-0"	6'-0"	0'-1 3/4"	INSL HM	INSL HM	PAINT	SET 2	DOUBLE	
106A	D1	ACID ROOM	7'-0"	3'-0"	0'-1 3/4"	HM	HM	PAINT	SET 1A	RHR	
106B	D2	ACID ROOM	7'-0"	6'-0"	0'-1 3/4"	INSL HM	INSL HM	PAINT	SET 2	DOUBLE	



DOOR ELEVATIONS
1/4" = 1'-0"

WINDOW SCHEDULE

NUMBER	WIDTH	HEIGHT	GLAZING	OPERATION	U-VALUE	SHGCC	VLT	COUNT	COMMENTS
A	6'-0"	1'-10"		FIXED				1	
B	12'-0"	1'-10"		FIXED				2	
C	4'-0"	4'-0"		FIXED				1	



WINDOW ELEVATIONS
1/4" = 1'-0"

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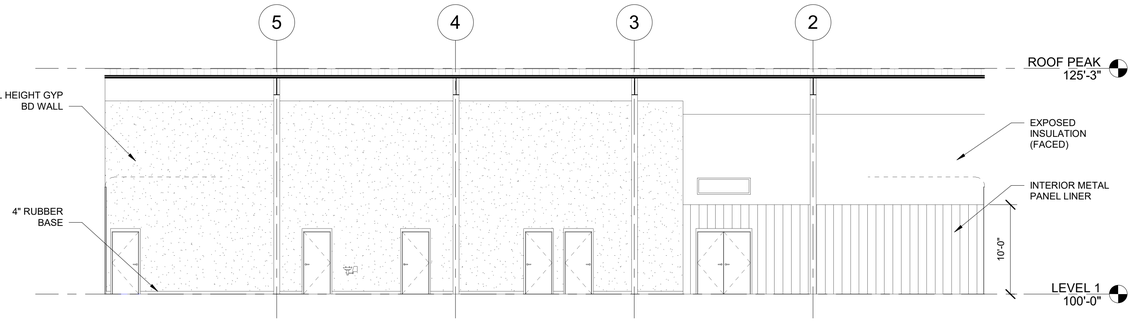
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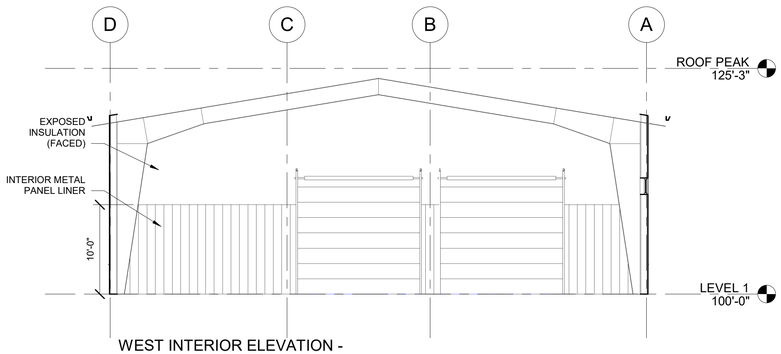
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DOOR & HARDWARE SCHEDULE AND ELEVATIONS

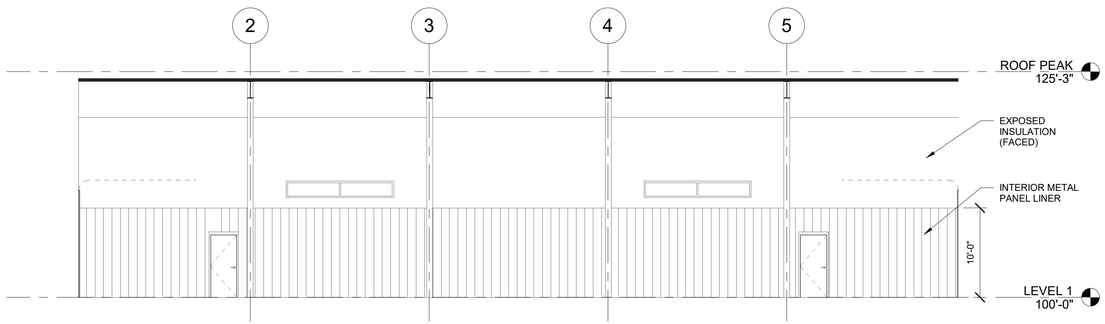
A601



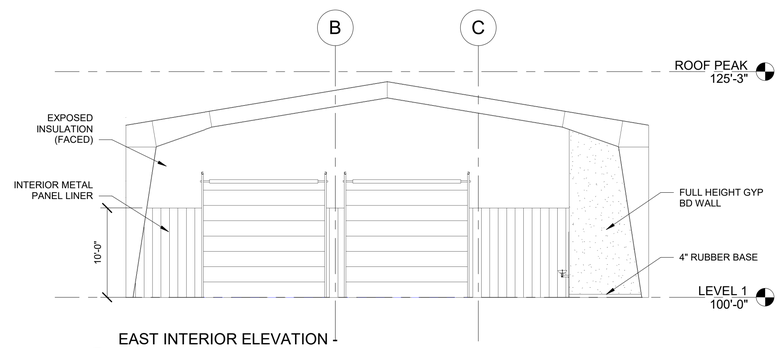
4 SOUTH INTERIOR ELEVATION - PROCESSING/OPERATOR
1/8" = 1'-0"



3 WEST INTERIOR ELEVATION - PROCESSING/OPERATOR
1/8" = 1'-0"



2 NORTH INTERIOR ELEVATION - PROCESSING/OPERATOR
1/8" = 1'-0"



1 EAST INTERIOR ELEVATION - PROCESSING/OPERATOR
1/8" = 1'-0"

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INTERIOR ELEVATIONS

A901

PLUMBING SYMBOLS

PIPING SYSTEMS

- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- DOMESTIC HOT WATER RECIRCULATION PIPING
- 140°F DOMESTIC HOT WATER PIPING
- 140°F DOMESTIC HOT WATER RECIRC. PIPING
- SANITARY PIPING
- VENT PIPING
- STORM PIPING
- OVERFLOW STORM PIPING
- CONDENSATE DRAIN PIPING
- NATURAL GAS PIPING
- LIQUID PETROLEUM GAS PIPING
- GREASE WASTE PIPING
- ACID WASTE PIPING
- ACID VENT PIPING
- COMPRESSED AIR PIPING
- FIRE PROTECTION PIPING
- FIRE SPRINKLER PIPING

GENERAL PIPING

- NEW LINEWORK
- EXISTING LINEWORK
- DEMOLITION LINEWORK

PIPE VALVES & SYMBOLS

- DIRECTION OF FLOW IN PIPING
- BALL VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- BALANCING VALVE
- GATE VALVE
- DOUBLE CHECK VALVE
- GLOBE VALVE
- SOLENOID VALVE
- THERMOSTATIC MIXING VALVE
- STRAINER
- STRAINER WITH BLOWOFF
- RELIEF / SAFETY VALVE
- PRESSURE REDUCING VALVE
- VACUUM BREAKER
- GAS COCK
- HOSE END BALL VALVE
- UNION
- AQUASTAT
- THERMOMETER
- SHOCK ARRESTOR
- PIPING ELBOW UP
- PIPING ELBOW DOWN
- PIPING TEE UP
- PIPING TEE DOWN
- PIPE CAP
- PIPING REDUCER
- LINE CLEANOUT / WALL CLEANOUT
- HOSE BIBB / WALL HYDRANT
- VENT THRU ROOF
- GARBAGE DISPOSAL UNIT
- 3"FS-1 — FLOOR SINK (FULL, QUARTER & HALF GRATE), SIZE AND TYPE
- 3"FD-1 — FLOOR DRAIN, SIZE AND TYPE
- 3"RD-1 — ROOF DRAIN, SIZE AND TYPE
- 3"OD-1 — OVERFLOW DRAIN, SIZE AND TYPE
- 3"FCO / 3"GCO — FLOOR / GRADE CLEANOUT, SIZE

ABBREVIATIONS

AAV	AIR ADMITTANCE VALVE
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
AV	ACID VENT
AW	ACID WASTE
BF	BOTTLE FILLER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BP	BOOSTER PUMP
BT	BATH TUB
BTU	BRITISH THERMAL UNIT
CB	CATCH BASIN
CD	CONDENSATE DRAIN
CO	CLEANOUT
CP	CIRCULATION PUMP
CW	COLD WATER
DEG,°	DEGREES
DDC	DIRECT DIGITAL CONTROL
DF	DRINKING FOUNTAIN
DN	DOWN
DSN	DOWNSPOUT NOZZLE
DT	DILUTION TANK
(E)	EXISTING TO REMAIN
EEW	EMERGENCY EYE WASH
ES	EMERGENCY SHOWER
ESP	ELEVATOR SUMP PUMP
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FHC	FIRE HOSE CABINET
FPM	FEET PER MINUTE
FS	FLOOR SINK
G	NATURAL GAS
GCO	GRADE CLEANOUT
GD	GARBAGE DISPOSAL
GPM	GALLONS PER MINUTE
GT	GAS TURRET
GV	GAS VALVE
GWH	GAS WATER HEATER
HB	HOSE BIBB
HD	HEAD
HP	HORSEPOWER
HW	HOT WATER
HWC	HOT WATER CIRCULATION
HX	HEAT EXCHANGER
HZ	HERTZ
IE	INVERT ELEVATION
IMB	ICE MAKER BOX
IN W.C.	INCHES OF WATER COLUMN
KW	KILOWATT
L	LAVATORY
LBS	POUNDS
LPG	LIQUEFIED PETROLEUM GAS
LS	LAUNDRY SINK
LWT	LEAVING WATER TEMPERATURE
MBH	1000 BTU PER HOUR
MFR	MANUFACTURER
MH	MANHOLE
MSB	MOP SINK BASIN
(N)	NEW
N2	NITROGEN
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
O2	OXYGEN
OD	OVERFLOW DRAIN
PH,ø	PHASE
PIV	POST INDICATOR VALVE
PRV	PRESSURE REDUCING VALVE
PT	PLASTER TRAP
QTY	QUANTITY
(R)	RELOCATED EXISTING
RC	REFRIGERANT CHARGE
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
S	SINK
SA	SHOCK ARRESTOR
SAN	SANITARY
SE	SEWAGE EJECTOR
SP	SUMP PUMP
ST	STORM, STORAGE TANK
SV	SHOWER VALVE
TD	TRENCH DRAIN
TDH	TOTAL DYNAMIC HEAD
TEA	THERMAL EXPANSION ABSORBER
TG	TRAP GUARD
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TSP	TOTAL STATIC PRESSURE
TW	TEPID WATER
U	URINAL
U/F	UNDERFLOOR
U/G	UNDERGROUND
U/S	UNDERSLAB
V	VENT
VAC	VACUUM
VTR	VENT THROUGH ROOF
WB	WASHER BOX
WC	WATER COLUMN, WATER CLOSET
WCO	WALL CLEANOUT
WH	WALL HYDRANT

GENERAL NOTES

1. THE PLANS ARE, TO A GREAT EXTENT, DIAGRAMMATIC IN NATURE. DRAWING SCALES SHOULD BE VERIFIED FROM DIMENSIONS ON ARCH. PLANS. THE INFORMATION PRESENTED IS AS EXACT AS COULD BE SECURED. THE CONTRACTOR SHALL OBTAIN EXACT LOCATION, MEASUREMENTS LEVELS, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT THE WORK TO THE ACTUAL CONDITIONS AT THE PROJECT SITE.

2. CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO SUBMITTING A BID TO COVER THE CONDITIONS AT THE SITE INFORMING THEMSELVES OF ALL DETAILS.

3. ALL WORK SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, LAWS, ACTS AND ORDINANCES, AND ALL AUTHORITIES HAVING JURISDICTION.

4. THE COMPLETED INSTALLATION SHALL BE IN ACCORDANCE WITH ALL ENGINEERING REQUIREMENTS, THE OWNER'S DESIGN CRITERIA, UTILITY COMPANY REQUIREMENTS, APPLICABLE INDUSTRY STANDARDS OF GOOD PRACTICE AND SAFETY, AND THE MANUFACTURER'S STRICTEST RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION.

5. RECORD DRAWINGS - PREPARE AND SUBMIT TO THE OWNER RECORD DRAWINGS INDICATING THE EXACT LOCATION OF ALL EQUIPMENT INCLUDING THE EQUIPMENT'S "AS INSTALLED" SIZE(S). MANUFACTURER, MODEL NUMBERS, AND PERFORMANCE RATINGS.

6. SUPPORTS - EQUIPMENT, PIPING, OR ANY OTHER ACCESSORY SHALL NOT BE SUPPORTED FROM OTHER PIPING, DUCTWORK, METAL ROOF DECK, LATERAL BRACING BRIDGING, OR CONDUIT. ITEMS SHALL ONLY BE SUPPORTED FROM BUILDING STRUCTURE.

7. COORDINATE EXACT LOCATION OF ALL PIPING AND EQUIPMENT WITH STRUCTURAL, ARCHITECTURAL, ELECTRICAL, AND OTHER MECHANICAL SYSTEMS.

8. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL MECHANICAL SERVICES AND OVERHEAD EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE.

9. ALL PIPING TO VIBRATING EQUIPMENT SHALL HAVE FLEXIBLE CONNECTORS.

10. COORDINATE ALL ROOF AND CHASE PENETRATIONS WITH STRUCTURAL DRAWINGS AND ROOF INSTALLER.

11. OWNER TO HAVE CHOICE SALVAGE OF ALL PLUMBING FIXTURES AND EQUIPMENT WHICH ARE PLANNED TO BE REMOVED BY CONTRACTOR. EQUIPMENT NOT SALVAGED BY OWNER SHALL BE REMOVED FROM SITE AND PROPERLY DISPOSED OF BY THE CONTRACTOR.

12. BEFORE REMOVAL OF ANY MECHANICAL EQUIPMENT, CONTRACTOR SHALL RECOVER USED REFRIGERANT IN A PROPERLY LABELED D.O.T. APPROVED REFILLABLE CYLINDER TO MEET E.P.A. STANDARDS. RECOVERED REFRIGERANT MUST BE CHEMICALLY ANALYZED AND REPROCESSED OR DISPOSED OF PER E.P.A. REQUIREMENTS, SECTION 608 OF THE CLEAN AIR ACT AND A.R.I. STANDARD 700.

13. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK.

14. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.

15. CONCRETE HOUSEKEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY THE MECHANICAL CONTRACTOR. MINIMUM CONCRETE PAD THICKNESS SHALL BE 6 INCHES. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 6 INCHES ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE THE SIZES AND LOCATIONS OF CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.

16. ACCESS PANELS ARE REQUIRED (MIN. 18"X18") FOR ACCESS TO EVERY VALVE AND CONTROL SENSOR IF NOT OTHERWISE ACCESSIBLE. ACCESS PANEL SHALL BE APPROVED BY ARCHITECT/ENGINEER. COORDINATE PANEL LOCATIONS WITH THE ARCHITECT PRIOR TO INSTALLATION.

17. PROVIDE SHUTOFF VALVES IN ALL DOMESTIC WATER PIPING SYSTEM BRANCHES IN WHICH BRANCH PIPING SERVES TWO OR MORE FIXTURES.

18. ROUTE ALL PIPING PARALLEL TO BUILDING WALLS, STRUCTURE AND FEATURES, AS HIGH AS POSSIBLE, AND OFFSET AS NECESSARY TO AVOID STRUCTURAL MEMBERS, MECHANICAL EQUIPMENT AND THE LIKE.

19. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS OF STANDARD AND ACCESSIBLE PLUMBING FIXTURES.

20. SLOPE ALL SANITARY WASTE PIPE SIZES 3" AND UNDER AT 1/4 INCH PER FOOT.

21. SLOPE ALL SANITARY WASTE PIPE SIZES 4" AND ABOVE AT 1/8 INCH PER FOOT.

22. SLOPE ALL STORM AND OVERFLOW STORM PIPING AT 1/8 INCH PER FOOT.

23. SLOPE ALL CONDENSATE DRAINAGE PIPING AT 1/8 INCH PER FOOT.

GENERAL SYMBOLS

- KEY NOTE REFERENCE
- CONNECTION POINT OF NEW TO EXISTING
- EXTENT OF DEMOLITION SYMBOL
- RISER DIAGRAM REFERENCE
- Name / Elevation — ELEVATION MARK
- 1 / A-101 SIM — SECTION CUT: UPPER NUMBER INDICATES DETAIL, LOWER NUMBER INDICATES SHEET
- 1 / A-101 SIM — DETAIL REFERENCE: UPPER NUMBER INDICATES DETAIL, LOWER NUMBER INDICATES SHEET

GRAPHIC SCALE

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PLUMBING LEGEND & NOTES

P000

DIVISION 22 00 00 - PLUMBING SPECIFICATIONS

PART 1 - GENERAL

I. CODES

A. ALL EQUIPMENT AND THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE LATEST EDITION OF THE INTERNATIONAL PLUMBING CODE, O.S.H.A. REQUIREMENTS, LIFE SAFETY CODE AND ALL APPLICABLE LOCAL AND STATE LAWS AND ORDINANCES.
B. THE CONTRACTOR SHALL PAY ALL INSPECTION FEES AND PURCHASE ALL PERMITS REQUIRED FOR THIS WORK.

II. LOCATION OF EQUIPMENT

A. THE CONTRACTOR SHALL NOTE THAT THE PLUMBING DRAWINGS ARE INTENDED TO INDICATE ONLY THE EXTENT DIAGRAMMATICALLY, GENERAL CHARACTER AND LOCATION OF THE WORK. WORK INTENDED, BUT HAVING MINOR DETAILS OBVIOUSLY OMITTED, SHALL BE FURNISHED AND INSTALLED COMPLETE BY THIS CONTRACTOR AT HIS EXPENSE.

III. ROUGH-IN

A. VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH SHOP DRAWINGS, FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED PRIOR TO ROUGH-IN.
B. REFER TO EQUIPMENT SPECIFICATIONS IN DIVISIONS 1 THROUGH 15 FOR ROUGH-IN REQUIREMENTS.
C. OBTAIN FROM OWNER AND GENERAL CONTRACTOR COPIES OF "EQUIPMENT BROCHURE" AND A SET OF SHOP DRAWINGS OF EQUIPMENT BEFORE ROUGHING IN ANY WATER, WASTE, CONNECTIONS, ETC. CHANGES RESULTING FROM FAILURE TO OBTAIN THIS INFORMATION WILL NOT RESULT IN ADDITIONAL COST.

IV. WARRANTIES

A. GUARANTEE ALL PLUMBING SYSTEM MATERIALS AND WORKMANSHIP TO BE FREE FROM DEFECTS FRO A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE AND PROPERLY CORRECT LATENT DEFECTS ARISING WITHIN THIS PERIOD UPON NOTIFICATION BY THE OWNER'S REPRESENTATIVE WITHOUT ADDITIONAL COMPENSATION.

V. CHANGES

A. THE DRAWINGS INDICATE GENERALLY THE LOCATIONS OF PLUMBING FIXTURES, APPARATUS, PIPING, ETC., BUT IF, BEFORE INSTALLATION, IT IS FOUND NECESSARY TO CHANGE THE LOCATION OF SAME TO ACCOMMODATE THE CONDITIONS AT THE BUILDING, SUCH CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER AND AS DIRECTED BY THE OWNER.

VI. PLUMBING SUBMITTALS

A. SUBMITTAL ARE REQUIRED ON THE FOLLOWING ITEMS AND THEY MUST BE SELECTED FROM ONE OF THE MANUFACTURERS LISTED, OR OTHERWISE BE AN APPROVED ALTERNATE.

1. PLUMBING FIXTURES
   a. AMERICAN STANDARD
   b. KOHLER
2. FLOOR DRAINS AND SINKS
   a. WADE
   b. ZURN
3. CLEANOUTS
   a. WADE
   b. ZURN
4. PLUMBING FIXTURE SUPPORTS
   a. WADE
   b. ZURN

B. LOW FLOW REQUIREMENTS

1. 1.28 GPF WATER CLOSETS
2. 0.25 GPF URINALS
3. 0.5 GPM LAVATORY FAUCETS
4. 1.5 GPM KITCHEN FAUCETS

VII. AS BUILT DRAWINGS

A. FURNISH THE OWNER TWO (2) HARD COPIES AND ONE (1) SOFT COPY OF AS-BUILT DRAWINGS AND O&M MANUALS UPON COMPLETION OF THE WORK.

PART 2 - PRODUCTS

I. PIPING

A. SANITARY DRAIN LINES AND BRANCHES SHALL BE SOLID-WALL SCHEDULE 40 PVC WITH GLUED JOINTS, CONFORMING TO ASTM D 2665, DWV. CAST-IRON PIPE AND FITTINGS CONFORMING TO ASTM A 888 OR CISPI 1301 FOR ABOVE GRADE SANITARY AND VENT PIPING SHALL BE PROVIDED AS A PRICING OPTION FOR THE OWNER'S APPROVAL.
B. HOT AND COLD WATER PIPE ABOVE CEILING SHALL BE ASTM B88 TYPE "L" HARD DRAWN COPPER WITH ASME B16.22 WROUGHT COPPER FITTINGS, 100% LEAD-FREE SOLDER JOINTS: APPLY ASTEM B 813 WATER WASHABLE FLUX TO END OF TUBE, JOIN COPPER TUBE AND FITTINGS ACCORDING TO ASTM B 828 OR CDA'S "COPPER TUBE HANDBOOK."
C. PEX TUBING (ASTM F 877, SDR 9) SHALL BE APPROVED FOR PIPE SIZES 2" AND SMALLER WITH OWNER'S APPROVAL. FITTING FOR PEX TUBING SHALL BE ASTM F 1807 METAL-INSERT TYPE WITH COPPER OR STAINLESS-STEEL CRIMP RINGS AND MATCHING PEX TUBE DIMENSIONS.
D. ALL WATER PIPING BELOW GRADE SHALL BE ASTM B88 TYPE "K" SOFT COPPER WITH NO JOINTS, OR PEX PIPING WITH OWNER'S APPROVAL.
E. GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL.
F. BRASS, COPPER AND CHROME PLATED MANUFACTURERD PIPE NIPPLES SHALL BE CONFORM TO ASTM B 687. STEEL MANUFACTURED PIPE NIPPLES SHALL CONFORM TO ASTM A 733.
G. EXPOSED PIPE IN RESTROOMS SHALL BE CHROME PLATED BRASS WITH CHROME PLATED WALL PLATES. AMERICAN BRASS CO. OR EQUIVALENT.
H. ALTERNATIVE PIPE MATERIALS, SUCH AS PROPRESS OR PEX MANIFOLDS FOR DOMESTIC WATER OR CSST FOR NATURAL GAS, SHALL BE ALLOWED WITH ACCEPTANCE FROM OWNER AND ENGINEER ONLY. MODIFICATIONS TO DESIGN AND LAYOUT OF PIPING SYSTEMS TO ACCOMODATE ALTERNATIVE MATERIALS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

II. CLEANOUTS

A. WALL CLEANOUTS SHALL BE CAST IRON WITH BRASS PLUG AND POLISHED BRASS ACCESS COVER WITH COUNTER SUNK BRASS SCREW. THEY SHALL BE OF STANDARD PIPE SIZES.
B. FLOOR CLEANOUTS SHALL HAVE CAST IRON BODY, NICKEL BRONZE SCORIATED TOP AND RUBBER GASKETED CONNECTION, EQUAL TO ZURN ZN-1400-2.

III. VALVES

A. BALL VALVES SHALL BE 125 POUND, SCREWED, ALL BRONZE, TWO PIECE, FULL PORT DESIGN. NIBCO T-580 OR EQUIVALENT.
B. BALANCING VALVES SHALL BE LEAD FREE, CALIBRATED TYPE, SUITABLE FOR POTABLE WATER SYSTEMS, MEETING NSF-61. BELL AND GOSSETT CIRCUIT SETTER OR EQUAL

IV. P-TRAPS

A. FLOOR DRAINS SHALL HAVE CAST IRON DEEP SEAL TRAPS WITH PROSET TRAP GUARDS, NOT TO BE INTEGRAL WITH DRAINS.
B. SINKS AND LAVATORIES SHALL HAVE CHROME PLATED COPPER P-TRAPS, 17 GA. MINIMUM.

V. ESCUTCHEON PLATES

A. CHROME PLATED ESCUTCHEON PLATES FOR ALL EXPOSED PIPE PASSING THROUGH WALLS, FLOORS, OR CEILINGS.

VI. FLOOR DRAINS AND FLOOR SINKS

A. FLOOR DRAINS SHALL BE EQUAL TO ZURN MODEL ZN-415-B WITH 5" ROUND STRAINER.
B. FLOOR RECEPTOR SHALL BE EQUAL TO ZURN MODEL ZS-1900-2 (1/2 GRATE).

VII. PIPE INSULATION

A. PROVIDE RIGID FIBERGLASS PIPE INSULATION WTIH INTEGRAL VAPOR BARRIER. INSULATE HOT AND COLD WATER PIPING IN ACCORDANCE WITH 2018 IECC TABLE C403.11.3:

	INSULATION CONDUCTIVITY		NOMINAL PIPE SIZE (INCHES)			
FLUID OPERATING TEMPERATURE RANGE (°F)	CONDUCTIVITY (BTU*in.)/(h*ft²*°F)	MEAN RATING TEMPERATURE (°F)	d<1	1<d<1-1/2	1-1/2<d<4	4<d<8
> 350	0.32 - 0.34	250	4.5	5.0	5.0	5.0
251 - 350	0.29 - 0.32	200	3.0	4.0	4.5	4.5
201 - 250	0.27 - 0.30	150	2.5	2.5	2.5	3.0
141 - 200	0.25 - 0.29	125	1.5	1.5	2.0	2.0
105 - 140	0.21 - 0.28	100	1.0	1.0	1.5	1.5
40 - 60	0.21 - 0.27	75	0.5	0.5	1.0	1.0
< 40	0.20 - 0.26	50	0.5	1.0	1.0	1.0

PART 3 - EXECUTION

I. INSTALLATION OF PIPING

A. ALL BELOW GRADE PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH IPC SECTION 306, TRENCHING, EXCAVATION AND BACKFILL.
B. ON VERTICAL SANITARY DRAIN LINES, CONNECT ALL SOIL AND WASTE INLETS THROUGH SANITARY TEES, WYES, OR WYES AND EIGHT BENDS. SHORT RADIUS FITTINGS MAY BE USED FOR VENT PIPING. ON HORIZONTAL LINES, CONNECT ALL WASTE AND SOIL CONNECTIONS THROUGH WYES, OR WYES AND EIGHTH BENDS. DOUBLE BRANCH FITTINGS MAY BE USED ON VERTICAL LINES AND HORIZONTAL RUNS PROVIDING PROPER GRADES CAN BE MAINTAINED.
C. MAKE SCREW JOINTS BETWEEN CAST IRON PIPES AND OTHER PIPES WATER-TIGHT WITH APPROVED COMPOUND. JOIN BELL & SPIGOT PIPING WITH THE USE OF AN APPROVED NEOPRENE RUBBER GASKET CONFORMING TO ASTM C 564.
D. LAY HORIZONTAL DRAIN PIPES TO UNIFORM GRADE; RISER PIPES, VERTICAL. MAKE CHANGES IN DIRECTIONS OF DRAIN PIPES WITH LONG BENDS. NO SCREWED JOINTS PERMITTED IN DRAIN PIPES, EXCEPT AS DESCRIBED HEREIN BEFORE.
E. PITCH ALL HORIZONTAL DRAINS 1/8" PER FOOT MINIMUM, OR AS PER LOCAL CODE.
F. PROVIDE CLEANOUTS AT EVERY CHANGE IN DIRECTION OF MORE THAN FORTY-FIVE DEGREES AND EVERY FIFTY FEET AS REQUIRED BY LOCAL CODES.
G. CUT BRASS AND COPPER PIPE BY MEANS OF A TUBING CUTTER. REMOVE ALL BURRS AND METAL CHIPS, DIRT, ETC., BEFORE JOINING PIPE. CHROME PLATED PIPE SHALL SHOW NO WRENCH MARKS AFTER INSTALLATION; NO THREADS SHALL SHOW.
H. ADEQUATELY SUPPORT ALL PIPING ABOVE FLOORS, INSIDE THE BUILDING FROM OR ON THE BUILDING STRUCTURE. SUPPORT PIPING SUSPENDED FROM THE BUILDING STRUCTURE BY MEANS OF THE SPECIFIED PIPE HANGERS AND RODS. MAKE MAXIMUM SPACING BETWEEN PIPE SUPPORTS AS FOLLOWS:

PIPE MATERIAL	MAXIMUM HORIZONTAL SPAN
CAST-IRON	5'
COPPER PIPE	12'
COPPER TUBING SIZES 1-1/2" AND LARGER	10'
COPPER TUBING SIZES 1-1/4" AND SMALLER	6'
PEX PIPE	2.67" (32")
PVC PIPE	4'

H. SUPPORT VERTICAL PIPING AT BASE OF RISER AND AT EVERY 10'-0" OF RISE, EXCEPT PEX PIPE WHICH SHALL BE SUPPORTED EVERY 4'-0" OF VERTICAL RISE.

II. INSTALLATION OF VALVES

A. ISOLATE ALL MAJOR ASSEMBLIES AS SHOWN ON THE DRAWINGS AND AS REQUIRED FOR PROPER OPERATION AND MAINTENANCE. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE VALVE BOXES AND ACCESS PANELS WHERE REQUIRED FOR ACCESSIBILITY.
B. PROVIDE DOMESTIC WATER AND GAS SHUT-OFF IN THE UTILITY AREA OF EACH INDIVIDUAL UNIT. SHUT-OFF VALVES SHALL BE LOCKING TYPE, AND UPSTREAM OF SUBMETERS. LOCKS PROVIDED BY OWNER.

III. INSTALLATION OF TRAPS

A. TRAP EACH FIXTURE BY WATER SEALING TRAP PLACED AS NEAR THE FIXTURE AS POSSIBLE.
B. VENT ALL TRAPS AS PER LOCAL PLUMBING CODE REQUIREMENTS.

IV. INSTALLATION OF PIPE SLEEVES

A. INSTALL PIPE SLEEVES AT ALL LOCATIONS WHERE PIPE PASSES THROUGH WALLS, FLOORS, OR CEILINGS ABOVE OR BELOW GRADE.
B. WHERE SUBJECT TO MOISTURE, SEAL SLEEVES WITH WATER-TIGHT SEALANT.

V. INSTALLATION OF AIR CHAMBERS

A. INSTALL A WATER HAMMER ARRESTOR AT EACH FIXTURE, OR GROUP OF FIXTURES. WATER HAMMER ARRESTERS, SHALL BE ZURN SHOKTROL SIZED AND INSTALLED PER MANUFACTURER'S RECOMMENDATION.

VI. INSTALLATION OF FIXTURE TRIM AND FITTINGS

A. INSTALL THE FIXTURE TRIM AND FITTINGS SPECIFIED, TAKING CARE TO PROPERLY ANCHOR EACH FIXTURE.
B. WHEN THE USE OF A WRENCH IS NECESSARY ON CHROMIUM PLATED PIPING, PROTECT THE PIPE FROM MARRING BY USE OF FELT OF CLOTH WRAPPING BENEATH WRENCH JAWS.
C. FLEXIBLE SUPPLIES TO FIXTURES SHALL COMPLY WITH ASME A112.18.6, AND ACCESS SHALL BE PROVIDED PER 2012 IPC.

VII. INSTALLATION OF GAS PIPING

A. INSTALL GAS PIPING IN ACCORDANCE WITH ALL APPLICABLE CODES. INSTALLATION SHALL CONFORM TO SMACNA GUIDELINES FOR SEISMIC CONSIDERATIONS AT PROJECT LOCATION.
B. PAINT EXPOSED GAS PIPING WITH ONE COAT PRIMER AND TWO COATS OF YELLOW EPOXY.

VIII. INSTALLATION OF PIPE INSULATION

A. INSULATE ALL WATER PIPING AND CONDENSATE DRAINAGE PIPING. ALSO INSULATE ALL DRAIN LINES FROM ICE BINS.

IX. TESTS AND INSPECTIONS

A. MAKE ALL WATER, AIR AND GAS TESTS OF THE PIPING SYSTEMS IN THE PRESENCE OF AND TO THE SATISFACTION OF THE OWNER OR HIS DESIGNATED REPRESENTATIVE, AND LOCAL OFFICIALS. CONDUCT THESE TESTS AT SUCH PLACES AND WITH TIMING TO PERMIT WORK TO PROCEED WITH AS LITTLE INTERRUPTION AS POSSIBLE. MAKE TEST BEFORE WORK IS CONCEALED.
B. TEST WATER PIPING TO HYDROSTATIC PRESSURE OF 150 PSI AND HOLD FOR 4 HOURS WITH LESS THAN 2 PSI LOSS IN PRESSURE. TEST GAS PIPING AS PER NFPA-54 AND/OR LOCAL AUTHORITY.
C. AFTER THE INSTALLATION OF SANITARY PIPING AND BEFORE THE PIPE IS CONCEALED OR THE FIXTURES ARE INSTALLED, CAP OR PLUG THE ENDS OF THE SYSTEM AND FILL ALL LINES WITH WATER TO TOP OF VENTS (BUT NOT LESS THAN 10' OF HEAD), ALLOW TO STAND UNTIL A THOROUGH INSPECTION HAS BEEN MADE. SHOULD LEAKS APPEAR, MAKE NECESSARY CORRECTIONS AND REPEAT THE TESTS UNTIL THE SYSTEM IS TIGHT.
D. DO NOT USE RESIN, CANDLE WAX, OR ANY OTHER SUCH SUBSTANCE FOR STOPPING LEADS IN CAST IRON SOIL, WASTE OR VENT LINES. CAULKING OF SCREW JOINTS TO STOP LEAKS WILL NOT BE PERMITTED.
E. LABEL ALL VALVES IN EQUIPMENT ROOM AS TO SERVICE AND FUNCTION WITH BRASS TAGS. PLACE ON VALVES WITH STEEL RINGS. LABEL COLD WATER PIPING, HOT WATER (140°F & 110°F) PIPING, HOT WATER RETURN PIPING AND GAS PIPING WITH PIPE MARKERS. VALVE LABELS AND PIPE MARKERS SHALL BE SET ON NAME PLATE.

X. STERILIZATION

A. THE STERILIZATION PROCESS SHALL COMPLY WITH ALL GOVERNING REGULATIONS AND WITH THE STERILIZATION PROCEDURES RECOMMENDED BY THE AMERICAN WATER WORKS ASSOCIATION. THE CHLORINATION PROCESS MAY BE SIMPLIFIED BY FIRST FLUSHING THE SYSTEM THOROUGHLY CLEAN, THEN CHARGING WITH WATER CONTAINING A MINIMUM OF 50 PARTS PER MILLION OF CHLORINE, ALLOWING THIS TO STAND FOR 24 HOURS, THEN THOROUGHLY FLUSHING. AFTER STERILIZATION AND FINAL FLUSHING, THE LOCAL HEALTH AUTHORITY IS TO BE NOTIFIED, AND THEIR FINAL APPROVAL OBTAINED IN WRITING.

END OF SECTION 22 00 00

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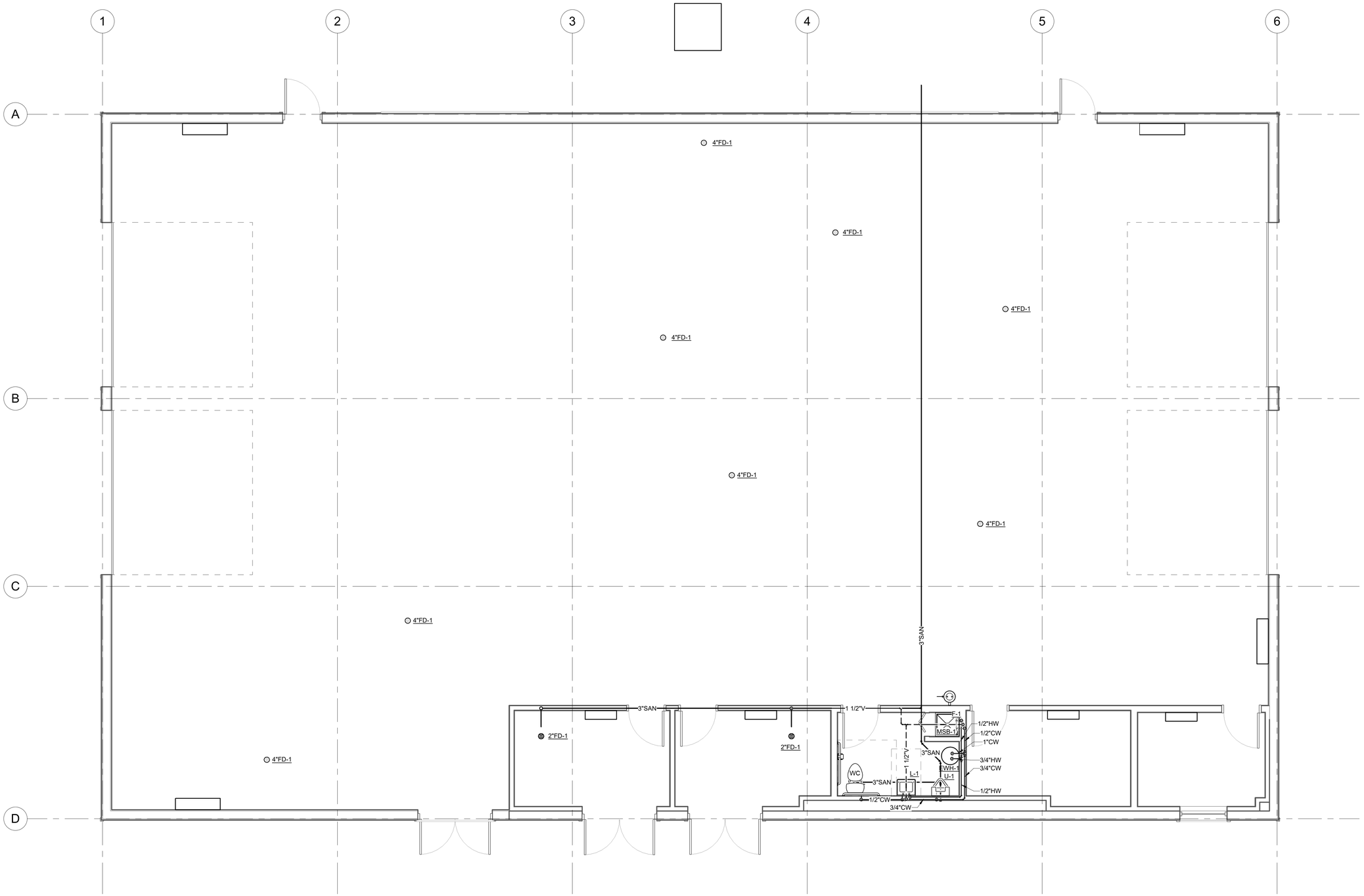
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PLUMBING SPECIFICATIONS

P001



1 PLUMBING-PLAN
1/4" = 1'-0"

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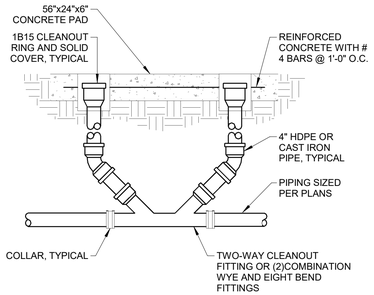
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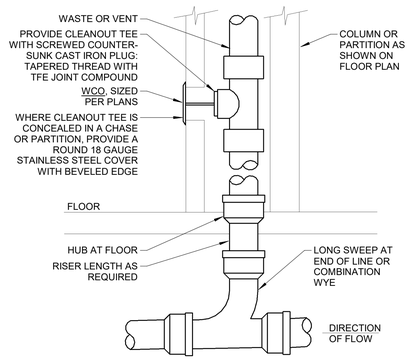
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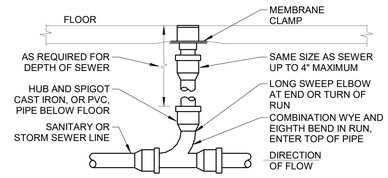
P101



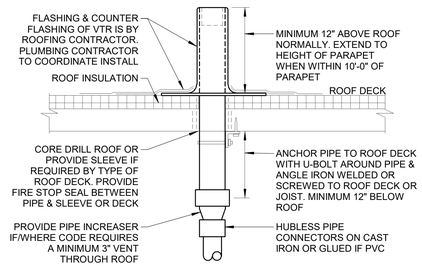
1 TWO-WAY GRADE CLEANOUT DETAIL



2 TYPICAL WALL CLEANOUT DETAIL

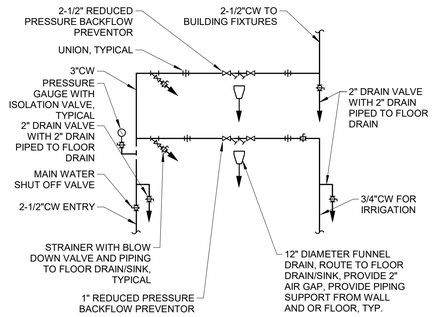


3 TYPICAL FLOOR/GRADE CLEANOUT DETAIL



REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATE VTR MINIMUM THREE FEET FROM PROPERTY LINE, OR FIFTEEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, OR ONE FOOT FROM ANY VERTICAL SURFACE. LOCATE VTR MINIMUM 18" FROM PARAPET, EXPANSION JOINT, EQUIPMENT CURB, ETC. OFFSET IN CELING SPACE WHERE REQUIRED TO MEET THESE CONDITIONS

4 VENT THRU ROOF DETAIL



5 DOMESTIC CW ENTRY DETAIL

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Project Name
PROJECT ADDRESS
XXXXX

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REVISION:

Enter Project Status
DATE: Issue Date
DRAWN BY: Author
CHECKED BY: Checker

PLUMBING DETAILS

P501

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REVISION:

Enter Project Status
DATE: Issue Date
DRAWN BY: Author
CHECKED BY: Checker

PLUMBING FIXTURE SCHEDULE

PLAN CODE	DESCRIPTION	FIXTURE BASIS OF DESIGN		ACCESSORIES		REMARKS	FLOW GPF/GPM	ADA	WASTE	VENT	CW	HW
		MANUFACTURER	MODEL	COMPONENT	MANUFACTURER							
F-1	FAUCET	ZURN	Z843M1	-	-	BRASS BODY, CHROME PLATED, 8" CENTERS, VACUUM BREAKER, INTERNAL STOPS AND CHECKS WITH PAIL HOOK AND ADJUSTABLE BRACE	2.0	YES	-	-	3/4"	3/4"
L-1	LAVATORY	KOHLER	K-2005	FAUCET	DELTA 501LF-HGMHDF	VITREOUS CHINA, WALL HUNG, 4" CENTERS, PROVIDE WITH CARRIER, COORDINATE WITH WALL THICKNESS. MANUALLY OPERATED FAUCET, W/ BELOW DECK TMV MANIFOLD. PROVIDE GRID DRAIN, 17 GAUGE P-TRAP, ANGLE SUPPLIES W/L.K. STOPS, INSULATION KIT.	0.5	YES	2"	1-1/2"	1/2"	1/2"
MSB-1	MOP SERVICE BASIN	FIAT	MSB2424	FAUCET	FIAT 830AA	MOLDED STONE, 24"x24"x10" WITH STAINLESS STEEL DRAIN AND DOME STRAINER. SERVICE FAUCET, CHROME PLATED WITH INTERNAL STOPS AND CHECKS, VACUUM BREAKER, PAIL HOOK, ADJUSTABLE WALL BRACE.	-	-	3"	2"	1/2"	1/2"
U-1	URINAL	KOHLER	K-4991-ET	FLUSH VALVE	SLOAN 186-0.25	VITREOUS CHINA URINAL WITH TOP SPUD AND MANUALLY OPERATED FLUSH VALVE. RE: ARCH FOR EXACT MOUNTING HEIGHT.	0.25	YES	2"	1-1/2"	3/4"	-
WC-2	WATER CLOSET	KOHLER	K-25077	SEAT	KOHLER K-4650-A	FLOOR MOUNTED, TANK TYPE, ELONGATED RIM, OPEN FRONT SOLID PLASTIC SEAT W/ ANTIMICROBIAL FINISH. PROVIDE ANGLE SUPPLY W/ L.K. STOPS	1.28	YES	4"	2"	1/2"	-

PLUMBING ACCESSORY SCHEDULE

PLAN CODE	DESCRIPTION	MANUFACTURER	MODEL	REMARKS	WASTE	VENT	CW	HW
2"FD-1	FLOOR DRAIN	ZURN	ZN-415-5B-P	CAST IRON	3"	1 1/2"	-	-
4"FD-1	FLOOR DRAIN	JOSAM	30000-A	CAST IRON	4"	2"	-	-

ELECTRIC WATER HEATER SCHEDULE

PLAN CODE	MANUFACTURER & MODEL	SERVES	GPH RECOVERY @ 100°F RISE	CAPACITY (GAL)	HEATING CAPACITY (KW)	VOLTAGE	PHASE	DIMENSIONS			WEIGHT (LBS)	NOTES
								HEIGHT	WIDTH	DEPTH		
EWH-1	BRADFORD WHITE LE120U3-1	DOMESTIC HOT WATER	12	19	3	277	1	24 3/4"	18"	18"	59	1-3

1. PROVIDE WITH T&P RELIEF VALVE PIPED TO MOP SINK.
2. MOUNT HEATER ON STAND SUPPORTED FROM STRUCTURE, SEE DETAIL.
3. PROVIDE VACUUM BREAKER ON CW INLET, LOCATED ABOVE TOP OF UNIT.

PLUMBING SCHEDULES

P601

COLORADO
Department of Public Health & Environment

Drinking Water Project Needs Assessment (PNA) Form

Water Quality Control Division

General Information

Facility Name:	Ouray, City of			Original ID:	
Mailing Address 1:	PO Box 468	Mailing Address 2:		County:	
City:	Ouray	State:	CO	Zip Code:	81427
Property Address 1:	P.O. Box 468	Property Address 2:		County:	
City:	Ouray	State:	CO	Zip Code:	81427
Latitude :	39.7517291	Longitude :	-104.992107		
Name of Project:	Water Treatment Plant Design				

Type of Project (Check all that apply)

☑ Treatment ☐ Distribution / Transmission ☑ Water Supply ☑ Water Storage

Please enter the following information for your organization if you have it.

1. Applicant Information:

First Name:	Silas	Middle Name:		Last Name:	Clarke
Phone Number:	970-325-7060				
Mailing Address1:	320 6th Ave	Mailing Address2:			
City:	Ouray	State:	CO	Zip Code:	81427
E-mail:	administrator@cityofouray.com				

Consulting Engineer Information:

First Name:	Alice	Middle Name:		Last Name:	Arsenault
Phone Number:	303-981-0453				
Mailing Address1:	12687 W. Cedar Drive	Mailing Address2:	Suite 300		
City:	Lakewood	State:	CO	Zip Code:	80228
E-mail:	alicea@elementengineering.net				

Self-Certification:

☐ Yes ☑ No Does the system intend to self-certify all or a portion of the project?

Read Only

2. Executive Summary

On March 2, 2021, the City of Ouray was issued a Final Evaluation of Surface Water Influence to Sources letter by CDPHE that stated that the city's raw water source, Spring No. 1 Weehawken, will be classified as groundwater under the direct influence of surface water (GWUDI). As documented in the letter, systems with sources classified as GWUID are required to comply with the Surface Water Treatment Rules (SWTR). The proposed project will bring the city into compliance with state regulations for surface water treatment.

The city operates the existing water system that consists of the raw water supply from Weehawken Spring, two (2) 500,000 gallon raw water storage tanks, gas chlorine disinfection, and distribution.

The proposed project includes the following components:

1. New Water Treatment Plant including three (3) 700 gallon per minute ultra-filtration treatment skids, with liquid sodium hypochlorite disinfection.
2. 1-million gallon finished water storage tanks.
3. Permitting of new surface water source - Weehawken Creek.

3.System Structure and Operation

3.1 Legal Ownership of System (TMF: Managerial-1)

First Name: Silas Clarke

Mailing Address1: 320 6th Ave Mailing Address2:

City: Ouray State: CO Zip Code: 81427

Phone Number: 970-325-7060 Fax:

3.2 Organizational Chart

Include an Organizational Chart as Attachment 2.

3.3 Plans (TMF: Managerial-2)

Monitoring Plan - Include a copy of the Monitoring Plan as Attachment 3.
Cross Connection Control Plan - Include a copy of the Cross Connection Control Plan as Attachment 4.

Water Conservation Plan (if system sells over 2,000 acre feet of water annually) - Include a copy of the Water Conservation Plan as Attachment 5. ☑ Not Applicable

3.4 Current Operator in Responsible (ORC) Charge (TMF: Technical-14)

First Name: John Middle Name: Last Name: Volk

Certification Number: CWP-WA-00341-0412 Certification Expiration Date: 04/12/2024

Operator Certification Level (check one) ☑ Staff Operator ☐ Contract Operator

Treatment	☐ Class D	☐ Class C	☐ Class B	☑ Class A
Distribution	☐ Class 4	☐ Class 3	☑ Class 2	☐ Class 1
Combined Treatment/Distribution	☑ Class S	☐ Class T		

3.5 Operator Certification (TMF: Technical-15)

☑ Yes ☐ No Do the system operators have adequate operator certification levels for the proposed project as defined by Regulation 100 Water and Wastewater Facility Operators Certification Requirements?

Explain the impact of the proposed project on the required operator in responsible charge (ORC) certification level and other predicted staffing changes.

Read Only

Based on Regulation 100, the proposed membrane skid facility requires a Class A water operator license. The current operator, John Volk, holds a Class A license, is able to operate the proposed facility.

3.6 Record Keeping (TMF: Managerial-3)

Describe the system's record retention policy that meets the requirements of the Colorado Primary Drinking Water Regulations (Regulation 11) including: record type, retention period, and record location.

Current and recent operating and lab records are kept at the existing water treatment building, and pertinent and permanent records are kept in city offices. The town's record retention policy meets the requirements of Regulation 11 as specified in Section 11.36. Records kept on-site for a minimum of 3-years include lab reports, action's taken to correct violations identified from state inspections, individual filter effluent (IFE) monitoring results, and source water monitoring. Records kept on-site for a minimum of 5-years include turbidity sampling under section 11.8, and microbiological sampling results. Records kept on site for a minimum of 10-years include chemical sample results, and records kept indefinitely include disinfection profiles and results of disinfection benchmark monitoring.

3.7 Annual Budget (TMF: Financial-1)

☑ Yes ☐ No Does the system prepare an annual budget?

☑ Yes ☐ No Does the system prepare and maintain a Capital Improvement Plan?

Please provide a narrative of the process for annual budgeting and financial planning.

City staff creates a budget that is then approved by the city board. The Water Fund finances water operations, which is comprised of the following departments: administration, water plant, distribution, water meters, and water supply. Currently, the main goal for the Water Fund is to begin preparing for the construction of a new water treatment plant, as proposed in this PNA. The city's most recent budget is attached as Attachment 7.

3.8 Financial Status (TMF: Financial-2)

Describe the current financial status and multi-year financial planning for the system including O&M costs, existing debt, required reserve accounts, rate structure, other capital improvement programs, and the system's reserve policies.

The current financial status of the City of Ouray's Water Enterprise Fund is described within the City's 2022 budget, Attachment 7. Included in that attachment is the Fund Balance Summary for each City fund estimated for the end of 2021 and projected for the end of 2022 based on the adopted budget. The budgeted annual O&M cost of the City's water treatment plant in 2021 (estimated, excluding staff wages & benefits) is $222,799. The only existing debt of the water system is $11,085 which is a lease/purchase (portion allocated to this fund) of a shared CAT Backhoe. This lease/loan is slated to be paid in full in January of 2023.

The City's Water Utility Capital Improvement Enterprise Fund manages capital improvement programs for the water plant, distribution, water meter installation project, and water treatment improvement project. The revenue source for this fund has been investment fees/tap fees and customer fees specifically for the Water Meter Installation Project and Water Treatment Improvement Project (WTIP). As seen in the City's 2022 budget (see Attachment 7), the City is planning to use American Rescue Plan Act monies in the amount of $259,896 on the WTIP as well as the customer fees of $209,239+ annually for the WTIP and its debt service. New for 2022 is revenue from an excise tax on short-term rentals, approved by voters in November of 2021. This new source of revenue is specifically for attainable housing projects (50%) and utilities projects debt service (50%). At least $100,000 is expected to be available for water project debt. Also, customer fees will be increased appropriately to ensure coverage of debt service.

20-year cash flow projection
Include a copy of the 20-year cash flow projection as Attachment 8.

3.9 Audits (TMF: Financial-5)

Has the system submitted audits to the Department of Local Affairs or has the received State exemption of the statutory audit requirement?

☑ Yes - Provide a copy of the most recent audited financial statement or exemption from State as Attachment 9. ☐ No

Read Only

3.10 Insurance (TMF: Financial-6)

Does the system maintain general liability insurance?

☑ Yes - Provide a copy of the most recent audited financial statement or exemption from State as Attachment 9. ☐ No

4. Project Purpose and Need

Discuss the issue or concern that the proposed project will address. Specific issues are outlined below. All issues must be discussed in each sub section below even if they are not the project driver.

4.1 Health and Compliance

Summarize the system's compliance status that necessitates the proposed project.

On March 2, 2021, the City of Ouray was issued a Final Evaluation of Surface Water Influence to Sources letter by CDPHE that stated that the city's raw water source, the Weehawken Spring, will be classified as groundwater under the direct influence of surface water (GWUDI). As documented in the letter, systems with sources classified as GWUDI are required to comply with the Surface Water Treatment Rules (SWTR). This letter from CDPHE in Attachment A.

4.2 Existing facility limitations

Summarize existing water system facility(ies) limitations that necessitate the proposed project.

Ouray's current water treatment system does not include filtration. In order to comply to Surface Water Treatment Rules (SWTR), Ouray's treatment system will need to be replaced.

4.3 Operations and Maintenance Issues

Summarize operational and maintenance (O&M) issues with the existing water facilities.

No operational or maintenance issues exist. The facility does not include adequate equipment to comply with the SWTR.

5. Existing Facilities Analysis

Read Only

5.1 Existing Source Water– Section required for treatment and supply projects

☐ Not applicable (for distribution and storage projects, only)

5.1.1 Raw Water Supply (TMF: Technical-2)
Explain the system's existing raw water source(s), seasonal variability, and availability. Explain the system's raw water quality including primary water quality parameters of concern, variability and potential sources of contamination in the watershed or source aquifer. Identify whether sources are classified as surface water, groundwater, or groundwater under direct influence of surface water (GWUDI). Explain water usage including multiple sources of differing qualities.

Source Name	Source Classification	Source Description
Weehawken Spring	GWUDI	The Weehawken Spring (three springs) are captured in perforated concrete vaults and piped downhill (two 6-inch pipes, one 8-inch pipe) to a sealed concrete vault located near the bridge over Cascade Creek. Two of the springs are located approximately 20 vertical feet uphill from the sealed concrete vault and the other spring is located approximately 10 vertical feet above the sealed concrete vault. The water quality is generally good. Sampling data for Weehawken Spring is attached in Appendix B. Weehawken Spring is the city's only permitted water source. This project proposes the permitting of a new surface water source, Weehawken Creek. Sampling results for Weehawken Creek are also attached in Appendix B.

5.1.2 Water Rights (TMF: Technical-3)

The City's primary raw water source, Weehawken Spring, is capable of meeting current demand. Weehawken Spring currently provides water for both non-potable and potable uses in Ouray. The City also has additional water rights that can be used to provide water supply on Weehawken Creek. With our current water treatment plant we are unable to use the Weehawken Creek as a source of raw water. With a surface water treatment plant we will have a second source for Ouray's water supply, providing redundancy and the ability for the City to grow. Please see the attached water efficiency plan (Attachment C) that the City adopted in September 2014.

The water rights decree for the city is attached in Attachment 12. Water rights are adequate for the 20-year planning horizon. The proposed treatment system will be sized to meet the 20-year anticipated demand.

5.2 Existing treatment– Required for treatment and supply projects only

☐ Not applicable (for distribution and finished water storage projects, only)

5.2.1 Overall treatment description (TMF: Technical-5)
Provide a current treatment description including: treatment processes used, major design parameters (e.g., process capacities, detention times, unit loading rates, disinfection log inactivation).

The existing water system consists of raw water collection from a spring, transmission of raw water to two (2) 500,000-gallon raw water storage tanks, disinfection with gas chlorine, followed by distribution to the service area. The service area contains ten (10) pressure reducing valves (PRVs) to regulate pressure throughout the distribution system. No finished water storage tanks or pump stations exist in the system.

5.2.2 Existing Process Flow Diagram (TMF: Technical-8)
Include an existing treatment facility process flow diagram as Attachment 13.

Ready Only

5.2.3 Current Compliance Status (TMF: Technical-1)
Discuss the system's current compliance status with Regulation 11, as well as violations and significant deficiencies documented during sanitary surveys.

The city received three violations during the last Sanitary Survey conducted on November 22, 2019. The consisted of: 1. Inadequate Survey Compliance Ratio (T2): Supplier has not adequately surveyed their public water system for cross connections. This is BPCCC treatment technique violation of Regulation 11 Section 11.39(6)(a)(iii). 2. Failure to Complete an Annual Backflow Report (T3): Supplier failed to develop a written annual BPCCC program report. This is a BPCCC violation of Regulation 11 Section 11.39(6)(b)(ii). 3. Backflow Assembly Testing Compliance Ratio (T2): Supplier has not met the annual backflow assembly testing compliance ratio. This is a BPCCC treatment technique violation of Regulation 11 Section 11.39(6)(a)(v). The city has addressed these issues.

On March 2, 2021, the City of Ouray was issued a Final Evaluation of Surface Water Influence to Sources letter by CDPHE that stated that the city's raw water source, Spring No. 1 Weehawken, will be classified as groundwater under the direct influence of surface water (GWUDI). As documented in the letter, systems with sources classified as GWUID are required to comply with the Surface Water Treatment Rules (SWTR). The proposed project will bring the city into compliance with state regulations for surface water treatment.

5.2.4 Appropriateness of Treatment Technologies (TMF: Technical-6)
Discuss if the existing treatment process(es) are appropriate to meet Regulation 11 considering existing source water quality and potential sources of contamination.

On March 2, 2021, the City of Ouray was issued a Final Evaluation of Surface Water Influence to Sources letter by CDPHE that stated that the city's raw water source, the Weehawken Spring, will be classified as groundwater under the direct influence of surface water (GWUDI). The existing treatment system does not meet the requirements for treatment for a GWUDI source.

5.2.5 Capacity of Treatment Technologies (TMF: Technical-7)
Is the capacity of the existing water treatment system appropriate to meet water demands through the next 20 years?

☑ Yes ☐ No

Please explain:

Capacity is not the driving factor for this project, water source re-classification is the reason behind the project.

5.2.6 Operational Controls (TMF: Technical-10)
Describe if the existing treatment process(es) has appropriate operational controls.

The current gas chlorination system has sufficient controls. Operational controls are not the impetus for this project.

5.2.7 Residuals Management (TMF: Technical-9)
If the treatment process produces waste residuals, please discuss the water system's residuals management strategy.

N/A

List documentation for all existing discharge permits and/or residuals for the water treatment plant including residuals for disposal or beneficial use (e.g., NPDES discharge permits, EPA UIC Permit, HMWMD radioactive materials license, HMWMD Solid Waste licenses).

Include a copy of discharge permits and/or residual documentation as Attachment 14 ☑ Not Applicable

Read Only

5.3 Distribution - Required for distribution and storage projects only

☐ Not applicable (for supply and treatment projects, only)

5.3.1 Overall Distribution System Description (TMF: Technical-11 and -12)
Discuss the existing finished water distribution system including: gravity vs. pumped pressurization, facility age, material type, condition of materials, amount of AC pipe, number of pressure zones, pump stations, and storage tanks.

The distribution system consists of ductile iron, cast iron, and PVC pipe. Currently, no individual meters for customers exist in the system. The city is working to implement a meter installation program, though this task was delayed due to COVID-19. The distribution system contains ten (10) pressure reducing valves (PRVs) to regulate pressure throughout the distribution system.

Discuss the estimated distribution system losses (i.e., the percent of water lost in the distribution system and not delivered/billed to customers).

Due to a lack of metering, calculating system loss is not known. The system does not experience an excessive amount of water main breaks according to city staff.

5.3.2 Pressure (TMF: Technical-13)
Discuss if the existing distribution system is designed to maintain a minimum pressure of 20 psi at all ground level points in the distribution system under all conditions of flow as required in the CDPHE Design Criteria for Potable Water Systems (Design Criteria). The Design Criteria also recommends a normal working pressure in the distribution system of approximately 60 psi, and not less than 35 psi. Discuss how the distribution system meets the required and recommended distribution system pressures.

According to the City of Ouray's "Pressure Zone Elevation Plan", Ouray's current distribution system maintains a 78 PSI in the Jim Brown Pressure zone, a 78 PSI in the Center of Town Pressure Zone, and a 58 PSI in the North Pressure Zone. Pressure in the system is adequate and will not be significantly modified as a result of the proposed project.

Include a map illustrating any locations where a minimum pressure of 20 psi cannot be provided under all conditions of flow as Attachment 15. ☐ Not Applicable

5.3.3 Meters (TMF: Financial-4)
Discuss if the existing distribution system includes water meters.

The current system does not include water meters for individual residencies. The city is working to install meters on all services.

6.Facility Planning Analysis

6.1 Planning Area Description

6.1.1 Project Area Map
Provide a map showing a minimum of a 3-mile radius around the project area that includes environmental features (lakes, streams, wetlands, floodplains). Map must include current and proposed service area, existing drinking water facilities (plants, major distribution lines, water sources, storage facilities), existing wastewater outfalls/permitted discharge points, and any new or affected sources with regard to the pertinent watershed. Include the map as Attachment 16.

6.1.2 Urban Growth Boundary

☐ Yes ☑ No Is the project within or near an urban growth boundary?

6.1.3 Local and Regional Issues

☑ Yes ☐ No Were local and regional planning efforts considered?

Please describe.

Read Only

Due to the location of the WTP, existing infrastructure, and water rights, consolidation with another water treatment system is not feasible.

☑ Yes ☐ No Were local and regional water quality and/or quantity efforts considered?

Please describe.

The project will not affect the quantity of water utilized by the city. The project will increase the water quality of water provided to city users and bring the city into compliance with the Surface Water Treatment Rule.

☑ Yes ☐ No Was consolidation with another water system / treatment facility considered?

If yes, describe the consolidation considerations. If no, please indicate why consolidation was not considered.

The town of Ridgeway is the closest entity to Ouray. Ridgeway is approximately 10 miles to the north. Consolidation beyond 5 miles is not financially feasible due to the cost of initial infrastructure. Consolidation is therefore not a viable alternative.

6.2 Population and Water Demand Projections (TMF: Technical-2)

For a 20 year planning period, forecast the population growth, projected increase in Equivalent Residential Taps (ERT), and projected drinking water demands.

Current ERT - As Calculated in the Prequalification Form: _____

Population and Demand Projections - The department generally accepts two methodologies for projecting water flows over the 20 year planning period. Other methodologies are acceptable with a clear explanation and all assumptions and parameters listed:

☑ Method 1: Population based projections. Recommended for primarily residential systems and/or for systems without water meter data

☐ Method 2: Equivalent Residential Taps (ERT) Analysis. Recommended for systems with a high multifamily, commercial, industrial, irrigation demands.

Method 1 and 2 templates can be found at the end of this form.
Attach the population projection as Attachment 17.

Discuss supporting data and reasons for projected future growth during the 20 year planning period.
Note: Projects designed solely to serve future development or population growth are not eligible for State Revolving Fund financing.

Attachment 17 shows historic population data for the City of Ouray obtained from the Colorado Department of Local Affairs population estimates, produced annually by the State Demography Office. This data shows that from 2010 - 2020, the average annual growth rate for the city was -1.3%. To be conservative, this report assumes an average annual growth rate of 0.5%. Attachment 17 documents the historic and projected population for the city. This report assumes that growth of non-residential users will mirror the residential growth.

6.3 Source Water Planning

6.3.1 Overall Water Resource Management Description (TMF: Technical-2)
For a 20 year planning period, describe the system's water resource management plan.

Read Only

The City's primary raw water source, Weehawken Spring, is capable of meeting current demand. Weehawken Spring currently provides water for both non-potable and potable uses in Ouray. The City also has additional water rights that can be used to provide water supply on Weehawken Creek. With our current water treatment plant we are unable to use the Weehawken Creek as a source of raw water. With a surface water treatment plant we will have a second source for Ouray's water supply, providing redundancy and the ability for the City to grow. Please see the attached water efficiency plan (Attachment C) that the City adopted in September 2014.

6.3.2 Water Rights (TMF: Technical-3)
For the 20 year planning period, discuss how the system will be able to meet the projected population and increased industrial/commercial water demands.

The water rights decree for the city is attached in Attachment 12. Water rights are adequate for the 20-year planning horizon. The proposed treatment system will be sized to meet the 20-year anticipated demand.

Provide documentation supporting the system's water rights, if not provided in section 5.1.2 above, as Attachment 18.

6.3.3 Source Water Supply Capacity (TMF: Technical-4)
For the 20 year planning period, discuss if the source water supply infrastructure is capable of delivering adequate source water to meet projected needs.

The spring box and raw water main conveyance pipe are both in need of rehabilitation. The city is working to secure funding to rehabilitate this infrastructure to ensure the delivery of adequate source water to meet system needs.

7.Assessment of Alternatives

7.1 Alternatives

For each alternative, please provide:
1. A description of the alternative addressing the issues identified in Section 4: Project Purpose and Need. (TMF: Technical-7)
2. Capital cost estimates and annual operation and maintenance costs.
3. Advantages and Disadvantages of each alternative.

Alternative 1 Title : No Action

Alternative 1 Description (2000 character limit):

See Attachment 19

Alternative 1 Capital and Operation and Maintenance Costs (2000 character limit):

See Attachment 19

Alternative 1 Advantages and Disadvantages (2000 character limit):

Read Only

See Attachment 19

Alternative 2 Title : Consolidation

Alternative 2 Description (2000 character limit):

See Attachment 19

Alternative 2 Capital and Operation and Maintenance Costs (2000 character limit):

See Attachment 19

Alternative 2 Advantages and Disadvantages (2000 character limit):

See Attachment 19

Alternative 3 Title : Ultrafiltration Facility

Alternative 3 Description (2000 character limit):

See Attachment 19

Alternative 3 Capital and Operation and Maintenance Costs (2000 character limit):

See Attachment 19

Alternative 3 Advantages and Disadvantages (2000 character limit):

Read Only

See Attachment 19

Provide discussions of additional alternatives as Attachment 19.

8. Selected Alternative

8.1 Justification of Selected Alternative (TMF: Technical-6)

Please demonstrate why the selected alternative best meets system needs based on both monetary and non-monetary considerations. For treatment facility projects, if the EPA-BAT technology is not selected then the report must include a treatment rational.

The proposed ultrafiltration (UF) system upgrade to the Town of Ouray Water Treatment Facility (WTF) is the city's preferred alternative because the proposed system addresses the town's site-specific issues including capacity and demand; raw water quality and finished water quality goals; site space availability; potential for future expansion; and offers desirable operational characteristics.

The proposed UF system will have adequate capacity to meet the city's service area demand, even with one skid out of operation. The UF membrane technology is a superior treatment process for particles and pathogens, which are the contaminants of concern in the service area which is surrounded by alpine and forested areas. The proposed UF system technology can achieve full 3-log removal Giardia credits through CDPHE 's Alternative Filtration Technologies (AFT), thus lowering overall disinfection required at the WTF. Furthermore, the Ouray WTF is restrained by site space availability. The proposed UF system requires a smaller building footprint as compared with alternative treatment options. Lastly, the proposed UF system offers a highly automated process including backwash cycles, which will limit operational and maintenance requirements.

8.2 Technical Description and Design Parameters (TMF: Technical-5)

For the selected alternative, please describe all proposed project components and assumed design parameters.

The proposed Water Treatment Plant Design Project consists of the following components:

1. New Water Treatment Plant including three (3) 700 gallon per minute ultra-filtration treatment skids, with liquid sodium hypochlorite disinfection.
2. 1-million gallon finished water storage tanks.
3. Permitting of new surface water source - Weehawken Creek.

Please see additional details included with this report's Attachment 19 - Alternatives Assessment. All project components will follow the State of Colorado Design Criteria for Potable Water Systems.

8.3 Proposed Process Flow Diagram

Include a proposed treatment facility process flow diagram or map of the distribution system, as applicable as Attachment 20.

8.4 Appropriateness of Treatment Technologies (TMF: Technical-6)

Discuss appropriateness of the proposed treatment process(es) to meet Regulation 11 considering anticipated source water quality and potential sources of contamination.

The proposed ultrafiltration (UF) filtration process meets Regulation 11 requirements considering the anticipated source water quality and potential sources of contamination. The UF process is a physical screening through a porous membrane in which contaminants such as particles and contaminants are rejected due to size exclusion. The practice of coagulation with the system's existing injection system and newly proposed pre-treatment screen filter reduce the strain on the UF skids to ensure optimum performance and production regardless the influent raw water turbidity.

8.5 Environmental Impacts

Describe direct and indirect impacts on floodplains, wetlands, wildlife habitat, historical and archaeological properties, etc., including any projected permits and certifications.

Read Only

No significant environmental impacts are expected. No floodplain map is available for the area, however the location of the proposed facility is high up on a cliff, so no effect of a flooding event is expected. The National Wetlands Inventory Map attached in Attachment 16 shows that there will be no effect on wetlands. The State Historic Preservation Office (SHPO) will be contacted as part of the environmental review if required, though no effect is expected.

8.6 Land Requirements

Identify all necessary sites and easements, permits and certifications, and specify if the properties are currently owned, to be acquired, or leased by the applicant.

All work will occur on land that is currently owned by the city.

8.7 Construction Requirements

Discuss construction concerns such as subsurface rock, high water table, limited access, or other conditions that may affect cost of construction or operation of a facility.

Numerous construction concerns exist with the project due to site location and conditions. The water treatment plant must be constructed in a difficult location due to the topography of the city. To mitigate construction concerns, this project is being designed, bid, and constructed as a Construction Manager at Risk (CMAR) project. A construction firm has already been retained by the city and is involved in the preliminary design. Element and the city will work with the construction firm to work to revise any design elements to reduce construction concern.

8.8 Operational Aspects

Discuss the operator staffing requirements, operator certification level requirements (including distribution), the expected basic operating configuration and process control complexities, and the operational controls and equipment that allows operational personnel to respond to routine and unanticipated treatment challenges, such as flow rate, chemical feed dosing, and process monitoring.

The completion of the proposed project will require an A operator certification. The proposed UF treatment process controls are highly automated, thus reducing the process control complexity on the operator. All necessary operational controls are included with the proposed construction. The existing operations staff will be trained and fully capable of handling any routine and unanticipated operation and maintenance challenges of the proposed equipment.

8.9 Costs (TMF: Financial-2 and -3)

Summarize the capital costs associated with the selected alternative. The 20 year cash flow projection included in Attachment 7 must reflect the capital and operation and maintenance costs associated with the selected alternative. (No more than 2,000 Characters)

Project costs and details are presented in Attachment 19.

Cost Category Selection (Assign a percent to each applicable category)

Planning and Design Only (non-construction)	0

Read Only

Construction - Treatment	85
Construction - Transmission and distribution	0
Construction - Source	0
Construction - Storage	15
Purchase of Systems	0
Restructuring	0
Land Acquisition	0
Water Rights	0
Other	0
Total: (must equal 100%)	100

Please include an estimate of the projected increase in and total average monthly user charges. Does the user charge system allow for billing, collection, and enforcement?

Details of the effect of the project on the monthly user rate are included in Attachment 19. The project is not expected to affect the demand for billing, collection, and enforcement. The city's budget currently adequately funds these needs.

8.10 Environmental Checklist

Include the Environmental Checklist for the Selected Alternative as Attachment 22.

8.11 Project Implementation

8.11.1 Proposed Schedule

Loan application	01/15/2022	Design Plans (60 day review period)	01/15/2022
Advertisement for bids	06/01/2022	Award Contracts	07/01/2022
Start Construction	07/01/2022	Complete Construction	10/23/2023

8.11.2 Public Meeting

Provide documentation of a public meeting held or describe when and where the meeting will be held. The meeting must be noticed for 30 days. Provide the public notice, proof of publication, sign in sheet, and agenda as Attachment 23 or provide to your project manager in the Grants and Loans Unit after the meeting has taken place.

☐ Include the public meeting documentation as Attachment 23.

Or, will be provided to the Grants and Loans Unit project manager after the meeting takes place.

9. Projecting Water Flows Method 1: Population based projections

Assumptions/Data			Information Source
Current System Population	1000	People	

Read Only

Current Service Area Population (If providing water to neighboring community)		People	
Population Growth Rates	0.6	% increase/year	
Average Daily per Capita Flow Rate		Gallons per capita day	
Maximum Daily per Capita Flow Rate		Gallons per capita day	
Peak Hour Factor		Gallons per capita day	

Year	System Population	Service Area Population (if different)	Average Daily Flow	Maximum Daily Flow	Peak Hour Flow
+0	0	0			
+5					
+10					
+15					
+20					

10. Projecting Water Flow Method 2: Equivalent Residential Taps (ERT)

Current Equivalent Residential Taps (ERT)		
A	Number of active residential taps:	0
B	Total annual consumption (gallons per year) - Residential	0
C	Estimated equivalent residential tap water usage Annual flow per ERT = B / A	0
D	Total annual consumption (gallons per year) - Commercial / Industrial / Irrigation	0
E	Estimated Commercial / Industrial / Irrigation flow in ERT # of commercial / industrial / irrigation ERT = D / C	0
F	Total ERTs = A + E	0

Population and Flow Assumptions / Data			Information Source
Current System Population		People	
Current Service Area Population (If providing water to neighboring community)		People	
Population Growth Rates		% increase/year	
Average daily flow per ERT		Gallons per capita day	
Maximum daily flow per ERT		Gallons per capita day	
Peak Hour Factor		Gallons per capita day	

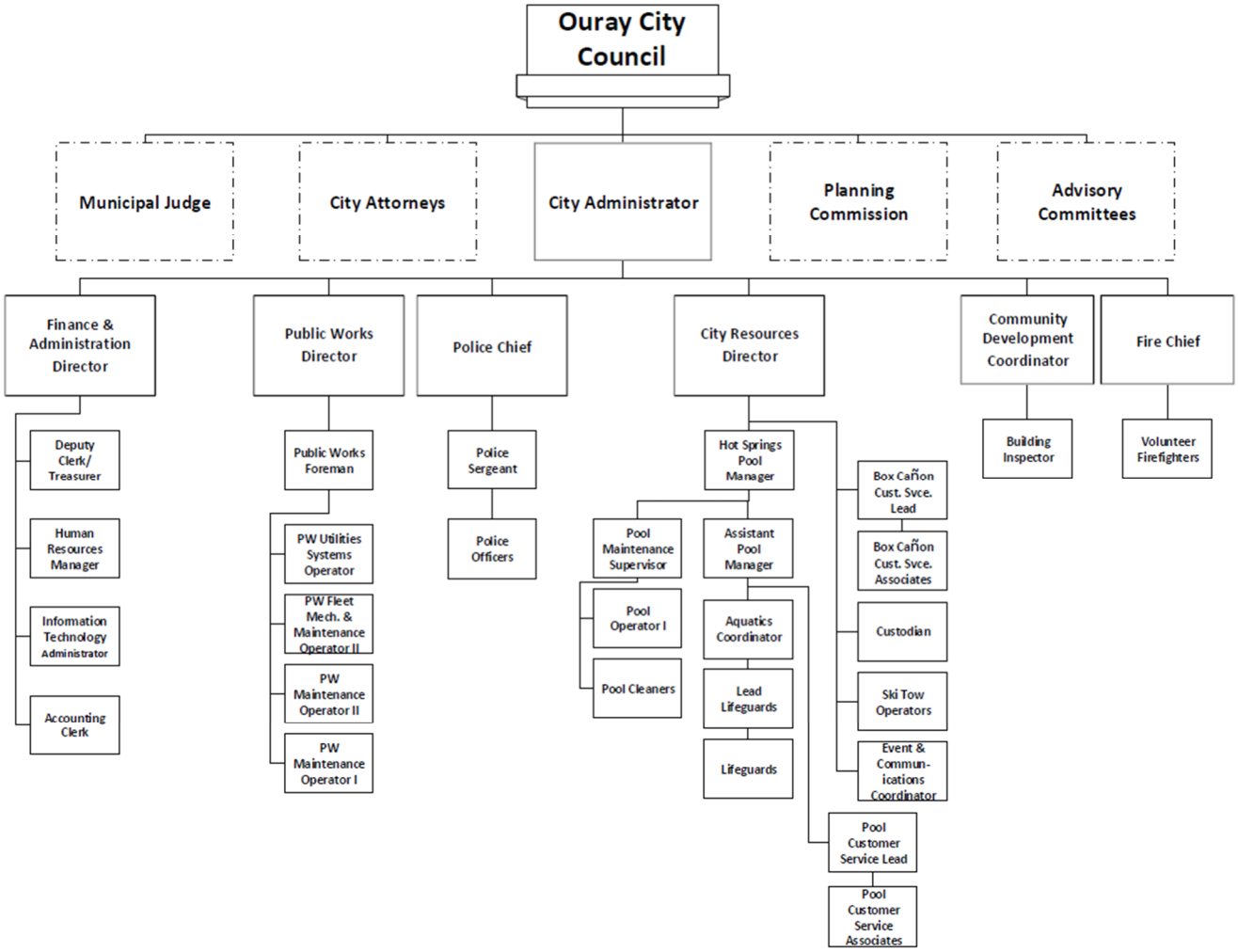
Read Only

Year	System Population	Service Area Population (if different)	Residential Taps (ERTs)	Multifamily Residential Taps (ERTs)	Commercial/ Industrial Taps (ERTs)	Irrigation Taps (ERTs)	Total Taps (ERTs)	Average Daily Flow	Maximum Daily Flow	Peak Hour Flow
+0										
+5										
+10										
+15										
+20										

Read Only


COLORADO LICENSED
ALICE MARY ARSENAULT
53350
PROFESSIONAL ENGINEER

Town of Ouray
Project Needs Assessment
Attachment 2 – Organizational Chart



OURAY CITY OF
Calendar Year 2021 Monitoring Schedule
Mailing Address: PO BOX 468 OURAY, CO 81427

Public Water System ID	Water System Name	Federal System Type	State Source Type	Service Connections	Population
CO0146588	OURAY CITY OF	Community	Groundwater UDI Surface Water	1004	1460
Primary County	**Minimum Certification for Treatment Operator**	**Minimum Certification for Distribution System Operator**	**Last Inspection**	**Seasonal**	**Water Hauler**
OURAY	B	1	08/21/2019	No	No

Contact Information
All public water systems are required to maintain an Administrative Contact, Treatment Operator (if applicable), Distribution System Operator (if applicable), and Owner. If the information below is incorrect or blank please send us a contact update form. This form and operator certification information is available by visiting wqcdcompliance.com/forms.

Administrative Contact	Treatment Operator	Distribution System Operator	Owner
JOE COLEMAN	JOHN VOLK	JOE COLEMAN	OURAY CITY OF

General Information

Samples must be collected at the location specified in the Monitoring Plan or Record of Approved Waterworks.

- Schedules are updated every Wednesday evening. Please contact your specialist with questions wqcdcompliance.com or call us at 303-692-3556.
- **System info, online records, public notices, violations, and sample results (bottom of page).**
- Laboratory sample results must be analyzed by a certified laboratory using a certified method. Results must be submitted using the Online Portal wqcdcompliance.com/login and not as email attachments.
- Please identify the **Facility ID and Sample Point ID** (listed below) when submitting sample results. Facility and Sample Point IDs are used to identify general sample site locations.

Monitoring Information

Distribution System Sample Schedules

Facility ID	Facility Name	Facility Type
DS001	DISTRIBUTION SYSTEM	Distribution System

Microorganisms and Disinfectants

TOTAL COLIFORM BACTERIA (TCR) Sample Schedule:

2 sample(s) **per Month** during the collection period

Use the Facility ID and Sample Point ID listed at the end of this monitoring schedule.

Collection Period:

January 1, 2021 to December 31, 2021

FREE CHLORINE Sample Schedule:

Measure **every time** you collect a TOTAL COLIFORM BACTERIA (TCR) sample

This monitoring schedule is based on the system's current inventory and is subject to change. ***Water systems are responsible for promptly reporting schedule errors or omissions***.
Errors or omissions on monitoring schedules do not prohibit the Water Quality Control Division from enforcing monitoring requirements set forth by the Regulations.

Distribution System Sample Schedules

Facility ID	Facility Name	Facility Type
DS001	DISTRIBUTION SYSTEM	Distribution System

Disinfection Byproducts

TTHMs and HAA5s (Stage 2) Sample Schedule:

1 dual sample(s) **per sample point** for a **TOTAL of 1 dual sample(s) per Quarter** during the collection period

****Collection Restriction:*** Sample(s) must be collected, **at a minimum**, in the following months: **May, August (Peak Month) , November***

State Sample Point ID(s) (System Location ID(s)):
DBP001 (RIVERSIDE INN)

Collection Period:

April 1, 2021 to December 31, 2021

Compliance Check:
May
~~**August (Peak Month)**~~ ****Result(s) Received****
November

Lead and Copper

LEAD AND COPPER Sample Schedule:

10 sample(s) **per Year**

****Collection Restriction:*** Sample(s) **must be collected between June 1 and September 30***

Collection Period:

~~June 1, 2021 to September 30, 2021~~
****Sample Result(s) Received****

SAMPLES MUST BE COLLECTED FROM THE HIGHEST RISK SITES LISTED IN THE LEAD AND COPPER SAMPLE POOL INFORMATION AT THE END OF THIS MONITORING SCHEDULE.

Each sample must be reported with a State Assigned Sample Point ID (LCR###).

To ensure timely processing of results, please have the certified lab report all results electronically in CSV data format. Do NOT submit paper or PDF copies of lab reported data.

Non-Distribution System Sample Schedules

Facility ID	Facility Name	Facility Type	Sample Point ID	Sample Point Name	Sample Point Type
001T	CHLORINATOR	Treatment Plant	001T	NOT ENTRY POINT	Water System Facility

Satisfied Schedules

NITRATE Sample Schedule:

1 sample(s) **per Year**

Collection Period:

~~January 1, 2021 to December 31, 2021~~
****Sample Result(s) Received****

FLUORIDE Sample Schedule:

1 sample(s) **per 3 Years**

Collection Period:

~~January 1, 2020 to December 31, 2022~~
****Sample Result(s) Received****

INORGANICS GROUP Sample Schedule:

1 sample(s) **per 3 Years**

Collection Period:

~~January 1, 2020 to December 31, 2022~~
****Sample Result(s) Received****

NITRITE Sample Schedule:

1 sample(s) **per 9 Years**

Collection Period:

~~January 1, 2020 to December 31, 2028~~
****Sample Result(s) Received****

This monitoring schedule is based on the system's current inventory and is subject to change. ***Water systems are responsible for promptly reporting schedule errors or omissions***.
Errors or omissions on monitoring schedules do not prohibit the Water Quality Control Division from enforcing monitoring requirements set forth by the Regulations.

Non-Distribution System Sample Schedules

Facility ID	Facility Name	Facility Type	Sample Point ID	Sample Point Name	Sample Point Type
005	RESCUE BUILDING	Sampling Station	005	MICROBIAL	Entry Point

Daily Schedules

FREE CHLORINE (MICROBIAL INACTIVATION AND ENTRY POINT RESIDUAL) Sample Schedule:

2 sample(s) **per Day** during the collection period

Collection Period:

While Operating

Facility ID	Facility Name	Facility Type	Sample Point ID	Sample Point Name	Sample Point Type
006	BOX CANYON	Sampling Station	006	FIRST CUSTOMER	Entry Point

Daily Schedules

FREE CHLORINE (MICROBIAL INACTIVATION AND ENTRY POINT RESIDUAL) Sample Schedule:

2 sample(s) **per Day** during the collection period

Collection Period:

While Operating

Yearly Schedules

VOLATILE ORGANICS GROUP Sample Schedule:

1 sample(s) **per Year**

Collection Period:

January 1, 2021 to December 31, 2021

3 Year Schedules

SYNTHETIC ORGANICS GROUP Sample Schedule:

1 sample(s) **per 3 Years**

Collection Period:

January 1, 2020 to December 31, 2022

9 Year Schedules

COMBINED RADIUM (-226 & -228) Sample Schedule:

1 sample(s) **per 9 Years**

Collection Period:

January 1, 2020 to December 31, 2028

COMBINED URANIUM Sample Schedule:

1 sample(s) **per 9 Years**

Collection Period:

January 1, 2020 to December 31, 2028

GROSS ALPHA, WITHOUT RADON & URANIUM Sample Schedule:

1 sample(s) **per 9 Years**

Collection Period:

January 1, 2020 to December 31, 2028

Collection Restriction:* Sample(s) **must be collected at the **same time** as the COMBINED URANIUM sample(s)*

This monitoring schedule is based on the system's current inventory and is subject to change. ***Water systems are responsible for promptly reporting schedule errors or omissions***.
Errors or omissions on monitoring schedules do not prohibit the Water Quality Control Division from enforcing monitoring requirements set forth by the Regulations.

Compliance and Public Notice Schedules

Public Notice Schedules - Certificate of Delivery and Notice must be submitted within 10 days after providing notification
Forms available at wqcdcompliance.com/pn

Activity Name	Activity Due Date	Activity Completion Date
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	February 7, 2020	May 14, 2020
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	February 7, 2020	May 14, 2020
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	May 7, 2020	May 14, 2020
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	May 7, 2020	May 14, 2020
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	August 7, 2020	Activity Not Completed
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	August 7, 2020	Activity Not Completed
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	October 7, 2020	May 14, 2020
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	November 7, 2020	Activity Not Completed
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	November 7, 2020	Activity Not Completed
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	January 21, 2021	Activity Not Completed
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	April 21, 2021	Activity Not Completed
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	July 21, 2021	Activity Not Completed
MAIL/HAND DELIVER NOTICE TO CONSUMERS: FAILURE TO MEET CROSS CONNECTION CONTROL AND/OR BACKFLOW PREVENTION REQUIREMENTS - CROSS CONNECTION RULE	October 21, 2021	Activity Not Completed

~~Sanitary Survey Significant Deficiency~~ - Schedule Closed

Activity Name	Activity Due Date	Activity Completion Date
RESOLVE SIGNIFICANT DEFICIENCY/VIOLATION - M611	November 11, 2020	October 21, 2021

This monitoring schedule is based on the system's current inventory and is subject to change. ***Water systems are responsible for promptly reporting schedule errors or omissions***.
Errors or omissions on monitoring schedules do not prohibit the Water Quality Control Division from enforcing monitoring requirements set forth by the Regulations.

Compliance and Public Notice Schedules

SWTR Compliance Schedule

Activity Name	Activity Due Date	Activity Completion Date
BEGIN REPORTING EPRD	June 1, 2021	June 1, 2021
INSTALL FILTRATION WITHIN 18 MONTHS	October 1, 2022	Activity Not Completed

~~CCR Compliance Schedule~~ - Schedule Closed
Your 2021 *DRAFT* CCR will be posted at wqcdcompliance.com/ccr in March

Activity Name	Activity Due Date	Activity Completion Date
SUBMIT CCR REPORT TO STATE	June 30, 2021	June 15, 2021
SUBMIT CERTIFICATE OF DELIVERY	June 30, 2021	June 1, 2021

~~Lead Consumer Notification - Delivery to consumers is required~~ within 30 days ~~after receipt of data from laboratory~~ - Schedule Closed

Activity Name	Activity Due Date	Activity Completion Date
SUBMIT ONE (1) LEAD CONSUMER NOTICE AND CERTIFICATE OF DELIVERY	December 31, 2021	September 29, 2021

Facility Specific Levels

Facility ID	Facility Name	Facility Type
DS001	DISTRIBUTION SYSTEM	Distribution System
Analyte Name	**Level**	**Level Type**
FREE CHLORINE	0.2 mg/L	Minimum
FREE CHLORINE	4.0 mg/L	Maximum
Facility ID	**Facility Name**	**Facility Type**
005	RESCUE BUILDING	Sampling Station
Analyte Name	**Level**	**Level Type**
FREE CHLORINE (MICROBIAL INACTIVATION AND ENTRY POINT RESIDUAL)	2.0 mg/L	Minimum
Facility ID	**Facility Name**	**Facility Type**
006	BOX CANYON	Sampling Station
Analyte Name	**Level**	**Level Type**
FREE CHLORINE (MICROBIAL INACTIVATION AND ENTRY POINT RESIDUAL)	2.0 mg/L	Minimum

This monitoring schedule is based on the system's current inventory and is subject to change. ***Water systems are responsible for promptly reporting schedule errors or omissions***.
Errors or omissions on monitoring schedules do not prohibit the Water Quality Control Division from enforcing monitoring requirements set forth by the Regulations.

Backflow Prevention and Cross-connection Control (BPCCC) Reminders:

- Annual BPCCC Reports need to be completed by May 1, 2021 for activities completed in 2020.
- The required survey compliance ratio for 2020 is 0.90, unless you have a CDPHE approved alternate ratio.
- The required assembly testing ratio for 2020 is 0.80 and the required method inspection ratio is 0.90.
- Annual BPCCC reports should only be submitted to us if a violation occurred. Reports and supporting calculations will be reviewed during your next sanitary survey, however, we can request this information at any time.
- The 2021 required survey compliance ratio is 1.0 and will need to be documented in the May 1, 2022 BPCCC annual report.
- The 2021 required assembly testing ratio is 0.90, and will need to be documented in the May 1, 2022 BPCCC annual report.
- For more information regarding the requirements and how to compile a report please visit wqcdcompliance.com/forms or submit specific questions to cdphe_wqcd_fss_questions@state.co.us.

Storage Tank Reminders:

All storage tanks within the distribution must be inspected twice per year unless an alternative storage tank inspection schedule has been established and included in the written inspection plan. An alternative storage tank inspection schedule is subject to our review and revision, generally during a sanitary survey, but alternative inspection schedules can be requested by us at any time. All storage tanks within the distribution are required to undergo a comprehensive tank inspection every five years. The first five year cycle for completion of comprehensive tank inspections is due by the end of 2021.

Facility Information				Sample Point Information	
Facility ID	**Active Status**	**Facility Name**	**Facility Type**	**Sample Point ID**	**Sample Point Name**
001	A	RAW WATER TANK 1	Storage	001	
001T	A	CHLORINATOR	Treatment Plant	001T	NOT ENTRY POINT
002	A	SPRING NO 1 WEEHAWKEN	Well	002	RAW
004	A	RAW WATER TANK 2	Storage	004	DIST TANK
005	A	RESCUE BUILDING	Sampling Station	005	MICROBIAL
006	A	BOX CANYON	Sampling Station	006	FIRST CUSTOMER
DS001	A	DISTRIBUTION SYSTEM	Dist System/Zone	DBP001	RIVERSIDE INN
				DBP002	CITY SHOP
				RPDN	REPEAT DOWNSTREAM
				RPOR	REPEAT ORIGINAL
				RPOT	REPEAT OTHER
				RPUP	REPEAT UPSTREAM
				RTOR	ROUTINE ORIGINAL
003	I	WATER SOLD TO MINERAL FARMS CO0146516	Consecutive Connection	NO ACTIVE SAMPLING POINT	NO ACTIVE SAMPLING POINT

This monitoring schedule is based on the system's current inventory and is subject to change. ***Water systems are responsible for promptly reporting schedule errors or omissions***.
Errors or omissions on monitoring schedules do not prohibit the Water Quality Control Division from enforcing monitoring requirements set forth by the Regulations.

Lead and Copper Sample Pool Information

The supplier must collect lead and copper samples from different **Department - approved** sample sites below until the minimum number of samples required is collected. Contact your compliance specialist if there are questions about unapproved sites. The supplier can add, manage, or inactivate unavailable sample sites on the Data Portal at wqcdcompliance.com/login under My…Sample Sites. Sites have been grouped by sampling priority based on tier level:

- If present, **Tier 1** sites must be sampled unless reported as an unavailable high risk site.
- If present, **Tier 2** sites must only be sampled after all Tier 1 sites have been sampled or have been reported as an unavailable high risk site.
- If present, **Tier 3** sites must only be sampled after all Tier 1 and 2 sites have been sampled or have been reported as an unavailable high risk site.
- If present, **Non-Tier, Representative** sites must only be sampled after all Tier 1, 2, and 3 sites have been sampled or have been reported as an unavailable high risk site.

Unavailable high risk site reporting form is available at wqcdcompliance.com/lcr

TIER 1 - HIGHEST RISK SITES

State Assigned Sample Site ID (Required on Lab Chain of Custody)	Location Identifier	Current Status
LCR001	LCR1	Active - Sampling - Approved
LCR002	LCR2	Active - Sampling - Approved
LCR003	LCR3	Active - Sampling - Approved
LCR006	LCR6	Active - Sampling - Approved
LCR008	LCR8	Active - Sampling - Approved
LCR021	LCR21	Active - Sampling - Approved
LCR022	LCR22	Active - Sampling - Approved
LCR023	LCR23	Active - Sampling - Approved
LCR024	LCR24	Active - Sampling - Approved
LCR025	LCR25	Active - Sampling - Approved
LCR026	LCR26	Active - Sampling - Approved
LCR027	LCR27	Active - Sampling - Approved
LCR028	LCR28	Active - Sampling - Approved
LCR029	LCR29	Active - Sampling - Approved
LCR030	LCR30	Active - Sampling - Approved
LCR031	LCR31	Active - Sampling - Approved
LCR032	LCR32	Active - Sampling - Approved
LCR033	LCR33	Active - Sampling - Approved
LCR034	LCR34	Active - Sampling - Approved
LCR035	LCR35	Active - Sampling - Approved

This monitoring schedule is based on the system's current inventory and is subject to change. ***Water systems are responsible for promptly reporting schedule errors or omissions***.
Errors or omissions on monitoring schedules do not prohibit the Water Quality Control Division from enforcing monitoring requirements set forth by the Regulations.

NO TIER 2 - SECOND HIGHEST RISK SITES HAVE BEEN IDENTIFIED

NO TIER 3 - THIRD HIGHEST RISK SITES HAVE BEEN IDENTIFIED

NO NON-TIER, REPRESENTATIVE - FOURTH HIGHEST RISK SITES HAVE BEEN IDENTIFIED

Time Period Definitions

Time Period	Start Date	End Date
First Quarter	January 1, 2021	March 31, 2021
Second Quarter	April 1, 2021	June 30, 2021
Third Quarter	July 1, 2021	September 30, 2021
Fourth Quarter	October 1, 2021	December 31, 2021
First 6 Months	January 1, 2021	June 30, 2021
Second 6 Months	July 1, 2021	December 31, 2021
Year	January 1, 2021	December 31, 2021

Analyte Group Definitions

Analyte Group Name	Analytes in Group	Number of Analytes in Group
INORGANICS GROUP	ANTIMONY | ARSENIC | BARIUM | BERYLLIUM | CADMIUM | CHROMIUM | MERCURY | NICKEL | SELENIUM | SODIUM | THALLIUM	11
SYNTHETIC ORGANICS GROUP	1,2-DIBROMO-3-CHLOROPROPANE | 2,4,5-TP | 2,4-D | ALDICARB | ALDICARB SULFONE | ALDICARB SULFOXIDE | ATRAZINE | BENZO(A)PYRENE | BHC-GAMMA | CARBOFURAN | CHLORDANE | DALAPON | DI(2-ETHYLHEXYL) ADIPATE | DI(2-ETHYLHEXYL) PHTHALATE | DINOSEB | DIQUAT | ENDOTHALL | ENDRIN | ETHYLENE DIBROMIDE | HEPTACHLOR | HEPTACHLOR EPOXIDE | HEXACHLOROBENZENE | HEXACHLOROCYCLOPENTADIENE | LASSO | METHOXYCHLOR | OXAMYL | PENTACHLOROPHENOL | PICLORAM | SIMAZINE | POLYCHLORINATED BIPHENYLS (PCB) | TOXAPHENE	31
VOLATILE ORGANICS GROUP	1,1,1-TRICHLOROETHANE | 1,1,2-TRICHLOROETHANE | 1,1-DICHLOROETHYLENE | 1,2,4-TRICHLOROBENZENE | 1,2-DICHLOROETHANE | 1,2-DICHLOROPROPANE | BENZENE | CARBON TETRACHLORIDE | CHLOROBENZENE | CIS-1,2-DICHLOROETHYLENE | DICHLOROMETHANE | ETHYLBENZENE | O-DICHLOROBENZENE | P-DICHLOROBENZENE | STYRENE | TETRACHLOROETHYLENE | TOLUENE | TRANS-1,2-DICHLOROETHYLENE | TRICHLOROETHYLENE | VINYL CHLORIDE | XYLENES (TOTAL)	21

This monitoring schedule is based on the system's current inventory and is subject to change. ***Water systems are responsible for promptly reporting schedule errors or omissions***.
Errors or omissions on monitoring schedules do not prohibit the Water Quality Control Division from enforcing monitoring requirements set forth by the Regulations.

ORDINANCE NO. 1 (Series 2018)

AN ORDINANCE OF THE CITY OF OURAY, COLORADO, AMENDING CHAPTER NINE OF THE OURAY MUNICIPAL CODE BY THE ADDITION OF A NEW SECTION 9-19 CONCERNING BACKFLOW AND CROSS CONNECTIONS AND PROVIDING PENALTIES FOR THE VIOLATION THEREOF.

Whereas, this Ordinance is intended to protect the City of Ouray water system from contaminants or pollutants that could enter the water distribution system by backflow from a customer's water supply system through the service connection.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF OURAY, COLORADO, as follows:

SECTION 1.

Chapter 9 of the Ouray Municipal Code is hereby amended by the addition of Section 9-19, as follows.

9-19 Back-Flow and Cross Connections.

A. Applicability. This Section applies to all connections to the City of Ouray water distribution system whether within the City of Ouray or outside the City. This Section does not apply to single-family (as defined herein) residential service connections unless the City becomes aware of a cross connection at the single-family connection.

B. Definitions.

1. "Backflow" means the undesirable reversal of flow of water or mixtures of water and other liquids, gases, or other substances into the City of Ouray water distribution system from any source or sources other than its intended source.

2. "Backflow contamination event" means backflow into the City of Ouray water system from an uncontrolled cross connection such that the water quality no longer meets the Colorado Primary Drinking Water Regulations or presents an immediate health or safety risk to the public.

3. "Backflow prevention assembly" means any mechanical assembly installed at a water service line or at a plumbing fixture to prevent a backflow contamination event, provided that the mechanical assembly is appropriate

for the identified contaminant at the cross connection and is an in-line field-testable assembly.

4. "Backflow prevention method" means any method and/or non-testable device installed at a water service line or at a plumbing fixture to prevent a backflow contamination event, provided that the method or non-testable device is appropriate for the identified contaminant at the cross connection.

5. "Certified cross-connection control technician" means a person who possesses a current valid Backflow Prevention Assembly Tester certification from one of the following approved organizations: American Society of Sanitary Engineering (ASSE) or the American Backflow Prevention Association (ABPA).

6. "Containment" means the installation of a backflow prevention assembly or a backflow prevention method at any connection to the City of Ouray water system that supplies an auxiliary water system, location, facility, or area such that backflow from a cross connection into the City of Ouray water system is prevented.

7. "Cross connection" means any connection that could allow any water, fluid, or gas to flow from any pipe, plumbing fixture, or a customer's water system into a the City of Ouray water distribution system or any other part of the City of Ouray water system through backflow.

8. "Customer" means the owner of real property that is connected to the City water distribution system and the agent or tenant of such owner.

9. "Multi-family," as used in this Section, means a single residential connection to the City of Ouray water distribution system from which two or more separate dwelling units are supplied water.

10. "Owner" means the person or persons identified as the owner of real property in the records of the Ouray County Assessor.

11. "Single-family," as used in this Section, means:

    a. A dwelling designed exclusively for and occupied exclusively by one (1) family and supplied by a separate service line; or

    b. A building comprised of multiple dwelling units where each dwelling unit is supplied by a separate service line.

12. "Uncontrolled" means not having a properly installed and maintained and tested or inspected backflow prevention assembly or backflow prevention

method, or the backflow prevention assembly or backflow prevention method does not prevent backflow through a cross connection.

13. "Water supply system" means a water distribution system, piping, connection fittings, valves and appurtenances within a building, structure, or premises. Water supply systems are also referred to commonly as premise plumbing systems.

C. Requirements.

1. Commercial, industrial, and multi-family service connections shall be subject to a survey for cross connections. If a cross connection has been identified an appropriate backflow prevention assembly or method shall be installed at the customer's water service connection within one-hundred-twenty (120) days of its discovery. The assembly shall be installed downstream of the water meter or as close to that location as deemed practical by the City of Ouray. If the assembly or method cannot be installed within one-hundred-twenty (120) days, the City of Ouray shall take action to control or remove the cross connection, suspended service to the cross connection, or receive an alternative compliance schedule from the Colorado Department of Public Health and Environment.

2. In no case shall it be permissible to have connections or tees between the meter and the containment backflow prevention assembly.

3. In instances where a reduced pressure principle backflow preventer cannot be installed, the customer must install approved backflow prevention devices or methods at all cross-connections within the customer's plumbing system.

4. Backflow prevention assemblies and methods shall be installed in a location that provides access for maintenance, testing, and repair.

5. Reduced pressure principle backflow preventers shall not be installed in a manner subject to flooding.

6. Provisions shall be made to provide adequate drainage from the discharge of water from reduced pressure principle backflow prevention assemblies. Such discharge shall be conveyed in a manner that does not impact waters of the State of Colorado.

7. All assemblies and devices shall be protected to prevent freezing. Those assemblies and methods used for seasonal services may be removed in lieu of being protected from freezing. Devices must be reinstalled and then

tested by a certified cross-connection control technician prior to the service being activated.

8. Where a backflow prevention assembly or method is installed on a water supply system using storage water heating equipment such that thermal expansion causes an increase in pressure, a device for controlling pressure shall be installed.

9. All backflow prevention assemblies shall be tested at the time of installation and on an annual schedule thereafter. Such tests must be conducted by a certified cross-connection control technician.

10. All backflow prevention assemblies and methods, and all required installations within the customer's plumbing system in the cases where containment assemblies and or methods cannot be installed, shall be subject to inspection testing, maintenance, and, as needed, repair and replacement.

11. The cost for design, installation, maintenance, testing, and as needed repair and replacement, shall be borne by the customer.

12. No existing nonconforming cross connection shall be permitted except for fire sprinkler systems where the installation of a backflow prevention assembly or method would compromise the integrity of the fire sprinkler system.

13. For new buildings, all building plans must be submitted to the City of Ouray and approved prior to connection to the water distribution system. Building plans must show:

    a. Water service type, size and location;

    b. Meter size and location; and

    c. Backflow prevention assembly size, type and location.

14. All fire sprinkling lines shall have a minimum protection of an approved double check valve assembly for containment of the system.

15. All glycol (ethylene or propylene), or antifreeze systems shall have an approved reduced pressure principle backflow preventer for containment.

16. Dry fire systems shall have an approved double check valve assembly installed upstream of the air pressure valve.

17. In cases where the installation of a backflow prevention assembly or method would compromise the integrity of the fire sprinkler system the City of

Ouray water system will not require the backflow protection. The City of Ouray will measure chlorine residual at the service connection once a month and perform periodic bacteriological testing at the site. If the City of Ouray determines that water quality issues exist it may require that the fire sprinkler system be flushed periodically.

D. Inspection, Testing, and Repair.

1. Backflow prevention devices or methods shall be tested by a certified cross-connection control technician upon installation and tested at least annually thereafter. Tests shall be made at the expense of the customer.

2. Backflow prevention devices, or methods that are non-testable, shall be inspected at least once annually by a certified cross-connection control technician. Inspections shall be made at the expense of the customer.

3. As necessary, backflow prevention devices shall be repaired and retested or replaced and tested, at the expense of the customer whenever the devices are found to be defective.

4. Testing gauges shall be tested and calibrated for accuracy at least once annually.

E. Reporting and Recordkeeping.

1. Copies of records of test reports, repairs and retests, or replacements shall be kept by the customer for a minimum of three (3) years.

2. Copies of records of test reports, repairs and retests shall be submitted to the City of Ouray by mail, facsimile or electronic mail by the testing company or testing technician.

3. Information on test reports shall include, at a minimum, the following:

a. Assembly or method type;

b. Assembly or method location;

c. Assembly manufacturer, model and serial number;

d. Assembly size;

e. Test date;

f. Test results including all results that would justify a pass or fail outcome;

g. The certified cross-connection control technician's certification agency, certification number, and certification expiration date; and

h. The test kit manufacturer, model, serial number, and calibration date.

F. Right of Entry. The City of Ouray shall have the right of entry to inspect any and all buildings and premises for the presence of cross connections for possible contamination risk to and for determining compliance with this Section. This right of entry shall be a condition of water service in order to protect the health, safety, and welfare of customers throughout the City of Ouray water distribution system.

G. Compliance.

1. Customers shall cooperate with the installation, inspection, testing, maintenance, and as needed repair and replacement, of backflow prevention assemblies and with the inspection process. For any identified uncontrolled cross-connections, the City of Ouray shall complete one of the following actions within one-hundred-twenty (120) days of its discovery:

   a. Control the cross-connection;

   b. Remove the cross-connection;

   c. Suspend service to the cross-connection; or

   d. Suspend water service to the property.

2. The City of Ouray shall give notice in writing to any customer whose plumbing system has been found to present a risk to City of Ouray water distribution system through an uncontrolled cross connection. The notice shall state that the customer must install a backflow prevention assembly or method at each service connection to the customer's premises to contain the water service. The notice will give a date by which the customer must comply.

3. In instances where a backflow prevention assembly or method cannot be installed, the customer must install approved backflow prevention devices or methods at all cross-connections within the customer's water supply system. The notice will give a date by which the customer must comply with the order.

H. Violations and Penalties. It shall be unlawful to violate any provision of this Section 9-19. Violations of this Section are declared to be a nuisance, which may be abated in any lawful manner. The City of Ouray Police or Code Enforcement

Officer shall have the power to issue warning notices or a summons and complaint to any person in violation of this Section.

I. Conflict with Other Law. In the event of any conflict between the provisions of this Section and any state or federal law, rule or regulation, or other City ordinances or regulations, the more stringent shall apply.

SECTION 2: EFFECTIVE DATE

The provisions of this Ordinance shall become effective April 21, 2018.

SECTION 4: SEVERABILITY

If any clause, sentence, paragraph, or part of this ordinance or the application thereof to any person or circumstances shall for any reason be adjudged by a court of competent jurisdiction invalid, such judgment shall not affect application to other persons or circumstances.

INTRODUCED, READ, APPROVED AS INTRODUCED, AND ORDERED PUBLISHED on first reading by unanimous vote of the Ouray City Council this 16th day of January, 2018.

CITY OF OURAY, COLORADO

By Pamela J Larson
Pamela J. Larson, Mayor

ATTEST:

Beverly Martensen
Beverly Martensen, Deputy City Clerk

INTRODUCED, READ AND ADOPTED on second reading by _____vote of the Ouray City Council this _19th_ day of _March_, 2018.

CITY OF OURAY, COLORADO

By Pamela J Larson
Pamela J. Larson, Mayor

ATTEST:

Beverly Martensen
Beverly Martensen, Deputy City Clerk

CERTIFICATE OF ATTESTATION

I, Melissa M. Drake, Ouray City Clerk, hereby certify that Ordinance No.1 (Series No. 2018), was introduced, read and passed by the Ouray City Council on first reading on _January 16, 2018. The Ordinance was published, in summary, in the Ouray County Plaindealer on _March 1, 2018, and thereafter introduced, read and adopted by the Ouray City Council on _March 19, 2018, and thereafter published in the Ouray County Plaindealer, as required by law.

Beverly Martensen
Beverly Martensen,DeputyCity Clerk

The Operator in Responsible Charge, John Volk, is responsible for operations and maintenance of the existing water treatment system. If there are any problems at either site, appropriate action is taken to fix or replace equipment or modify operations.

For larger projects, such as the proposed project, the public works director brings the topic to the city board for discussion, approval, and action.

Report Criteria:
Accounts to include: With balances
Budget note year end periods: 12/22
Print Fund Titles
Page and Total by Fund
Print Source Titles
Total by Source
Print Department Titles
Total by Department
All Segments Tested for Total Breaks

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
GENERAL FUND								
TAXES								
10-40-4000	Lodging Taxes	3,542	15,695	6,385	5,029	7,300	8,354	8,104
10-40-4005	STR Excise Tax / Housing	.00	.00	.00	.00	.00	.00	200,000
10-40-4010	Occupational Tax	1,107	450	1,600	1,525	1,000	1,525	1,525
10-40-4020	Property Taxes	437,072	443,824	489,188	481,945	495,749	495,749	553,490
10-40-4030	Sales Tax	1,142,413	1,303,784	1,523,271	1,023,551	1,321,881	1,955,674	1,897,004
Total TAXES:		1,584,134	1,763,753	2,020,444	1,512,049	1,825,930	2,461,302	2,660,123
GRANTS/CONTRIBUTIONS								
10-41-4105	State Historical Society Gr	.00	.00	170,043	82,327	.00	82,327	.00
10-41-4106	GOCO Grant for Ouray Sc	.00	.00	.00	110,000	.00	110,000	.00
10-41-4119	DOLA Discretionary Grant	.00	.00	.00	.00	.00	.00	25,000
10-41-4120	Police Grants/Donations	1,538	4,145	3,596	.00	3,000	.00	.00
10-41-4140	Fire Dept. Grants/Donation	100	100	1,504	13,766	.00	13,766	423,889
10-41-4185	Grant - Region 10 Small C	5,000	.00	.00	.00	.00	.00	.00
10-41-4190	CARES Act Reimb for COV	.00	.00	24,209	79,921	.00	79,921	.00
Total GRANTS/CONTRIBUTIONS:		6,638	4,245	199,351	286,014	3,000	286,014	448,889
PERMITS & FEES								
10-42-4200	Building Permits	40,348	27,203	32,688	61,818	20,000	82,186	80,000
10-42-4210	Liquor Licenses/Permits	4,033	40,229	5,508	22,525	3,500	5,000	5,000
10-42-4212	Short-term Rental Lic/Fees	.00	.00	15,000	11,250	16,000	29,500	21,000
10-42-4220	Motor Vehicle Fee	6,107	5,491	5,808	3,374	5,000	5,000	5,000
10-42-4230	Planning & Zonning Fees	4,816	3,775	1,850	2,450	2,000	8,277	6,000
10-42-4232	Encroachment Permits	725	13,537	200	100	1,000	100	100
10-42-4242	Specific Ownership Auto	63,757	65,640	68,667	43,003	56,000	69,850	69,850
Total PERMITS & FEES:		119,786	155,875	129,720	144,520	103,500	199,913	186,950
OTHER REVENUES								
10-43-4032	Ouray School Fuel Payme	4,836	5,558	2,484	2,967	5,000	5,000	5,800
10-43-4300	CNL rent	2,400	9,600	4,800	3,200	1,000	4,800	1,000
10-43-4305	Cigarette Tax	3,787	3,772	4,102	2,742	3,750	3,750	4,000
10-43-4310	Court Fines	17,755	5,236	5,140	9,005	10,000	10,000	10,000
10-43-4315	E.S.C. Reimbursement	3,372	9,579	4,741	.00	5,852	3,701	5,632
10-43-4320	Fire Dist Reimbursement	29,523	30,141	29,617	.00	26,000	36,218	42,691
10-43-4325	Franchise Fees	44,724	50,890	35,751	41,627	42,000	51,000	51,000
10-43-4330	Highway Dept Reimburse	6,231	9,215	3,406	4,959	6,200	5,512	5,512
10-43-4333	County Rd & Br Sharing	24,399	24,134	27,036	27,136	27,135	27,136	27,136
10-43-4335	Highway Users Tax	52,478	51,982	38,965	22,313	50,000	50,000	50,000
10-43-4337	Fed. Min. Lease & St.Seve	12,388	59,986	25,393	.00	20,000	7,520	20,000

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
10-43-4340	Interest Income	6,111	12,780	8,530	2,176	7,000	3,000	3,000
10-43-4350	Other Revenue - Misc	1,005	10,130	4,972	2,422	1,500	2,422	1,500
10-43-4351	Copy Machine Revenue	108	90	104	112	75	112	100
10-43-4353	Vending Machine Revenue	279	62	137	12	50	12	10
10-43-4354	Public Works Revenue	3,440	113	186	535	100	535	100
10-43-4355	Other Revenue - Police	1,099	2,764	2,569	1,060	1,500	1,060	1,000
10-43-4358	Police Reports	120	120	170	123	200	123	125
10-43-4365	Restitution Fund	750	100	.00	.00	750	.00	.00
10-43-4367	Fireworks Reimbursement	.00	11,997	.00	.00	.00	.00	.00
10-43-4368	Other Revenue - Fire	21,806	.00	10,000	.00	10,000	.00	.00
10-43-4369	Public Restroom Reimb-cle	.00	1,440	3,780	2,880	4,320	4,320	4,320
10-43-4370	Rebilling & Interest	3,777	10,191	4,268	5,752	5,500	8,252	8,000
10-43-4375	Taxes Penalty & Int	2,397	2,790	2,637	1,239	2,000	2,000	2,000
10-43-4385	Transfer from Ref/Rec Fun	5,214	10,000	10,301	6,867	10,300	10,300	14,014
10-43-4386	Transfer from Cap.Improv.	227,308	148,401	239,482	214,643	733,381	733,381	.00
10-43-4388	Transfer from WF - Loan R	.00	29,122	28,744	19,583	29,122	29,374	29,374
	Total OTHER REVENUES:	475,306	500,193	497,314	371,351	1,002,735	999,528	286,314
COMMUNITY CENTER								
10-44-4461	Use Fees	14,055	8,940	1,955	870	4,000	3,440	7,000
10-44-4470	Internet cabinet rent	635	635	635	424	635	635	635
	Total COMMUNITY CENTER:	14,690	9,575	2,590	1,294	4,635	4,075	7,635
OTHER PARKS REVENUES								
10-45-4021	OCRA Lease	7,644	.00	.00	.00	.00	.00	.00
10-45-4060	Geothermal Use	594	128	713	519	600	519	600
10-45-4172	PARC donations	.00	128	207	.00	.00	.00	200
10-45-4174	PARC League Fees	1,050	1,650	75	1,735	500	1,735	2,600
10-45-4175	PARC Fundraiser Sales	239	.00	.00	.00	.00	.00	.00
10-45-4205	Skate Rentals	.00	230	.00	.00	500	.00	250
10-45-4224	Ice Rink Donations	.00	.00	.00	.00	.00	.00	1,800
10-45-4310	City Park Use	800	1,575	863	125	1,500	1,350	1,000
10-45-4325	Park Dedication PILO	.00	.00	.00	1,203	.00	1,203	.00
10-45-4390	Trnsfr. from Beautification	54,289	25,851	42,157	935	43,595	43,595	38,000
	Total OTHER PARKS REVENUES:	64,616	29,562	44,014	4,517	46,695	48,402	44,450
PROPERTY TAXES -FLUMES/STREETS								
10-48-4810	Delinquent Prop. & Int.	434	502	474	224	325	230	230
10-48-4820	Property Taxes	79,087	79,819	87,978	87,124	89,620	89,620	100,919
	Total PROPERTY TAXES -FLUMES/STREETS:	79,521	80,321	88,452	87,348	89,945	89,850	101,149
GENERAL GOVERNMENT EXPENSES								
10-50-5000	Mayor & Council	15,600	15,600	7,900	3,400	15,600	10,000	15,600
10-50-5002	City Administrator	22,460	10,910	9,789	6,171	15,020	15,020	16,230
10-50-5004	Finance & Admin. Director	19,239	19,342	7,176	13,075	19,998	20,600	22,678
10-50-5006	HR Manager	13,028	9,824	10,160	6,641	10,157	10,157	10,970
10-50-5008	Administrative Clerks	37,713	32,075	30,499	17,552	36,008	36,008	59,900
10-50-5010	Building Inspection	14,911	24,808	16,350	1,690	15,576	15,576	35,050
10-50-5012	Community Development	.00	.00	35,024	19,239	43,381	43,381	46,852
10-50-5013	City Resources Director	9,313	8,045	8,321	5,439	8,317	8,317	8,982
10-50-5070	Court	4,680	4,680	4,680	3,477	4,680	6,205	6,600

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
10-50-5540	Custodian	11,001	11,778	12,232	7,921	12,342	12,342	13,330
10-50-5545	PW Maintenance Crew	2,656	5,474	.00	.00	.00	.00	.00
10-50-5650	Event Coordinator	13,055	13,136	14,640	2,660	13,536	13,536	16,200
10-50-5680	Parks/Facilities Maint. Mgr.	.00	.00	.00	2,533	24,584	24,584	35,640
10-50-5681	Parks/Facilities Maint Ops	.00	.00	.00	.00	.00	.00	24,149
10-50-5800	FICA	12,020	11,712	11,665	6,726	12,573	12,573	13,830
10-50-5810	Unemployment	584	517	586	350	578	578	625
10-50-5830	Workers' Comp	3,579	1,661	1,337	1,112	1,483	1,483	1,637
10-50-5831	Flex Plan Costs	711	1,398	1,260	832	1,500	1,500	1,500
10-50-5840	Group Term Life Insurance	1,122	1,701	1,389	678	2,258	2,258	2,258
10-50-5850	Employee Health Insuranc	30,662	60,944	69,194	42,496	85,840	85,840	88,415
10-50-5851	COBRA Admin Costs	.00	208	328	264	350	350	450
10-50-5870	Pension	3,406	3,686	2,525	2,192	4,244	4,244	4,585
10-50-6010	Telephone / Communicatio	8,874	12,538	14,586	12,568	13,959	13,959	14,450
10-50-6020	Utilities	7,030	6,609	4,418	3,731	7,000	7,000	7,750
10-50-6030	Insurance	19,459	17,902	18,485	14,999	19,939	19,939	22,002
10-50-6031	Insurance-Deductions	.00	1,356	.00	.00	.00	.00	.00
10-50-6050	County Treasurer's Fees	8,775	8,932	10,011	9,664	10,250	10,430	10,750
10-50-6060	Elections	997	410	2,519	.00	2,000	2,700	3,000
10-50-7000	Contract Labor-Gen Govt	73,507	50,463	48,241	75,613	35,893	35,893	105,000
Budget notes:								
~2022 Zoning Code Update - $54,090, Salary & Benefit Survey - $15,000								
10-50-7004	IT Contract Labor	.00	5,183	30,538	11,675	15,000	15,000	3,640
10-50-7025	Legal fees	41,760	74,509	71,237	40,415	74,000	65,000	90,000
Budget notes:								
~2022 Includes $15,000 for Personnel Regs Attorney								
10-50-7027	Audit Fees	13,350	13,500	14,000	.00	14,500	14,000	14,500
10-50-7035	Planning Commission	736	.00	.00	.00	1,200	1,200	2,000
10-50-7037	Comm. Econ. Dev. Commit	.00	.00	.00	.00	10,000	10,000	12,000
Budget notes:								
~2022 $2,000 - Refreshments for Round Table Discussions, $5,000 - Small Business Grants, $5,000 - Guest Speakers								
10-50-7050	State Historic Fund Grant	.00	.00	244,500	11,953	.00	11,953	.00
10-50-7051	GOCO Grant for Ouray Sc	.00	.00	.00	110,000	.00	110,000	.00
10-50-7100	C.H. Clean/Supplies	4,018	3,296	5,170	2,953	4,800	4,500	4,800
10-50-7104	IT Supplies	1,614	1,290	1,709	992	1,500	1,500	1,500
10-50-7400	Maintenance- City Hall	4,596	4,046	10,795	4,732	6,400	7,100	7,500
10-50-7600	Vehicle Oil & Gas - Admin	43	744	43	342	1,000	1,000	1,000
10-50-7601	Vehicle Oil & Gas - School	5,215	6,302	2,122	2,823	5,000	5,000	5,500
10-50-7800	Dues & Subscriptions	8,837	11,457	9,057	4,019	12,000	8,000	12,000
10-50-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	12,015
10-50-7811	Council & Other Meetings	5,924	2,090	4,262	453	10,000	2,000	10,000
10-50-7820	Hosted Meetings	576	530	1,215	460	2,000	500	5,000
10-50-7830	Office Supplies	3,650	3,406	4,909	2,676	5,000	5,000	5,000
10-50-7835	Copier/Printer Expense	3,347	4,244	3,054	2,291	3,500	3,500	3,800
10-50-7850	Printing/Publications	6,655	7,249	8,055	4,978	4,700	7,470	8,000
10-50-7854	Donations to Other Org.	2,209	231	3,500	500	6,550	6,550	12,500
Budget notes:								
~2022 OCPAG - $5,000, EcoAction Partners - $500, Uncompahgre Watershed - $500 for Remediatio and $1,000 for Love Your Gorge, Voyager - $3,000, Center for Mental Health - $2,500								
10-50-7855	GIS Cost	.00	.00	.00	.00	.00	.00	3,000
10-50-7860	Training	16,259	19,023	5,208	110	18,000	10,000	18,000
10-50-7862	Hiring Cost	9,220-	3,043	28,699	3,946	3,000	4,900	5,000
10-50-7865	Employee Functions	3,436	1,401	209	66	4,000	4,000	4,000
10-50-7880	Postage	2,930	1,467	738	203	2,500	1,200	1,200
10-50-7900	Other Expenses	5,262	227	887	355	1,000	500	1,000
10-50-8100	Inventoried Equipment	6,799	265	2,265	.00	1,500	500	1,500
10-50-8104	IT Inventoried Equipment	.00	7,369	763	4,457	15,000	15,000	2,500

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
10-50-8210	Capital Improvements	87,833	23,884	723	.00	.00	.00	.00
10-50-8250	City Hall Improvement	.00	409	29,167	23,252	35,000	35,000	.00
10-50-8400	Capital Equipment	24,470	18,899	.00	.00	.00	.00	.00
10-50-8402	IT Capital Expenditures	.00	.00	.00	9,965	94,081	94,081	.00
10-50-9010	E.S.C. Mntce/Other	1,869	1,873	1,930	1,714	2,060	2,571	2,650
10-50-9020	E.S.C. Utilities	3,590	3,177	3,218	1,981	3,792	3,005	3,155
Total GENERAL GOVERNMENT EXPENSES:		580,141	554,824	831,291	508,336	774,149	864,503	841,193
POLICE DEPT. EXPENSES								
10-51-5060	Police Chief	88,253	92,654	102,076	70,512	107,918	107,918	116,551
10-51-5065	Officers	273,441	232,693	325,414	205,654	289,301	308,481	333,160
10-51-5068	Training	.00	.00	.00	.00	5,000	5,000	5,000
10-51-5600	Veh. Maint. - PW Crew	7,033	7,510	7,040	5,208	7,500	7,820	8,450
10-51-5651	Security Wages	1,539	.00	.00	.00	.00	.00	.00
10-51-5800	FICA	27,197	24,703	32,571	20,886	27,692	31,330	33,840
10-51-5810	Unemployment	1,067	881	1,268	820	1,250	1,250	1,350
10-51-5830	Workers' Comp	19,965	15,249	10,502	8,736	11,650	11,650	12,854
10-51-5840	Group Term Life Insurance	2,678	2,367	3,381	1,808	3,835	3,000	3,000
10-51-5850	Employee Health Insuranc	66,055	71,310	77,924	52,175	95,600	95,600	97,512
10-51-5855	Medical	170	590	200	136	250	250	250
10-51-5870	Pension	8,674	6,040	6,412	7,312	6,200	10,968	11,850
10-51-6010	Telephone / Communicatio	6,901	7,997	8,197	5,181	9,000	9,000	8,780
10-51-6011	Dispatch Communications	40,343	54,053	49,243	36,385	48,513	48,513	52,309
10-51-6020	Utilities	694	696	688	414	850	850	850
10-51-6030	Insurance	23,434	22,895	23,600	18,706	25,456	25,456	28,090
10-51-7000	Contract Labor	10,952	4,080	3,017	200	4,000	4,000	4,000
10-51-7004	IT Contract Labor	.00	2,424	1,524	3,768	6,350	6,350	2,080
10-51-7060	Community Policing	2,309	3,587	2,595	1,582	3,500	3,500	3,500
10-51-7100	Supplies	2,393	8,159	3,214	176	6,200	6,200	6,200
10-51-7104	IT Supplies	.00	600	766	260	600	600	600
10-51-7180	Uniforms	2,567	2,935	2,619	1,857	3,300	3,300	3,300
10-51-7600	Vehicle Oil & Gas	10,025	9,740	10,972	8,632	10,025	10,025	11,000
10-51-7650	Vehicle R & M/Supplies	6,156	5,315	17,647	6,743	9,350	9,350	9,350
10-51-7654	Radio Maintenance	440	633	384	558	1,000	1,000	1,000
10-51-7800	Dues & Subscriptions	4,018	5,334	4,413	1,163	5,200	5,200	5,200
10-51-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	5,130
10-51-7830	Office Supplies	1,471	2,043	3,390	1,181	2,686	2,686	2,686
10-51-7835	Copier/Printer Expenses	.00	.00	.00	332	.00	500	500
10-51-7850	Arrest/Investigation Costs	756	4,450	6,258	18	3,000	3,000	3,000
10-51-7855	Juvenile Div. Program	3,000	5,000	8,800	.00	8,800	8,800	8,800
10-51-7856	Neighborhood Watch Progr	.00	.00	548	.00	.00	.00	.00
10-51-7860	Training	7,143	8,798	9,049	1,888	11,000	11,000	11,000
10-51-7862	Hiring Cost	3,892	13,339	244	.00	1,000	1,000	1,000
10-51-7870	Animal Control	1,115	105	.00	.00	600	600	600
10-51-7880	Postage	8	10	60	74	50	50	50
10-51-7887	Shooting Range Maintenan	314	6,645	9,869	3,987	3,300	3,300	5,000
10-51-7888	Fire Arms and Ammunition	.00	.00	.00	.00	.00	.00	5,500
10-51-7900	Other Expenses	1,519	1,674	141	211	1,000	1,000	1,000
10-51-8100	Inventoried Equipment	4,409	4,233	1,273	1,725	4,800	4,800	4,800
10-51-8104	IT Inventoried Equipment	.00	6,113	17	3,822	2,400	2,400	.00
10-51-8400	Capital Equipment	.00	.00	.00	55,386	42,000	42,000	.00
10-51-8402	IT Capital Expenditures	28	55,212	.00	.00	.00	.00	.00
10-51-8420	Police Car	82,140	18,899	7,336	66,171	63,000	63,000	.00
10-51-9540	Debt Service Principal	6,983	.00	.00	.00	.00	.00	.00

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
10-51-9545	Debt Service Interest	869	.00	.00	.00	.00	.00	.00
Total POLICE DEPT. EXPENSES:		719,952	708,967	742,655	593,665	833,176	860,747	809,142
FIRE DEPT. EXPENSES								
10-52-5500	Fire Chief	3,654	4,529	1,818	1,872	4,500	4,500	9,600
10-52-5600	Veh. Maint. - PW Crew	3,282	3,504	3,286	2,430	4,750	4,750	5,130
10-52-5800	FICA	534	600	375	328	700	700	750
10-52-5810	Unemployment	21	20	15	12	30	30	30
10-52-5830	Workers' Comp	14,685	309	171	142	9,000	9,000	210
10-52-5840	Group Term Life Insurance	30	17	27	23	45	45	45
10-52-5850	Employee Health Insuranc	976	955	1,298	401	2,224	1,000	1,000
10-52-5855	Medical	308	.00	.00	580	.00	600	600
10-52-5870	Pension	95	.00	57	62	110	110	119
10-52-6010	Telephone / Communicatio	1,184	2,105	2,182	1,299	2,000	2,000	2,090
10-52-6011	Dispatch Communications	1,111	719	742	644	599	800	1,450
10-52-6020	Utilities	3,640	3,404	2,992	1,712	3,700	3,700	3,700
10-52-6030	Insurance	17,192	16,880	17,400	14,025	18,768	18,768	20,710
10-52-6740	Inspections	.00	.00	.00	.00	.00	.00	4,500
10-52-7000	Contract Labor	3,000	3,000	14,650	.00	.00	.00	.00
10-52-7004	IT Contract Labor	.00	193	140	161	.00	161	520
10-52-7100	Supplies	6,191	5,298	1,533	410	7,000	7,000	15,600
Budget notes:								
~2022 Adapters, pagers, hoods, gloves, keys, etc.								
10-52-7104	IT Supplies	.00	86	47	52	.00	52	.00
10-52-7180	Uniforms	.00	.00	.00	.00	.00	.00	11,400
10-52-7400	Building Maintenance	120	334	160	453	.00	.00	22,100
10-52-7470	Tools	.00	.00	.00	.00	1,000	1,000	3,000
10-52-7600	Vehicle Oil & Gas	1,602	925	1,332	959	1,000	1,000	1,500
10-52-7650	Vehicle R & M/Supplies	5,999	7,282	4,856	2,675	18,000	18,000	8,000
10-52-7651	Equipment Maintenance	3,617	4,616	1,187	2,024	.00	2,024	1,500
10-52-7800	Dues & Subscriptions	.00	.00	.00	56	.00	56	2,000
10-52-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	1,190
10-52-7830	Office Supplies	.00	.00	.00	42	.00	42	300
10-52-7860	Training	6,382	7,679	5,021	820	8,000	8,000	8,500
10-52-7890	Social Activities	2,396	1,868	.00	2,651	2,400	2,651	3,500
10-52-7891	July 4th Games	13,436	1,200	.00	1,600	1,200	1,600	2,000
10-52-7892	Fireworks Expense	74	12,165	14,601	347	.00	347	.00
10-52-7900	Other Expenses	165	1,371	1,320	1,320	1,450	1,450	1,320
10-52-7910	Pension Fund Contribution	18,000	18,000	20,027	.00	20,027	20,027	21,000
10-52-8100	Inventoried Equipment	11,994	9,282	23,918	15,500	.00	.00	23,500
10-52-8104	IT Inventoried Equipment	.00	.00	.00	.00	2,500	2,500	.00
10-52-8400	Capital Equipment	.00	.00	34,342	46,343	78,000	78,000	429,093
Budget notes:								
~2022 $5,204 + $423,889 from grant								
10-52-8402	IT Capital Expenditures	7	.00	.00	.00	.00	.00	.00
10-52-9540	Debt Service Principal	27,838	28,645	29,475	30,329	30,329	30,329	31,209
10-52-9545	Debt Service Interest	7,151	6,344	5,513	4,659	4,659	4,659	3,780
Total FIRE DEPT. EXPENSES:		154,685	141,327	188,483	133,933	221,991	224,901	640,946
PUBLIC WORKS DEPT. EXPENSES								
10-53-5100	PW Director	27,597	8,012	24,262	15,390	23,539	23,539	25,422
10-53-5110	PW Crew	131,071	74,104	105,113	62,996	102,144	102,144	110,316
10-53-5151	Reclassification to Capitaliz	4,921-	.00	.00	.00	.00	.00	.00
10-53-5153	PW Improvements	4,921	.00	.00	.00	.00	.00	.00

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
10-53-5600	Veh. Maint. - PW Crew	10,316	15,637	10,326	7,639	12,188	12,188	13,163
10-53-5800	FICA	12,931	7,258	10,344	6,476	10,143	10,143	10,954
10-53-5810	Unemployment	507	330	406	251	398	398	430
10-53-5830	Workers' Comp	7,907	4,020	3,570	2,969	3,959	3,959	4,369
10-53-5831	Flex Plan Costs	356	.00	.00	.00	.00	.00	.00
10-53-5840	Group Term Life Insurance	1,936	1,132	1,207	442	1,403	1,403	1,403
10-53-5850	Employee Health Insuranc	51,950	15,742	9,502	6,392	13,294	13,294	13,693
10-53-5855	Medical	239	587	233	345	600	600	600
10-53-5870	Pension	3,719	2,054	3,417	2,464	3,201	3,700	4,000
10-53-6010	Telephone / Communicatio	4,629	4,294	4,824	2,919	4,755	5,300	4,370
10-53-6020	Utilities	2,202	1,876	3,132	1,204	3,727	2,500	3,500
10-53-6021	Trash Removal	10,331	736	1,159	.00	2,000	1,000	2,000
10-53-6025	Street Lights	13,954	13,669	11,770	6,831	12,000	12,000	12,000
10-53-6029	Sanitation	.00	850	.00	.00	1,000	.00	1,000
10-53-6030	Insurance	3,695	4,461	3,543	4,236	4,960	4,960	5,474
10-53-6031	Insurance-Deductions	1,000	.00	.00	1,000	.00	1,000	.00
10-53-6050	County Treasurer's Fees	1,588	1,606	1,800	1,747	1,836	2,000	2,295
10-53-7000	Contract Labor	8,815	15,646	4,782	9,044	20,000	18,000	20,000
10-53-7004	IT Contract Labor	.00	648	1,172	266	3,000	1,500	740
10-53-7104	IT Supplies	.00	211	215	130	250	200	250
10-53-7110	Street Patching	.00	78	1,900	.00	10,000	8,000	5,000
10-53-7112	Bridge Material	1,560	1,576	703	162	2,000	500	1,500
10-53-7120	Drainage Material	.00	654	.00	.00	.00	.00	.00
10-53-7130	Flume Materials	.00	307	1	.00	1,500	100	1,500
10-53-7135	Sand	10,000	10,000	10,000	.00	10,000	10,000	10,000
10-53-7140	St Supplies/Materials	8,495	20,544	4,310	14,013	20,000	20,000	20,000
10-53-7150	Dust Control - Contract	22,365	25,515	26,460	27,090	27,000	27,090	28,000
10-53-7185	Equipment Rental	.00	1,641	.00	.00	5,000	2,000	2,500
10-53-7200	Maintenance & Repairs	191	4,604	4,968	779	5,000	2,500	6,000
10-53-7470	Tools	228	937	401	.00	750	750	1,000
10-53-7600	Vehicle Oil & Gas	8,539	11,063	6,169	5,163	9,000	9,000	12,000
10-53-7650	Vehicle R & M/Supplies	12,279	34,316	24,297	6,816	25,000	25,000	25,000
10-53-7700	City Shop Expense	6,690	9,648	2,880	1,337	10,000	8,000	8,000
10-53-7720	Safety Expense	622	318	1,093	794	800	800	1,000
10-53-7800	Dues & Subscriptions	13	70	.00	.00	.00	.00	.00
10-53-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	770
10-53-7830	Office Supplies	403	549	444	146	500	500	500
10-53-7835	Copier/Printer Expense	261	342	297	215	500	500	500
10-53-7860	Training	503	153	.00	.00	250	.00	250
10-53-7862	Hiring Cost	658	396	705	857	400	1,293	500
10-53-7870	Uniforms	1,200	1,200	1,200	1,200	1,200	1,200	1,600
10-53-7880	Postage	.00	.00	7	.00	200	.00	200
10-53-7900	Other	2,156	995	747	320-	1,000	1,000	1,000
10-53-8081	Street Paving	.00	.00	.00	.00	1,000	.00	10,000
Budget notes:								
~2022 Chautauqua Seal								
10-53-8100	Inventoried Equipment	2,567	347	1,986	10,563	.00	10,563	.00
10-53-8104	IT Inventoried Equipment	596	2,437	1,677	.00	4,500	.00	.00
10-53-8250	Capital Improvements	.00	.00	53,518	17,440	.00	17,440	.00
10-53-8400	Capital Equipment	.00	25,492	98,317	.00	.00	.00	.00
10-53-8402	IT Capital Expenditures	14	.00	.00	.00	.00	.00	.00
10-53-8420	Vehicles	37,157	.00	500	3,500	21,850	21,850	.00
10-53-9540	Debt Service Principal	38,767	12,289	12,927	.00	5,228	5,228	5,384
10-53-9545	Debt Service Interest	3,666	1,271	736	.00	483	483	327
10-53-9570	Flume Repair/Improvement	.00	27,320	36,467	252	50,000	50,000	250,000
10-53-9575	Drainage/River Dredging	49,009	15,965	.00	.00	.00	.00	.00

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
10-53-9590	Capitalized Wages	4,921	.00	.00	.00	.00	.00	.00
Total PUBLIC WORKS DEPT. EXPENSES:		507,602	382,900	493,484	222,748	437,558	443,625	628,510
COMMUNITY CENTER EXPENSES								
10-54-5012	City Resources Director	15,521	8,045	8,321	5,439	8,158	8,158	8,812
10-54-5540	Custodian / PW maintenan	28,137	26,567	22,425	14,522	21,790	21,790	23,533
10-54-5650	Event Coordinator	23,934	24,083	26,840	4,877	26,782	26,782	29,700
10-54-5800	FICA	4,826	4,300	4,173	1,745	4,150	4,150	4,482
10-54-5810	Unemployment	189	199	164	68	200	200	216
10-54-5830	Workers' Comp	2,354	2,021	1,678	1,396	1,861	1,861	2,054
10-54-5840	Group Term Life Insurance	623	618	660	247	745	745	745
10-54-5850	Employee Health Insuranc	23,778	23,368	25,455	13,701	30,879	22,000	24,000
10-54-5870	Pension	2,020	1,586	1,667	742	1,675	1,675	1,809
10-54-6010	Telephone / Communicatio	2,244	2,198	2,238	1,339	2,266	2,266	2,280
10-54-6020	Utilities	7,016	6,999	5,404	3,902	6,180	6,180	6,365
10-54-6030	Insurance	3,400	3,871	3,991	3,217	4,304	4,304	4,750
10-54-6100	Advertising	.00	.00	.00	.00	700	700	700
10-54-6720	Elevator	3,132	4,265	3,685	2,581	4,500	4,500	5,000
10-54-7000	Contract Labor	3,339	800	.00	.00	.00	.00	.00
10-54-7004	IT Contract Labor	.00	621	320	161	.00	161	.00
10-54-7100	Supplies	5,599	4,060	5,164	3,595	5,600	5,600	6,100
10-54-7103	Laundry	.00	60	.00	.00	150	150	300
10-54-7104	IT Supplies	.00	28	23	26	200	200	1,000
10-54-7200	Maintenance & Repairs	2,962	3,081	7,154	198	4,000	4,000	4,000
10-54-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	290
10-54-7830	Office Supplies	569	62	.00	.00	350	350	400
10-54-7900	Other Expenses	140	.00	.00	.00	.00	.00	.00
10-54-8100	Inventoried Equipment	1,657	1,401	3,686	.00	3,500	3,500	3,425
10-54-8104	IT Inventoried Equipment	.00	230	.00	.00	.00	.00	2,750
10-54-8250	Capital Improvements	25,083	26,635	500	43,555	100,000	100,000	.00
10-54-8400	Capital Equipment	.00	370	.00	.00	.00	.00	.00
10-54-8402	IT Capital Expenditures	3	.00	.00	.00	.00	.00	.00
Total COMMUNITY CENTER EXPENSES:		156,525	145,467	123,547	101,311	227,990	219,272	132,711
OTHER PARKS EXPENSES								
10-55-5100	PW Director	9,199	4,553	4,852	3,078	4,708	4,708	5,085
10-55-5520	Gardeners/Maint Wages -	34,297	33,419	35,159	20,589	36,637	36,637	39,568
10-55-5540	Custodian	.00	569	.00	.00	.00	.00	.00
10-55-5545	PW Maintenance Crew	33,391	29,656	22,543	13,989	22,360	22,360	.00
10-55-5600	Veh. Maint. - PW Crew	5,627	8,530	5,632	4,167	6,177	6,251	6,755
10-55-5680	Parks/Facilities Maint. Mgr.	.00	.00	.00	2,533	24,584	24,584	17,820
10-55-5681	Parks/Facilities Maint Ops	.00	.00	.00	.00	.00	.00	12,075
10-55-5800	FICA	6,193	6,735	5,132	3,350	7,174	7,174	7,750
10-55-5810	Unemployment	243	338	201	131	407	407	440
10-55-5830	Workers' Comp	4,779	3,119	2,092	1,740	2,321	2,321	2,561
10-55-5840	Group Term Life Insurance	415	389	416	204	488	488	488
10-55-5850	Employee Health Insuranc	11,892	11,774	12,380	8,539	16,304	16,304	16,793
10-55-5855	Medical	42	.00	.00	.00	.00	.00	.00
10-55-5870	Pension	999	835	818	685	944	1,030	1,113
10-55-6010	Telephone / Communicatio	1,015	1,313	1,179	787	1,510	1,510	1,500
10-55-6020	Utilities	6,577	6,612	6,733	5,087	7,218	7,218	7,435
10-55-6021	Trash Removal	.00	704	.00	.00	1,000	1,000	1,000

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
10-55-6029	Sanitation	1,310	1,570	5,134	6,612	3,500	6,612	5,500
10-55-6030	Insurance	2,396	2,380	2,453	1,978	3,036	3,036	2,920
10-55-6031	Insurance-Deductions	.00	1,000	.00	.00	.00	.00	.00
10-55-7000	Contract Labor	371	340	300	225	1,000	1,000	1,000
10-55-7004	IT Contract Labor	.00	140	140	161	250	250	520
10-55-7100	Parks Maint Supplies	11,265	12,016	4,296	865	8,000	8,000	8,000
10-55-7101	Paper/Cleaning Supplies	5,094	7,818	9,245	7,889	10,000	10,000	10,000
10-55-7102	PARC Supplies	1,476	219	103	12	1,420	1,420	1,420
10-55-7104	IT Supplies	.00	.00	.00	40	250	250	250
10-55-7125	Fertilizer	300	.00	300	382	600	600	600
10-55-7150	Tree Maintenance	3,931	3,560	3,295	2,737	4,000	4,000	7,000
10-55-7160	Geothermal Expenses	1,815	10,799	846	1,105	2,500	2,500	.00
10-55-7165	Parks Uniforms	1,173	1,395	870	707	1,200	1,200	3,000
10-55-7200	Maintenance & Repairs	8,597	5,346	8,680	2,237	10,000	10,000	10,000
10-55-7201	Maint. & Repairs - MicroHy	386	.00	567	.00	3,000	3,000	3,000
10-55-7202	Maint. & Repairs - Dog Par	707	70	300	.00	300	300	400
10-55-7470	Tools	171	465	450	.00	500	500	1,000
10-55-7600	Vehicle Oil & Gas	5,640	6,611	3,901	3,442	6,000	6,000	6,000
10-55-7650	Vehicle R & M/Supplies	720	2,579	2,036	.00	3,000	3,000	3,000
10-55-7720	Safety Expense	560	1,003	810	.00	500	500	1,000
10-55-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	860
10-55-7830	Office Supplies	221	394	318	161	250	250	250
10-55-7835	Copier/Printer Expense	87	134	99	72	250	250	100
10-55-7860	Training	.00	.00	113	.00	500	500	1,000
10-55-7862	Hiring Cost	1,807	1,418	1,427	2,050	1,500	1,500	2,200
10-55-7870	Supplies	.00	.00	.00	.00	250	250	500
10-55-7900	Other Expenses	10,483	917	155	.00	1,200	1,200	.00
10-55-8100	Inventoried Equipment	630	2,047	649	1,702	4,000	4,000	7,800
10-55-8250	Capital Improvements	.00	.00	6,125	26,748	277,000	277,000	.00
10-55-8400	Capital Equipment	.00	.00	25,955	4,200	21,850	21,850	.00
10-55-8402	IT Capital Expenditures	3	.00	.00	.00	.00	.00	.00
10-55-9540	Debt Service Principal	1,920	2,000	2,084	.00	.00	.00	.00
10-55-9545	Debt Service Interest	213	133	69	.00	.00	.00	.00
	Total OTHER PARKS EXPENSES:	175,947	172,899	177,859	128,203	497,688	500,960	197,703
SKI TOW EXPENSES								
10-56-5012	City Resources Director	2,328	2,414	2,496	1,632	2,497	2,497	2,697
10-56-5520	Ski Tow Wages	3,664	8,020	7,798	6,899	7,733	7,733	8,352
10-56-5540	PW Maintenance Crew	1,594	1,713	.00	.00	.00	.00	.00
10-56-5800	FICA	581	799	787	572	900	900	972
10-56-5810	Unemployment	23	31	31	26	41	41	45
10-56-5830	Workers' Comp	638	515	358	298	397	397	438
10-56-5840	Group Term Life Insurance	34	35	40	22	45	45	45
10-56-5850	Employee Health Insuranc	883	921	1,025	823	1,225	1,240	1,275
10-56-5870	Pension	115	100	72	49	127	127	127
10-56-6020	Utilities	600	676	643	474	652	652	652
10-56-6029	Sanitation	437	661	586	270	790	790	790
10-56-6030	Insurance	160	160	165	133	178	178	196
10-56-6740	Inspections	2,113	1,223	290	775	2,300	2,300	2,300
10-56-7000	Contract Labor	.00	.00	.00	.00	1,800	1,800	6,800
10-56-7004	IT Contract Labor	.00	760	.00	.00	200	200	.00
10-56-7010	Engineering	.00	.00	.00	.00	.00	.00	5,000
10-56-7100	Supplies	322	96	327	.00	1,200	1,200	1,200
10-56-7200	Maintenance & Repairs	488	740	195	80	1,000	1,000	1,000
10-56-7900	Other Expenses	48	.00	.00	.00	.00	.00	.00

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
10-56-8100	Inventoried Equipment	.00	1,990	.00	.00	.00	.00	3,750
Budget notes:								
~2022 $3,750 tow rope in 2022								
10-56-8104	IT Inventoried Equipment	.00	69	.00	.00	.00	.00	.00
Total SKI TOW EXPENSES:		14,029	20,924	14,813	12,052	21,085	21,100	35,639
ICE RINK/ROTARY PARK EXPENSES								
10-57-5001	Ice Rink/Rotary Wages - S	.00	3,165	3,495	.00	4,077	3,500	4,403
10-57-5540	PW Maintenance Crew	.00	979	.00	.00	.00	.00	.00
10-57-5680	Parks/Facilities Maint Mgr	.00	.00	.00	.00	.00	.00	7,128
10-57-5681	Parks/Facilities Maint Ops	.00	.00	.00	.00	.00	.00	4,830
10-57-5800	FICA	.00	268	267	.00	414	350	1,636
10-57-5810	Unemployment	.00	13	10	.00	25	25	82
10-57-5830	Workers' Comp	.00	130	.00	.00	.00	.00	.00
10-57-5840	Group Term Life Insurance	.00	15	16	9	19	19	80
10-57-5850	Employee Health Insuranc	.00	457	536	441	639	639	5,000
10-57-5870	Pension	.00	116	.00	.00	.00	.00	400
10-57-6020	Utilities	.00	576	839	217	850	850	850
10-57-6029	Sanitation	.00	631	1,261	1,355	1,000	1,355	.00
Budget notes:								
~2022 No port-a-potties for 2022 because new restroom will be in place								
10-57-6030	Insurance	.00	.00	.00	133	178	178	196
10-57-7100	Supplies	.00	236	110	.00	500	500	750
10-57-7102	PARC Supplies	.00	208	98	.00	250	250	.00
10-57-7150	Tree Maintenance	.00	.00	.00	.00	.00	.00	2,500
10-57-7200	Maintenance & Repairs	.00	7,416	607	.00	11,000	11,000	11,000
10-57-7900	Other Expenses	.00	158	.00	.00	.00	.00	.00
Total ICE RINK/ROTARY PARK EXPENSES:		.00	14,369	7,241	2,155	18,952	18,666	38,855
GENERAL FUND Revenue Total:		2,344,693	2,543,526	2,981,886	2,407,093	3,076,440	4,089,084	3,735,510
GENERAL FUND Expenditure Total:		2,308,880	2,141,677	2,579,373	1,702,403	3,032,589	3,153,774	3,324,699
Net Total GENERAL FUND:		35,812	401,849	402,514	704,690	43,851	935,310	410,811

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
WATER FUND								
CUSTOMER REVENUES								
20-40-4050	Water Charges- Customers	405,828	464,690	477,133	345,454	500,986	500,000	549,272
20-40-4051	Water Charges - Pool	18,500	17,616	18,144	12,822	19,240	19,233	20,387
20-40-4053	Water Charges - Box Cano	750	669	689	487	739	739	775
20-40-4057	Water Debt Surcharge	116,364	51,971	16,351	1,072-	.00	.00	.00
20-40-4058	Water Debt Surcharge -Def	.00	21,945	57,647	.00	.00	.00	.00
20-40-4059	Water Debt Surcharge- Re	2,429	29,122	28,750	19,583	28,623	29,375	29,375
20-40-4060	Service Charge - Water	13,399	13,654	13,704	9,237	13,688	13,886	13,886
20-40-4061	Transfer Charge - Water	538	450	625	350	500	500	500
20-40-4062	Water Off/On Charge	420	541	240	260	300	300	300
Total CUSTOMER REVENUES:		558,228	600,658	613,285	387,122	564,076	564,033	614,495
GRANTS								
20-41-4185	Grant - Water Trtmt Feas.	.00	.00	.00	42,210	.00	42,210	.00
20-41-4190	CARES Act Reimb for COV	.00	.00	314	.00	.00	.00	.00
Total GRANTS:		.00	.00	314	42,210	.00	42,210	.00
OTHER REVENUES								
20-43-4300	Invest Fee-Water(25%)	17,000	11,250	7,675	9,788	7,500	9,788	7,500
20-43-4310	Other Revenue	366	175	243	337	300,000	337	100
20-43-4340	Interest Income	307	1,755	1,550	138	800	150	150
20-43-4350	Water Tap - Matl. & Labor	976	554	.00	.00	.00	.00	.00
20-43-4376	Utility-CI Fund Transfer	.00	82,013	34,023	.00	398,000	200,000	.00
20-43-4900	Disposal of assets	.00	2,781-	.00	.00	.00	.00	.00
Total OTHER REVENUES:		18,649	92,965	43,490	10,263	706,300	210,275	7,750
WATER EXPENSES								
20-50-5002	City Administrator	23,252	37,509	32,595	20,826	31,908	35,000	37,800
20-50-5004	Finance & Admin. Director	20,413	20,362	8,115	13,075	19,999	20,600	22,678
20-50-5006	HR Manager	10,432	10,397	11,914	6,641	10,157	10,157	10,970
20-50-5008	Administrative Clerks	38,241	45,014	46,995	26,328	54,011	54,011	64,060
20-50-5010	Building Inspector	3,195	8,126	5,450	563	7,788	7,788	11,682
20-50-5012	Community Development	.00	.00	9,505	4,886	10,846	10,846	11,714
20-50-5100	PW Director	29,018	33,509	21,575	12,312	18,831	19,022	20,545
20-50-5150	PW Crew	66,357	79,366	81,824	47,008	100,481	100,481	108,520
20-50-5600	Veh. Maint. - PW Crew	10,316	15,637	10,556	7,639	12,190	12,190	13,166
20-50-5650	Event Coordinator	1,096	1,102	1,239	222	1,130	1,130	1,350
20-50-5660	Payroll Adjustment	7,625	.00	.00	.00	.00	.00	.00
20-50-5800	FICA	15,101	19,257	17,195	10,406	18,536	18,536	20,020
20-50-5810	Unemployment	592	739	675	408	730	730	730
20-50-5830	Workers' Comp	3,660	7,430	4,654	3,871	5,162	5,162	5,696
20-50-5840	Group Term Life Insurance	1,387	1,955	2,177	1,267	2,540	2,540	2,540
20-50-5850	Employee Health Insuranc	36,357	58,987	56,885	42,866	71,355	71,355	73,500
20-50-5855	Medical	281	587	173	345	500	500	500
20-50-5870	Pension	4,244	6,048	5,849	3,904	7,270	7,270	7,852
20-50-6010	Telephone / Communicatio	651	630	719	495	825	825	1,490
Budget notes:								
~2022 Water Tower Camera Cellular								
20-50-6020	Utilities	4,920	4,526	4,178	2,813	5,304	5,304	5,400
20-50-6030	Insurance	7,540	7,488	7,718	6,486	8,326	8,326	9,187
20-50-6150	Online Processing Fees	2,347	3,238	3,384	2,677	3,502	3,502	3,607

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
20-50-7000	Contract Labor	70,971	37,018	54,988	32,118	32,000	38,000	35,000
20-50-7004	IT Contract Labor	.00	2,293	3,689	1,340	4,000	4,000	520
20-50-7010	Engineering	.00	.00	3,414	6,695	.00	6,695	10,000
20-50-7024	Permit Fees	757	.00	.00	.00	1,000	.00	.00
20-50-7025	Legal Fees	13,123	21,400	4,926	18,809	20,000	20,000	10,000
20-50-7100	Dist.Syst.Supplies	21,529	17,287	4,923	6,701	16,500	15,000	15,000
20-50-7104	IT Supplies	.00	45	41	26	500	250	500
20-50-7110	Street Patching	.00	6,423	.00	.00	5,000	.00	5,000
20-50-7185	Equipment Rental	.00	169	296	.00	2,400	1,500	2,500
20-50-7200	Maintenance & Repairs	2,172	6,319	2,145	5,173	5,000	9,000	7,000
20-50-7400	Water Sample	3,895	4,020	4,139	1,097	5,000	2,500	5,000
20-50-7450	Chemicals	4,769	3,612	3,135	1,894	6,000	4,000	6,000
20-50-7460	Water Tank Maintenance	3,552	316	1,669	1,020	2,500	2,000	3,500
20-50-7470	Tools	.00	2,812	1,531	.00	3,500	3,500	3,500
20-50-7600	Vehicle Oil & Gas	9,239	10,837	6,754	5,679	8,000	7,500	8,000
20-50-7650	Vehicle R & M Supplies	2,371	7,726	8,629	137	8,000	5,000	8,000
20-50-7700	City Shop Expense	2,619	2,274	1,925	1,951	2,000	2,032	2,500
20-50-7720	Safety Expense	310	693	525	.00	1,000	1,000	2,000
20-50-7800	Dues & Subscriptions	1,995	1,243	585	465	1,500	1,000	1,500
20-50-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	280
20-50-7830	Office Supplies	300	486	313	146	500	500	500
20-50-7835	Copier/Printer Expense	861	1,573	1,213	902	1,500	1,500	1,500
20-50-7850	Printing & Publications	75	162	.00	.00	500	.00	500
20-50-7855	GIS Cost	8,041	1,027	.00	.00	2,000	2,000	3,000
20-50-7860	Training	2,256	2,470	495	757	3,000	2,500	3,000
20-50-7862	Hiring Cost	431	344	475	753	250	1,500	1,500
20-50-7870	Uniforms	1,021	1,656	1,200	1,200	1,200	1,200	1,600
20-50-7880	Postage	422	951	1,330	472	1,000	500	1,000
20-50-7900	Other Expenses	1,133	756	383	.00	1,200	1,000	1,200
20-50-7920	Transfer to GF to Repay Lo	.00	29,122	28,744	19,583	28,300	28,300	28,300
20-50-8100	Inventoried Equipment	1,387	6,693	5,401	1,002	5,000	3,500	5,000
20-50-8104	IT Inventoried Equipment	596	1,216	1,677	.00	2,000	2,000	2,000
20-50-8250	Capital Improvements	.00	.00	.00	7,507	198,000	8,000	.00
20-50-8251	Water Improvements Cap.	.00	.00	.00	64,384	500,000	200,000	.00
20-50-8400	Capital Equipment	.00	.00	34,023	.00	.00	.00	.00
20-50-8402	IT Capital Expenditures	7	.00	.00	.00	.00	.00	1,000
Budget notes:								
~2022 1 camera								
20-50-8403	Water Augmentation	143	.00	.00	.00	.00	.00	.00
20-50-8570	New Lines / Valves	.00	.00	.00	.00	2,000	2,000	2,000
20-50-8571	New Hydrants	3,470	.00	.00	.00	3,000	2,800	3,000
20-50-9540	Debt Service Principal	.00	359	17,315	.00	5,074	5,074	5,226
20-50-9545	Debt Service Interest	2,175	1,537	872	.00	469	469	317
20-50-9560	Bond Principal	.00	.00	56,118	.00	.00	.00	.00
20-50-9565	Bond Interest	7,028	4,333	1,530	.00	.00	.00	.00
Total WATER EXPENSES:		453,675	539,081	587,775	394,849	1,270,284	781,095	619,450
WATER FUND Revenue Total:		576,876	693,624	657,089	439,594	1,270,376	816,518	622,245
WATER FUND Expenditure Total:		453,675	539,081	587,775	394,849	1,270,284	781,095	619,450
Net Total WATER FUND:		123,202	154,542	69,314	44,746	92	35,423	2,795

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
SEWER FUND								
CUSTOMER REVENUE								
23-40-4050	Sewer Charges - Customer	464,229	650,609	673,089	478,036	707,663	717,054	760,077
23-40-4051	Sewer Charges - Pool	10,234	13,968	14,387	10,167	15,250	15,250	16,166
23-40-4053	Sewer Charges - Box Cano	770	1,062	1,093	773	1,159	1,159	1,229
23-40-4060	Service Charge - Sewer	14,493	13,975	14,047	9,476	14,010	14,214	14,214
23-40-4061	Transfer Charge - Sewer	563	450	625	350	500	500	500
Total CUSTOMER REVENUE:		490,288	680,064	703,242	498,802	738,582	748,177	792,186
GRANTS								
23-41-4185	Grant - EIAF - CDPHE Co	23,477	.00	.00	.00	.00	.00	.00
23-41-4190	CARES Act Reimb for COV	.00	.00	314	.00	.00	.00	.00
Total GRANTS:		23,477	.00	314	.00	.00	.00	.00
OTHER REVENUES								
23-43-4300	Invest Fee-Sewer(25%)	16,875	7,500	7,675	9,788	7,500	9,788	7,500
23-43-4310	Other Revenue	.00	1,296	1,290	463	.00	463	.00
23-43-4340	Interest Income	1,448	7,828	4,484	465	4,500	1,000	1,000
23-43-4350	Sewer Tap - Matl. & Labor	.00	.00	.00	.00	500	.00	.00
23-43-4998	Trf From Util.-CI	.00	.00	178,056	150,832	575,450	500,000	.00
Total OTHER REVENUES:		18,323	16,624	191,504	161,548	587,950	511,251	8,500
SEWER EXPENSES								
23-50-5002	City Administrator	23,252	41,600	38,641	23,140	39,160	39,160	42,293
23-50-5004	Finance & Admin. Director	20,413	20,362	8,115	13,075	19,999	20,600	22,678
23-50-5006	HR Manager	10,432	13,672	15,886	8,854	13,542	13,542	14,626
23-50-5008	Administrative Clerks	38,242	45,090	46,995	26,328	54,011	54,011	59,740
23-50-5010	Building Inspector	3,195	8,126	5,450	563	5,293	5,293	11,685
23-50-5012	Community Development	.00	.00	6,484	3,206	7,231	7,321	7,810
23-50-5100	PW Director	29,018	46,764	53,937	30,779	47,075	47,075	50,841
23-50-5150	PW Crew	64,072	89,132	88,086	51,121	106,520	106,520	115,050
23-50-5600	Veh. Maint. - PW Crew	10,316	15,637	10,556	7,639	12,189	12,189	13,164
23-50-5650	Event Coordinator	1,096	1,102	1,239	222	1,130	1,130	1,350
23-50-5800	FICA	14,924	21,137	20,475	12,335	21,721	21,721	23,460
23-50-5810	Unemployment Insurance	585	806	803	483	852	852	920
23-50-5830	Workers' Comp	2,627	7,018	4,620	3,842	5,124	5,124	5,654
23-50-5840	Group Term Life Insurance	1,369	2,055	2,344	1,380	2,735	2,735	2,735
23-50-5850	Employee Health Insuranc	35,742	65,585	61,779	47,175	77,304	77,304	79,623
23-50-5855	Medical	281	588	173	345	500	500	500
23-50-5870	Pension	4,178	4,798	7,154	4,683	8,519	8,519	9,201
23-50-6010	Telephone / Communicatio	1,060	1,006	1,270	919	1,292	1,500	1,490
23-50-6020	Utilities	29,722	29,916	28,890	16,670	27,810	25,000	30,000
23-50-6030	Insurance	6,704	6,659	7,864	5,797	7,404	7,404	8,170
23-50-6150	Online Processiong Fees	2,347	3,238	3,384	2,677	3,497	4,016	4,140
23-50-7000	Contract Labor	30,775	33,006	30,625	29,010	31,000	31,000	35,000
23-50-7004	IT Contract Labor	.00	2,293	2,487	1,705	4,000	3,000	520
23-50-7010	Engineering	30,382	81,796	12,086	.00	.00	.00	.00
23-50-7023	Professional Svcs	2,316	.00	.00	.00	.00	.00	.00
23-50-7025	Legal Fees	10,900	11,038	2,337	1,020	10,000	10,000	2,000
23-50-7075	Discharge Permit Fees	7,624	2,316-	1,501	.00	2,000	1,500	1,500
23-50-7100	Supplies-WWTP	9,686	2,309	1,664	98	8,000	5,000	6,000
23-50-7101	Supplies-Collection Lines	151	702	682	89	3,000	2,000	3,000

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
23-50-7104	IT Supplies	.00	45	41	26	500	500	500
23-50-7110	Street Patching	.00	.00	.00	.00	5,000	.00	5,000
23-50-7185	Equipment Rental	179	.00	.00	.00	2,500	.00	2,500
23-50-7200	Maintenance & Repairs	51,314	17,793	15,647	7,898	20,000	15,000	18,000
23-50-7250	Chemicals	9,132	6,235	1,202	9,634	10,000	15,000	15,000
23-50-7276	Lab Tests	7,727	2,757	4,109	3,515	5,000	4,500	5,000
23-50-7470	Tools	.00	573	199	.00	500	500	1,000
23-50-7600	Vehicle Oil & Gas	4,200	4,964	3,315	2,581	5,000	5,000	5,300
23-50-7650	Vehicle R & M	.00	8,189	12,037	1,621-	10,000	8,000	8,000
23-50-7700	City Shop Expense	4,843	5,202	7,418	2,261	6,000	5,000	5,000
23-50-7720	Safety Expense	946	2,802	322	718	2,000	2,000	2,000
23-50-7800	Dues & Subscriptions	.00	1,593	92	.00	250	.00	250
23-50-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	280
23-50-7830	Office Supplies	279	516	386	146	5,000	500	500
23-50-7835	Copier/Printer Expense	861	1,573	1,213	902	1,500	1,500	.00
23-50-7850	Printing & Publication	.00	.00	38	.00	.00	.00	.00
23-50-7855	GIS Cost	8,041	1,027	.00	.00	2,000	.00	3,000
23-50-7860	Training	2,647	1,258	585	468	3,000	2,500	3,000
23-50-7862	Hiring Cost	409	337	648	753	250	1,500	500
23-50-7870	Uniforms	1,200	790	1,333	829	1,200	1,200	1,600
23-50-7880	Postage	636	333	554	472	400	472	500
23-50-7900	Other Expenses	2,667	766	392	.00	1,200	1,000	1,200
23-50-8100	Inventoried Equipment	815	4,122	1,492	1,002	4,000	2,500	4,000
23-50-8104	IT Inventoried Equipment	596	1,216	1,677	.00	2,000	2,000	.00
23-50-8250	Capital Improvements	16,502	.00	.00	.00	.00	.00	.00
23-50-8251	Sewer Improvements Capit	.00	.00	144,033	241,114	715,000	500,000	.00
23-50-8400	Capital Equipment	16,502-	.00	34,023	.00	.00	.00	.00
23-50-8402	IT Capital Expenditures	7	.00	.00	.00	.00	.00	1,000
Budget notes:								
~2022 1 Camera								
23-50-8520	Lines	.00	.00	.00	.00	2,500	1,500	2,500
23-50-8570	Lift Station	.00	.00	.00	.00	2,000	1,500	2,000
23-50-9540	Debt Service Principal	.00	359	17,315	.00	5,074	5,074	5,226
23-50-9545	Debt Service Interest	2,175	1,537	872	.00	469	469	317
Total SEWER EXPENSES:		490,082	617,106	714,469	563,856	1,333,251	1,091,231	646,323
SEWER FUND Revenue Total:		532,089	696,688	895,060	660,350	1,326,532	1,259,428	800,686
SEWER FUND Expenditure Total:		490,082	617,106	714,469	563,856	1,333,251	1,091,231	646,323
Net Total SEWER FUND:		42,007	79,582	180,591	96,495	6,719-	168,197	154,363

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
REFUSE/RECYCLE FUND								
REFUSE REVENUE								
25-40-4040	Refuse Charges	135,419	142,407	148,352	110,914	167,746	166,371	173,617
25-40-4060	Service Charge - Ref/Rec	866	10,385	10,431	7,007	10,300	10,300	14,014
Total REFUSE REVENUE:		136,284	152,792	158,783	117,920	178,046	176,671	187,631
RECYCLE REVENUE								
25-41-4040	Recycling Charges	24,891	50,595	53,510	44,913	68,441	67,370	70,837
Total RECYCLE REVENUE:		24,891	50,595	53,510	44,913	68,441	67,370	70,837
REFUSE EXPENSES								
25-50-7000	Contract Hauling	133,675	112,068	142,419	92,807	161,805	150,500	160,750
25-50-7010	Spring Cleaning	9,868	.00	.00	.00	.00	.00	.00
25-50-7020	Transfer to GF - Admin. Fe	4,200	6,400	6,593	4,395	6,593	6,593	8,969
Total REFUSE EXPENSES:		147,743	118,468	149,012	97,203	168,398	157,093	169,719
RECYCLE EXPENSES								
25-51-7000	Contract Hauling	23,745	63,038	80,111	52,204	65,792	79,505	83,500
25-51-7020	Transfer to GF - Admin. Fe	1,014	3,600	3,708	2,472	3,708	3,708	5,045
Total RECYCLE EXPENSES:		24,759	66,638	83,819	54,676	69,500	83,213	88,545
REFUSE/RECYCLE FUND Revenue Total:		161,175	203,387	212,293	162,833	246,487	244,041	258,468
REFUSE/RECYCLE FUND Expenditure Total:		172,502	185,107	232,830	151,879	237,898	240,306	258,264
Net Total REFUSE/RECYCLE FUND:		11,328-	18,281	20,537-	10,954	8,589	3,735	204

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
UTILITY - CI FUND								
WATER REVENUES								
28-40-4005	STR Excise Tax for Water	.00	.00	.00	.00	.00	.00	100,000
28-40-4300	Invest Fee-Water(75%)	51,000	33,750	23,024	29,364	22,500	29,364	22,500
28-40-4320	Water Sys Upgrades - Mon	8,448	99,005	107,683	143,842	211,237	215,763	308,239
28-40-4340	Interest Water	654	7,708	5,465	548	5,000	1,000	1,000
28-40-4500	SRF Loan - Water	.00	.00	.00	.00	.00	.00	6,000,000
28-40-4505	Am Rescue Plan Rev	.00	.00	.00	.00	.00	.00	259,896
Total WATER REVENUES:		60,102	140,463	136,171	173,753	238,737	246,127	6,691,635
SEWER REVENUES								
28-41-4005	STR Excise Tax for Sewer	.00	.00	.00	.00	.00	.00	100,000
28-41-4300	Invest Fee-Sewer(75%)	50,625	22,500	23,024	29,364	22,500	29,364	22,500
28-41-4330	WWTP CIP Replace/Updat	17,287	215,558	238,822	232,746	344,690	349,119	491,885
28-41-4500	SRF Loan WWTP	.00	.00	.00	.00	.00	.00	10,000,000
Total SEWER REVENUES:		67,912	238,058	261,846	262,110	367,190	378,483	10,614,385
UTILITY-CI WATER EXPENSES								
28-50-8252	Water Meter Project	.00	.00	.00	.00	.00	.00	297,000
28-50-8253	Water Plant Construction P	.00	.00	.00	.00	.00	.00	5,959,000
28-50-8254	Water Plant Proj Engineeri	.00	.00	.00	.00	.00	.00	35,000
28-50-8255	Water Plant Project Legal	.00	.00	.00	.00	.00	.00	6,000
28-50-8260	Spring Box Improvements	.00	.00	.00	.00	.00	.00	75,000
28-50-8510	Water Lines	.00	82,013	.00	.00	.00	.00	.00
28-50-8590	Transfer to WF for Cap Exp	.00	.00	34,023	.00	398,000	398,000	.00
28-50-9540	Debt Service Principal	.00	.00	.00	.00	.00	.00	1
28-50-9545	Debt Service Interest	.00	.00	.00	.00	.00	.00	1
Total UTILITY-CI WATER EXPENSES:		.00	82,013	34,023	.00	398,000	398,000	6,372,002
UTILITY-CI SEWER EXPENSES								
28-51-8253	WWTP Construction Projec	.00	.00	.00	.00	.00	.00	9,794,000
28-51-8254	WWTP Proj Engineering	.00	.00	.00	.00	.00	.00	200,000
28-51-8255	WWTP Project Legal	.00	.00	.00	.00	.00	.00	6,000
28-51-8590	Transfer to SF for Cap Exp	.00	.00	178,056	150,832	575,450	575,450	.00
28-51-9540	Debt Service Principal	.00	.00	.00	.00	.00	.00	1
28-51-9545	Debt Service Interest	.00	.00	.00	.00	.00	.00	1
Total UTILITY-CI SEWER EXPENSES:		.00	.00	178,056	150,832	575,450	575,450	10,000,002
UTILITY - CI FUND Revenue Total:		128,014	378,521	398,017	435,863	605,927	624,610	17,306,020
UTILITY - CI FUND Expenditure Total:		.00	82,013	212,078	150,832	973,450	973,450	16,372,004
Net Total UTILITY - CI FUND:		128,014	296,509	185,939	285,031	367,523-	348,840-	934,016

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
CAPITAL IMPROVEMENTS FUND								
CAPITAL IMPROVEMENT REVENUES								
30-40-4030	Sales Tax 1%	395,100	433,761	507,496	341,025	434,125	651,581	632,034
Total CAPITAL IMPROVEMENT REVENUES:		395,100	433,761	507,496	341,025	434,125	651,581	632,034
CAPITAL IMPROVEMENT EXPENSES								
30-50-8250	Capital Improvements	227,308	148,401	239,482	214,643	733,381	733,381	965,580
Budget notes:								
~2022 IT Surveilance Cameras & Access Control 6,000$4,000 - 10-52-8402/$2,000 - 10-53-8402, Council Chamber & Administrator Office 45,000 10-50-8250								
Police Dash Cameras 15,000 10-51-8420, FD Exhaust System 47,000 10-52-8400								
FD Radios and Batteries 20,400 10-52-8400, FD LED Light Replacement for Apparatus 15,000 10-52-8400								
FD Lockers 9,900 10-52-8400, FD Rit (Rescue Air) Pack 7,000 10-52-8400								
FD Sidewalk Repair & Apron 35,000 10-50-8250, FD Masks & Batteries 9,000 10-52-8400								
FD SCBA 17 Packs 5,204 10-52-8401 Note: additional $423,889 from grant								
Broadband Anchor Sites 64,000 10-50-8402, Network Switches & Access Points 12,000 10-50-8402								
Parks/Facilities Maint. Trucks (2) 88,000 10-55-8400, City Hall Bathroom Renovation 30,000 10-50-7400								
Community Center Bathroom Renovation 50,000 10-54-7200, Community Center Stove Replacement 14,000 10-54-8400								
POS for Community Center & Park Reservations 500 10-54-8402, IT -Audio and Visual Upgrade in Community Center 35,000 10-54-8402								
Phase 3 Geothermal Project 300,000 10-55-8250, Ski Tow Fencing 7,576 10-56-8250								
Ski Tow - Lower Apparatus Upgrade 15,000 10-56-8250, Master Parks Plan 50,000 10-55-7000								
City Property Survey for Housing Project 25,000 10-50-7000, City Admin Vehicle 38,000 10-50-8400								
Replacement Truck for Watering & Plowing (Partial) 22,000 (10% 10-55-8400/40% 10-53-8420)								
Total CAPITAL IMPROVEMENT EXPENSES:		227,308	148,401	239,482	214,643	733,381	733,381	965,580
CAPITAL IMPROVEMENTS FUND Revenue Total:		395,100	433,761	507,496	341,025	434,125	651,581	632,034
CAPITAL IMPROVEMENTS FUND Expenditure Total:		227,308	148,401	239,482	214,643	733,381	733,381	965,580
Net Total CAPITAL IMPROVEMENTS FUND:		167,793	285,360	268,014	126,381	299,256-	81,800-	333,546-

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
PARKS FUND								
POOL REVENUES								
50-40-4030	Swim. Pool Admissions	1,888,840	1,558,055	785,637	1,257,891	1,099,639	1,600,000	1,650,000
50-40-4031	Over/Short	347	622-	853-	329-	.00	600-	.00
50-40-4033	Membership Pass Revenu	47,128	391,220	118,160	214,744	273,854	250,000	320,000
50-40-4034	Facility Rental Revenue	610	1,014	38	.00	600	600	.00
50-40-4035	Slide Admissions	40,967	2,841	.00	48,512	28,677	50,000	50,000
50-40-4040	Locker and Misc. Rentals	58,577	59,005	9,140	6,936	32,000	8,000	32,000
50-40-4045	Sales-Pool Merchandise	814	756	8,154	39,205	30,000	48,000	60,000
50-40-4047	Swim Team	350	12,474	.00	.00	3,500	.00	3,500
50-40-4048	Swim Lessons	5,580	.00	.00	.00	7,800	6,000	7,800
50-40-4049	Programs Revenue	.00	5,035	.00	3,289	.00	.00	.00
50-40-4052	Massage Rent	1,750	3,000	1,955	2,000	3,000	3,000	3,000
50-40-4053	Swim Shop Rent	2,700	3,555	1,185	.00	.00	.00	.00
50-40-4300	Lifeguard and Other Class	110	.00	.00	.00	.00	.00	.00
50-40-4320	Vending Machine Revenue	332	440	167	113	400	.00	400
50-40-4340	Interest Income	1,934	12,276	9,236	476	.00	.00	.00
50-40-4350	Misc. Revenue	.00	2,112	3,350	5,495	.00	.00	.00
	Total POOL REVENUES:	2,050,038	2,051,160	936,170	1,578,332	1,479,470	1,965,000	2,126,700
BOX CANON REVENUES								
50-41-4010	Box Canon Admissions	258,267	299,941	319,614	294,781	300,500	396,000	384,120
50-41-4015	BC Donations	951	1,406	3,101	2,365	1,000	2,800	3,400
50-41-4020	Concessions	27,000	30,403	22,056	37,306	30,000	50,000	50,000
50-41-4031	Over/Short	40	299	1,136-	159	.00	200	.00
50-41-4190	CARES Act Reimb for COV	.00	.00	10,533	.00	.00	.00	.00
50-41-4320	Vending Machine Revenue	103	104	.00	.00	.00	.00	200
	Total BOX CANON REVENUES:	286,361	332,152	354,168	334,612	331,500	449,000	437,720
ROTARY PARK / ICE RINK REV.								
50-42-4003	PARC League Fees	600	.00	150	.00	.00	.00	.00
50-42-4005	Skate Rentals	170	135	1,080	.00	.00	.00	.00
50-42-4390	Trsfr.from Beautification Fu	.00	301,025	.00	.00	.00	.00	.00
	Total ROTARY PARK / ICE RINK REV.:	770	301,160	1,230	.00	.00	.00	.00
GYM REVENUES								
50-43-4010	Gym Admissions	32,929	30,844	2,505	16,025	18,000	18,000	24,000
	Total GYM REVENUES:	32,929	30,844	2,505	16,025	18,000	18,000	24,000
Ice Park Revenues								
50-47-4047	Ice Park Guide Donations	.00	9,658	.00	.00	.00	.00	.00
50-47-4048	Ice Park Fees	.00	13,367	11,060	.00	11,000	11,000	11,000
	Total Ice Park Revenues:	.00	23,025	11,060	.00	11,000	11,000	11,000
POOL EXPENSES								
50-50-5012	City Resources Director	43,807	53,575	65,327	31,000	47,411	47,411	51,204
50-50-5520	Cashiers	101,307	88,021	68,830	60,017	86,000	86,000	101,792
50-50-5524	Pool Manager	68,857	58,481	26,777	17,845	62,000	62,000	83,265
50-50-5525	Pool Assistant Manager	53,559	3,503	.00	.00	.00	.00	72,720
50-50-5532	Aquatics Coordinators	27,708	29,524	30,680	32,663	42,234	42,234	56,560

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
50-50-5533	Lead Lifeguards	101,371	77,117	71,284	72,872	70,100	70,100	89,250
50-50-5534	Part-Time Lifeguards	201,145	241,832	122,632	154,265	184,417	184,417	279,666
50-50-5536	Swim Lesson Wage	4,985	7,001	.00	2,229	7,329	7,329	8,100
50-50-5538	Pool Attendants	.00	7,845	.00	5,675	43-	5,675	9,100
50-50-5540	Pool Cleaning Wage	50,161	48,493	46,191	33,012	56,701	56,701	56,080
50-50-5545	Pool Maint.Wage	36,941	31,115	40,811	27,988	37,307	37,307	77,620
50-50-5550	Pool Filtration Wage	38,462	36,935	44,786	30,162	37,307	37,307	77,620
50-50-5680	Parks/Facilities Maint Mgr	.00	.00	.00	.00	.00	2,000	3,564
50-50-5681	Parks/Facilities Maint Ops	.00	.00	.00	.00	.00	1,000	2,415
50-50-5800	FICA	55,469	50,061	39,421	35,673	45,530	45,530	.00
50-50-5810	Unemployment	2,063	1,802	1,417	1,313	1,814	1,814	.00
50-50-5830	Workers' Comp	24,758	36,412	25,299	21,044	19,641	25,783	30,964
50-50-5831	Flex Plan Costs	356	.00	.00	.00	.00	.00	.00
50-50-5840	Group Term Life Insurance	2,000	1,771	2,050	1,015	1,912	1,912	2,200
50-50-5850	Employee Health Insuranc	50,228	50,762	35,292	33,855	57,467	57,467	60,000
50-50-5855	Medical	1,784	1,224	136	.00	1,000	1,000	1,000
50-50-5870	Pension	6,045	2,547	2,747	3,734	6,046	6,046	6,500
50-50-5999	Deprciation	.00	601,671	.00	.00	.00	.00	.00
50-50-6010	Telephone / Commuication	3,970	5,698	5,117	3,332	6,732	6,732	4,970
50-50-6020	Utilities	66,217	65,423	55,680	30,818	66,950	66,950	68,959
50-50-6024	Water Charge	20,660	22,848	23,376	16,382	19,240	19,240	20,387
50-50-6026	Sewer Charge	10,252	18,486	19,205	15,004	15,250	15,250	16,166
50-50-6030	Insurance	6,168	7,944	8,236	6,600	8,832	8,832	9,746
50-50-6031	Insurance-Deductions	.00	2,243	1,490	.00	.00	.00	.00
50-50-6100	Advertising	4,925	4,729	2,009	720	4,000	4,000	14,000
50-50-6101	Promotion	6,009	8,287	2,124	771	5,000	5,000	4,500
50-50-6150	Bankcard Charge-VISA/M	53,742	65,045	34,536	46,252	43,200	65,045	42,000
50-50-6740	Inspections	.00	.00	3,114	.00	3,850	3,850	3,850
50-50-7000	Contract Labor	111,129	46,209	5,122	3,666	4,800	4,800	5,000
50-50-7004	IT Contract Labor	.00	13,127	6,150	4,160	6,000	6,000	5,210
50-50-7100	Supplies	18,168	23,211	11,711	9,937	17,000	17,000	20,000
50-50-7104	IT Supplies	.00	96	2,230	1,470	1,500	1,700	1,500
50-50-7120	Uniforms	4,655	5,005	3,338	1,947	5,500	5,500	8,000
50-50-7170	Swim Team	350	15,194	.00	.00	3,500	3,500	3,500
50-50-7200	Facilities Maint/Supply	24,926	27,239	13,422	22,135	27,000	27,000	33,000
50-50-7201	Swim Lessons Supplies	549	263	.00	238	500	500	500
50-50-7202	Special Events Supplies	2,342	1,827	479	668	1,500	1,500	1,500
50-50-7204	Daily Cleaning Supplies	6,948	1,146	2,838	869	5,500	5,500	6,000
50-50-7400	Water Sample	47,916	22,168	19,958	14,234	22,000	22,000	26,000
50-50-7450	Chemicals	118,244	89,311	94,128	45,619	86,000	86,000	90,000
50-50-7470	Tools	.00	20	.00	.00	750	750	750
50-50-7475	Fees	3,360	1,480	1,480	2,383	3,500	3,500	3,500
50-50-7500	Filtration Maintenance	16,035	30,400	14,196	14,450	18,000	18,000	18,000
50-50-7720	Safety/First Aid Supplies	5,819	1,576	1,219	1,962	3,600	3,600	5,600
50-50-7800	Purchases-Pool Merchandi	300	211	4,257	16,761	15,000	20,000	36,000
50-50-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	8,990
50-50-7830	Office Supplies	1,501	1,689	361	1,037	2,000	2,000	2,000
50-50-7835	Copier/Printer Expense	865	1,150	1,522	1,497	1,300	1,800	1,800
50-50-7860	Training	7,581	11,169	3,237	2,379	9,000	9,000	10,000
50-50-7862	Hiring Cost	6,686	13,328	2,123	15,105	7,000	20,000	18,000
50-50-7879	Mileage	32	182	202	.00	1,000	1,000	1,000
50-50-7880	Postage	13	55	.00	.00	.00	.00	.00
50-50-7900	Other Expenses	1,341	400	400	146	.00	146	200
50-50-8100	Inventoried Equipment	24,244-	627	.00	.00	4,200	4,200	47,900
50-50-8104	IT Inventoried Equipment	199	2,498	.00	2,445	6,600	6,600	3,600
50-50-8250	Capital Improvements	.00	85,302-	.00	.00	.00	.00	.00

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
50-50-8270	Filtration Engineering	3,504	260	.00	.00	.00	.00	.00
50-50-8275	Filtration Equipment	18,409	.00	432	9,467	8,000	10,000	10,000
50-50-8400	Capital Equipment	.00	.00	.00	7,885	.00	7,885	35,000
Budget notes:								
~2022 Lightning detector - $15,000, East Fencing & Concrete - $20,000								
50-50-8402	IT Capital Expenditures	27	.00	.00	.00	.00	.00	3,000
Budget notes:								
~2022 cameras - $2,000, POS - $1,000								
50-50-9540	Debt Service Principal	.00	.00	80,000	78-	80,000	80,000	108,000
50-50-9545	Debt Service Interest	114,000	110,992	107,967	57,296	104,800	104,800	59,821
50-50-9560	Debt Service - Bond Princi	.00	.00	155,417	106,667	160,000	160,000	160,000
50-50-9565	Debt Service - Bond Intere	195,625	192,625	189,367	124,350	186,525	182,525	182,525
Total POOL EXPENSES:		1,729,228	2,158,549	1,500,121	1,152,930	1,729,302	1,790,738	2,170,094
BOX CANON EXPENSES								
50-51-5012	City Resources Director	19,512	19,562	22,922	10,877	16,636	16,636	17,970
50-51-5520	Cashiers	32,604	38,471	29,957	28,888	49,121	49,121	53,000
50-51-5540	Custodian	5,543	5,662	6,215	3,960	6,172	6,172	6,667
50-51-5650	Event Coordinator	4,386	4,215	4,955	887	4,869	4,869	5,400
50-51-5680	Parks/Facilities Maint. Mgr.	.00	.00	.00	1,077	5,463	5,463	7,128
50-51-5681	Parks/Facilities Maint Ops	.00	.00	.00	.00	.00	.00	4,830
50-51-5800	FICA	4,616	5,228	4,836	3,409	6,000	6,000	6,480
50-51-5810	Unemployment	181	255	186	134	231	231	250
50-51-5830	Workers' Comp	385	203	58	48	65	65	72
50-51-5840	Group Term Life Insurance	228	228	275	131	307	307	500
50-51-5850	Employee Health Insuranc	7,132	7,688	8,275	5,155	10,022	10,022	10,223
50-51-5870	Pension	701	798	1,011	488	821	821	887
50-51-6010	Telephone / Communicatio	.00	.00	42	83	150	150	150
50-51-6020	Utilities	1,713	1,479	1,351	411	2,500	1,500	1,750
50-51-6024	Water Charge	890	1,000	1,020	740	739	1,111	775
50-51-6026	Sewer Charge	788	1,422	1,476	1,151	1,159	1,726	1,229
50-51-6030	Insurance	1,092	1,082	1,116	899	1,204	1,204	1,328
50-51-6100	Advertising	565	742	533	535	1,000	1,000	1,000
50-51-6150	Bankcard Charge-VISA/M	4,193	4,668	6,253	5,341	4,841	8,000	8,000
50-51-6800	Concessions	15,722	14,514	10,544	20,434	20,000	25,000	27,000
50-51-7000	Contract Labor	2,855	3,460	.00	3,640	2,400	7,210	.00
50-51-7004	IT Contract Labor	.00	582	250	201	.00	225	360
50-51-7100	Supplies	3,071	800	1,433	5,673	4,000	6,500	6,600
50-51-7150	Facility Maintenance	370	30,934	2,654	2,520	8,800	8,800	18,500
Budget notes:								
~2022 $,500 General Maintenance, $10,000 tree removal, $4,000 entry gate near powderhouse								
50-51-7155	Maintenance Supplies	42	.00	.00	5	500	500	.00
50-51-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	210
50-51-7830	Office Supplies	787	839	626	210	1,100	1,100	1,200
50-51-7835	Copier/Printer Expense	803	1,860	1,368	916	2,200	2,200	.00
50-51-7862	Hiring Cost	182	219	648	499	850	850	1,000
50-51-7900	Other Expenses	630	28	9	.00	.00	.00	.00
50-51-8100	Inventoried Equipment	105	.00	.00	13,237	11,200	13,237	3,000
50-51-8104	IT Inventoried Equipment	.00	460	.00	.00	.00	.00	3,600
50-51-8250	Capital Improvements	.00	.00	.00	.00	35,000	35,000	69,687
Budget notes:								
~2022 Box Canon Retaining Wall15,000, Box Canon Stairway Upgrades & Reopen Waterfall Viewing Platform41,107, Replace Fencing at Box Canon 13,580								
50-51-8402	IT Capital Expenditures	3	.00	.00	.00	.00	.00	3,000
Budget notes:								
~2022 New POS								

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
Total BOX CANON EXPENSES:		109,098	146,399	108,013	111,549	197,350	215,020	261,796
GYM EXPENSES								
50-53-6020	Utilities	1,475	1,486	978	520	1,592	1,000	1,000
50-53-6030	Insurance	160	199	205	165	221	221	244
50-53-6100	Advertising	.00	.00	.00	.00	300	300	300
50-53-7000	Contract Labor	.00	1,077	1,450	.00	1,000	1,000	6,000
50-53-7100	Supplies	528	1,105	722	541	1,200	1,200	1,200
50-53-7150	Maintenance	274	1,191	5,005	1,892	800	800	2,000
50-53-8100	Inventoried Equipment	1,120	.00	.00	.00	4,500	4,500	4,500
Total GYM EXPENSES:		3,556	5,058	8,359	3,118	9,613	9,021	15,244
ADMINSTRATION EXPENSES								
50-57-5002	City Administrator	23,252	39,442	43,741	26,997	40,194	47,600	51,500
50-57-5004	Finance & Admin. Director	20,413	20,362	8,115	13,075	19,999	20,600	22,678
50-57-5006	HR Manager	34,773	34,657	39,715	22,136	33,855	35,545	38,395
50-57-5008	Administrative Clerks	38,241	29,316	31,330	17,552	36,008	43,112	46,561
50-57-5012	Community Development	.00	.00	6,484	3,206	7,231	7,593	8,200
50-57-5800	FICA	8,410	9,008	9,605	6,192	9,921	9,921	10,750
50-57-5810	Unemployment	330	334	377	243	390	390	421
50-57-5830	Workers' Comp	116	119	.00	.00	.00	.00	.00
50-57-5840	Group Term Life Insurance	946	1,079	980	708	1,400	1,400	1,450
50-57-5850	Employee Health Insuranc	22,247	27,804	25,442	20,375	34,598	34,598	37,366
50-57-5870	Pension	2,997	3,024	3,373	2,361	3,893	3,893	4,250
50-57-7000	Contract Labor	21,548	13,705	11,568	3,301	7,000	7,000	7,000
50-57-7025	Legal fees	.00	.00	300	700	1,500	1,500	1,500
Total ADMINSTRATION EXPENSES:		173,275	178,851	181,028	116,846	195,989	213,152	230,071
ICE PARK EXPENSES								
50-58-7700	Ice Park Expenses	.00	2,848	10,200	670	.00	.00	.00
Total ICE PARK EXPENSES:		.00	2,848	10,200	670	.00	.00	.00
PARKS FUND Revenue Total:		2,370,097	2,738,341	1,305,132	1,928,968	1,839,970	2,443,000	2,599,420
PARKS FUND Expenditure Total:		2,015,158	2,491,704	1,807,722	1,385,113	2,132,254	2,227,931	2,677,205
Net Total PARKS FUND:		354,939	246,636	502,589-	543,855	292,284-	215,069	77,785-

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
POOL RENOVATION FUND								
PROJECT REVENUES								
55-40-4050	Grants/Donations	175,281	.00	.00	.00	.00	.00	.00
	Total PROJECT REVENUES:	175,281	.00	.00	.00	.00	.00	.00
PROJECT EXPENDITURES								
55-50-8250	Capital Improvements	205,114	301,025	.00	.00	.00	.00	.00
	Total PROJECT EXPENDITURES:	205,114	301,025	.00	.00	.00	.00	.00
	POOL RENOVATION FUND Revenue Total:	175,281	.00	.00	.00	.00	.00	.00
	POOL RENOVATION FUND Expenditure Total:	205,114	301,025	.00	.00	.00	.00	.00
	Net Total POOL RENOVATION FUND:	29,833-	301,025-	.00	.00	.00	.00	.00

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
TOURISM FUND								
REVENUE								
60-40-4000	Lodging Occupation Tax	246,260	415,882	443,754	373,874	333,774	604,909	586,762
60-40-4020	Concessions	.00	.00	.00	.00	.00	.00	50,000
60-40-4050	Donations	.00	.00	265	343	.00	500	500
Total REVENUE:		246,260	415,882	444,020	374,217	333,774	605,409	637,262
TOURISM EXPENSES								
60-50-5655	VC Wages	.00	.00	.00	11,730	.00	35,000	55,000
60-50-5800	FICA	.00	.00	.00	897	.00	2,676	3,445
60-50-5810	Unemployment	.00	.00	.00	35	.00	105	135
60-50-6010	Telephone / Communicatio	.00	.00	.00	123	.00	400	840
60-50-6800	Concessions	.00	.00	.00	.00	.00	.00	27,000
60-50-7004	IT Contract Labor	.00	.00	.00	80	.00	80	440
60-50-7025	Legal Fees	.00	.00	680	380	.00	380	1,000
60-50-7104	IT Supplies	.00	.00	.00	28	.00	30	100
60-50-7700	Marketing Expense	210,833	381,966	156,791	59,996	148,055	120,000	245,000
Budget notes:								
~2022 Van Meter, Buildfire, printing, Marketing Firm or Director $125,000								
60-50-7701	Promotional Activities	8,000	8,000	.00	27,813	10,000	27,813	70,000
Budget notes:								
~2022 MAMS - $10,000, Ouray Film Festival (Wright Opera House) - $20,000, OIPI Ice Fest - $30,000, OC Sheriff Backcountry Law Enforcement- $10,000								
60-50-7702	Fireworks	.00	.00	.00	21,999	25,000	21,999	25,000
60-50-7703	Alpine Ranger Program	.00	.00	.00	5,000	5,000	5,000	6,860
60-50-7720	Visitor Center Operations	.00	25,555	46,377	14,078	50,000	21,200	23,320
60-50-7721	Visitor Center Maintenance	.00	.00	278	27,768	2,000	41,652	2,000
60-50-7740	Way-finding Project	.00	.00	.00	353	30,000	30,000	100,000
Budget notes:								
~2022 Includes study and signage								
60-50-7741	Sidewalk Replacement Pro	.00	.00	.00	.00	.00	.00	20,000
60-50-7804	IT Software & Subscription	.00	.00	.00	.00	.00	.00	570
60-50-7854	Small Tourism Grant Progr	.00	.00	.00	.00	.00	.00	10,000
Budget notes:								
~2022 $500-$2,000 Tourism Events								
60-50-7862	VC Hiring Costs	.00	.00	.00	308	.00	400	400
60-50-8104	IT Inventoried Equipment	.00	.00	.00	1,398	.00	1,398	3,600
60-50-8402	IT Capital Eqipment	.00	.00	.00	.00	.00	.00	42,530
Budget notes:								
~2022 Dowtown Internet - $32,800, Web Cameras (x3) - $6,730, POS - 3,000								
Total TOURISM EXPENSES:		218,833	415,521	204,126	171,987	270,055	308,133	637,240
TOURISM FUND Revenue Total:		246,260	415,882	444,020	374,217	333,774	605,409	637,262
TOURISM FUND Expenditure Total:		218,833	415,521	204,126	171,987	270,055	308,133	637,240
Net Total TOURISM FUND:		27,427	361	239,894	202,230	63,719	297,276	22

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
BEAUTIFICATION FUND								
TAXES & INTEREST								
65-40-4000	Lodging Occupation Tax B	33,696	56,848	60,657	51,105	35,000	82,686	80,205
65-40-4340	Interest Income	310	1,451	842	76	950	100	100
Total TAXES & INTEREST:		34,006	58,299	61,499	51,181	35,950	82,786	80,305
GRANTS/DONATIONS								
65-41-4344	Misc. Donations	1,260	.00	.00	.00	.00	.00	.00
65-41-4346	Flower Pot Donations	3,895	3,007	2,295	2,855	3,550	3,150	3,150
Total GRANTS/DONATIONS:		5,156	3,007	2,295	2,855	3,550	3,150	3,150
BEAUTIFICATION EXPENSES								
65-50-7700	General Expenses	552	879	501	529	14,000	1,000	12,000
Budget notes:								
~2022 South Berm completion at Rotary Park, hoses, splitters, plaques for light poles								
65-50-7720	Seasonal Decorations	766	1,222	1,092	218	4,000	500	32,000
65-50-7735	NOC Maintenance	.00	.00	.00	.00	.00	.00	25,000
65-50-7740	Planters and Flowers	6,878	7,079	7,504	15,133	8,300	15,133	15,800
65-50-7750	Clean & Green	.00	.00	.00	1,500	.00	1,500	.00
65-50-7790	Transfer to General Fund	54,289	25,851	42,157	935	43,595	45,000	38,000
65-50-8400	Capital Equipment	.00	.00	.00	.00	.00	.00	22,000
Total BEAUTIFICATION EXPENSES:		62,485	35,032	51,254	18,315	69,895	63,133	144,800
BEAUTIFICATION FUND Revenue Total:		39,162	61,306	63,794	54,036	39,500	85,936	83,455
BEAUTIFICATION FUND Expenditure Total:		62,485	35,032	51,254	18,315	69,895	63,133	144,800
Net Total BEAUTIFICATION FUND:		23,323-	26,275	12,540	35,721	30,395-	22,803	61,345-

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
CONSERVATION TRUST FUND								
STATE REVENUE & INTEREST								
70-40-4100	State Entitlement	10,348	11,846	10,534	6,645	9,500	12,000	12,000
70-40-4340	Interest Income	344	1,929	1,039	90	800	180	10
Total STATE REVENUE & INTEREST:		10,692	13,774	11,573	6,734	10,300	12,180	12,010
CONSERVATION TRUST EXPENSES								
70-50-8250	Capital Projects	.00	.00	.00	.00	85,000	125,000	.00
Total CONSERVATION TRUST EXPENSES:		.00	.00	.00	.00	85,000	125,000	.00
CONSERVATION TRUST FUND Revenue Total:		10,692	13,774	11,573	6,734	10,300	12,180	12,010
CONSERVATION TRUST FUND Expenditure Total:		.00	.00	.00	.00	85,000	125,000	.00
Net Total CONSERVATION TRUST FUND:		10,692	13,774	11,573	6,734	74,700-	112,820-	12,010

Account Number	Account Title	2018-18 Pri Year 3 Actual	2019-19 Pri Year 2 Actual	2020-20 Pri Year Actual	01/21-08/21 Cur YTD Actual	2021-21 Cur Year Budget	2021-21 Cur Year Estimated	2022-22 Proposed Budget
FIREMEN'S PENSION FUND								
CONTRIBUTIONS & EARNINGS								
80-40-4030	Contributions	33,756	34,200	20,027	16,042	39,100	30,000	30,000
80-40-4040	Investment Income	5,643-	101,108	93,517	75,778	30,000	100,000	50,000
Total CONTRIBUTIONS & EARNINGS:		28,113	135,308	113,544	91,820	69,100	130,000	80,000
FIREMEN'S PENSION EXPENSES								
80-50-6000	Fees	16,446	17,022	13,355	6,954	17,000	15,000	17,000
80-50-6010	Benefits	23,094	21,843	20,844	10,764	29,000	22,000	22,000
Total FIREMEN'S PENSION EXPENSES:		39,540	38,865	34,199	17,718	46,000	37,000	39,000
FIREMEN'S PENSION FUND Revenue Total:		28,113	135,308	113,544	91,820	69,100	130,000	80,000
FIREMEN'S PENSION FUND Expenditure Total:		39,540	38,865	34,199	17,718	46,000	37,000	39,000
Net Total FIREMEN'S PENSION FUND:		11,427-	96,442	79,345	74,102	23,100	93,000	41,000
Net Grand Totals:		813,977	1,318,586	926,598	2,130,939	931,526-	1,227,353	1,082,545

Report Criteria:
- Accounts to include: With balances
- Budget note year end periods: 12/22
- Print Fund Titles
- Page and Total by Fund
- Print Source Titles
- Total by Source
- Print Department Titles
- Total by Department
- All Segments Tested for Total Breaks

City of Ouray
Water Treatment System Improvements Project
Attachment 8 - Project Needs Assessment

Year	Number of EQRs	Additional Monthly EQR Charge	Additional Annual Revenue	Total Annual Loan Payment	Change to O&M	Total Annual Project Cost
2021	1,397	$ 35.45	$ 594,234	$ 492,734	$ 101,500	$ 594,234
2022	1,404	$ 35.45	$ 597,205	$ 492,734	$ 101,500	$ 594,234
2023	1,411	$ 35.45	$ 600,191	$ 492,734	$ 101,500	$ 594,234
2024	1,418	$ 35.45	$ 603,192	$ 492,734	$ 101,500	$ 594,234
2025	1,425	$ 35.45	$ 606,208	$ 492,734	$ 101,500	$ 594,234
2026	1,432	$ 35.45	$ 609,239	$ 492,734	$ 101,500	$ 594,234
2027	1,439	$ 35.45	$ 612,285	$ 492,734	$ 101,500	$ 594,234
2028	1,447	$ 35.45	$ 615,346	$ 492,734	$ 101,500	$ 594,234
2029	1,454	$ 35.45	$ 618,423	$ 492,734	$ 101,500	$ 594,234
2030	1,461	$ 35.45	$ 621,515	$ 492,734	$ 101,500	$ 594,234
2031	1,468	$ 35.45	$ 624,623	$ 492,734	$ 101,500	$ 594,234
2032	1,476	$ 35.45	$ 627,746	$ 492,734	$ 101,500	$ 594,234
2033	1,483	$ 35.45	$ 630,885	$ 492,734	$ 101,500	$ 594,234
2034	1,491	$ 35.45	$ 634,039	$ 492,734	$ 101,500	$ 594,234
2035	1,498	$ 35.45	$ 637,209	$ 492,734	$ 101,500	$ 594,234
2036	1,506	$ 35.45	$ 640,395	$ 492,734	$ 101,500	$ 594,234
2037	1,513	$ 35.45	$ 643,597	$ 492,734	$ 101,500	$ 594,234
2038	1,521	$ 35.45	$ 646,815	$ 492,734	$ 101,500	$ 594,234
2039	1,528	$ 35.45	$ 650,049	$ 492,734	$ 101,500	$ 594,234
2040	1,536	$ 35.45	$ 653,300	$ 492,734	$ 101,500	$ 594,234
2041	1,544	$ 35.45	$ 656,566	$ 492,734	$ 101,500	$ 594,234
		Total	$ 13,123,060		Total	$ 12,478,904

[1]Assumes 0.5% constant growth starting in 2021.

City of Ouray
Financial Statements and
Independent Auditor's Report
as of
December 31, 2020

City of Ouray
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INDEPENDENT AUDITOR'S REPORT

To the City Council
City of Ouray, Colorado

We have audited the accompanying financial statements of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the City of Ouray, Colorado as of and for the year ended December 31, 2020, and the related notes to the financial statements, which collectively comprise the City's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the City of Ouray, Colorado, as of December 31, 2020, and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Certified Public Accountants

105 S.E. Frontier Ave, Suite A Cedaredge, CO 81413 | 970-856-7550 | 970-856-2122 | www.bandacpas.com

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, budgetary comparison information, Schedule of Activity-Net Position and Schedule of Contributions to Pension Plan on pages 3–11 and 39–41 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the City of Ouray, Colorado basic financial statements. The combining and individual fund financial statements and Local Highway Finance Report are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The combining and individual fund financial statements and Local Highway Finance Report are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the combining and individual fund financial statements and Local Highway Finance Report are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Blair and Associates, P.C.

Cedaredge, Colorado
August 17, 2021

CITY OF OURAY
Management's Discussion and Analysis
Year Ended December 31, 2020

The Ouray City Council and Administration are responsible for the management of the City's activities, and thus their financial results. We therefore offer the following analysis and discussion of the accompanying financial statements.

FINANCIAL HIGHLIGHTS

As of December 31, 2020

Change in Net Position:

Total Assets and Deferred Outflows		$ 23,962,142
Total Liabilities and Deferred Resources		9,190,997
Net Position	12/31/20	$ 14,771,145
	12/31/19	14,094,423
Increase (Decrease)		$ 676,722

Governmental Fund Balance:

	1/1/20	12/31/20	Increase (Decrease)
General Fund	$ 905,516	$ 1,289,457	$ 383,941
Capital Improvements Fund	937,715	1,213,402	275,687
Non-major Funds	314,224	578,230	264,006
	$ 2,157,455	$ 3,081,089	$ 923,634

Capital Assets, net of accumulated depreciation:

	1/1/20	12/31/20	Increase (Decrease)
Governmental Activities	$ 2,072,853	$ 2,064,300	$ (8,553)
Business-type Activities	14,905,407	14,322,265	(583,142)
Total Capital Assets	$ 16,978,260	$ 16,386,565	$ (591,695)

Cash and Cash Equivalents:

	12/31/20
Governmental Activities	$ 3,202,128
Business-type Activities	2,979,902
Total Cash and Cash Equivalents	$ 6,182,030

OVERVIEW OF FINANCIAL STATEMENTS

This discussion and analysis is intended to serve as an introduction to the City's basic financial statements. The basic statements are comprised of three components: 1) government-wide financial statements, 2) fund financial statements, and 3) notes to the financial statements.

Government-wide Financial Statements

The government-wide financial statements are designed to provide readers with a broad overview of the City's finances in a manner similar to a private-sector business.

The **statement of net position** presents information on all the City's assets and liabilities, with the difference between the two being reported as net position. Over time, the increases or decreases in net position may serve as a useful indicator of whether the financial position of the City is improving or deteriorating.

The **statement of activities** presents information showing how the City's net position changed during the most recent fiscal year. All changes in net position is reported as soon as the underlying event giving rise to the change occurs, *regardless of the timing of related cash flows.* Thus, revenues and expenses reported in this statement for some items will result in cash flows in future periods (e.g. uncollected taxes and earned but unused personal time).

The government-wide financial statements distinguish functions of the City that are principally supported by taxes and intergovernmental revenues (*Governmental Activities*) from other functions that are intended to recover all or a significant portion of their costs through user fees and charges (*Business-type Activities*). The Governmental Activities of the City include general government administration, police, fire, public works, and community center. The Business-type Activities of the City include the following utilities: water, sewer, refuse/recycling, and utilities-capital improvements; in addition to parks and recreation.

Fund Financial Statements

A *fund* is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. Fund accounting is used to ensure and demonstrate compliance with finance-related legal requirements. The City's funds can be divided into three categories: Governmental Funds, Proprietary Funds and
Fiduciary Funds.

Governmental Funds – *Governmental funds* are used to account for essentially the same functions reported as *governmental activities* in the government-wide financial statements. However, unlike the government-wide financial statements, governmental fund financial statements focus on *short-term inflows and outflows of spendable resources*, as well as on *balances of spendable resources* available at the end of the fiscal year. Such information may be useful in evaluating a government's short-term financing requirements. The accounting method is called *modified accrual* accounting.

Because the focus of governmental funds is narrower than that of the government-wide financial statements, it is useful to compare the information presented for governmental activities in the *governmental funds* with similar information presented for *governmental activities* in the government-wide financial statements.
By doing so, readers may better understand the long-term impact of the government's short-term financing decisions. Both the governmental fund balance sheet and the governmental fund statement of revenues, expenditures, and changes in fund balances provide a reconciliation to facilitate this comparison between *governmental funds* and *governmental activities*.

The City maintains one major government fund, the General Fund. Information is presented separately in the governmental fund balance sheet and in the governmental fund statement of revenues, expenditures, and changes in fund balances for the general fund.

Proprietary Funds – The City maintains one type of proprietary fund. *Enterprise Funds* are used to report the same functions presented as *business-type activities* in the government-wide financial statements. The City uses a separate enterprise fund to account for each of its utility funds: Water, Sewer, Refuse/Recycling, and Utilities – Capital Improvements Fund, Parks and Recreation Fund and to account for its Pool Renovation Fund.

Notes to Financial Statements

The notes provide additional information that is essential to a full understanding of the data provided in the financial statements.

GOVERNMENT-WIDE FINANCIAL ANALYSIS

Net Position

As noted previously, net position may serve over time as a useful indicator of the City's financial position. For the year ended December 31, 2020, the City's combined assets exceeded liabilities by $ 14,771,145. Of this amount, $ 5,867,165 is unrestricted and available to meet the City's ongoing financial obligations.

By far the largest portion of net position is the investment in capital assets (net of related debt) of $ 8,728,721 (59% of net position). This amount reflects the investment in all capital assets (e.g. infrastructure, land, buildings, and equipment) less any related debt used to acquire those assets that are still outstanding. These capital assets are used to provide services to citizens; consequently, these assets are not available for future spending. Although the investment in capital assets is reported net of debt, it should be noted that the resources needed to repay this debt must be provided from other sources since capital assets themselves cannot be used to liquidate these liabilities.

The following table summarizes the City's governmental and business-type net position for 2020:

	Governmental Activities		Business-Type Activities		Total	
	2020	2019	2020	2019	2020	2019
ASSETS						
Cash and cash equivalents	$ 3,202,128	$ 2,252,102	$ 2,847,902	$ 2,874,915	$ 6,050,030	$ 5,127,017
Restricted cash	-	-	132,000	132,000	132,000	132,000
Property taxes receivable	585,369	579,002	-	-	585,369	579,002
Accounts receivables	38,657	31,872	186,522	182,227	225,179	214,099
Other receivables	-	-	-	1,596	-	1,596
Due from other governments	93,654	58,288	-	-	93,654	58,288
Prepaid and deposits	(665)	732	-	-	(665)	732
Inventories	7,321	7,321	25,524	25,524	32,845	32,845
Net pension assets	457,165	319,485	-	-	457,165	319,485
Capital assets, net	2,064,300	2,072,853	14,322,265	14,905,407	16,386,565	16,978,260
Total assets	6,447,929	5,321,655	17,514,213	18,121,669	23,962,142	23,443,324

	Governemental Activities		Business-Type Activities		Total	
Deferred outflows	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
Pension contributions made after measurement date	-	-	-	-	-	-
Pension net difference between projected & actual investment earnings	-	-	-	-	-	-
Total deferred outflows	-	-	-	-	-	-
LIABILITIES						
Accounts payable	$ 181,807	$ 80,667	$ 126,093	$ 148,455	$ 307,900	$ 229,122
Accrued wages	35,847	72,099	79,895	84,917	115,742	157,016
Accrued interest payable	-	-	5,227	5,227	5,227	5,227
Performance bonds and deposits	-	-	5,731	5,322	5,731	5,322
Unearned revenue	42,352	40,094	190,213	181,021	232,565	221,115
Current portion of debt					-	-
Loans and notes payable	35,712	44,790	100,768	171,854	136,480	216,644
Capital leases		-	150,000	150,000	150,000	150,000
Compensated absences	74,448	54,118	-	-	74,448	54,118
Lont-term liabilities					-	-
Due more than one year:					-	-
Bonds payable		-	4,685,000	4,850,000	4,685,000	4,850,000
Capital leases	135,224	170,936	2,551,140	2,641,908	2,686,364	2,812,844
Total liabilities	505,390	462,704	7,894,067	8,238,704	8,399,457	8,701,408
Deferred inflows of resources						
Deferred property tax revenue	585,369	579,002	-	-	585,369	579,002
Pension difference between expected & actual experience	206,171	68,491	-	-	206,171	68,491
Total deferred inflows	791,540	647,493	-	-	791,540	647,493
NET POSITION						
Invested in capital assets	1,893,364	1,857,127	6,835,357	7,091,645	8,728,721	8,948,772
Reserves	-	-	86,657	86,657	86,657	86,657
Restricted for:						
Emergencies	88,602	108,905		-	88,602	108,905
Unrestricted	3,169,033	2,245,426	2,698,132	2,704,663	5,867,165	4,950,089
Total net position	$ 5,150,999	$ 4,211,458	$ 9,620,146	$ 9,882,965	$ 14,771,145	$ 14,094,423

A portion of net position, $88,602, represents resources that are subject to constitutional restrictions on how they may be used. Reserves of $86,657 are required by one debt agreement. Unrestricted net position of $5,867,165 (40% of net position) may be used to meet the government's ongoing obligations to citizens and creditors.

Change in Net Position

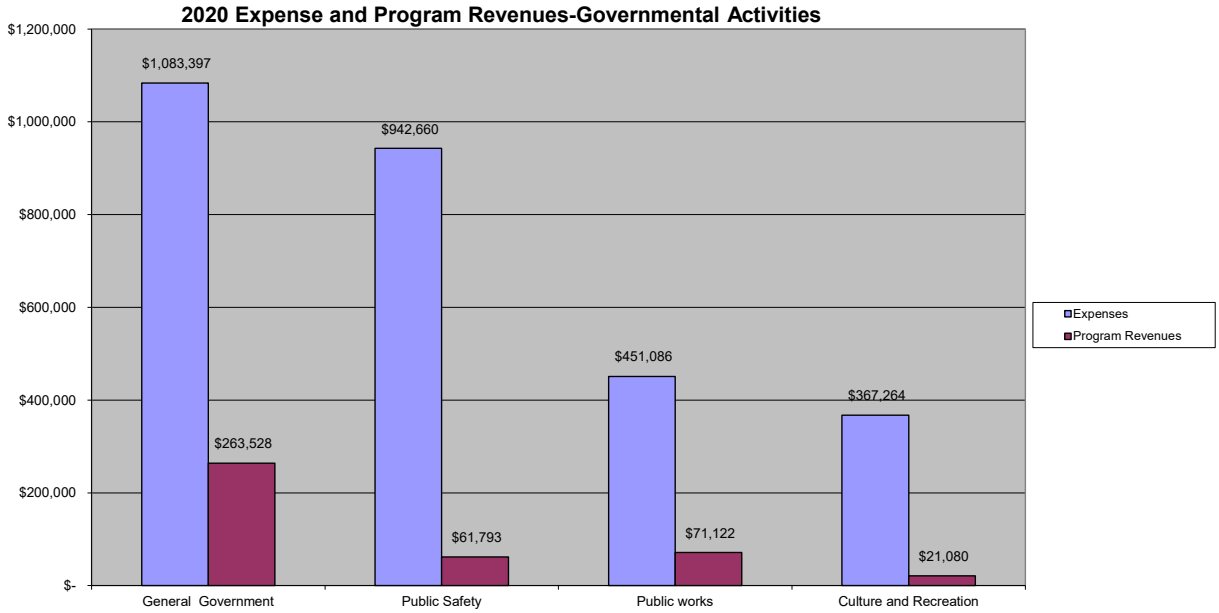
Governmental and business-type activities increased the City's net position by $676,722 in 2020.

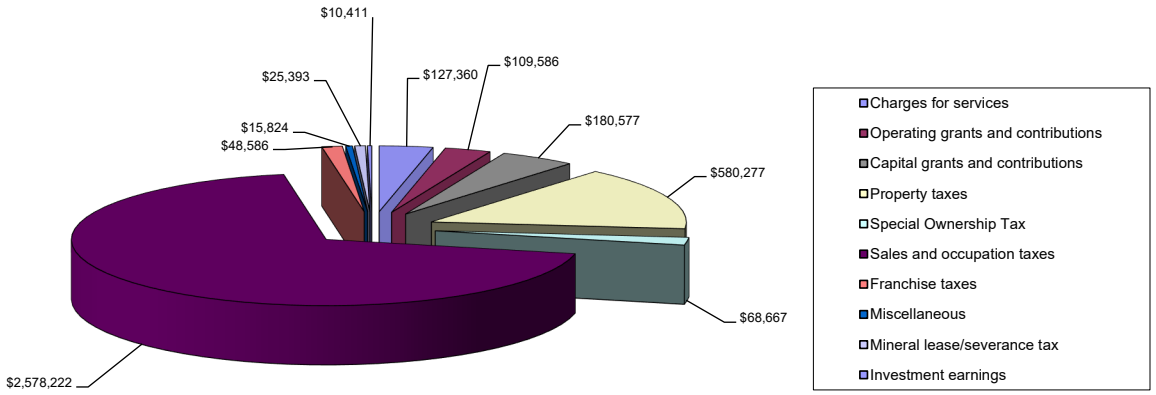
City of Ouray
For the Year Ended December 31, 2020 and 2019
Changes in Net Position

	Governmental Activities		Business-Teype Activities		Total	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**
Revenues						
Program revenues						
Charges for services	$ 127,360	$ 185,052	$ 3,226,502	$ 4,292,261	$ 3,353,862	$ 4,477,313
Operating grants	109,586	83,496		-	109,586	83,496
Capital grants	180,577	11,846	15,350	18,750	195,927	30,596
Generl Revenues						
Property taxes	580,277	526,935	-	-	580,277	526,935
Specific ownership	68,667	65,640	-	-	68,667	65,640
Sales taxes and other	2,578,222	2,230,192	-	-	2,578,222	2,230,192
Franchise taxes	48,586	50,890	-	-	48,586	50,890
Miscellaneous	15,824	24,677	2,161	2,025	17,985	26,702
Mineral lease/severance tax	25,393	59,986	-	-	25,393	59,986
Grants and contributions	-	-	-	-	-	-
Gain (loss) on assets	-	-	-	(2,781)	-	(2,781)
Investment earnings	10,411	16,160	11,499	17,291	21,910	33,451
Transfers In (Out)	39,045	39,122	(39,045)	(39,122)	-	-
Totals	3,783,948	3,293,996	3,216,467	4,288,424	7,000,415	7,582,420
Expenses						
General government	1,083,397	970,590	-	-	1,083,397	970,590
Public safety	942,660	804,885	-	-	942,660	804,885
Public works	451,086	429,948	3,479,286	4,012,761	3,930,372	4,442,709
Culture and recreation	367,264	356,260	-	-	367,264	356,260
Total Expenses	2,844,407	2,561,683	3,479,286	4,012,761	6,323,693	6,574,444
Changes in net position	939,541	732,313	(262,819)	275,663	676,722	1,007,976
Beginning	4,211,458	3,479,145	9,882,965	9,607,302	14,094,423	13,086,447
Ending	$ 5,150,999	$ 4,211,458	$ 9,620,146	$ 9,882,965	$ 14,771,145	$ 14,094,423

Governmental Activities

Governmental activities increased the City's net position by $676,722.





Business-type Activities

Business-type activities for the year resulted in a decrease in net position of $ 262,819. Charges for services accounted for 99% of total revenues.

FINANCIAL ANALYSIS OF GOVERNMENT'S FUNDS

Governmental funds. The focus of the City's governmental funds is to provide information on near-term inflows, outflows, and balances of spendable resources. Such information is useful in assessing the City's financing requirements. In particular, unassigned fund balance may serve as a useful measure of the City's net resources available for spending at the end of the fiscal year.

As of the end of 2020, the City's governmental funds reported combined ending fund balances of $ 3,081,089, an increase of $ 923,634 in comparison with the prior year. Of the combined ending fund balances for all governmental funds 28% of this total amount, $ 861,959, constitutes unassigned fund balance, which is available for appropriation at the City's discretion; committed fund balance is 72%, or $ 2,219,130, of governmental fund balances. There is $ 156,808 of fund balance that is statutorily restricted to capital spending for parks and recreation. Non-spendable fund balance of $ 7,321 represents inventoried materials. The remaining fund balance is restricted to indicate that it is not available for new spending, because it is already committed to meet a State constitution mandated emergency reserve of $ 88,602.

The City has one major governmental fund, the General Fund, which is the primary operating fund for the City. At the end of 2020, unassigned fund balance of the General Fund was $ 861,959, while the total fund balance was $ 1,289,457. As a measure of the General Fund's liquidity, it may be useful to compare both unassigned fund balance and total fund balance to total fund expenditures. The fund balance of the City's General Fund increased by $ 383,941 during 2020.

Proprietary funds. The City's proprietary fund statements provide the same type of information found in the government-wide financial statements, but in more detail.

The City has five enterprise funds: Water Fund, Sewer Fund, Refuse/Recycling Fund, Utilities – Capital Improvements Fund, and Parks and Recreation Fund. At the end of 2020, these funds represented the following net position amounts:

Fund:	Water	Sewer	Refuse/Rcycl.	Utilities – CI	Parks & Rec.
Unrestricted net position	105,242	770,553	6,974	808,530	1,006,833
Total net position	3,386,363	1,260,685	6,974	808,530	4,157,594
Increase (decrease) in net position	29,098	356,120	(20,538)	185,939	(813,438)

GENERAL FUND BUDGETARY HIGHLIGHTS

The City budgeted $ 3,120,718 for 2020 expenditures. Actual expenditures were $ 2,647,091, or 15% less than the budgeted amount.

CAPITAL ASSET AND DEBT ADMINISTRATION

The City's investment in capital assets, net of depreciation, for its governmental and business-type activities as of December 31, 2020, was $ 16,386,565, a decrease of $ 591,695 from the prior year, representing $ 363,717 of acquisitions offset by $ 955,414 of depreciation expense. As required by GASB34, the investment in capital assets includes land, buildings, building improvements, and equipment.

Long-term Debt

As of December 31, 2020, the City had long-term debt as follows:

	Balance			Balance	Due Within
Governmental Activities	January 1, 2020	Additions	Reductions	December 31, 2020	One Year
Fire Truck	$ 190,173	$ -	$ (29,475)	$ 160,698	$ 30,328
Cat Backhoe	15,466	-	(5,228)	10,238	5,384
Chevy Silverado	4,331	-	(4,331)	-	-
Bobcat Skid Steer	5,756	-	(5,756)	-	-
Accrued compensated absences	54,118	20,330		74,448	74,448
Total	$ 269,844	$ 20,330	$ (44,790)	$ 245,384	$ 110,160
Enterprise Activities					
Colorado Water Resources	$ 56,117	$ -	$ (56,117)	$ -	$ -
Sales Tax Revenue Bonds	5,000,000	-	(155,000)	4,845,000	160,000
COP	2,700,000	-	(80,000)	2,620,000	80,000
Cat Backhoe	32,056	-	(10,148)	21,908	10,452
Bobcat Skid Steer	11,478	-	(11,478)	-	-
Chevy Silverado	4,330	-	(4,330)	-	-
Chevy Silverado double cab	9,781	-	(9,781)	-	-
Total	$ 7,813,762	$ -	$ (326,854)	$ 7,486,908	$ 250,452

ECONOMIC FACTORS AND NEXT YEAR'S BUDGET

- The City is in fair financial condition.

REQUEST FOR INFORMATION

This financial report is designed to provide a general overview of the City's finance for all those with an interest in the government's finances. Questions concerning any of the information provided in the report or requests for additional financial information should be addressed to:

City Administrator: City of Ouray, PO Box 468, Ouray, CO 81427

CITY OF OURAY, COLORADO
Statement of Net Position
December 31, 2020

	Governmental Activities	Business Type Activities	Total
ASSETS			
Cash and cash equivalents	$ 3,202,128	$ 2,847,902	$ 6,050,030
Restricted cash	-	132,000	132,000
Property taxes receivable	585,369	-	585,369
Accounts receivable	38,657	186,522	225,179
Due from other governments	93,654	-	93,654
Prepaid and deposits	(665)	-	(665)
Inventories	7,321	25,524	32,845
Net pension assets	457,165	-	457,165
Capital assets, net	2,064,300	14,322,265	16,386,565
Total assets	6,447,929	17,514,213	23,962,142
LIABILITIES			
Accounts payable	181,807	126,093	307,900
Accrued wages	35,847	79,895	115,742
Accrued interest payable	-	5,227	5,227
Performance bonds and deposits	-	5,731	5,731
Unearned revenue	42,352	190,213	232,565
Current portion of debt			
Loans and leases payable	35,712	100,768	136,480
Bonds payable	-	150,000	150,000
Compensated absences	74,448	-	74,448
Long-term liabilities			
Bonds payable	-	4,685,000	4,685,000
Loans and leases payable	135,224	2,551,140	2,686,364
Total liabilities	505,390	7,894,067	8,399,457
Deferred inflow of resources			
Deferred property tax revenue	585,369	-	585,369
Pension difference between expected and actual experience	206,171	-	206,171
Total Deferred inflow of resources	791,540	-	791,540
NET POSITION			
Invested in capital assets	1,893,364	6,835,357	8,728,721
Reserves	-	86,657	86,657
Restricted for:			
Emergencies	88,602	-	88,602
Unrestricted	3,169,033	2,698,132	5,867,165
Total net position	$ 5,150,999	$ 9,620,146	$ 14,771,145

The accompanying notes are an integral part of this statement.

CITY OF OURAY, COLORADO
Statement of Activities
For the Year Ended December 31, 2020

Functions/Programs	Expenses	Program Revenues: Charges for Service and Fees	Program Revenues: Operating Grants and Contributions	Program Revenues: Capital Grants and Contributions
Primary government:				
Governmental activities:				
General government	$ 1,083,397	$ 69,276	$ 24,209	$ 170,043
Public Safety	942,660	44,927	16,866	-
Public Works	451,086	5,113	66,009	-
Culture and Recreation	367,264	8,044	2,502	10,534
Total governmental activities	2,844,407	127,360	109,586	180,577
Business-type activities:				
Water	599,246	613,283	-	7,675
Sewer	538,940	703,241	-	7,675
Refuse	222,530	212,293	-	-
Utilities-Capital Improvements	-	392,553	-	-
Parks	2,118,570	1,305,132	-	-
Total business- type activities	3,479,286	3,226,502	-	15,350
Total primary government	$ 6,323,693	$ 3,353,862	$ 109,586	$ 195,927

General Revenues
Taxes:
Property taxes
Specific ownership
Sales taxes and miscellaneous
Franchise taxes
Miscellaneous
Mineral leasing and severance taxes
Investment earnings
Transfers In (out)
Total General Revenues and Transfers

Changes in Net Position
Net Position-January 1
Net Position-December 31

Net (Expense) Revenue and Changes in Net Position		
Primary Government		
Governmental Activities	**Business-Type Activities**	**Total**
$ (819,869)	$ -	$ (819,869)
(880,867)	-	(880,867)
(379,964)	-	(379,964)
(346,184)	-	(346,184)
(2,426,884)	-	(2,426,884)
-	21,712	21,712
-	171,976	171,976
-	(10,237)	(10,237)
-	392,553	392,553
-	(813,438)	(813,438)
-	(237,434)	(237,434)
(2,426,884)	(237,434)	(2,664,318)
580,277	-	580,277
68,667	-	68,667
2,578,222	-	2,578,222
48,586	-	48,586
15,824	2,161	17,985
25,393	-	25,393
10,411	11,499	21,910
39,045	(39,045)	-
3,366,425	(25,385)	3,341,040
939,541	(262,819)	676,722
4,211,458	9,882,965	14,094,423
$ 5,150,999	$ 9,620,146	$ 14,771,145

The accompanying notes are an integral part of this statement.

CITY OF OURAY, COLORADO
Governmental Funds
Balance Sheet
December 31, 2020

	General Fund	Capital Improvement Fund	Nonmajor Governmental Funds	Total Governmental Funds
Assets				
Cash and cash equivalents	$ 1,397,121	$ 1,187,580	$ 617,427	$ 3,202,128
Taxes receivable	585,369	-	-	585,369
Due from other governments	93,654	-	-	93,654
Accounts receivable	12,835	25,822	-	38,657
Inventory	7,321	-	-	7,321
Prepaid expenses	(665)	-	-	(665)
Total assets	$ 2,095,635	$ 1,213,402	$ 617,427	$ 3,926,464
Liabilities, Deferred inflows of resources and Fund Balance				
Liabilities:				
Accounts payable	$ 142,610	$ -	$ 39,197	$ 181,807
Accrued wages	35,847	-	-	35,847
Unearned revenue	42,352	-	-	42,352
Total liabilities	220,809	-	39,197	260,006
Deferred inflow of resources				
Deferred property tax revenue	585,369	-	-	585,369
Fund balances:				
Non-spendable	7,321	-	-	7,321
Restricted				
Emergencies	88,602		-	88,602
Parks and recreation	-	-	156,808	156,808
Committed				
Flumes, streets and drainage	331,575		-	331,575
Capital improvements	-	1,213,402	-	1,213,402
Tourism	-	-	298,508	298,508
Beautification	-	-	122,914	122,914
Unassigned	861,959		-	861,959
Total fund balance	1,289,457	1,213,402	578,230	3,081,089
Total liabilities, deferred inflows of resources and fund balance	$ 2,095,635	$ 1,213,402	$ 617,427	$ 3,926,464

The accompanying notes are an integral part of this statement.

CITY OF OURAY, COLORADO
Reconciliation of the Governmental Funds Balance
Sheet to the Statement of Net Position
December 31, 2020

Total fund balance, governmental funds		$ 3,081,089
Amounts reported for governmental activities in the Statement of Net Position is different because:		
Capital assets used in governmental activities are not current period expenditures and therefore are not reported in this fund financial statement, but are reported in the governmental activities of the Statement of Net Position.		
Cost of capital assets	$ 9,918,799	
Less accumulated depreciation	(7,854,499)	2,064,300
Some liabilities, (such as Notes Payable, Capital Lease Contract Payable, Long-term Compensated Absences, and Bonds Payable), are not due and payable in the current period and are not included in the fund financial statement, but are included in the governmental activities of the Statement of Net Position.		
Capital leases	$ (170,936)	
Compensated absences	(74,448)	(245,384)
Net pension assets and related deferred inflows and outflows of resources are not recorded in the funds.		250,994
Net Position of Governmental Activities in the Statement of Net Position		$ 5,150,999

The accompanying notes are an integral part of this statement.

CITY OF OURAY, COLORADO
Statement of Revenues, Expenditures and Changes in Fund Balances
Governmental Funds
For the Year Ended December 31, 2020

	General Fund	Capital Improvement Fund	Nonmajor Governmental Funds	Total Governmental Funds
REVENUES				
Property Taxes	$ 580,277	$ -	$ -	$ 580,277
Sales and miscellaneous taxes	1,627,044	515,169	504,676	2,646,889
Fees and fines	14,753	-	-	14,753
Licenses and permits	53,396	-	-	53,396
Intergovernmental	174,532	-	12,829	187,361
Charges for services	14,929	-	-	14,929
Investment earnings	12,798	-	1,881	14,679
Miscellaneous	232,619	-	-	232,619
Total revenues	2,710,348	515,169	519,386	3,744,903
EXPENDITURES				
Current:				
General government	806,736	-	213,223	1,019,959
Public safety	838,048	-	-	838,048
Public works	287,359	-	-	287,359
Culture and recreation	284,389	-	-	284,389
Debt service payments	50,804	-	-	50,804
Capital outlay	379,755	-	-	379,755
Total expenditures	2,647,091	-	213,223	2,860,314
Excess (deficiency) of revenues over expenditures	63,257	515,169	306,163	884,589
OTHER FINANCING SOURCES (USES)				
Transfers In (out)	320,684	(239,482)	(42,157)	39,045
Total other financing sources (uses)	320,684	(239,482)	(42,157)	39,045
Net change to fund balance	383,941	275,687	264,006	923,634
Fund balance, January 1	905,516	937,715	314,224	2,157,455
Fund balance, December 31	$ 1,289,457	$ 1,213,402	$ 578,230	$ 3,081,089

The accompanying notes are an integral part of this statement.

CITY OF OURAY, COLORADO
Reconciliation of the Governmental Funds Statement of Revenues, Expenditures, and Changes in Fund Balances to the Statement of Activities
For the Year Ended December 31, 2020

Net change in fund balances - total governmental funds		$ 923,634
Amounts reported for governmental activities in the statement of activities are different because:		
Governmental funds report capital outlays as expenditures. However, in the statement of activities the cost of those assets is allocated over their estimated useful lives and reported as deprecation expense. This is the amount by which depreciation exceeded capital outlays in the current period.		
Fixed assets current additions	$ 151,640	
Depreciation expense	(160,193)	
Excess of capital outlay over depreciation		(8,553)
Gain on sale of assets		-
Some expenses reported in the statement of activities do not require the use of current financial resources: therefore, are not reported as expenditures in governmental funds.		(20,330)
Repayment of long-term debt principal is reported as an expenditure in the governmental funds but reduces long-term liabilities in the statement of net position.		44,790
Change in net position of governmental funds		$ 939,541

The accompanying notes are an integral part of this statement.

CITY OF OURAY, COLORADO
Statement of Net Position
Enterprise Funds
December 31, 2020

	Water Fund	Sewer Fund	Utilities-CI Fund
ASSETS			
Current Assets:			
Cash and cash equivalents	$ 62,704	$ 839,397	$ 838,530
Receivables:			
Accounts	100,736	55,791	-
Inventories	19,901	5,319	-
Total current assets	183,341	900,507	838,530
Restricted cash	132,000	-	-
Capital assets:			
Land and improvements	149,131	-	-
Construction in progress	-	144,033	-
Utility system	5,354,554	2,104,423	-
Geothermal wells	-	-	-
Swimming pool	-	-	-
Pool filtration system	-	-	-
Box Cañon	-	-	-
Parks and other assets	-	-	-
Buildings	75,020	14,497	-
Equipment and furniture	303,483	363,888	-
Less accumulated depreciation	(2,676,770)	(2,125,755)	-
Total capital assets	3,205,418	501,086	-
Total Assets	$ 3,520,759	$ 1,401,593	$ 838,530
LIABILITIES			
Current liabilities:			
Accounts payable	$ 16,016	$ 48,131	$ -
Accrued payroll	17,407	21,962	-
Customer deposits	375	-	-
Accrued interest payable	5,227	-	-
Unearned revenues	84,417	59,861	30,000
Current portion of long term debt	5,384	5,384	-
Total current liabilities	128,826	135,338	30,000
Noncurrent liabilities			
Bonds payable	-	-	-
Loans and leases payable	5,570	5,570	-
Total noncurrent liabilities	5,570	5,570	-
NET POSITION			
Invested in capital assets, net of related debt	3,194,464	490,132	-
Restricted for O&M expenses	86,657	-	-
Unrestricted	105,242	770,553	808,530
Total net position	$ 3,386,363	$ 1,260,685	$ 808,530

Refuse Fund	Parks Fund	Total Enterprise Funds
$ 35,687	$ 1,071,584	$ 2,847,902
4,578	25,417	186,522
-	304	25,524
40,265	1,097,305	3,059,948
-	-	132,000
-	-	149,131
-	-	144,033
-	-	7,458,977
-	167,138	167,138
-	12,512,490	12,512,490
-	5,202	5,202
-	351,707	351,707
-	1,413,608	1,413,608
-	-	89,517
-	-	667,371
-	(3,834,384)	(8,636,909)
-	10,615,761	14,322,265
$ 40,265	$ 11,713,066	$ 17,514,213
$ 17,356	$ 44,590	$ 126,093
-	40,526	79,895
-	5,356	5,731
-	-	5,227
15,935	-	190,213
-	240,000	250,768
33,291	330,472	657,927
-	4,685,000	4,685,000
-	2,540,000	2,551,140
-	7,225,000	7,236,140
-	3,150,761	6,835,357
-	-	86,657
6,974	1,006,833	2,698,132
$ 6,974	$ 4,157,594	$ 9,620,146

The accompanying notes are an integral part of this statement.

CITY OF OURAY, COLORADO
Statement of Revenues, Expenses and Changes in Net Position
Enterprise Funds
Year Ended December 31, 2020

	Water Fund	Sewer Fund	Utilities-CI Fund
Operating Revenues			
Charges for services	$ 613,283	$ 703,241	$ 392,553
Miscellaneous	557	1,604	-
Total operating revenues	613,840	704,845	392,553
Operating Expenses			
Personal services	299,292	354,919	-
Contractual services	68,786	30,625	-
Utilities	4,897	28,010	-
Repairs and maintenance	24,444	27,684	-
Other supplies and expenses	32,650	49,156	-
Insurance claims and expenses	7,718	7,864	-
Depreciation	159,611	40,364	-
Total operating expenses	597,398	538,622	-
Operating income (loss)	16,442	166,223	392,553
Nonoperating revenues (expenses)			
Interest income	1,550	4,484	5,465
Interest expense	(1,848)	(318)	-
Total nonoperating revenues (expenses)	(298)	4,166	5,465
Income (loss) before transfers and and Capital Contributions	16,144	170,389	398,018
Transfers in (out)	5,279	178,056	(212,079)
Capital contributions-Investment Fees	7,675	7,675	-
Change in net position	29,098	356,120	185,939
Total net position, January 1	3,357,265	904,565	622,591
Total net position, December 31	$ 3,386,363	$ 1,260,685	$ 808,530

Refuse Fund	Parks Fund	Total Enterprise Funds
$ 212,293	$ 1,305,132	$ 3,226,502
-	-	2,161
212,293	1,305,132	3,228,663
-	822,514	1,476,725
222,530	29,682	351,623
-	118,837	151,744
-	30,704	82,832
-	213,608	295,414
-	10,385	25,967
-	595,248	795,223
222,530	1,820,978	3,179,528
(10,237)	(515,846)	49,135
-	-	11,499
-	(297,592)	(299,758)
-	(297,592)	(288,259)
(10,237)	(813,438)	(239,124)
(10,301)	-	(39,045)
-	-	15,350
(20,538)	(813,438)	(262,819)
27,512	4,971,032	9,882,965
$ 6,974	$ 4,157,594	$ 9,620,146

The accompanying notes are an integral part of this statement.

CITY OF OURAY, COLORADO
Statement of Cash Flows
Enterprise Funds
Year Ended December 31, 2020

	Water Fund	Sewer Fund
Cash Flows From Operating Activities		
Cash received from charges for services	$ 583,914	$ 735,555
Cash payments for goods and services	(223,409)	(102,351)
Cash payments to employees for services	(299,292)	(354,919)
Net cash provided (used) by operating activities	61,213	278,285
Cash Flows from Noncapital Financing Activities		
Grants and contributions	-	-
Miscellaneous	-	-
Transfers from (to) other funds	5,279	178,056
Net cash provided (used) by noncapital financing activities	5,279	178,056
Cash Flows from Capital and Related Financing Activities		
Investment fees	7,675	7,675
Acquisition of capital assets	(34,023)	(178,056)
Principal paid on loans and leases	(73,986)	(17,869)
Interest expense	(1,848)	(318)
Net cash provided (used) by capital and related financing activities	(102,182)	(188,568)
Cash Flows from Investing Activities		
Interest on investments	1,550	4,484
Net increase (decrease) in cash and equivalents	(34,140)	272,257
Cash balances, January 1	228,844	567,139
Cash balances, December 31	$ 194,704	$ 839,396
Reconciling of operating income (loss) to net cash provided (used) by operating activities:		
Operating income (loss)	$ 16,442	$ 166,223
Adjustments to reconcile operating income (loss) to net cash provided (used) by operating activities:		
Depreciation expense	159,611	40,364
Assets (increase) decrease:		
Accounts receivable	(38,443)	26,566
Liabilities increase (decrease):		
Accounts payable	(84,914)	40,988
Accrued payroll	(675)	4,144
Unearned revenues	9,192	-
Total adjustments	44,771	112,062
Net cash provided (used) by operating activities	$ 61,213	$ 278,285

Utilities-CI Fund	Refuse Fund	Parks Fund	Total Enterprise Funds
$ 392,553	$ 221,471	$ 1,296,640	$ 3,230,133
-	(205,174)	(398,600)	(929,534)
-	-	(822,514)	(1,476,725)
392,553	16,297	75,526	823,874
-	-	-	-
-	-	-	-
(212,079)	(10,301)	-	(39,045)
(212,079)	(10,301)	-	(39,045)
-	-	-	15,350
-	-	-	(212,079)
-	-	(235,000)	(326,855)
-	-	(297,592)	(299,758)
-	-	(532,592)	(823,342)
5,465	-	-	11,499
185,939	5,996	(457,066)	(27,014)
652,591	29,691	1,528,650	3,006,915
$ 838,530	$ 35,687	$ 1,071,584	$ 2,979,901
$ 392,553	$ (10,237)	$ (515,846)	$ 49,135
-	-	595,248	795,223
-	9,178	-	(2,699)
-	17,356	4,207	(22,363)
-	-	(8,492)	(5,023)
-	-	409	9,601
-	26,534	591,372	774,739
$ 392,553	$ 16,297	$ 75,526	$ 823,874

The accompanying notes are an integral part of this statement.

Note 1 - Summary of Significant Accounting Policies

The financial statements of the City of Ouray, Colorado (the City) have been prepared in conformity with accounting principles generally accepted in the United States of America (GAAP) as applied to government units. The Governmental Accounting Standards Board (GASB) is the accepted standard-setting body for establishing governmental accounting and financial reporting principles.

A. Financial Reporting Entity

The City adopted a home rule charter on May 5, 2009, with a council – administrator form of government with five elected Council members. As required by accounting principles generally accepted in the United States of America, these financial statements present the City of Ouray (the primary government). The City has no oversight responsibility for any other governmental entity since no other entities are considered to be controlled by or dependent on the City. Control or dependence is determined on the basis of budget adoption, taxing authority, funding, and appointment of the respective governing body.

Related Organizations

- The City and the Ouray Volunteer Fire Department provided fire protection to the citizens of Ouray. The volunteer fire department has a special fund that receives donations and fund-raising monies, which are also used to cover fire protection services. This fund is not included in these financial statements of the City of Ouray.

B. Government-wide Financial Statements

The government-wide financial statements (i.e., the statement of net position and the statement of activities) report information on all of the activities of the City and its component units. These statements include the financial activities of the overall government, except fiduciary activities. For the most part, the effect of inter-fund activity has been removed from these statements. These statements distinguish between the *governmental* and *business-type activities* of the City. Governmental activities, which normally are supported by taxes, charges for services and intergovernmental revenues, are reported separately from business-type activities, which rely to a significant extent on user charges for support.

The statement of activities demonstrates the degree to which the direct expenses of a given function or segment is offset by program revenues. Direct expenses are those that are clearly identifiable with a specific function or segment. Program revenues include 1) charges to those who purchase, use, or directly benefit from goods, services, or privileges provided by a given function or segment, and 2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular function or segment. Taxes and other items not properly included among program revenues are reported instead as general revenues.

Note 1 - Summary of Significant Accounting Policies - (continued)

C. Fund Financial Statements

The accounts of the City are organized on the basis of funds and account groups, each of which is considered a separate accounting entity. The operations of each fund are accounted for with a separate set of self-balancing accounts that comprise its assets, liabilities, fund equity, revenues, and expenditures, or expenses, as appropriate. Government resources are allocated to and accounted for in individual funds based upon the purposes for which they are to be spent and the means by which spending activities are controlled.

All governmental funds are accounted for on a flow of current financial resources basis. Balance sheets for these funds generally include only current assets and current liabilities. Reported fund balances are considered a measure of available, spendable resources. Operating statements for these funds present a summary of available, spendable resources and expenditures for the period.

Separate financial statements are provided for governmental funds and proprietary funds. Major individual governmental funds and major individual enterprise funds are reported as separate columns in the fund financial statements.

The City reports the following major governmental funds:

- The General Fund is the City's primary operating fund. It accounts for all financial resources of the City, except those required to be accounted for in another fund.

- The Capital Improvement Fund, which accounts for the Town's additional sales tax that is to be used for capital improvements.

The remaining governmental funds are aggregated and presented as non-major funds. Those funds include:

- The Conservation Trust Fund, which accounts for State of Colorado lottery funds to be used for parks and recreation services and capital investment.

- Beautification Fund, which accounts for lodging tax collections to be used for City beautification projects.

- Tourism Promotion Fund, which accounts for lodging tax collections for the promotion of tourism.

Enterprise Funds account for operations that are financed and operated in a manner similar to private business enterprises, where the intent is that the costs of providing goods or services to the general public on a continuing basis be financed or recovered primarily through user charges. Enterprise funds are considered major funds because of community interests in the activities and sources of funding supporting these operations.

Note 1 - Summary of Significant Accounting Policies - (continued)

C. Fund Financial Statements - (continued)

Enterprise funds distinguish operating revenues and expenses from nonoperating items. Operating revenues and expenses generally result from providing services and producing and delivering goods in connection with an enterprise fund's principal ongoing operations. The principal operating revenues of the City are charges for water, sewer, refuse, pool, park and other fees. Operating expenses for the enterprise funds include personnel services, contract services, utilities, repairs and maintenance, supplies, insurance and depreciation cost. All revenues and expenses not meeting this definition are reported as nonoperating revenues and expenses.

The City reports the following major enterprise fund business-type activities:

- Water, Sewer and Refuse Funds, which account for all operations of the City's water, sewer and refuse services. They are primarily financed by user charges.
- Utility Capital Improvement Fund, which accounts for the investment fees of water and sewer taps to be used for water and sewer capital expenditures.
- Park Fund, which accounts for all operations of the City's Hot Springs Pool and Box Cañon Park. They are primarily financed by user charges at the Hot Springs Pool and Box Cañon Park.
- Pool Renovation Fund, which accounts for the renovation of the City's Hot Springs Pool.

D. Measurement Focus and Basis of Accounting

The government-wide financial statements are reported using the economic resources measurement focus and the accrual basis of accounting, as are the enterprise fund financial statements. Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. Property taxes are recognized as revenues in the year for which they are levied. Grants and similar items are recognized as revenue as soon as all eligibility requirements imposed by the provider have been met.

The modified accrual basis of accounting is used by all governmental funds. Under the modified accrual basis of accounting, revenues are recognized when susceptible to accrual (i.e., when they become both measurable and available). "Measurable" means the amount of the transaction can be determined and "available" means collectible within the current period or soon enough thereafter to be used to pay liabilities of the current period.

Expenditures are recorded when the related fund liability is incurred. Exceptions to this general rule include principal and interest on general long-term debt which is recognized when due, and compensated absences which are recognized when the obligations are expected to be liquidated with expendable available resources.

Those revenues susceptible to accrual are interest revenue and charges for services. Entitlement revenues are not susceptible to accrual because generally, they are not measurable until received. Grant revenues are recognized as they are earned.

Note 1 - Summary of Significant Accounting Policies - (continued)

D. Measurement Focus and Basis of Accounting - (continued)

The accrual basis of accounting is utilized by enterprise funds. Under this method, revenues are recorded when earned and expenses are recorded at the time liabilities are incurred.

Deferred Outflows / Inflows of Resources

In addition to assets, the statement of net position will sometimes report a separate section of deferred outflows of resources. This separate financial statement element, deferred outflows of resources, represents a consumption of net position that applies to a future period(s) and will not be recognized as an outflow of resources (expense/ expenditure) until then.

In addition to liabilities, the statement of net position will sometimes report a separate section of deferred inflows of resources. This separate financial statement element, deferred inflows of resources, represents an acquisition of net position that applies to a future period(s) and will not be recognized as an inflow of resources (revenue) until that time. Property taxes revenue that are related to a future period have been recorded as deferred inflows. Grants and entitlements received before eligibility requirements are met (e.g., cash advances) are recorded as deferred inflows. These amounts are deferred and will be recognized as an inflow of resources in the period that the amounts become available.

E. Cash and Cash Equivalents

For the purposes of the statement of cash flows of the enterprise funds, cash and cash equivalents consist of operating and restricted cash and highly liquid securities with an initial maturity of six months or less.

F. Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

G. Property Taxes

Property taxes for the current year are levied and attached as a lien on property the following January 1. They are payable in full by April 30 or in two equal installments due February 28 and June 15. Property taxes levied in the current year and collected in the following year are reported as deferred inflows of resources at December 31. However, since the taxes are not available to pay current liabilities, the receivable is recorded as deferred inflows of resources in the governmental fund.

Note 1 - Summary of Significant Accounting Policies - (continued)

H. Capital Assets

Capital assets, which include property, equipment and infrastructure assets, are reported in the applicable governmental or business-type activities columns in the government-wide financial statements. Capitalized assets are defined by the City as assets that have a useful life of one or more years, and for which the initial, individual value equals or exceeds $ 5,000.

All purchased assets are valued at cost where historical records are available and at an estimated historical cost where no historical records exist. Donated assets are valued at their estimated fair market value on the date received. The cost of normal maintenance and repairs that does not add to the value of an asset or materially extend asset life is not capitalized.

Depreciation on all assets is provided on the straight-line basis over the following estimated useful lives:

Asset Class	Useful Life
Improvements	10-20 years
Building and Other Improvements	40-50 years
Water and Sewer Systems	40-50 years
Furniture and Equipment	5-20 years
Swimming Pool	20-50 years
Infrastructure	15-40 years

Public domain assets consisting of roads, bridges, curbs and gutters, streets and sidewalks, drainage systems and lighting systems are examples of infrastructure assets. Infrastructure assets are distinguished from other capitalized assets as their useful life often extends beyond most other capital assets and are stationary in nature. General infrastructure assets are those associated with or arising from governmental activities.

I. Long-Term Liabilities

In the government-wide financial statements, and enterprise fund types in the fund financial statements, long-term debt and other long-term obligations are reported as liabilities in the applicable government activities, business-type activities, or enterprise fund type statement of net position.

J. Compensated Absences

It is the City's policy for employees to accumulate earned but unused vacation and sick pay benefits, but employees are not entitled to be paid for sick leave upon termination. In the government-wide statements, vacation and unused compensation time is accrued when incurred and reported as a liability of the governmental and business-type activities. In the governmental funds, vacation and unused compensation time is not expected to be liquidated with expendable available financial resources and therefore are not reported as expenditure.

Note 1 - Summary of Significant Accounting Policies - (continued)

K. Net Position

Net position represents the difference between assets and liabilities. Net position invested in capital assets, net of related debt consists of capital assets, net of accumulated depreciation, reduced by the outstanding balances of any borrowing used for the acquisition or construction of improvements on those assets. Net position is reported as restricted when there are limitations imposed on their use either through the enabling legislation adopted by the City or through external restrictions imposed by creditors, grantors, laws or regulations of other governments.

L. Interfund Transactions

Interfund receivables and payables arise from interfund transactions and are recorded by all funds affected in the period in which transactions are executed. At year end, outstanding balances between funds are reported as "due to/from other funds." Nonrecurring or nonroutine permanent transfers of equity are reported as residual equity transfers. All other interfund transfers are reported as operating transfers. Any residual balances outstanding between the governmental activities and business-type activities are reported in the government-wide financial statements as "internal balances."

M. Encumbrances

The City does not use an encumbrance system for budgetary control.

N. Inventory

Inventory is valued at lower of cost (first-in, first-out) or market. Reported inventories are equally offset by a fund balance reserve which indicates that they do not constitute "available spendable resources" even though they are a component of net current assets.

O. Fund Equity

The following classifications describe the relative strength of the spending constraints placed on the purposes for which resources can be used:

- Non-spendable fund balance amounts that are not in spendable form (such as inventory) or are required to be maintained intact;
- Restricted fund balance-amounts constrained to specific purposes by their providers (such as grantors, bondholders, and higher levels of government), through constitutional provisions or by enabling legislation;
- Committed fund balance-amounts constrained to specific purposes by a government itself, using its highest level of decision-making authority; to be reported as committed, amounts cannot be used for any other purpose unless the government takes the same highest-level action to remove or change the constraint;
- Assigned fund balance-amounts a government intends to use for a specific purpose; intent can be expressed by the governing body or by an official or body to which the governing body delegates the authority;
- Unassigned fund balance-amounts that are available for any purpose; positive amounts are reported only in the general fund.

Note 1 - Summary of Significant Accounting Policies - (continued)

O. Fund Equity - (continued)

When an expenditure is incurred for purposes for which both restricted and unrestricted fund balance is available, the City considers restricted funds to have been spent first. When an expenditure is incurred for which committed, assigned, or unassigned fund balances are available, the City considers amounts to have been spent first out of committed funds, then assigned funds, and finally unassigned funds, as needed, unless City Council has provided otherwise in its commitment or assignment actions.

Note 2 - Reconciliation of Government-wide and Fund Financial Statements

The governmental funds balance sheet includes reconciliation between total fund balance, governmental funds and net position - governmental activities as reported in the government-wide statement of net position. Additionally, the governmental fund statement of revenues, expenditures, and changes in fund balances includes reconciliation between net change in fund balances - total governmental funds and changes in net position of governmental activities as reported in the government-wide statement of activities. The enterprise fund statement of net position and statement of revenues, expenses and changes in net position also includes reconciliation to the government-wide statement of net position and activities.

These reconciliations detail items that require adjustment to convert from the current resources measurement and modified accrual basis for government fund statements to the economic resources measurement and full accrual basis used for government-wide statements. However, certain items having no effect on measurement and basis of accounting were eliminated from the governmental fund statements during the consolidation of governmental activities.

Note 3 - Tax, Spending and Debt Limitations

Colorado voters passed an amendment to the State Constitution, Article X, Section 20, which has several limitations, including revenue raising, spending abilities, and other specific requirements of state and local governments, excluding “enterprises.” The City’s voters on November 8, 1994, approved a ballot measure to permit the City to collect, retain and expend the full proceeds of the City’s 3% sales tax, existing lodging occupation tax and nonfederal grants.

The Amendment is complex and subject to judicial interpretation. The City believes it is in compliance with the requirements of the amendment.

The Amendment requires that an emergency reserve be maintained at three percent of fiscal year spending. A portion of the General Fund’s fund balance is classified as restricted for emergencies as required by the Amendment.

Note 4 - Budgets

The City adheres to the following procedures in establishing budgetary data reflected in the financial statements:

A. By mid August of each year, the City Administrator gives public notice of the budget calendar for the next fiscal year. The City Administrator asks that all City departments, boards, commissions or citizens submit within thirty days from the notice, any request for funds under the budget being prepared. The City Administrator, with assistance from the City Treasurer, then prepares a proposed budget for the ensuing fiscal year and submits it to the Council no later than forty-five days prior to any date required by state law for the certification to the County of the tax levy.

B. The budget provides a complete financial plan of all City funds and activities for the ensuing fiscal year indicating anticipated revenues, proposed operating and capital expenditures, a provision for contingencies, and anticipated net surplus or deficit for the ensuing fiscal year.

C. A public hearing on the proposed budget is held by the Council in early November.

D. The Council adopts the budget by resolution on or before the final day established by law for the certification of the ensuing year's tax levy to the County. Adoption of the budget by the Council shall constitute appropriations of the amounts specified therein as expenditures from the funds indicated and shall constitute a levy of the property tax therein proposed.

E. If during the fiscal year the City Administrator determines that there are expenses in excess of those estimated in the budget, the Council by resolution may make supplemental appropriations for the year up to the amount of such excess. To meet an emergency affecting public property, health, peace or safety, the Council may make emergency appropriations. If at any time during the fiscal year it appears probable to the City Administrator that the revenues available will be insufficient to meet the amount appropriated, the City Administrator reports to the Council, indicating the estimated amount of deficit, any remedial action already taken, and a recommendation as to any other steps to be taken. Any time during the fiscal year the City Administrator may transfer part or all of any unencumbered appropriation balance within a department.

F. Budget appropriations lapse at the end of each year.

G. Expenditures may not exceed appropriations at the fund level. Budget amounts included in the financial statements are based on the final amended budget. The City could be in violation of Colorado Budget Law because expenditures exceed budgetary amounts in the Refuse Fund.

H. Budgets for governmental funds are adopted on a basis consistent with accounting principles generally accepted in the United States of America (GAAP), except for long-term receivables and advances and capital lease financing which are budgeted when liquidated rather than when the receivable/liability is incurred. Budgets for enterprise funds are adopted on a basis consistent with the spending measurement focus of the governmental funds.

Note 5 - Deposits and Investments

A. Deposits

The Colorado Public Deposit Protection Act (PDPA) requires that all units of local government deposit cash in eligible public depositories; eligibility is determined by state regulators. Amounts on deposit in excess of federal insurance levels must be collateralized. The eligible collateral is determined by the PDPA. The PDPA allows the institution to create a single collateral pool for all public funds. The pool is to be maintained by another institution or held in trust for all the uninsured public deposits as a group. The market value of the collateral must be at least equal to the aggregate uninsured deposits. Collateral in the pool is considered to be equal to depository insurance pursuant to definitions listed in GASB Statement No. 40. At December 31, 2020, the bank balance of the City's deposits was $6,050,245 of which $263,522 was covered by federal depository insurance and $5,786,723 was collateralized under PDPA.

Colorado statutes specify investment instruments meeting defined rating and risk criteria in which local government entities may invest. Authorized investments include obligations of the United States and certain U.S. government agency securities; certain international agency securities; general obligation and revenue bonds of U.S. local government entities; bankers' acceptances of certain banks; commercial paper; local government investment pools; written repurchase agreements collateralized by certain authorized securities; certain money market funds; and, guaranteed investment contracts. The City’s investment policy follows Colorado statutes. At December 31, 2019 the City’s investments included funds held in COLOTRUST.

The City had invested $203,380 in the Colorado Government Liquid Asset Trust (COLOTRUST), an investment vehicle established for local government entities in Colorado to pool surplus funds. COLOTRUST operates similarly to a money market fund and each share is equal in value to $1.00. Investments of COLOTRUST consist of U.S. Treasury bills, notes and note strips and repurchase agreements collateralized by U.S. Treasury securities. A designated custodial bank provides safekeeping and depository services to COLOTRUST in connection with the direct investment and withdrawal functions of COLOTRUST. Substantially all securities owned by COLOTRUST are held by the Federal Reserve Bank in the account maintained for the custodial bank. The custodian's internal records identify the investments owned by COLOTRUST. These pools are not required to and are not registered with the SEC. COLOTRUST’s funds are rated AAA by Standard and Poor’s, Fitch’s and Moody’s rating services.

Note 5 - Deposits and Investments - (continued)

A. Deposits - (continued)

The City maintains a cash pool that is available to the General Fund, Special Revenue Funds and Enterprise Funds.

Cash and cash equivalents	
Cash on hand	$ 4,707
Deposits	5,750,309
Certificate of deposits	212,890
Cash with county treasurer	10,746
COLOTRUST	203,380
Total	$ 6,182,032
Statement of Net Position	
Cash and cash equivalents	$ 6,050,032
Restricted cash	132,000
Total	$ 6,182,032

B. Restricted cash

Water Fund

Pursuant to loan, the City has set aside funds in the Water Fund for operations and maintenance costs for the Water Fund in the amount of $132,000.

Note 6 - Risk Management

The City is exposed to various risks of loss related to torts; theft of damage to and destruction of assets; errors and omissions; injuries to employees; and natural disasters.

The City is a member of the Colorado Intergovernmental Risk Sharing Agency (CIRSA), a public entity risk pool currently operating as a common risk management and insurance program for property/casualty and workers' compensation coverage. CIRSA is to be self-sustaining through member contributions and reinsures through commercial companies for claims in excess of certain limits for each insured event. CIRSA members are subject to a supplemental assessment in the event of a deficiency.

Note 7 - Long-term Liabilities

Governmental Activities	Balance January 1, 2020	Additions	Reductions	Balance December 31, 2020	Due Within One Year
Fire Truck	$ 190,173	$ -	$ (29,475)	$ 160,698	$ 30,328
Cat Backhoe	15,466	-	(5,228)	10,238	5,384
Chevy Silverado	4,331	-	(4,331)	-	-
Bobcat Skid Steer	5,756	-	(5,756)	-	-
Accrued compensated absences	54,118	20,330		74,448	74,448
Total	$ 269,844	$ 20,330	$ (44,790)	$ 245,384	$ 110,160
Enterprise Activities					
Colorado Water Resources	$ 56,117	$ -	$ (56,117)	$ -	$ -
Sales Tax Revenue Bonds	5,000,000	-	(155,000)	4,845,000	160,000
COP	2,700,000	-	(80,000)	2,620,000	80,000
Cat Backhoe	32,056	-	(10,148)	21,908	10,452
Bobcat Skid Steer	11,478	-	(11,478)	-	-
Chevy Silverado	4,330	-	(4,330)	-	-
Chevy Silverado double cab	9,781	-	(9,781)	-	-
Total	$ 7,813,762	$ -	$ (326,854)	$ 7,486,908	$ 250,452

Fire Truck

$ 300,000, July 2015, due in annual payments of $ 34,988 each on July 31 starting on July 31 of 2016 at an interest rate of 2.90%.

	Principal	Interest	Total
2021	$ 30,328	$ 4,660	$ 34,988
2022	31,207	3,781	34,988
2023	32,112	2,876	34,988
2024	32,994	1,994	34,988
2025	34,057	931	34,988
Total	$ 160,698	$ 14,242	$ 174,940

Cat Backhoe

$ 104,694, January 2016, due in annual payments of $ 16,795.82 each on January 1 starting on January 1 of 2017 at an interest rate of 2.987%.

	Principal	Interest	Total
2021	$ 15,836	$ 960	$ 16,796
2022	16,310	486	16,796
Total	$ 32,146	$ 1,446	$ 33,592

Note 7 - Long-term Liabilities – (continued)

Sales Tax Revenue Bonds, Series 2016

On November 3, 2015, the City's electorate approved the issuance of $5,300,000 in sales tax revenue bonds, for the purpose planning, constructing, acquiring and equipping improvements to the City's Hot Springs Pool Facility. The sales tax revenue bonds are payable from revenues generated by sales tax increase and also payable from any other legally available City revenues and pledge the full faith and credit of the City. The annual coupon interest ranges from 2% to 4%. The following is a breakdown of the payments:

	Principal	Interest	Total
2021	$ 160,000	$ 186,525	$ 346,525
2022	160,000	182,525	342,525
2023	165,000	178,525	343,525
2024	170,000	174,400	344,400
2025	175,000	167,600	342,600
2026-2030	995,000	726,400	1,721,400
2031-2035	1,210,000	510,600	1,720,600
2036-2040	1,480,000	248,000	1,728,000
2041	330,000	13,200	343,200
	$ 4,845,000	$ 2,387,775	$ 7,232,775

Certificate of Participation

The City's finance part of the construction of the City's Hot Springs Pool Facility Renovation Project by the issuance of a certificate of participation note. The annual coupon interest ranges from 4% to 12%. The following is a breakdown of the payments:

	Principal	Interest	Total
2021	$ 80,000	$ 104,800	$ 184,800
2022	85,000	101,600	186,600
2023	90,000	98,200	188,200
2024	95,000	94,600	189,600
2025-2029	520,000	886,400	1,406,400
2030-2034	625,000	904,800	1,529,800
2035-2039	770,000	497,400	1,267,400
2040-2041	355,000	64,200	419,200
	$ 2,620,000	$ 2,752,000	$ 5,372,000

Note 8 - Defined Benefit Pension Plans

All volunteer fire fighters participate in the Defined Benefit Pension Plan administrated by the FPPA for plan administration and investment only. The plan has a plan document, actuarial valuation and is governed by the local pension board.

Any fire fighter, who has reached the age of 50 years and completed 20 years of active service, including 36 hours of training per year, is eligible for $90 per month. In addition, there are survivor benefits of $45 per month and a one-time only lump sum death benefit of $180.

At December 31, 2020, the City reported an asset of $319,485 for its proportionate share of the net pension asset. The net pension asset was measured as of December 31, 2020, and the total pension asset used to calculate the net pension asset was determined by an actuarial study as of December 31, 2018. Standard update procedures were used to roll forward the total pension liability to December 31, 2015. The City's proportion of the net asset was based on City's contributions to FPPA for the calendar year 2020 relative to the total contributions of participating employers to FPPA.

For the year ended December 31, 2020, the City recognized pension expense of $20,844. At December 31, 2020, the City reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	$ -	$ 206,171
Net difference between projected and actual earnings on pension plan investments	-	
Changes in proportion and differences between contributions recognized and proportionate share of contributions	-	-
Contributions subsequent to the measurement date	-	-
Total	$ -	$ 206,171

Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ending December 31	Net Deferred Outflows/ (Inflows) of Resources
2021	$ (206,171)
2022	-
2023	-
2024	-
2025	-
Thereafter	-
Total	$ (206,171)

Actuarial assumptions. The total pension asset in December 31, 2018 actuarial valuation was determined using the following actuarial assumptions and other inputs:

Note 8 - Defined Benefit Pension Plans – (continued)

Actuarially determined contribution rates are calculated as of January 1 of odd numbered years. The contribution rates have a one-year lag, so the actuarial valuation as of January 1, 2019, determines the contribution amounts for 2017 and 2018.

Methods and Assumptions Used to Determine Contribution Rates:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Dollar, Open*
Remaining Amortization Period	20 years*
Asset Valuation Method	5-Year smoothed market
Inflation	3.00%
Salary Increases	N/A
Investment Rate of Return	7.50%
Retirement Age	50% per year of eligibility until 100% at age 65
Mortality	**Pre-retirement:** RP-2000 Combined Mortality Table with Blue Collar Adjustment, 40% multiplier for off-duty mortality. **Post-retirement:** RP-2000 Combined Mortality Table with Blue Collar Adjustment. **Disabled:** RP-2000 Disabled Mortality Table All tables projected with Scale AA

*Plans that are heavily weighted with retiree liabilities use an amortization period based on the expected remaining lifetime of the participants.

Regarding the sensitivity of the net pension liability/ (asset) to changes in the Single Discount Rate, the following presents the plan's net pension liability/ (asset), calculated using a Single Discount Rate of 7.50%, as well as what the plan's net pension liability/ (asset) would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

Sensitivity of Net Pension Liability/(Asset)
to the Single Discount Rate Assumption

1% Decrease	Current Single Discount Rate Assumption	1% Increase
6.00%	7.00%	8.00%
$ (391,856)	$ (457,165)	$ (522,474)

The Fire & Police Pension Association (FPPA) administers an agent multiple-employer Public Employee Retirement System (PERS). The PERS represents the assets of numerous separate plans that have been pooled for investment purposes. The pension plans have elected to affiliate with FPPA for plan administration and investment only. FPPA issues a publicly available comprehensive annual financial report that can be obtained at:http//www.fppaco.org.

Note 9 - Defined Contribution Plan

All full-time permanent employees of the City must participate in the City's group-retirement plan and may participate in the City's deferred compensation plan, after twelve (12) months of continuous employment. The plans are administered by Colorado Retirement Association (CRA) plan. The employees' contributions are fully vested, and the City's contributions are vested at the rate of 20% per year. The Plan may be amended by resolution of the City Council, but it may not be amended beyond the limits established by state statute.

Under the group retirement plan, the City contributes 3% of eligible employees' base salary, matching the amount contributed by the employees. In 2020 the City's total payroll was $2,014,158. The City's contribution was calculated using a base salary amount of $1,115,433. The City and the covered employees made the following contributions, amounting to $33,463 and $33,463 respectively for a total of $66,926.

Note 10 - Capital Assets

Capital assets activity for the year ended December 31, 2020 was as follows:

Governmental Activities	January 1, 2020	Additions	Dispositions	December 31, 2020
Capital assets not being depreciated				
Land	$ 325,094	$ -	$ -	$ 325,094
	325,094	-	-	325,094
Capital assets being depreciated				
Buildings	793,318	-	-	793,318
Improvements other than building	37,459		-	37,459
Infrastructure	6,051,396		-	6,051,396
Equipment and vehicles	2,559,892	151,640		2,711,532
	9,442,065	151,640	-	9,593,705
Less accumulated depreciation				
Buildings	(625,180)	(2,367)	-	(627,547)
Improvements	(12,459)	(1,651)	-	(14,110)
Infrastructure	(5,279,528)	(79,200)	-	(5,358,728)
Equipment and vehicles	(1,777,139)	(76,975)	-	(1,854,114)
	(7,694,306)	(160,193)	-	(7,854,499)
Capital asset being depreciated, net	1,747,759	(8,553)	-	1,739,206
Total Governmental Activities Capital Assets	$ 2,072,853	$ (8,553)	$ -	$ 2,064,300

Note 10 - Capital Assets – (continued)

Business - Type Activities	2020	Additions	Dispositions	2020
Capital assets not being depreciated				
CIP	$ -	$ 144,033	$ -	$144,033
Land	149,131	-	-	149,131
	149,131	144,033	-	293,164
Capital assets being depreciated				
Utility system	7,458,977	-	-	7,458,977
Geothermal wells	167,138	-	-	167,138
Swimming pool	12,512,490	-	-	12,512,490
Pool filtration system	5,202	-	-	5,202
Box Cañon	351,707	-	-	351,707
Other Parks assets	1,413,608	-	-	1,413,608
Buildings	89,517	-	-	89,517
Equipment and furniture	599,327	68,044	-	667,371
Less accumulated depreciation	(7,841,688)	(795,221)	-	(8,636,909)
Capital assets being depreciated, net	14,756,278	(727,177)	-	14,029,101
Total Business-Type Activities Capital Assets	$ 14,905,409	$ (583,144)	$ -	$ 14,322,265

Depreciation expense was charged to governmental activities of the City as follows:

General Government	$ 12,455
Public Safety	32,068
Public Works	111,903
Culture and Recreation	3,767
Total depreciation	$ 160,193

Note 11 - Contingent Liabilities

Lawsuits and Claims

Various claims and lawsuits are pending against the City. In the opinion of the City's management, after consulting with legal counsel, the potential loss on all claims and lawsuits will not materially affect the City's financial position.

Note 11 – Subsequent events

On January 30, 2020, the World Health Organization ("WHO") announced a global health emergency because of a new strain of coronavirus originating in Wuhan, China (the "COVID-19 outbreak") and the risks to the international community as the virus spreads globally beyond its point of origin. In March 2020, the WHO classified the COVID-19 outbreak as a pandemic, based on the rapid increase in exposure globally.

The full impact of the COVID-19 outbreak continues to evolve as of the date of this report. As such, it is uncertain as to the full magnitude that the pandemic will have on the City's financial condition, liquidity, and future results of operations in the Park Fund. Management is actively monitoring the global situation on its financial condition, liquidity, operations, suppliers, industry, and workforce. Given the daily evolution of the COVID-19 outbreak and the global responses to curb its spread, the City is not able to estimate the effects of the COVID-19 outbreak on its results of operations, financial condition, or liquidity for fiscal year 2020.

The City is dependent on its workforce to deliver its services. Developments such as social distancing and shelter-in-place directives have impact the City's ability to deploy its workforce effectively. While expected to be temporary, prolonged workforce disruptions may negatively impact services and the City's overall liquidity in the Parks Fund.

Required Supplementary Information

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Fund Balance-Budget and Actual
General Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
Property taxes	$ 581,327	$ 581,327	$ 580,277	$ (1,050)
Sales taxes and other taxes	1,351,430	1,351,430	1,627,044	275,614
Licenses and permits	52,250	52,250	53,396	1,146
Intergovernmental revenues	166,236	166,236	174,532	8,296
Fees and fines	33,740	33,740	14,753	(18,987)
Charges for services	29,226	29,226	14,929	(14,297)
Miscellaneous revenue	14,420	14,420	232,619	218,199
Interest income	17,500	17,500	12,798	(4,702)
Total revenues	2,246,129	2,246,129	2,710,348	464,219
Expenditures				
General government	572,922	572,922	806,736	(233,814)
Capital outlay	85,523	85,523	30,653	54,870
Public safety	816,098	816,098	838,048	(21,950)
Capital outlay	115,400	115,400	67,031	48,369
Public works	347,294	347,294	287,359	59,935
Capital outlay	484,017	484,017	202,963	281,054
Culture and recreation	318,311	318,311	284,389	33,922
Capital outlay	330,350	330,350	79,108	251,242
Debt service payments	50,803	50,803	50,804	(1)
Total Expenditures	3,120,718	3,120,718	2,647,091	473,627
Excess of Revenues over (under) Expenditures	(874,589)	(874,589)	63,257	937,846
Other financing sources (uses)				
Transfers in	891,985	891,985	320,684	(571,301)
Total other financing sources (uses)	891,985	891,985	320,684	(571,301)
Excess of Revenues and sources over or (under) Expenditures and uses	17,396	17,396	383,941	366,545
Fund balance, January 1	818,805	818,805	905,516	86,711
Fund balance, December 31	$ 836,201	$ 836,201	$ 1,289,457	$ 453,256

Schedules of Required Supplementary Information
Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios Multiyear

Last 10 Fiscal Years (to be built prospectively)

Measurement period ending December 31,	2018	2018	2018	2017	2016
Total Pension Liability					
Service Cost	$ 2,130	$ 2,130	$ 2,130		$ 2,303
Interest on the Total Pension Liability	28,351	28,351	28,351		35,004
Contributions	67,599	67,599	67,599		-
Difference between Expected and Actual Experience	(29,625)	(29,625)	(29,625)		(22,406)
Benefit Payments	(24,158)	(24,158)	(24,158)		(19,764)
Net Change in Total Pension Liability	44,297	44,297	44,297	-	(4,863)
Total Pension Liability - Beginning	263,591	263,591	263,591		287,188
Total Pension Liability - Ending (a)	$ 307,888	$ 307,888	$ 307,888	$ -	$ 282,325
Plan Fiduciary Net Position					
Employer Contributions	$ 20,027	$ 18,000	$ 18,000	$ 18,000	$ 18,000
Pension Plan Net Investment Income	93,517	90,654	37,358	43,524	11,794
Benefit Payments	(20,844)	(21,843)	(23,094)	(22,248)	(19,764)
Pension Plan Administrative Expense	(13,356)	(17,022)	(11,185)	(10,497)	(5,643)
State of Colorado supplemental discretionary payment	-	16,200	15,756	15,843	15,190
Net Change in Plan Fiduciary Net Position	79,344	85,989	36,835	44,622	19,577
Plan Fiduciary Net Position - Beginning	685,709	599,720	590,538	545,916	526,339
Plan Fiduciary Net Position - Ending (b)	$ 765,053	$ 685,709	$ 627,373	$ 590,538	$ 545,916
Net Pension Liability/(Asset) - Ending (a) - (b)	(457,165)	(377,821)	(319,485)	(590,538)	(263,591)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	248.48%	222.71%	203.77%		193.36%
Covered Payroll	N/A	N/A	N/A		N/A
Net Pension Liability as a Percentage of Covered Payroll	N/A	N/A	N/A		N/A

Schedules of Required Supplementary Information
Schedule of Contributions to Pension Plan

Required State Contributions	December 31, 2017	$33,190
Required State Contributions	December 31, 2018	$33,843
Required State Contributions	December 31, 2019	$34,200
Required State Contributions	December 31, 2020	$36,227

CITY OF OURAY, COLORADO
Combining Balance Sheet
Nonmajor Governmental Funds
December 31, 2020

	Conservation Trust Fund	Tourism Promotion Fund	Beautification Fund	Total Nonmajor Governmental Funds
Assets				
Cash and cash equivalents	$ 156,808	$ 337,705	$ 122,914	$ 617,427
Total assets	$ 156,808	$ 337,705	$ 122,914	$ 617,427
Liabilities and Fund Balances				
Liabilities:				
Accounts payable	$ -	$ 39,197	$ -	$ 39,197
Total liabilities	-	39,197	-	39,197
Fund balances:				
Unreserved:	156,808	298,508	122,914	578,230
Total fund balances	156,808	298,508	122,914	578,230
Total liabilities and fund balances	$ 156,808	$ 337,705	$ 122,914	$ 617,427

CITY OF OURAY, COLORADO
Combining Statement of Revenues, Expenditures and Changes in Fund Balances
Nonmajor Governmental Funds
December 31, 2020

	Conservation Trust Fund	Tourism Promotion Fund	Beautification Fund	Total Nonmajor Governmental Funds
REVENUES				
Lodging taxes	$ -	$ 444,019	$ 60,657	$ 504,676
Intergovernmental	10,534	-	2,295	12,829
Interest earnings	1,039	-	842	1,881
Total revenues	11,573	444,019	63,794	519,386
EXPENDITURES				
Current:				
General government	-	204,126	9,097	213,223
Total expenditures	-	204,126	9,097	213,223
Excess revenues over (under) expenditures	11,573	239,893	54,697	306,163
OTHER FINANCING SOURCES (USES)				
Transfer out	-	-	(42,157)	(42,157)
Total other financing sources (uses)	-	-	(42,157)	(42,157)
Net change to fund balance	11,573	239,893	12,540	264,006
Fund balance, January 1	145,235	58,615	110,374	314,224
Fund balance, December 31	$ 156,808	$ 298,508	$ 122,914	$ 578,230

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Fund Balance-Budget and Actual
Conservation Trust Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance with Final Budget Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
State entitlement	$ 9,415	$ 9,415	$ 10,534	$ 1,119
Interest Income	1,395	1,395	1,039	(356)
Total revenues	10,810	10,810	11,573	763
Expenditures				
Culture and recreation	85,000	85,000	-	-
Total expenditures	85,000	85,000	-	85,000
Excess of Revenues over (under) Expenditures	(74,190)	(74,190)	11,573	85,763
Fund balance, January 1	142,271	142,271	145,235	2,964
Fund balance, December 31	$ 68,081	$ 68,081	$ 156,808	$ 88,727

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Fund Balance-Budget and Actual
Tourism Promotion Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance with Final Budget Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
Taxes	$ 486,180	$ 486,180	$ 444,019	$ (42,161)
Total revenues	486,180	486,180	444,019	(42,161)
Expenditures				
General government	482,694	482,694	204,126	278,568
Total expenditures	482,694	482,694	204,126	278,568
Excess of revenues over (under) expenditures	3,486	3,486	239,893	236,407
Fund balance, January 1	68,433	68,433	58,615	(9,818)
Fund balance, December 31	$ 71,919	$ 71,919	$ 298,508	$ 226,589

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Fund Balance-Budget and Actual
Beautification Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance with Final Budget Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
Lodging taxes	$ 46,757	$ 46,757	$ 60,657	$ 13,900
Interest income	950	950	842	(108)
Grants and donations	3,550	3,550	2,295	(1,255)
Total revenues	51,257	51,257	63,794	12,537
Expenditures				
General government	26,300	26,300	9,097	17,203
Total expenditures	26,300	26,300	9,097	17,203
Excess of Revenues over (under) Expenditures	24,957	24,957	54,697	29,740
OTHER FINANCING SOURCES (USES)				
Transfer out	(29,750)	(29,750)	(42,157)	(12,407)
Total other financing sources (uses)	(29,750)	(29,750)	(42,157)	(12,407)
Net change to fund balance	(4,793)	(4,793)	12,540	17,333
Fund balance, January 1	93,540	93,540	110,374	16,834
Fund balance, December 31	$ 88,747	$ 88,747	$ 122,914	$ 34,167

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Fund Balance-Budget and Actual
Capital Improvement Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance with Final Budget Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
Sales tax	$ 421,480	$ 421,480	$ 515,169	$ 93,689
Total revenues	421,480	421,480	515,169	93,689
Expenditures				
Capital Improvements	-	-	-	-
Total expenditures	-	-	-	-
Excess of Revenues over (under) Expenditures	421,480	421,480	515,169	93,689
OTHER FINANCING SOURCES (USES)				
Transfer out	(822,823)	(822,823)	(239,482)	583,341
Total other financing sources (uses)	(822,823)	(822,823)	(239,482)	583,341
Net change to fund balance	(401,343)	(401,343)	275,687	677,030
Fund balance, January 1	734,791	734,791	937,715	202,924
Fund balance, December 31	$ 333,448	$ 333,448	$ 1,213,402	$ 879,954

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Available Resources-Budget and Actual
Water Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance with Final Budget Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
Water services	$ 627,884	$ 627,884	$ 613,283	$ (14,601)
Investment fees	26,250	26,250	7,675	(18,575)
Miscellaneous	1,200	1,200	557	(643)
Interest revenue	800	800	1,550	750
Total revenues	656,134	656,134	623,065	(33,069)
Expenditures				
Salaries and wages	260,843	260,843	213,469	47,374
Taxes and benefits	101,380	101,380	85,823	15,557
Overhead	17,972	17,972	21,993	(4,021)
Operating maintenance	125,650	125,650	109,424	16,226
Capital expenditures	152,867	152,867	41,101	111,766
Debt service	91,911	91,911	75,836	16,075
Total expenditures	750,623	750,623	547,646	202,977
Excess of Revenues over (under) Expenditures	(94,489)	(94,489)	75,419	169,908
Other Financing Sources (Uses)				
Transfers in/Out	106,000	106,000	5,279	(100,721)
Available resources, January 1	86,943	86,943	111,201	24,258
Available resources, December 31	$ 98,454	$ 98,454	$ 191,899	$ 93,445

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Available Resources-Budget and Actual
Sewer Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance with Final Budget Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
Sewer services	$ 694,035	$ 694,035	$ 703,241	$ 9,206
Investment fees	26,250	26,250	7,675	(18,575)
Miscellaneous	500	500	1,604	1,104
Interest	8,000	8,000	4,484	(3,516)
Total revenues	728,785	728,785	717,004	(11,781)
Expenditures				
Salaries and wages	295,120	295,120	259,329	35,791
Taxes and benefits	116,045	116,045	95,590	20,455
Overhead	52,038	52,038	44,499	7,539
Operating maintenance	124,000	124,000	95,672	28,328
Capital expenditures	762,917	762,917	181,225	581,692
Debt service	18,184	18,184	18,186	(2)
Total expenditures	1,368,304	1,368,304	694,501	673,803
Excess of Revenues over (under) Expenditures	(639,519)	(639,519)	22,503	662,022
Other Financing Sources (Uses)				
Transfers in	575,450	575,450	178,056	(397,394)
Available resources, January 1	546,882	546,882	569,995	23,113
Available resources, December 31	$ 482,813	$ 482,813	$ 770,554	$ 287,741

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Available Resources-Budget and Actual
Utilities-Capital Improvement Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance with Final Budget Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
Water Fund				
Charges for services	$ 177,800	$ 177,800	$ 130,707	$ (47,093)
Interest Income	4,000	4,000	5,465	1,465
Sewer Fund				
Charges for services	305,950	305,950	261,846	(44,104)
Total revenues	487,750	487,750	398,018	(89,732)
Expenditures				
Capital expenditures/Transfers	779,750	779,750	212,079	567,671
Total expenditures	779,750	779,750	212,079	567,671
Excess of Revenues over (under) Expenditures	(292,000)	(292,000)	185,939	477,939
Available resources, January 1	599,333	599,333	622,591	23,258
Available resources, December 31	$ 307,333	$ 307,333	$ 808,530	$ 501,197

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Available Resources-Budget and Actual
Refuse Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance with Final Budget Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
Refuse collection service	$ 156,431	$ 156,431	$ 158,783	$ 2,352
Recycling	55,430	55,430	53,510	(1,920)
Total revenues	211,861	211,861	212,293	432
Expenditures				
Contract hauling	204,772	204,772	222,530	(17,758)
Total expenditures	204,772	204,772	222,530	(17,758)
Excess of revenues over (under) expenditures	7,089	7,089	(10,237)	(17,326)
Other Financing Sources (Uses)				
Transfers out	(10,301)	(10,301)	(10,301)	-
Available funds, January 1	19,852	19,852	27,512	7,660
Available funds, December 31	$ 16,640	$ 16,640	$ 6,974	$ (9,666)

CITY OF OURAY, COLORADO
Schedule of Revenues, Expenditures and Changes in Available Resources-Budget and Actual
Parks Fund
For the Year Ended December 31, 2020

	Budgeted Amounts			Variance with Final Budget Favorable
Revenues	**Original**	**Final**	**Actual**	**(Unfavorable)**
Swimming pool	$ 2,050,038	$ 2,050,038	$ 936,169	$ (1,113,869)
Box Cañon	322,300	322,300	354,168	31,868
Ice rink	13,000	13,000	12,290	(710)
Gym	33,000	33,000	2,505	(30,495)
Total revenues	2,418,338	2,418,338	1,305,132	(1,113,206)
Expenditures				
Salaries and wages	1,006,817	1,006,817	666,572	(340,245)
Taxes and benefits	245,251	245,251	155,942	(89,309)
Overhead	226,823	226,823	170,337	(56,486)
Operating maintenance	326,250	326,250	232,447	(93,803)
Capital expenditures	156,300	156,300	432	(155,868)
Debt Service	530,625	530,625	532,587	1,962
Total expenditures	2,492,066	2,492,066	1,758,317	733,749
Excess of Revenues over (under) expenditures	(73,728)	(73,728)	(453,185)	(379,457)
Available resources, January 1	972,209	972,209	1,460,023	487,814
Available resources, December 31	$ 898,481	$ 898,481	$ 1,006,838	$ 108,357

COLORADO
Department of Transportation

Steps for printing your content and returning to 'Edit Mode

1. Click Ctrl + A on a Windows machine or Command + A on a Mac to select all data.
2. Right-click your mouse and select Print.
3. Confirm that print settings are correct - make sure "selection only" isn't checked.
4. Print hard copy or to PDF.
5. Click "Edit Mode" to return to modifying your data.
6. Remember to click "Save" to save any changes.

Annual Highway Finance Report - CY20

Email address: peteblaircpa@yahoo.com
City/County: Orchard City

Receipts, Disbursements & Costs

II - Receipts for Road & Street Purposes

A. Receipts from local sources			
2. General Fund Appropriations:		$	0.00
3. Other local imposts: *from A.3. Total below)*		$	13,772.00
4. Miscellaneous local receipts: *from A.4. Total below)*		$	6,957.00
5. Transfers from toll facilities		$	0.00
6. Proceeds of sale of bonds and notes			
a. Bonds - Original Issues:		$	0.00
b. Bonds - Refunding Issues:		$	0.00
c. Notes:		$	0.00
	SubTotal:	$	20,729.00
B. Private Contributions		$	0.00

Receipts, Disbursements & Costs

II - Receipts for Road & Street Purposes (Detail)

A.3. Other local imposts		
a. Property Taxes &and Assessments	$	0.00
b. Other Local Imposts		
1. Sales Taxes:	$	2,644.00
2. Infrastructure and Impact Fees:	$	0.00
3. Liens:	$	0.00
4. Licenses:	$	0.00
5. Specific Ownership and/or Other:	$	11,128.00
Total: *(a + b) carried to 'Other local imposts' above)*	$	13,772.00
A.4. Miscellaneous local receipts		
a. Interest on Investments:	$	5,154.00
b. Traffic fines and Penalities:	$	0.00
c. Parking Garage Fees:	$	0.00
d. Parking Meter Fees:	$	0.00
e. Sale of Surplus Property:	$	0.00
f. Charges for Services:	$	0.00
g. Other Misc. Receipts:	$	1,803.00
h. Other:	$	0.00
Total: *(a through h) carried to 'Misc local receipts' above)*	$	6,957.00
C. Receipts from State Government		
1. Highway User Taxes:	$	132,786.00
3. Other State funds:		
c. Motor Vehicle Registrations:	$	18,478.00
d. Other (Specify):		
Comments: undefined	$	0.00
e. Other (Specify):		
Comments: undefined	$	0.00
Total: *(1+3c,d,e)*	$	151,264.00
D. Receipts from Federal Government		
2. Other Federal Agencies		
a. Forest Service:	$	0.00
b. FEMA:	$	0.00
c. HUD:	$	0.00
d. Federal Transit Administration:	$	0.00
e. U.S. Corp of Engineers	$	0.00
f. Other Federal:	$	0.00
Total: *(2a-f)*	$	0.00

Receipts, Disbursements & Costs

III - Disbursements for Road & Street Purposes

A. Local highway disbursements		
1. Capital outlay: *(from A.1.d. 'Total Capital Outlay' below)*	$	80,752.00
2. Maintenance:	$	0.00
3. Road and street services		
a. Traffic control operations:	$	0.00
b. Snow and ice removal:	$	1,653.00
c. Other:	$	380.00

4. General administration and miscellaneous	$	40,100.00
5. Highway law enforcement and safety	$	0.00
Total: (A.1-5)	$	122,885.00
B. Debt service on local obligations		
1. Bonds		
a. Interest	$	0.00
b. Redemption	$	0.00
2. Notes		
a. Interest	$	0.00
b. Redemption	$	0.00
SubTotal: (1+2)	$	0.00
C. Payments to State for Highways:	$	0.00
D. Payments to Toll Facilities:	$	0.00
Total Disbursements: (A+B+C+D)	$	122,885.00

Receipts, Disbursements & Costs

III - Disbursements for Road & Street Purposes - (Detail)

	A. ON NATIONAL HIGHWAY SYSTEM	B. OFF NATIONAL HIGHWAY SYSTEM	C. TOTAL
A.1. Capital Outlay			
a. Right-Of-Way Costs:	$ 0.00	$ 0.00	$ 0.00
b. Engineering Costs:	$ 0.00	$ 0.00	$ 0.00
c. Construction			
1. New Facilities:	$ 0.00	$ 0.00	$ 0.00
2. Capacity Improvements:	$ 0.00	$ 0.00	$ 0.00
3. System Preservation:	$ 0.00	$ 80,752.00	$ 80,752.00
4. System Enhancement:	$ 0.00	$ 0.00	$ 0.00
5. Total Construction:			$ 80,752.00
d. Total Capital Outlay: (Lines A.1.a + 1.b + 1.c.5)			$ 80,752.00

Receipts, Disbursements & Costs

IV. Local Highway Debt Status

	OPENING DEBT	AMOUNT ISSUED	REDEMPTIONS	CLOSING DEBT
A. Bonds (Total)	$ 0.00	$ 0.00	$ 0.00	$ 0.00
1. Bonds (Refunding Portion)		$ 0.00	$ 0.00	$ 0.00
B. Notes (Total):	$ 0.00	$ 0.00	$ 0.00	$ 0.00

Receipts, Disbursements & Costs

V - Local Road & Street Fund Balance

A. Beginning Balance	B. Total Receipts	C.Total Disbursements	D. Ending Balance	E. Reconciliation
$ 195,734.00	$ 171,993.00	$ 122,885.00	$ 244,842.00	$ 0.00

Notes and Comments:
undefined

Please enter your name: Melissa Oelke

Please provide a telephone number where you may be reached: 970-835-3337

Save Print Mode Edit Mode

Please click on the "Save" button before viewing the data in a print format.

Contact: Karen Peterson | Email: karenk.peterson@state.co.us

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 11/24/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER LIC #N/A 1-303-757-5475 CIRSA 3665 Cherry Creek North Drive Denver, CO 80209	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS:
INSURED City of Ouray PO Box 468 Ouray, CO 81427	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : CIRSA INSURER B : See Attached Schematic INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER: 63842572** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY			LIAB 01-2021	01/01/21	01/01/22	EACH OCCURRENCE	$ 10,000,000
	X CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 10,000,000
	X $10m POL E&O Aggregate						MED EXP (Any one person)	$ 0
							PERSONAL & ADV INJURY	$ 10,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$ 10,000,000
	☐ OTHER:							$
A	AUTOMOBILE LIABILITY			LIAB 01-2021	01/01/21	01/01/22	COMBINED SINGLE LIMIT (Ea accident)	$ 5,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						☐ PER STATUTE ☐ OTH-ER	
	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ (Mandatory in NH)	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
B	Property (Excess Prop)			See Attached Schematic	01/01/21	01/01/22	Prop Pool Limit	500,000,000
A	Property (Primary)			PR 01-2021	01/01/21	01/01/22		1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

As respects Drinking Water Loan application.

CERTIFICATE HOLDER

CDPHE

Erick Worker
4300 Cherry Creek Drive South

Denver, CO 80246

USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

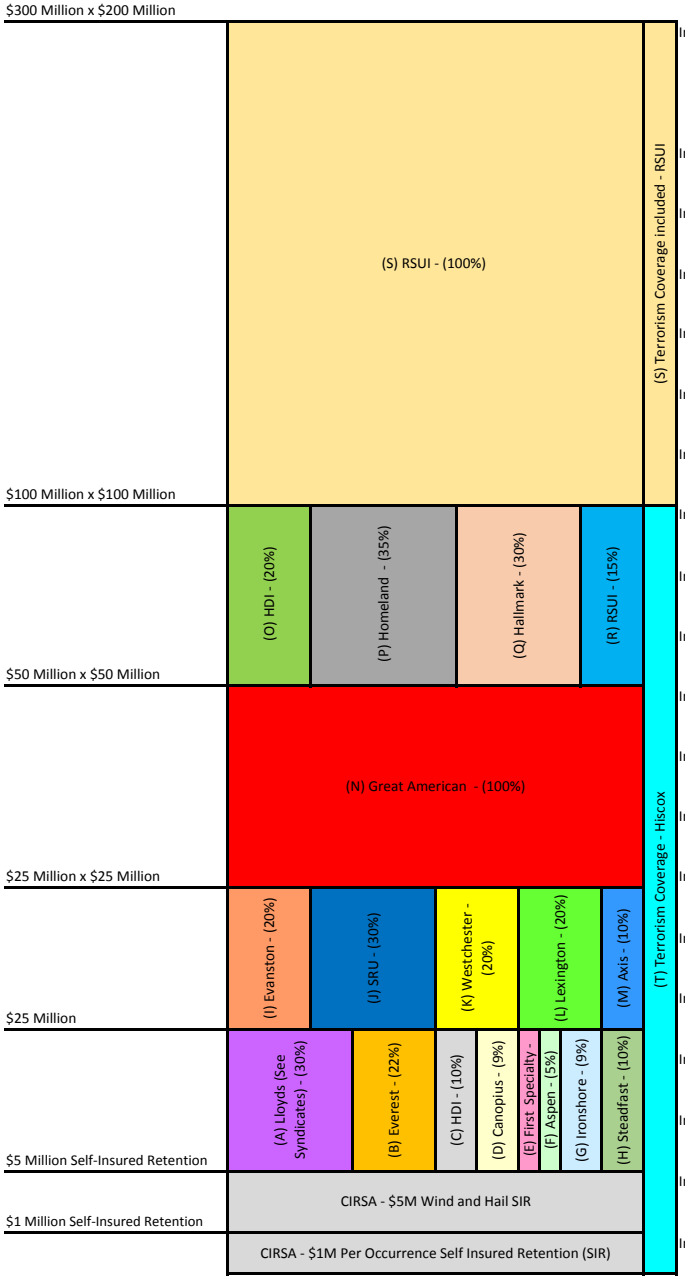
Jill Ruckman

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Colorado Intergovernmental Risk Sharing Agency

Property Coverage Schematic

January 1, 2021 to January 1, 2022



Insurer A.	Lloyds Syndicates - HCC International Insurance Company PLC (10%); Apollo Syndicate Management Ltd (5%); W.R. Berkley Syndicate Limited (5%); Unicorn Underwriting Limited (4%); Brit Insurance (3%); Liberty (3%) Policy # B080119852U21
Insurer B.	Everest Indemnity Insurance Company Policy # CA3P006325-211 / NAIC # 10851
Insurer C.	HDI Global Insurance Company Policy # CPD5542202 NAIC # 41343
Insurer D.	Canopius Insurance Services, Lloyds Syndicate Policy # B68154BAA
Insurer E.	First Specialty Insurance Corporation Policy # ESP 2002790 03 / NAIC # 34916
Insurer F.	Aspen Specialty Insurance Company Policy # PR007HE21 / NAIC # 10717
Insurer G.	Ironshore Specialty Insurance Company Policy # 1000368384-02 / NAIC # 25445
Insurer H.	Steadfast Insurance Company Policy # CPP 3279796-01 / NAIC # 26387
Insurer I.	Evanston Insurance Company Policy # MKLV2XPR000071 / NAIC # 35378
Insurer J.	SRU/Lloyds (Various Syndicates) Policy # S-2008-476178-01
Insurer K.	Westchester Surplus Lines Insurance Company Policy # D42295243 002 / NAIC # 10172
Insurer L.	Lexington Insurance Company Policy # 0006893580 / NAIC # 19437
Insurer M.	Axis Surplus Insurance Company Policy # EAF650183-21 / NAIC # 26620
Insurer N.	Great American Insurance Company Policy # 2480063 / NAIC # 37532
Insurer O.	HDI Global Insurance Company Policy # CPXD5444603 / NAIC # 41343
Insurer P.	Homeland Insurance Company of New York Policy # 795014183 / NAIC # 34452
Insurer Q.	Hallmark Specialty Insurance Company Policy # 73-PX-000640124-00 / NAIC # 10838
Insurer R.	RSUI Indemnity Company Policy # NHD916238 / NAIC # 22314
Insurer S.	RSUI Indemnity Company Policy # NHD916236 / NAIC # 22314
Insurer T.	Hiscox Policy # UTS2564592.21

STATE OF COLORADO,
:SS.
COUNTY OF OURAY,

IN THE DISTRICT COURT.

IN THE MATTER OF THE ADJUDICATION OF WATER RIGHTS FOR STORAGE, DOMESTIC, FIRE AND IRRIGATION PURPOSES ON THE APPLICATION AND PETITION OF THE CITY OF OURAY.

FINDINGS AND DECREE.

----------0----------

On this 6th day of December, A. D. 1904, being the first day of the regular term of said Court, the above entitled matter comes on th be heard before the Court upon the application and petition of the City of Ouray, Colorado, for adjudication of its rights to the use of the waters of Oak Creek, Wehawken Creek and a certain Spring near to and in the vicinity of said Wehawken Creek, for storage, domestic, fire and irrigation purposes, all in water district No,68, County of Ouray, State of Colorado, the said City of Ouray appearing by its Attorney Thomas Y. Bradshaw, and no one appearing in objection or resistance to said application and petition; and after hearing the evidence and testimony introduced in support of said application and upon due consideration thereof, the Court being now fully advised in the premises, doth find:

1st- That due notice of the filing of and hearing upon said application and petition has been duly given and published as by law and order of this Court required, and proof thereof is on file herein.

2nd,-That the said City of Ouray is the owner of what is known and here designated as the OAK CREEK SUPPLY LINE AND RESERVOIR situate in said water district, said Ouray County; that the said Oak Creek Supply Line and Reservoir obtaines and draws its supply of water from Oak Creek, in said water district and County at a point whence Hayden Peak bears S. 56°35' E. and Twin Monument bears N. 58°6' W. That said water is conveyed from said Oak Creek to said reservoir through and by means of a conduit or pipe line the course of which from the point of diversion on said Oak Creek is as

[illegible]nce S. 31°50' E. 43 feet; thence S.64°33' E. 44.5 feet; thence
[illegible]74 feet; thence N. [illegible]eet; thence N. 68°13' E. 43
N. 69°49' E. 33.3 [illegible]e N. 59°17' E. 30.6 feet; thence

twelve (12)

That the carrying capacity of said conduit or pipe line from said Oak Creek to said Oak Creek reservoir is 5.2 cubic feet of water per second of time, and that the capacity of the said Oak Creek reservoir is 34,425 cubic feet when filled to the high water mark.

4th,-That the said conduit, pipe line and reservoir were laid, built and constructed by the said City of Ouray in the year 1881, and the entire flow of the waters of said Oak Creek were appropriated by the said City of Ouray in the said year 1881 through and by means of said conduit, pipe line and reservoir for the use and benefit of the inhabitants of the said City of Ouray for domestic purposes, and ever since said appropriation by said City all of the waters of Oak Creek have been and are now being succ essfully applied to the benefical use of the inhabitants of said City for fire and other domestic purposes.

AND THE COURT DOTH FURTHER FIND:

1st,-That the said City of Ouray is the owner of what is known and here designated as the WEHAWKEN CREEK AND SPRING PIPE LINE AND NEW RESERVOIR situate in said water district, said Ouray County, that the said Wehawken Creek and Spring Pipe Line and New Reservoir obtains and draws its supply of water from Wehawken Creek and a certain Spring near to and in the vicinity of where the waters are diverted from said Wehawken Creek; that the head gate on said Wehawken Creek and point at which said water is diverted is situated on the east bank of said Wehawken Creek at a point wh ence the junction of said Wehawken Creek and Canon Creek bears N. 81°22'E. 862 feet, and the head gate or point where the water is diverted from said Spring is situated at a point whence Buckey Mountain bears S. 40°22' W. Twin Monument bears N. 13°9' E., and profile Needle bears N. 62°15' E. That said water is conveyed from said Wehawken Creek and said Spring to said New Reservoir by means of a conduit or pipe line, the course of which from the point of diversion at said Spring is as follows: North 41°3' E. 390 feet; thence north 37° 18' E. 130 feet; thence north 61°23' E. 140 feet; th north 41°54' E. 245 feet to junction of pipe line from said Wehawken Creek. From said point of diversion on sa[illegible]reek the line of such pipe is as follows: South 75°E. 110 feet; [illegible] E. 150 feet; thence South 79°18' E. 315 feet to junction [illegible] line from said Spring; thence N. 41°54' E. 55 feet; thence N. N. 34°35' E. 475 feet; thence N. 29°35' E. 210.5 feet; thence N. 46°28' E. 110 feet; thence N.

thence N. 26°53' E. 133 feet; thence N. 18° E. 215 feet; thence N. 30°30' E.67 feet; thence N. 26° E. 350 feet; thence N. 43°15' E. 400 feet; thence N. 51°41' E. 266 feet; thence N. 33°20' E. 134 feet; thence N. 23°41' E. 175 feet; thence N. 25°40' E. 403 feet; thence N. 31° E. 472 feet; thence N. 19°30' E. 700 feet ; thence N. 32°30' E. 141 feet; thence N. 24°30' E. 85 feet; thence N. 20°55' E. 427 feet; thence N. 22° E. 200 feet; thence N. 36°30' E. 680 feet; thence N. 57°30' E.57.5 feet; thence N. 68° E. 52 feet; thence N. 44° E. 140.5 feet; thence N. 55 E. 70 feet; thence N. 41° E. 250 feet; thence N. 44°45' E. 158.5 feet; thence N. 3°20' E. 91.5 feet; thence N. 9° W. 50 feet; thence N. 2° E. 79 feet; thence N. 27°45' E.118 feet; thence N. 50°45' E. 303 feet; thence N. 49° E. 550 feet; thence N. 59°30' E. 431 feet; thence N. 30° E. 65 feet; thence N. 15°30' E. 114 feet thence N.36° E. 35 feet; thence N. 57°10' E. 255 feet; thence N. 65°10' E. 90 feet; thence N. 75°30' E. 95 feet; thence N. 50°30' E. 55 feet; thence N. 41°30' E. 130 feet; thence N. 44° E. 188 feet; thence N. 42°30' E.242 feet; thence N. 21°30' E. 150 feet; thence N. 22° E. 92 feet;thence N. 52°30' E. 658 feet; thence N. 61°45' E. 84.5 feet; thence N. 81°15' E. 121 feet; thence S. 75° E. 244.5 feet; thence S. 66°30' E. 75 feet; thence S. 61° E. 275 feet; thence S. 66° E. 113 feet; thence S. 76° E. 387 feet; thence S. 85°30' E. 127 feet; thence N. 73°30' E. 68 feet; thence S.88°30' E. 67 feet; thence S. 69° E. 155 feet to said New Reservoir.

2nd,-That the said last mentioned pipe and pipe line is ten (10) inches in diameter and has an average grade of two eighty (280) feet per mile, and the same is used as a feeder and supply pipe line from said Wehawkwn Creek and said Spring to said Reservoir. That the carrying capac ity of said conduit and pipe line from said Wehawken Creek and said Spring to said New Reservoir is 3,816 cubic feet of water per second of time, and that the capacity of the said New Reservoir, when filled to the high water mark, is 98,135 cubic feet.

3rd,-That said Conduit, pipe line and reservour were laid, built and constructed by the said City of Orange in the year 1889, except the pipe line from said Wehawken Creek to the junction with the pipe line from the Spring, which last mentioned pipe line was laid and constructed by the City in the year 1895, and the entire waters of said Wehawken Creek and said Spring were turned into the said City on or about the 1st. day of July

by means of said conduit, pipe line and New Reservoir, for the use and benefit of the inhabitants of the said City of Ouray for domestic purposes and ever since said respective dates of appropriation by said City all of the waters of said Spring and said Wehawken Creek have been and are now being successfully applied to the beneficial use of the inhabitants of said city for fire and other domestic purposes.

And the Court doth further find that all of the waters so appropriated as aforesaid by the said City of Ouray from said Oak Creek, Wehawken Creek and said Spring are necessary and ecential for the use of the inhabitants of the said City for the purposes hereinbefore stated.

WHEREFORE, it is considered, adjudged and decreed by the Court:

1st,-That the said City of Ouray is the owner of said Oak Creek supply Line and Reservoir, and the same is hereby given number 1.-
That there be allowed to flow into and through said supply or pipe line into said Oak Creek Reservoir all of the waters of said Oak Creek, not to exceed 5.2 cubic feet of water per second of time, for the use and benefit of the inhabitants of the said City of Ouray for fire and other domestic purposes, and that the appropriation of such waters by the said City of Ouray date from the 1st day of October, 1881, and be classed as priority No. 1.-

2nd,-That the said City of Ouray is the owner of said Wehawken Creek and Spring Pipe Line and New Reservoir, and the same is hereby given number 2.-

a.- That there be allowed to flow into and through said pipe line into said New Reservoir all of the waters of said Spring, not exceeding 3.816 cubic feet per second of time, for the use and benefit of the inhabitants of the said City of Ouray for fire and other domestic purposes, and that the appropriation of such waters by the said City of Ouray date from the 1st, day of July, 1889 and be classed as priority No. 2.,

b.- That there be allowed to flow into and through said pipe line into said New Reservoir all of the waters of said Wehawken Creek, not exceeding 3.816 cubic feet per second of time, for the use and benefit of the inhabitants of the said City of Ouray for fire and other domestic purposes, and that the appropriation of such waters by the said City of Ouray date from the 15th, day of April, 1895 and be classed as priority No. 3.,

That all Court expenses of this adjudication be paid by the Plaintiff.

Thereon Stevens, Judge.

STATE OF COLORADO,
COUNTY OF Ouray } ss.

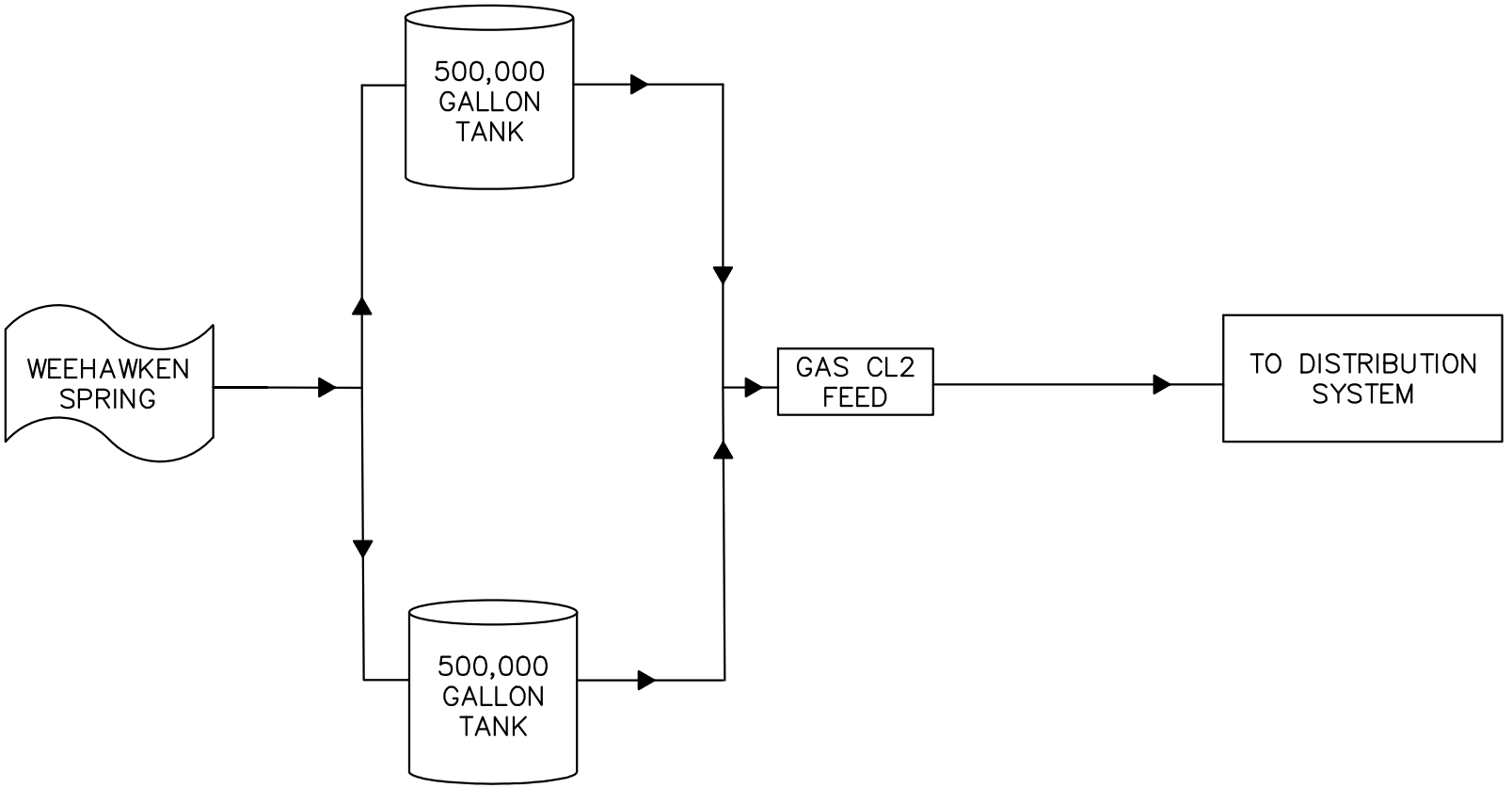
I, W H Middaugh.

Clerk of the District Court of Ouray County,
the same being a Court of Record, in the State aforesaid, do hereby certify the above and foregoing
to be a true, perfect and complete copy of A Certain Decree
Issued out of the District Court
Wherein the City of Ouray was
Petitioner Plaintiff and of Record
as the same remains on file
in this Office

IN WITNESS WHEREOF, I have hereunto set my hand and affixed
the seal of said Court, at Ouray
this 6th day of June A. D. 1905

W H Middaugh
Clerk.

By
Deputy Clerk.



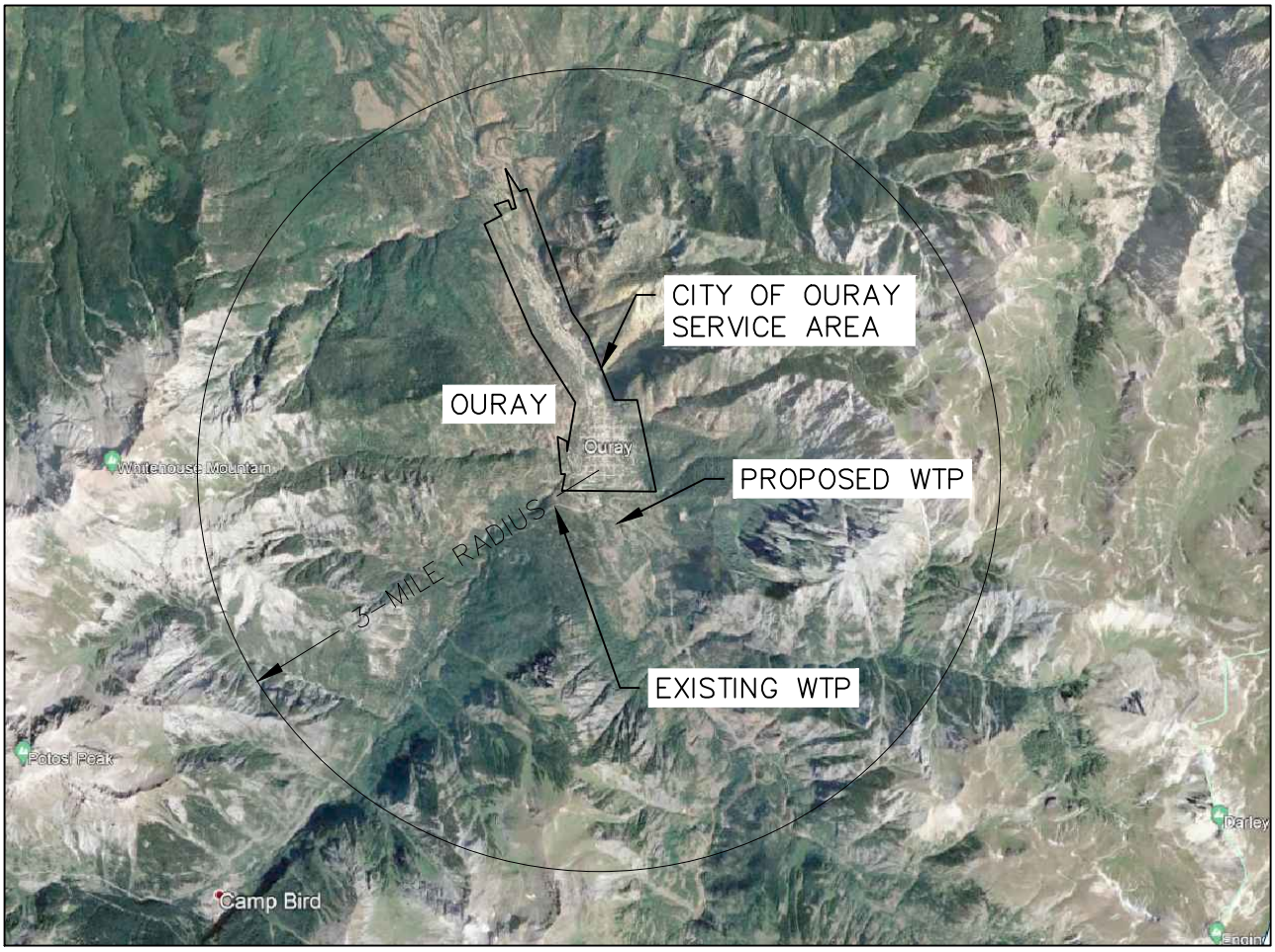
EXISTING OURAY WTP PFD

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
WWW.ELEMENTENGINEERING.NET

DATE
NOVEMBER 2021

JOB NUMBER
0111.0001

SCALE
NTS



N

OURAY PROJECT AREA MAP

DATE
OCTOBER 2021

ELEMENT ENGINEERING LLC
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LAKEWOOD, CO 80228
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JOB NUMBER
0111.0001

SCALE
NTS

U.S. Fish and Wildlife Service

National Wetlands Inventory

Ouray



October 22, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

City of Ouray
Project Needs Assessment
Attachment 17 - Population and Usage Projections

Year	Population	Annual Growth Rate
2010	1003	--
2011	970	-3.3%
2012	974	0.4%
2013	966	-0.8%
2014	947	-2.0%
2015	928	-2.0%
2016	958	3.2%
2017	937	-2.2%
2018	902	-3.7%
2019	923	-1.3%
2020	899	-1.0%
Average		**-1.3%**

Note: Population data obtained from Colorado Department of Local Affairs. Population estimated produced annually by the State Demography Office.

Assumed Annual Growth Rate	0.5%

Year	Population
2020	899
2021	903
2022	908
2023	913
2024	917
2025	922
2026	926
2027	931
2028	936
2029	940
2030	945
2031	950
2032	954
2033	959
2034	964
2035	969
2036	974
2037	979
2038	983
2039	988
2040	993
2041	998
2042	1003

	Existing (gpd)	Future (gpd)
Average Demand	625,901	691,555
Max Demand	953,158	1,053,140
Summer Average (June, July, Aug)	890,397	983,796
Winter Average (Nov, Dec, Jan, Feb)	463,470	512,086

WATER TREATMENT FACILITY IMPROVEMENTS

The following alternatives are analyzed to determine the most cost-effective and appropriate means of providing adequate treatment and capacity for the City of Ouray's public water system:

Alternative I – No Action

Alternative II – Consolidation

Alternative III – New Water Treatment Plant with Ultrafiltration (UF) Treatment

In addition to a treatment process, the proposed project will also include the permitting of a new raw water source (Weehawken Creek) and the construction of a 1-million-gallon finished water storage tank. The city does not currently have any finished water storage. The city would like to include the construction of a finished water storage tank in the design of the new treatment plant to allow for continued water service to its users during periods when the treatment plant is inoperable, or during periods when the demand exceeds the production capacity of the treatment plant. The tank will also provide chlorine contact time for disinfection. All viable alternatives include the cost of the design and construction of a 1-million-gallon storage tank as well as the permitting of the raw water source.

ALTERNATIVE I – NO ACTION

Alternative I – No Action was not considered a viable alternative. The existing system requires additional treatment as the existing raw water source (Weehawken Spring) has been deemed a Groundwater Under Direct Influence (GWUDI). The existing system cannot treat water in accordance with the Surface Water Treatment Rules (SWTR) set by CDPHE. Therefore, No Action is not a feasible alternative.

ALTERNATIVE II – CONSOLIDATION

A "Consolidation" alternative is not considered viable. The Town of Ridgway is the closest municipality and is located approximately twelve (12) miles to the north of the City of Ouray. A distance of twelve miles is financially prohibitive due to the cost of piping and booster stations. Therefore, consolidation is not a feasible alternative.

ALTERNATIVE III – NEW WATER TREATMENT PLANT WITH ULTRAFILTRATION (UF) TREATMENT

Description

Alternative III – New Water Treatment Plant with Ultrafiltration (UF) Treatment would include the complete removal and replacement of the Ouray WTF's existing chlorination system and the construction of three (3) 700 gpm ultrafiltration (UF) membrane skids. Membrane filtration treatment systems are attractive because they are highly automated (requiring less operator time) and can effectively provide treatment with a smaller building footprint as compared to conventional filtration. UF technology is designed to remove particulate matter such as turbidity and microorganisms, which are the primary contaminants of concern when evaluating the replacement of

their existing chlorination system. The system meets the requirements of the Surface Water Treatment Rule. Ultrafiltration is the preferred treatment technology of the city.

The proposed UF system for Ouray's WTF would include three separate UF treatment skids by Pentair (UltraFlex XIGA configuration) as manufactured by Filter Tech Systems based in Grand Junction, Colorado. Each treatment skid will be composed of 48 X-flow AquaFlex 55 8" x 60" hollow fiber modules. The modules are long and very narrow tubes (nominal pore size of 0.02 µm) which are bundled together longitudinally and encased within a pressure vessel mounted horizontally. The modules operate in the 'dead-end deposition' filtration mode, which is analogous to direct filtration in which contaminants suspended in the feed stream accumulate into a cake layer on the membrane surface and are held in place by a transmembrane pressure differential. Each proposed UF treatment skid will be rated for a net flow rate of 700 gpm, equivalent to 1 MGD, for a combined net capacity of 3 MGD. The proposed UF system will treat the city's water sources by removing particulate matter such as colloidal turbidity, giardia, cryptosporidium, bacteria and viruses. Components included with Alternative III are the following:

- New treatment building
- Replacement of existing gas chlorination system with liquid sodium hypochlorite
- Screen filter pre-treatment
- Three UF treatment skids with Chemically Enhanced Backwash (CEB) capabilities
- Backwash recovery treatment skid
- New analyzers and new finished water meter
- New Backwash pump skid

The proposed UF system will be installed within a newly constructed building and act as the city's water treatment facility (WTF). The building will include adequate access to allow for all normal deliveries and required operation and maintenance tasks. The proposed finished water storage tank will be located adjacent to the treatment building.

The WTF's existing gas chlorination system will be replaced as part of the proposed project with a liquid chlorine dosing system. The new disinfection system will include peristaltic pumps for dosing pre- and post-filtration at the facility. Replacing the gas chlorine system will improve safety conditions and facilitate easier operations for the city's staff.

The proposed UF system includes the addition of pre-treatment composed of automatic self-cleaning 150-micron screen filters to reduce large colloidal loading and damage to the downstream hallow fiber UF modules. Two filters are provided to meet redundancy requirements. The cleaning process is initiated based on a pre-set screen filter pressure differential and takes between 12 and 15 seconds. The filter uses a coarse/fine stainless steel screen combination housed in a stainless steel body.

The proposed project also includes the installment of necessary analyzers and flow meters such as the raw water turbidimeter; individual skid effluent turbidimeters; treated water and clearwell chlorine analyzers; and the facilities combined filtered water flow meter on the effluent water line feeding the proposed water storage tank.

Backwash water supply for the proposed UF system will be provided by the proposed finished water tank conveyed by new backwash pumps and controls with variable frequency drives (VFDs). The UF system will also include provisions for chemically enhanced backwash (CEB) on the backwash supply line. The included CEB system will be used occasionally when more intense cleanings are required and will utilize constant-rate chemical feed pumps to supply neat hypo, acid, and caustic.

The project will also include the installation of a backwash recovery skid for improving the overall recovery of the proposed primary UF system. The backwash recovery skid further treats the backwash from the UF skids to increase recovery and minimize discharged waste from the facility. The proposed BW recovery system for the city of Ouray's proposed UF system would be rated at approximately 80 gpm. With the utilization of the backwash recovery skid, the recovery of the system is approximately 99.5%.

Capital and Operation and Maintenance Costs

Detailed construction costs, non-construction costs, and changes to city operations and maintenance costs for Alternative III - Upgrade Facility with Ultrafiltration (UF) Skids are presented in Table 1. The project is being designed and bid as a Construction Manager at Risk (CMAR) project. The project costs are supported by the 30% design guaranteed maximum price (GMP) provided by the selected contractor. Details of the 30% GMP are attached to this Attachment 19.

The proposed project will significantly increase operations and maintenance costs for the city as it will substantially increase the complexity of the city's water treatment plant. Increases to O&M costs include chemical usage, utilities, and general maintenance costs.

Table 1: Alternative III Cost Estimate

CONSTRUCTION ITEMS					
ITEM	**DESCRIPTION**	**QTY**	**UNIT**	**UNIT PRICE**	**SUBTOTAL**
1	Construction (See Attached Details from 30% Design GMP - CMAR)	1	LS	$ 9,888,057	$ 9,888,057
				Subtotal Construction Items	**$ 9,888,057**
Electrical, Instrumentation, and Controls					Included
Seeding/Erosion Control/Site Restoration					Included
Mobilization/Demobilization/Bonds/Insurance					Included
				Subtotal Construction Cost	**$ 9,888,057**
Contingency					Included
Contractor OH&P and General Conditions					Included
				Total Construction Cost	**$ 9,888,057**
NON-CONSTRUCTION ITEMS					
Project Needs Assessment & Environmental Assessment					$ 15,000
Design, Permitting, and Bidding					$ 209,500
Survey					$ 18,355
Geotech					$ 23,800
Construction Management and Oversite					$ 375,000
Legal Services					$ 50,000
				Total Non-Construction Project Cost	**$ 691,655**
				Total Project Cost	**$10,579,712**

OPERATIONS & MAINTENANCE ITEMS	ADDITIONAL O&M COST
Utilities	$ 32,000
Chemicals	$ 50,000
Equipment Maintenance and Repairs	$ 10,000
Water Sampling and Analysis	$ 9,500
Total Annual Operations and Maintenance Costs	**$ 101,500**

Advantages and Disadvantages

Advantages:

- Meet and exceed water quality standards.
- Capable of meeting current service area demands throughout year.
- Excellent for particle and pathogen removal.
- High recovery rate.
- Adheres to the preferred treatment technology of the city.
- Moderate operating cost with respect to membrane filters – low pressure differential maintained across membrane.

Disadvantages:

- Must take out loan to complete project.
- Chemically Enhanced Backwash (CEB) cycles – must handle waste accordingly.
- Filter unit life not infinite, must be replaced over time. Recovery will slowly decrease overtime regardless of backwash and CEB cycles.

Selected Alternative Summary

This project proposes Alternative III – New Water Treatment Plant with Ultrafiltration (UF) Treatment as the selective alternative. The construction of this new facility is the only viable alternative to meet the requirements of the SWTR, as required due to the designation of the Weehawken Spring source to a Groundwater Under Direct Influence of Surface Water.

No other treatment technologies were seriously considered. City personnel have selected ultra-filtration as the preferred technology. The city would not see cost savings by revising to alternative treatment options. Therefore, alternative treatment technologies were not considered in this PNA.

The 30% design plans including site and building details for the proposed project are included at the end of this attachment.

The proposed City of Ouray's Water Treatment System Improvements Project is summarized as follows.:

- Three (3) 700 gpm Ultrafiltration Treatment Skids
- One (1) Backwash Recovery Skid
- One (1) Backwash Pumping Skid
- Two (2) Pre-Screens (150 microns)
- Liquid Sodium Hypochlorite Disinfection
- 60'x100' Treatment Building
- 1,000,000 Finished Water Storage Tank

Additional details of the scope are attached at the end of this attachment.

Debt Repayment for Loan

Table 2 presents the total project cost, city contribution, total loan amount, yearly loan payment, change to annual operations and maintenance, and overall annual cost to support the proposed project. Costs to cover short lived assets of the proposed UF system were included in the estimated O&M costs as equipment and maintenance repair costs. This project is proposed to be funded through a 30-year CDPHE State Revolving Fund (SRF) loan at an assumed 2.5% interest rate.

Table 2 – Loan Repayment

Total Project Cost	City Contribution	Total SRF Loan[1]	Annual Loan Payment	Change to Annual O&M Cost	Total Project Annual Cost
$ 10,579,712	$ 266,655	$ 10,313,057	$ 492,734	$ 101,500	$ 594,234
[1]Assumes 30 year loan term and 2.5% interest. Loan amount = Total Project Cost - City Contribution					

The charges water fees based on Equivalent Residential Units (EQR). This Attachment 19 assumes that the loan repayment and increased operation & maintenance costs will be supported by an increase in the monthly water EQR rate. The city may elect to fund the project instead through a combination of water rate increases as well as other sources of revenue, as discussed in the PNA form. Table 3 presents the existing EQR rate, the required increase, and total proposed EQR rate to support this project.

Table 3 – Proposed User Rate

Existing EQRs	Existing Water EQR Monthly Rate	*Proposed Increase to Monthly EQR Rate*	Proposed Monthly Water EQR Rate
1,397	$ 32.05	*$ 35.45*	$ 67.50

Ouray WTP – CMAR

30% Cost Proposal

Moltz Construction Assumptions, Clarifications, and Exclusions

- Existing Tank Recoating – assumed to be interior would be recoated in both tanks – Approx. $300k in estimate
- Waste tank and septic tank both in estimate at $50k and $25k respectively
- No over excavation nor subgrade prep in for tank foundation
- Retaining walls in at $45 per square foot
- Moltz assumed that 6 buried valves, not shown, would be required in the buried influent and effluent lines - $48k
- Building foundation assumed to be grade beams and pilasters in lieu of continuous footers and stem walls
- Interior walls for chem rooms assumed to be full height
- Moltz added bollards, not shown in plans
- Moltz has no double containment chemical piping
- Moltz requests additional details regarding the grating spans as shown on the plans
- Neutralization tank as shown will not fit through the OH doors, consider splitting into 2 tanks
- Rock excavation is excluded until the geotech report is complete
- Site is unbalanced at 30%, continue talks to try to achieve site balance and reduce costs for hauling materials offsite $137k for hauling in estimate
- Tank pricing is a plug at this time, solicited pricing to happen as more detail is provided
- Can grating supports be mechanically post installed (assumed) or will angle need to be embedded in concrete?
- Shall the tank be bolted or welded?
- OH doors assumed to be electric $15k/ea plugged
- Allowances (not comprehensive)
    - $10k Interior improvements (furnishings for office)
    - $10k casework
    - $20k plumbing
    - $40k HVAC
    - $10k security
    - $20k PLS
    - $167k retaining walls
    - $1.25m electric

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
01.00 Cost of Work Allocation			16,101	7,487		33,200	4,605	61,393	11,591	72,984
01.10 CMAR General Conditions			121,747	67,088	16,000	24,044	168,895	397,774	82,496	480,270
02.00 Typical To Site			15,981	16,539	138,950	14,442	6,654	192,565	12,545	205,110
02.50 Retaining Walls			11,694	4,118	167,000	9,637	3,994	196,443	9,180	205,624
03.00 Access Road Improvements			6,558	11,884	4,923	4,999	2,180	30,544	5,148	35,692
04.00 Demo Masonry Dam			1,792	2,160	1,260	2,228	837	8,277	1,407	9,684
05.00 1,000,000 Gal Welded Steel Tank			75,664	116,502	608,832	24,413	10,255	835,666	58,568	894,234
06.00 PEMB Building			152,310	311,894	721,404	63,798	33,092	1,282,497	120,273	1,402,770
07.00 Distribution Pipeline			22,333	146,480		15,810	5,647	190,270	17,531	207,801
08.00 Feed Pipeline to PEMB			20,768	136,776		14,822	5,294	177,660	16,303	193,962
09.00 14" PEMB to Tank			1,692	16,316		344	131	18,484	1,328	19,812
09.50 Neutralized Water (Assumed to Daylight)			3,851	31,816		1,095	467	37,229	3,023	40,253
10.00 Ultra Filtration			73,126	2,630,448		20,800	3,000	2,727,374	58,223	2,785,598
10.50 Allowance Assumptions Made Based on Dwg C3			384				30,000	30,384	301	30,685
11.00 Re-coat Existing Tanks					318,074			318,074		318,074
12.00 Electrical & Instrumentation					1,250,000			1,250,000		1,250,000
13.00 Start-up, Disinfection & Commissioning			16,512	3,350	10,100	8,400	375	38,737	12,962	51,699
* unassigned *					20,000			20,000		20,000

Estimate Totals

Description	Amount	Cuts/Adds	Net Amount	Totals	Hours	Rate	Cost Basis	Cost per Unit	Percent of Total
Labor	540.513		540.513		15.772.433 hrs				5.47%
Material	3.502.858		3.502.858						35.43%
Subcontract	3.256.543		3.256.543						32.93%
Equipment	238.031		238.031		23.536.834 hrs				2.41%
Other	275.426		275.426						2.79%
	7,813,371			**7,813,371**					**79.02** #####
Labor Burden	194,585					36.000 %	C		1.97%
Per Diem	189,269					12.000 $/hr	H		1.91%
Small Tools & Equip	27,026					5.000 %	C		0.27%
2 Year Perf. & Pav. Bond	63.393						B		0.64%
Inland Marine Insurance	4,761					2.000 %	C		0.05%
Builders Risk Insurance	18,787					0.190 %	T		0.19%
Profit & Overhead	664,895					8.000 %	T		6.72%
Owner's Contingency	718,087					8.000 %	T		7.26%
Contractor's Contingency	193,883					2.000 %	T		1.96%
Total				***9.888.057***					

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
01.00 Cost of Work Allocation										
011000 Summary										
01 -100 CMAR General Conditions (Same)										
Safety & Safety Manager	1116.100	43.00 wks	9,675	2,924	-	-	-	12,599	6,547	19,146
Survey Equipment, Project	1630.100	14.00 mnth	-	1,400	-	11,900	-	13,300		13,300
40' Storage Trailer	1900.142	14.00 mnth	-	-	-	2,100	700	2,800		2,800
Staging Area Rock	2305.250	104.00 cy	666	2,163	-	-	-	2,829	523	3,351
Semi Tractor	1900.210	160.00 hr	-	-	-	19,200	-	19,200		19,200
Mob & Demob Labor	1900.210	120.00 hr	3,840	-	-	-	-	3,840	3,014	6,854
Final Cleaning	1714.100	1.00 ls	1,920	1,000	-	-	-	2,920	1,507	4,427
Drug Testing	1116.100	71.00 ea	-	-	-	-	3,905	3,905		3,905
CMAR General Conditions (Same)		43.00 wk	16,101	7,487		33,200	4,605	61,393	11,591	72,984
011000 Summary			16,101	7,487		33,200	4,605	61,393	11,591	72,984
01.00 Cost of Work Allocation			**16,101**	**7,487**		**33,200**	**4,605**	**61,393**	**11,591**	**72,984**
01.10 CMAR General Conditions										
011000 Summary										
01 -100 CMAR General Conditions (Same)										
Project Manager(s) - includes burden	1006.100	30.00 wk	-	-	-	0	85,650	85,650		85,650
Project Engineer(s) - includes burden	1006.100	31.00 wk	-	-	-	0	58,745	58,745		58,745
Project Superintendent	1022.100	61.00 wk	111,447	-	-		-	111,447	74,973	186,420
CMAR Field Engineer	1630.100	4.00 wk	6,652	-	-	-	-	6,652	4,647	11,299
Pickup	1900.210	29.00 mnth	-	-	-	21,344	20,300	41,644		41,644
Project Signs 4x8	1614.100	1.00 ea	128	1,000	-	-	-	1,128	100	1,228
PM/PE Per Diem	1642.100	14.00 mnth	-	-	-	-	2,800	2,800		2,800
Temporary Fences	1116.200	1.00 ls	-	-	4,500	-	-	4,500		4,500
Site Security/Alarm System	1644.100	14.00 mnth	2,240	3,500	-	-	-	5,740	1,758	7,498
Temporary Power Hookup	1162.100	1.00 ls			1,500	-	-	1,500	12	1,512
Temporary Toilets	1162.100	29.00 mnth	-	5,220	-	-	-	5,220		5,220
Cell Phone	1162.100	36.00 mnth	-	-	-	2,700	-	2,700		2,700
Computers	1672.200	14.00 mnth	-	-	-	-	1,400	1,400		1,400
Drinking Water - office	1162.100	14.00 mnth	-	490	-	-	-	490		490
Documents - Contract Documents	1060.100	1.00 ls	-	350	-	-	-	350		350
Documents - Freight and Postage	1060.100	1.00 ls	-	2,130	-	-	-	2,130		2,130
Temp Office and Storage Construction	1900.142	1.00 ls	1,280		-	-	-	1,280	1,005	2,285
Dumpster Rental/Pick up	1714.100	14.00 mnth	-	8,610	-	-	-	8,610		8,610
CMAR General Conditions (Same)		43.00 wk	121,747	21,300	6,000	24,044	168,895	341,986	82,496	424,482
015- Construction Field Offices - Contractor (Same)										
MCI Office Trailer	1672.100	14.00 mnth	-	9,240	-	-	-	9,240		9,240
Trailer Mob and Demob	1672.100	1.00 ls	-	7,800	-	-	-	7,800		7,800
Office Supply & Equip - GC Monthy	1672.200	14.00 mnth	-	14,000	-	-	-	14,000		14,000
Office Supply & Equip - GC Lump Sum	1672.200	1.00 ls	-	2,500	-	-	-	2,500		2,500
Inspector's Trailer	1672.100	14.00 mnth	-	9,240	-	-	-	9,240		9,240
Trailer Mob and Demob (Inspector	1672.100	1.00 ls		3,008	-	-	-	3,008		3,008
Construction Field Offices - Contractor (Same)		61.00 wk		45,788				45,788		45,788
0292- Traffic Control Allowance										
Traffic Control Allowance	1116.100	1.00 ls		-	10,000	-	-	10,000		10,000
Traffic Control Allowance					10,000			10,000		10,000
011000 Summary			121,747	67,088	16,000	24,044	168,895	397,774	82,496	480,270
01.10 CMAR General Conditions			**121,747**	**67,088**	**16,000**	**24,044**	**168,895**	**397,774**	**82,496**	**480,270**
02.00 Typical To Site										
015713 Temporary Erosion & Sediment Control										
0213- Site Erosion Control (Revise)										
Haybales	2370.150	60.00 ea	960	792	-	-	-	1,752	754	2,506
Silt Fence	2370.150	2,400.00 lf	3,840	924	-	-	-	4,764	3,014	7,778
Wood Stakes For Wattles	2370.150	67.00 ea	178	34	-	-	-	211	140	351
Straw Wattles 9in	2370.150	200.00 lf	160	250	-	-	-	410	126	536
Wood Stakes for Control Bales	2370.050	120.00 ea	-	720	-	-	-	720		720
Safety Fence Orange 4'	2370.150	300.00 lf	643	375	-	-	-	1,018	505	1,523
Safety Fence Steel Tee Post 5'	2370.150	21.00 ea	101	137	-	-	-	237	79	316
Site Erosion Control (Revise)		1.00 ls	5,882	3,231				9,113	4,617	13,730
015713 Temporary Erosion & Sediment Control			5,882	3,231				9,113	4,617	13,730
311000 Site Clearing										
0212- Clear/Grub Site (Revise)										

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
0212- Clear/Grub Site (Revise)										
Clear and Grub Site -Medium	2314.100	2.00 ac	5,446	-	-		-	5,446	4,275	9,722
John Deere 350 Excavator (271 HP) (L)	1900.136	0.23 mnth	-	-	-	1,828	812	2,640		2,640
(3rd Party) Dump Truck, 10 wheel	1900.210	40.00 hr	-	-	4,200	-	-	4,200		4,200
John Deere 850 Dozer	1900.120	0.23 mnth	-	-	-	1,856	951	2,807		2,807
Water Truck, 4000?? Gallon	1900.210	0.23 mnth	-	-	-	1,044	278	1,322		1,322
Clear/Grub Site (Revise)		**2.00 ac**	**5,446**		**4,200**	**4,728**	**2,042**	**16,416**	**4,275**	**20,692**
311000 Site Clearing			**5,446**		**4,200**	**4,728**	**2,042**	**16,416**	**4,275**	**20,692**
312200 Grading										
0225- Strip & Replace Topsoil (Assume 4"") (Revise)										
Strip Topsoil to Stockpile	2314.200	848.00 lcy	1,275	-	-	-	-	1,275	1,001	2,277
Topsoil Placement	2303.100	412.00 lcy	923	-	-	-	-	923	724	1,647
John Deere 350 Excavator (271 HP) (L)	1900.136	0.15 mnth	-	-	-	1,198	532	1,730		1,730
(3rd Party) Dump Truck, 10 wheel	1900.210	26.00 hr	-	-	2,730	-	-	2,730		2,730
Water Truck, 4000?? Gallon	1900.210	0.15 mnth	-	-	-	684	182	866		866
John Deere 850 Dozer	1900.120	0.15 mnth	-	-	-	1,216	623	1,839		1,839
Strip & Replace Topsoil (Assume 4"") (Revise)		**1.00 ls**	**2,198**		**2,730**	**3,098**	**1,338**	**9,364**	**1,726**	**11,089**
312200 Grading			**2,198**		**2,730**	**3,098**	**1,338**	**9,364**	**1,726**	**11,089**
312323 Fill										
0232- Load, Hauloff & Dispose Excess Excavation (New)										
Load/Haul From Stockpile For Hauloff	2303.100	4,710.00 lcy	1,583	-	-	-	-	1,583	1,242	2,825
John Deere 624 Loader (172 HP) (M)	1900.132	0.40 mnth	-	-	-	1,980	1,188	3,168		3,168
(3rd Party) Dump Truck, 10 wheel (1 hr per 9 lcy Load)	1900.210	700.00 hr	-	-	73,500	-	-	73,500		73,500
Dump Fees by CY (Earth Disposal)	1714.100	4,710.00 lcy	-	11,775	-	-	-	11,775		11,775
John Deere 350 Excavator (271 HP) (L)	1900.136	0.50 mnth	-	-	-	3,940	1,750	5,690		5,690
Load, Hauloff & Dispose Excess Excavation (New)		**4,710.00 lcy**	**1,583**	**11,775**	**73,500**	**5,920**	**2,938**	**95,716**	**1,242**	**96,958**
0259-1 Riprap, Bedding & Geotextile (Same)										
Import Riprap	2302.600	31.00 cy	-	1,279	-	-	-	1,279		1,279
Rip Rap & Bedding Machine Place	2338.100	51.15 ton	492		-	-	-	492	386	877
Geotextile Fabric ( )	2360.100	145.00 sy	380	254	-	-	-	634	298	932
John Deere 200 Excavator	1900.136	0.09 mnth	-	-	-	432	200	632		632
John Deere 410 Backhoe	1900.131	0.09 mnth	-	-	-	264	137	400		400
Riprap, Bedding & Geotextile (Same)		**31.00 cy**	**872**	**1,533**		**696**	**337**	**3,437**	**684**	**4,121**
312323 Fill			**2,454**	**13,308**	**73,500**	**6,616**	**3,275**	**99,152**	**1,926**	**101,079**
323113 Chain Link Fence & Gates										
020- Site Security - Fencing (Same)										
6' Chain Link Fence & Gates	2820.006	1,000.00 lf	-	-	30,000	-	-	30,000		30,000
Site Security - Fencing (Same)		**1.00 ls**			**30,000**			**30,000**		**30,000**
323113 Chain Link Fence & Gates					**30,000**			**30,000**		**30,000**
329219 Seeding										
0298- Reseeding (Revise)										
Sub - Reseeding	2322.020	2.00 acr	-	-	14,000	-	-	14,000		14,000
Soil Retention Blanket (North American Green SC250)	2322.060	9,680.00 sy	-	-	14,520	-	-	14,520		14,520
Reseeding (Revise)		**2.00 acre**			**28,520**			**28,520**		**28,520**
329219 Seeding					**28,520**			**28,520**		**28,520**
02.00 Typical To Site			**15,981**	**16,539**	**138,950**	**14,442**	**6,654**	**192,565**	**12,545**	**205,110**
02.50 Retaining Walls										
312316 Excavation										
0234- Retaining Wall Str Excavation (New)										
Excavation - Mass	2317.105	2,093.00 lcy	3,582	-	-	-	-	3,582	2,812	6,394
John Deere 350 Excavator (271 HP) (L)	1900.136	0.23 mnth	-	-	-	1,789	795	2,583		2,583
John Deere 624 Loader (172 HP) (M)	1900.132	0.23 mnth	-	-	-	1,135	681	1,816		1,816
Water Truck, 4,000 Gallon (L)	1900.210	0.23 mnth	-	-	-	1,022	272	1,294		1,294
Precompact Subgrade Below Foundations	2300.600	258.00 sy	216	-	-	-	-	216	169	385
Machine Grade Below Structure	2301.100	258.00 sy	216	-	-	-	-	216	169	385
Wacker/Rammer Pad Foot Trench Roller (L)	1900.138	0.04 mnth	-	-	-	81	11	93		93
Water Truck, 4,000 Gallon (L)	1900.210	0.04 mnth	-	-	-	167	44	211		211
Retaining Wall Str Excavation (New)		**1,820.00 bcy**	**4,013**			**4,193**	**1,803**	**10,010**	**3,150**	**13,160**
312316 Excavation			**4,013**			**4,193**	**1,803**	**10,010**	**3,150**	**13,160**
312323 Fill										
0235- Backfill Retaining Walls										
Backfill - Mass	2319.302	2,107.50 lcy	7,681	-	-	-	-	7,681	6,030	13,711

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
0235- Backfill Retaining Walls										
Import Fill - Peastone	2305.100	192.00 cy	-	4,118	-	-	-	4,118		4,118
John Deere 350 Excavator (271 HP) (L)	1900.136	0.23 mnth	-	-	-	1,789	795	2,583		2,583
John Deere 624 Loader (172 HP) (M)	1900.132	0.23 mnth	-	-	-	1,135	681	1,816		1,816
Sakai SV540 Compactor Single Drum 84" (160 HP) (L)	1900.138	0.23 mnth	-	-	-	999	375	1,373		1,373
Wacker/Rammer Pad Foot Trench Roller (L)	1900.138	0.23 mnth	-	-	-	499	68	568		568
Water Truck, 4,000 Gallon (L)	1900.210	0.23 mnth	-	-	-	1,022	272	1,294		1,294
Backfill Retaining Walls		**1,686.00 bcy**	**7,681**	**4,118**		**5,443**	**2,191**	**19,434**	**6,030**	**25,464**
312323 Fill			**7,681**	**4,118**		**5,443**	**2,191**	**19,434**	**6,030**	**25,464**
329500 Retaining Walls										
0242-8 Retaining Wall Allowance (No Information) New										
Retaining Wall Allowance	2322.510	3,340.00 sf			167,000	-	-	167,000		167,000
Retaining Wall Allowance (No Information) New		**3,340.00 sf**			**167,000**			**167,000**		**167,000**
329500 Retaining Walls					**167,000**			**167,000**		**167,000**
02.50 Retaining Walls			**11,694**	**4,118**	**167,000**	**9,637**	**3,994**	**196,443**	**9,180**	**205,624**
03.00 Access Road Improvements										
312200 Grading										
0232- Excavation @ Access Road (New)										
Site Excavation	2303.100	1,416.00 lcy	1,794	-	-	-	-	1,794	1,408	3,202
John Deere 350 Excavator (271 HP) (L)	1900.136	0.09 mnth	-	-	-	717	319	1,036		1,036
John Deere 624 Loader (172 HP) (M)	1900.132	0.09 mnth	-	-	-	455	273	728		728
(3rd Party) Dump Truck, 10 wheel	1900.210	32.00 hr	-	-	3,360	-	-	3,360		3,360
John Deere 850 Dozer (192 HP) (L)	1900.120	0.09 mnth	-	-	-	728	373	1,101		1,101
Precompact Base of Fill	2300.600	2,922.00 sy	407	-	-	-	-	407	319	726
Sakai SV540 Compactor Single Drum 84" (160 HP) (L)	1900.138	0.05 mnth	-	-	-	198	74	272		272
Water Truck, 4,000 Gallon (L)	1900.210	0.05 mnth	-	-	-	203	54	257		257
John Deere 850 Dozer (192 HP) (L)	1900.120	0.05 mnth	-	-	-	360	185	545		545
Excavation @ Access Road (New)		**1,231.00 bcy**	**2,201**		**3,360**	**2,661**	**1,277**	**9,499**	**1,728**	**11,226**
0233- Embankment @ Access Road (New)										
Site Fill	2303.100	1,303.00 lcy	1,534	-	-	-	-	1,534	1,205	2,739
Sakai SV540 Compactor Single Drum 84" (160 HP) (L)	1900.138	0.09 mnth	-	-	-	400	150	551		551
Water Truck, 4,000 Gallon (L)	1900.210	0.09 mnth	-	-	-	410	109	519		519
Embankment @ Access Road (New)		**1,042.00 bcy**	**1,534**			**810**	**259**	**2,604**	**1,205**	**3,808**
312200 Grading			**3,735**		**3,360**	**3,470**	**1,537**	**12,102**	**2,932**	**15,034**
321123 Aggregate Base Course										
0250- Assume 6" Roadbase Surfacing (Revise)										
Sub-Grade/Compact Roads	2300.600	1,750.00 sy	560	-	-	-	-	560	440	1,000
Fine Grade/Compact Roads	2301.100	1,750.00 sy	1,120	-	-	-	-	1,120	879	1,999
Base - Roads	2339.510	365.00 lcy	1,142	-	-	-	-	1,142	897	2,039
Import Gravel Base	2305.250	584.00 bcy	0	11,884	-	-	-	11,885	0	11,885
Rental Equip - Owner Operated Blade	1950.110	0.11 mnth	-	-	1,563			1,563		1,563
John Deere 624 Loader (172 HP) (M)	1900.132	0.11 mnth		-	-	550	330	880		880
Sakai SV540 Compactor Single Drum 84" (160 HP) (L)	1900.138	0.11 mnth		-	-	484	182	666		666
Water Truck, 4,000 Gallon (L)	1900.210	0.11 mnth		-	-	495	132	627		627
Assume 6" Roadbase Surfacing (Revise)		**292.00 bcy**	**2,823**	**11,884**	**1,563**	**1,529**	**644**	**18,442**	**2,216**	**20,658**
321123 Aggregate Base Course			**2,823**	**11,884**	**1,563**	**1,529**	**644**	**18,442**	**2,216**	**20,658**
03.00 Access Road Improvements			**6,558**	**11,884**	**4,923**	**4,999**	**2,180**	**30,544**	**5,148**	**35,692**
04.00 Demo Masonry Dam										
021000 No Specification Given										
0204-1 Demo Masonry Dam (Same)										
Demo 10" Reinforced Block	2220.480	800.00 sf	1,792	-	-		-	1,792	1,407	3,199
JD 240 w/ Small Jaw Concrete Pulverizer (177 HP) (L)	1900.136	0.09 mnth		-	-	1,056	246	1,301		1,301
John Deere 350 Excavator (271 HP) (L)	1900.136	0.09 mnth	-	-	-	717	319	1,036		1,036
John Deere 624 Loader (172 HP) (M)	1900.132	0.09 mnth		-	-	455	273	728		728
(3rd Party) Dump Truck, 10 wheel	1900.210	12.00 hr		-	1,260	-	-	1,260		1,260
Dump Fees by ton (Masonry Dam)	1714.100	48.00 tn	0	2,160	-	-	-	2,160	0	2,160
Demo Masonry Dam (Same)		**1.00 ls**	**1,792**	**2,160**	**1,260**	**2,228**	**837**	**8,277**	**1,407**	**9,684**
021000 No Specification Given			**1,792**	**2,160**	**1,260**	**2,228**	**837**	**8,277**	**1,407**	**9,684**
04.00 Demo Masonry Dam			**1,792**	**2,160**	**1,260**	**2,228**	**837**	**8,277**	**1,407**	**9,684**
05.00 1,000,000 Gal Welded Steel Tank										
033000 Cast-in-Place Concrete										

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
0309- Circular Wall Concrete Tank Foundation (Revise)										
Pump Place Walls	3310.260	45.75 cy	1,410	-	-	-	1,713	3,123	1,107	4,230
4000 psi Concrete	3310.100	45.75 cy	-	11,749	-	-	-	11,749		11,749
Wall Placement Count	3310.360	2.00 ea	-	0	-	-	-	0		0
Job Built with Plyform 0-4'	3100.180	1,646.41 sf	12,054	2,074	-	-	-	14,129	9,463	23,592
CJ Prep Walls	3350.170	24.00 sf	44	4	-	-	-	48	35	82
Finish- Top of Wall	3350.110	308.70 sf	318		-	-	-	318	250	568
Liquid Curing Walls	3390.170	308.70 sf	23	12	-	-	-	35	18	53
Grind/Patch Walls	3350.130	1,646.41 sf	1,454	82	-	-	-	1,536	1,141	2,678
Chamfer 3/4"	3150.625	411.60 lf	451	65	-	-	-	516	354	871
Oil Wall Forms	3100.310	1,646.41 sf	-	33	-	-	-	33		33
Nails and Hardware	3150.200	1,646.41 sf	-	66	-	-	-	66		66
Form Ties 18"	3150.632	412.00 ea	-	618	-	-	-	618		618
Dimension Lumber	3150.200	1,646.41 sf	-	494	-	-	-	494		494
Rebar Supply	3200.980	6.00 tn		7,500	-	-	-	7,500	0	7,500
Rebar Bricks	3200.980	55.00 ea	-	22	-	-	-	22		22
Rebar Chairs	3200.980	412.00 ea	-	165	-	-	-	165		165
Rebar Acc: wire and acc	3200.980	1.00 ls	-	50	-	-	-	50		50
Air Compressor 185 cfm	1900.010	1.00 mnth	-	-	-	750	705	1,455		1,455
Equip Rental - Sinker Drill & bits	1900.300	1.00 mnth	-	500	-	2,200	500	3,200		3,200
Rebar Install (sub)	3200.980	6.00 tn		-	4,500	-	-	4,500		4,500
Rebar Contingency	3200.980	0.60 tn		750	-	-	-	750		750
Rebar Install (sub) (Contingency)	3200.980	0.60 tn		-	450	-	-	450		450
Circular Wall Concrete Tank Foundation (Revise)		**45.75 cy**	**15,755**	**24,184**	**4,950**	**2,950**	**2,918**	**50,757**	**12,367**	**63,124**
033000 Cast-in-Place Concrete			**15,755**	**24,184**	**4,950**	**2,950**	**2,918**	**50,757**	**12,367**	**63,124**
312316 Excavation										
0234- Str Excavation @ Steel Tank (Revise)										
Excavation - Mass	2317.105	1,574.00 lcy	5,641	-	-	-	-	5,641	4,428	10,070
John Deere 350 Excavator (271 HP) (L)	1900.136	0.31 mnth	-	-	-	2,466	1,096	3,562		3,562
Water Truck, 4000?? Gallon	1900.210	0.31 mnth	-	-	-	1,409	376	1,784		1,784
(3rd Party) Dump Truck, 10 wheel	1900.210	107.47 hr	-	-	11,284	-	-	11,284		11,284
Precompact Subgrade Below Foundations	2300.600	392.00 sy	134	-	-	-	-	134	105	240
Machine Grade Below Structure	2301.100	392.00 sy	134	-	-	-	-	134	105	240
Komatsu 200 Excavator w/ Breaker	1900.136	0.31 mnth	-	-	-	3,255	689	3,944		3,944
Sakai SV540 Compactor Single Drum 84" (160 HP) (L)	1900.138	0.02 mnth	-	-	-	101	38	139		139
Water Truck, 4,000 Gallon (L)	1900.210	0.02 mnth	-	-	-	104	28	131		131
Str Excavation @ Steel Tank (Revise)		**1,368.00 bcy**	**5,910**		**11,284**	**7,335**	**2,225**	**26,754**	**4,639**	**31,394**
312316 Excavation			**5,910**		**11,284**	**7,335**	**2,225**	**26,754**	**4,639**	**31,394**
312323 Fill										
0235- Exterior Backfill (Revise)										
Backfill - Mass	2319.302	387.50 lcy	5,332	-	-	-	-	5,332	4,186	9,518
Water Truck, 4000?? Gallon	1900.210	0.32 mnth	-	-	-	1,458	389	1,847		1,847
Wacker Pad Foot Trench Roller	1900.138	0.32 mnth	-	-	-	518	81	599		599
Mikasa Jumping Jack Compactor	1900.138	0.32 mnth	-	-	-	65	32	97		97
John Deere 410 Backhoe	1900.131	0.32 mnth	-	-	-	940	486	1,426		1,426
Exterior Backfill (Revise)		**310.00 bcy**	**5,332**			**2,981**	**988**	**9,301**	**4,186**	**13,487**
0235-3 Tank Interior Str Backfill (Revise)										
Backfill - Dental	2319.302	521.25 lcy	5,238	-	-	-	-	5,238	4,111	9,349
Import Fill Gravel Process (CL-6)	2302.600	417.00 bcy	-	16,663	-	-	-	16,663		16,663
John Deere 350 Excavator (271 HP) (L)	1900.136	0.13 mnth	-	-	-	1,001	445	1,445		1,445
Bobcat Skid Steer (85hp)- track	1900.131	0.13 mnth	-	-	-	419	254	673		673
Water Truck, 4000?? Gallon	1900.210	0.13 mnth	-	-	-	572	152	724		724
Wacker Pad Foot Trench Roller	1900.138	0.13 mnth	-	-	-	203	32	235		235
Mikasa Jumping Jack Compactor	1900.138	0.13 mnth	-	-	-	25	13	38		38
Bobcat E85 Mini-Excavator (60 HP) (L)	1900.136	0.13 mnth	-	-	-	381	152	533		533
Tank Interior Str Backfill (Revise)		**417.00 bcy**	**5,238**	**16,663**		**2,601**	**1,048**	**25,550**	**4,111**	**29,661**
0235-3 Tank Interior Treated Sand (Revise)										
Backfill - Dental	2319.302	82.50 lcy	2,431	-	-	-	-	2,431	1,909	4,340
Import Fill Sand	2302.600	66.00 bcy	-	3,267	-	-	-	3,267		3,267
John Deere 200 Excavator	1900.136	0.07 mnth	-	-	-	333	154	487		487
Bobcat Skid Steer (85hp)- track	1900.131	0.07 mnth	-	-	-	231	140	371		371
Water Truck, 4000?? Gallon	1900.210	0.07 mnth	-	-	-	315	84	399		399
Wacker Pad Foot Trench Roller	1900.138	0.07 mnth	-	-	-	112	18	130		130
Mikasa Jumping Jack Compactor	1900.138	0.07 mnth	-	-	-	14	7	21		21
Treated Base Tack Coat (Assume .75 gal/sy)	2740.840	358.00 sy	-	-	1,343	-	-	1,343		1,343

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
Tank Interior Treated Sand (Revise)		**66.00 bcy**	**2,431**	**3,267**	**1,343**	**1,005**	**403**	**8,448**	**1,909**	**10,357**
312323 Fill			**13,001**	**19,930**	**1,343**	**6,586**	**2,438**	**43,298**	**10,206**	**53,504**
330110 Site Piping										
026-1- Manhole @ Drain (Same)										
Manhole 6' Base	2327.030	1.00 ea	174	8,636	-	-	-	8,810	137	8,947
Manhole 6' Riser	2327.030	9.00 vf	353	0	-	-	-	353	277	629
Frame & Grate - Single	2327.120	1.00 ea	44	0	-	-	-	44	34	78
Manhole 6' Flat Cover	2327.030	1.00 ea	44	0	-	-	-	44	34	78
Grout Pipe in Manhole 24"	2327.090	3.00 ea	522	330	-	-	-	852	410	1,262
3000 psi Concrete Thrust Block	2333.070	9.00 cy	783	1,805	-	-	-	2,588	615	3,203
Manhole @ Drain (Same)		**9.00 vf**	**1,919**	**10,771**				**12,690**	**1,507**	**14,197**
02606- 4" Perforated Drain Line (Same)										
Trench Excavtion 8-10'	2333.010	325.00 lf	2,962	-	-	-	-	2,962	2,325	5,287
Trench Backfill 8-10'	2333.020	325.00 lf	3,888	-	-	-	-	3,888	3,052	6,939
Utility Bedding Peastone	2333.040	50.00 cy	-	2,400	-	-	-	2,400		2,400
Spoils to Waste	2333.060	51.10 cy	291	-	-	-	-	291	229	520
PVC SDR 35 Pipe 4" Perforated	2336.422	325.00 lf	926	822	-	-	-	1,748	727	2,475
PVC SDR 35 22 bend 4	2336.424	6.00 ea	103	47	-	-	-	149	80	230
PVC SDR 35 Pipe Cap 4	2336.434	1.00 ea	17	4	-	-	-	21	13	35
John Deere 350 Excavator (271 HP) (L)	1900.136	0.25 mnth	-	-	-	1,994	886	2,879		2,879
John Deere 624 Loader	1900.132	0.25 mnth	-	-	-	1,265	759	2,024		2,024
Water Truck, 4000?? Gallon	1900.210	0.13 mnth	-	-	-	567	151	718		718
Mikasa Jumping Jack Compactor	1900.138	0.13 mnth	-	-	-	25	13	38		38
Wacker Pad Foot Trench Roller	1900.138	0.13 mnth	-	-	-	202	32	233		233
Rodent Screen @ 4" Pipe	10210.100	1.00 ea	16	25	-	-	-	41	13	54
Komatsu 200 Excavator w/ Breaker	1900.136	0.25 mnth	-	-	-	2,631	557	3,188		3,188
Geotextile Fabric (Insert MFR name/#)	2360.100	108.00 sy	104	189	-	-	-	293	81	374
4" Perforated Drain Line (Same)		**325.00 lf**	**8,305**	**3,487**		**6,684**	**2,396**	**20,873**	**6,520**	**27,393**
02608- PS-46 PVC Pipe (Outlet Manhole to Daylight) (Same)										
Trench Excavtion 6- 8'	2333.010	30.00 lf	419	-	-	-	-	419	329	748
Trench Backfill 6- 8'	2333.020	30.00 lf	559	-	-	-	-	559	439	997
Pipe Bedding	2333.040	13.64 cy	-	533	-	-	-	533		533
Spoils to Waste	2333.060	15.00 cy	140	-	-	-	-	140	110	249
PVC PS-46 Pipe ??"	2336.436	30.00 lf	419	1,044	-	-	-	1,463	329	1,792
John Deere 350 Excavator (271 HP) (L)	1900.136	0.01 mnth	-	-	-	110	49	159		159
John Deere 624 Loader	1900.132	0.01 mnth	-	-	-	70	42	112		112
Water Truck, 4000?? Gallon	1900.210	0.01 mnth	-	-	-	32	8	40		40
Mikasa Jumping Jack Compactor	1900.138	0.01 mnth	-	-	-	1	1	2		2
Wacker Pad Foot Trench Roller	1900.138	0.01 mnth	-	-	-	11	2	13		13
Komatsu 200 Excavator w/ Breaker	1900.136	0.01 mnth	-	-	-	146	31	176		176
PS-46 PVC Pipe (Outlet Manhole to Daylight) (Same)		**30.00 lf**	**1,536**	**1,577**		**370**	**133**	**3,617**	**1,206**	**4,823**
02641- ??" Overflow line (Same)										
Trench Excavtion 4- 6'	2333.010	50.00 lf	220	-	-	-	-	220	173	393
Trench Backfill 4- 6'	2333.020	50.00 lf	330	-	-	-	-	330	259	590
Pipe Bedding	2333.040	10.90 cy	-	426	-	-	-	426		426
Spoils to Waste	2333.060	13.00 cy	57	-	-	-	-	57	45	102
Polybag 12" and Smaller	2333.090	60.00 lf	19	55	-	-	-	74	15	89
John Deere 350 Excavator (271 HP) (L)	1900.136	0.02 mnth	-	-	-	142	63	205		205
John Deere 410 Backhoe	1900.131	0.02 mnth	-	-	-	52	27	79		79
Water Truck, 4000?? Gallon	1900.210	0.01 mnth	-	-	-	41	11	51		51
Mikasa Jumping Jack Compactor	1900.138	0.01 mnth	-	-	-	2	1	3		3
Wacker Pad Foot Trench Roller	1900.138	0.01 mnth	-	-	-	14	2	17		17
Warning Tape Detectable	2333.080	60.00 ls	26	5	-	-	-	31	21	52
Tracer Wire	2333.080	60.00 ls	26	17	-	-	-	43	21	64
Testing Pressure & Leak - Piping	1166.100	1.00 ea	352	50	-	50	-	452	277	729
Dresser Couplings ??" Style 62 (@ ??" Drain) (Steel to PS-46)	2519.310	1.00 ea	176	500	-	-	-	676	138	814
NBG Kit 125# Steel ??in COR BLUE *	15125.010	1.00 ea	32	200	-	-	-	232	25	257
Drain Steel Overflow Pipe 24 (Assume by Tank Installer)	***15213.104***	***1.00 ea***			**-**	**-**	**-**			
Drain Steel Pipe ??"dia x 6'-6" Flange x 90 Bend x 9' PE	15213.104	1.00 ea	1,111	2,000	-	-	-	3,111	872	3,983
Drain Steel Pipe ??" Dia 2'-0" PE x PE	15213.104	1.00 ea	79	300	-	-	-	379	62	442
Komatsu 200 Excavator w/ Breaker	1900.136	0.02 mnth	-	-	-	187	40	227		227
Drain ??" Pipe Joint Restraint Assembly @ ??" MJ Valve	15213.104	1.00 ea	79	250	-	-	-	329	62	392
Drain ??" Pipe Joint Restraint Assembly @ ??" Dresser Couplings	15213.104	2.00 ea	159	500	-	-	-	659	125	783
Drain Steel Pipe ??" Dia 35'-0" PE x ??x??Tee x PE	15213.104	1.00 ea	556	4,000	-	-	-	4,556	436	4,992
DI MJ Transition Gasket ??" (MJ Valve to Steel)	2511.340	2.00 ea	79	250	-	-	-	329	62	392
Dresser Couplings ??" Style 62 (@ ??" Drain) (Steel to Steel)	2519.310	1.00 ea	128	500	-	-	-	628	100	728

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
??" Overflow line (Same)		44.00 lf	3,432	9,052		488	144	13,116	2,694	15,810
02641- Under Tank Steel Pipe @ Distribution Line (Same)										
Distribution Steel Pipe ??"dia x 6'-6" PE x 90 Bend x 9' PE	15213.104	1.00 ea	1,111	2,500	-	-	-	3,611	872	4,483
Distribution Steel Pipe ??" Dia 2'-0" PE x PE	15213.104	1.00 ea	79	300	-	-	-	379	62	442
Distribution ??" Pipe Joint Restraint Assembly @ ??" MJ Valve	15213.104	1.00 ea	79	250	-	-	-	329	62	392
Distribution ??" Pipe Joint Restraint Assembly @ ??" Dresser Couplings	15213.104	1.00 ea	79	250	-	-	-	329	62	392
DI MJ Transition Gasket ??" (MJ Valve to Steel)	2511.340	2.00 ea	64	250	-	-	-	314	50	364
Dresser Couplings ??" Style 62 (@ ??" Distribution) (Steel To Steel)	2519.310	1.00 ea	128	500	-	-	-	628	100	728
Under Tank Steel Pipe @ Distribution Line (Same)		1.00 ls	1,541	4,050				5,591	1,210	6,801
02641- Under Tank Steel Pipe @ Inlet (Same)										
Inlet Steel Pipe ??" dia x 6'-6" Flange x 90 Bend x 9' PE	15213.104	1.00 ea	1,111	2,500	-	-	-	3,611	872	4,483
Inlet ??" Pipe Joint Restraint Assembly @ ??" Dresser Couplings	15213.104	1.00 ea	79	250	-	-	-	329	62	392
Inlet ??" Flange x 45 x PE (Assume By Tank Installer)	***15213.104***	***1.00 ea***			**-**	**-**	**-**			
Dresser Couplings ??" Style 62 (DIxSteel) (@ ??" Inlet)	2519.310	1.00 ea	352	500	-	-	-	852	277	1,129
NBG Kit 125# Steel ??in COR BLUE *	15125.010	1.00 ea	32	200	-	-	-	232	25	257
Under Tank Steel Pipe @ Inlet (Same)		1.00 ls	1,575	3,450				5,025	1,236	6,261
330110 Site Piping			18,309	32,388		7,542	2,673	60,911	14,372	75,284
331600 Water Utility Storage Tanks										
11-500 Welded Steel Tank (Revise)										
Tank Foundation Design (Assume by Owner)	13031.100	1.00 ls			0	-	-	0		0
Tank Design	13031.100	1.00 ls	-	-	10,000	-	-	10,000		10,000
Tank Fabrication & Erection (1,000,000 Gal)	13031.100	1.00 ea	-	-	360,000	-	-	360,000		360,000
Tank Interior Painting	13031.100	15,473.00 sf	-	-	124,867	-	-	124,867		124,867
Tank Exterior Painting	13031.100	11,944.00 sf	-	-	96,388	-	-	96,388		96,388
Tank Superintendent	1022.100	13.00 wk	18,850	-	-		-	18,850	13,969	32,819
Mixing System For Welded Steel Tank	13031.100	1.00 ls	3,840	40,000	-	-	-	43,840	3,014	46,854
Welded Steel Tank (Revise)		1.00 ls	22,690	40,000	591,255			653,945	16,983	670,928
331600 Water Utility Storage Tanks			22,690	40,000	591,255			653,945	16,983	670,928
05.00 1,000,000 Gal Welded Steel Tank			**75,664**	**116,502**	**608,832**	**24,413**	**10,255**	**835,666**	**58,568**	**894,234**
06.00 PEMB Building										
033000 Cast-in-Place Concrete										
0301-A Assume 16ea 4'x4'x1' Column Pads @ Plant Building (Revise)										
4000 psi Concrete	3310.100	9.48 cy		2,435	-	-	-	2,435		2,435
Other Placement Count	3310.360	2.00 ea		0	-	-	-	0		0
Truck Place Wall Footings	3310.150	9.48 cy	156	-	-	-	-	156	122	278
Formwork Isolated Footing >12"	3100.102	256.00 sf	2,949	134	-	-	-	3,084	2,315	5,399
Finegrade Below Concrete	3150.650	256.00 sf	138	-	-	-	-	138	108	246
Finish- Float	3350.110	256.00 sf	98	2	-	-	-	100	77	177
Liquid Curing Compounds	3390.170	256.00 sf	20	8	-	-	-	27	15	43
Road Base Below Concrete	2305.300	10.67 cy	161	232	-	-	-	393	126	520
Oil Footing Forms	3100.310	256.00 sf	10	5	-	-	-	15	8	23
Nails and Hardware	3150.200	256.00 sf	0	10	-	-	-	10	0	10
Dimension Lumber	3150.200	256.00 sf	0	77	-	-	-	77	0	77
Rebar Bricks	3200.980	64.00 ea	0	32	-	-	-	32	0	32
Assume 16ea 4'x4'x1' Column Pads @ Plant Building (Revise)		9.48 cy	3,531	2,935				6,466	2,772	9,238
0302- Interior Slab Assume 60'x100'x8" @ Plant Bldg (Revise)										
4000 psi Concrete	3310.100	122.62 cy	0	31,489	-	-	-	31,489	0	31,489
Slab Placement Count	3310.360	4.00 ea		0	-	-	-	0		0
Crane Place Slab on Grade	3310.230	122.62 cy	2,267	-	-	-	-	2,267	1,780	4,047
Formwork S.O.G. Const Joints < 1'	3100.120	432.50 sf	7,640	681	-	-	-	8,321	5,997	14,318
CJ Prep Slab	3350.170	521.98 sf	501	78	-	-	-	579	393	973
Finegrade Below Concrete	3150.650	4,941.40 sf	2,657	-	-	-	-	2,657	2,085	4,742
Finish- Hard Trowel	3350.110	4,941.40 sf	2,657		-	-	-	2,657	2,085	4,742
Liquid Curing Compounds	3390.170	4,941.40 sf	380	148	-	-	-	528	298	826
Chamfer 3/4"	3150.625	320.00 lf	183	50	-	-	-	233	144	377
6 Mil. Vapor Barrier	3150.630	4,941.40 sf	380	82	-	-	-	461	298	759
Expansion Joint	3150.720	214.40 sf	165	68	-	-	-	232	129	361
Expansion Joint Sealant	3150.720	370.84 lf	142	214	-	-	-	357	112	468
Oil SOG Form	3100.310	466.56 sf	0	9	-	-	-	9	0	10
Nails and Hardware	3150.200	466.56 sf	0	19	-	-	-	19	0	19
Dimension Lumber	3150.200	466.56 sf	0	140	-	-	-	140	0	140
Rebar Bricks	3200.980	310.00 ea	0	155	-	-	-	155	0	155
Formwork S.O.G. Const Joints < 1'	3100.120	34.06 sf	602	54	-	-	-	655	472	1,128
Formwork Edge Form	3100.120	318.84 lf	612	100	-	-	-	713	481	1,193

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
Interior Slab Assume 60'x100'x8" @ Plant Bldg (Revise)		**122.62 cy**	**18,185**	**33,287**				**51,472**	**14,275**	**65,747**
0302- Garage Door Apron Assume 4 ea 16'x16'x8" @ (Plant Bldg) (Revise)										
4000 psi Concrete	3310.100	25.42 cy	0	6,528	-	-	-	6,528	0	6,528
Slab Placement Count	3310.360	2.00 ea		0	-	-	-	0		0
Truck Place Slab on Grade	3310.230	25.42 cy	470	-	-	-	-	470	369	839
Formwork S.O.G. Edge Form < 1'	3100.120	128.64 sf	988	101	-	-	-	1,089	776	1,865
Finegrade Below Concrete	3150.650	1,024.00 sf	551	-	-	-	-	551	432	983
Finish- Broom	3350.110	1,024.00 sf	551	6	-	-	-	557	432	989
Liquid Curing Compounds	3390.170	1,024.00 sf	79	31	-	-	-	109	62	171
Chamfer 3/4"	3150.625	64.00 lf	37	10	-	-	-	47	29	75
6 Mil. Vapor Barrier	3150.630	1,024.00 sf	79	17	-	-	-	96	62	157
Road Base Below Concrete	2305.300	18.96 cy	286	413	-	-	-	699	224	923
Expansion Joint	3150.720	42.88 sf	33	14	-	-	-	46	26	72
Expansion Joint Sealant	3150.720	64.00 lf	25	37	-	-	-	62	19	81
Oil SOG Form	3100.310	128.64 sf	0	3	-	-	-	3	0	3
Nails and Hardware	3150.200	128.64 sf	0	5	-	-	-	5	0	5
Dimension Lumber	3150.200	128.64 sf	0	39	-	-	-	39	0	39
WWM 4/4- W 4 Rolls	3220.110	1,095.68 sf	248	357	-	-	-	605	195	800
Rebar Bricks	3200.980	276.00 ea	0	138	-	-	-	138	0	138
Garage Door Apron Assume 4 ea 16'x16'x8" @ (Plant Bldg) (Revise)		**25.42 cy**	**3,345**	**7,697**				**11,042**	**2,626**	**13,668**
0302- Man Door Stoop Assume 5 ea 4'x5'x8" A (Plant Bldg) (Revise)										
4000 psi Concrete	3310.100	2.50 cy		642	-	-	-	642	0	642
Slab Placement Count	3310.360	2.00 ea		0	-	-	-	0		0
Truck Place Slab on Grade	3310.230	2.50 cy	46	-	-	-	-	46	36	83
Formwork S.O.G. Edge Form < 1'	3100.120	43.55 sf	334	34	-	-	-	369	263	631
Finegrade Below Concrete	3150.650	100.00 sf	54	-	-	-	-	54	42	96
Finish- Broom	3350.110	100.00 sf	54	1	-	-	-	54	42	97
Liquid Curing Compounds	3390.170	100.00 sf	8	3	-	-	-	11	6	17
Chamfer 3/4"	3150.625	65.00 lf	37	10	-	-	-	47	29	77
6 Mil. Vapor Barrier	3150.630	100.00 sf	8	2	-	-	-	9	6	15
Road Base Below Concrete	2305.300	1.85 cy	28	40	-	-	-	68	22	90
Expansion Joint	3150.720	16.75 sf	13	5	-	-	-	18	10	28
Expansion Joint Sealant	3150.720	25.00 lf	10	14	-	-	-	24	8	32
Oil SOG Form	3100.310	43.55 sf	0	1	-	-	-	1		1
Nails and Hardware	3150.200	43.55 sf	0	2	-	-	-	2	0	2
Dimension Lumber	3150.200	43.55 sf	0	13	-	-	-	13	0	13
WWM 4/4- W 4 Rolls	3220.110	107.00 sf	24	35	-	-	-	59	19	78
Rebar Bricks	3200.980	20.00 ea	0	10	-	-	-	10	0	10
Man Door Stoop Assume 5 ea 4'x5'x8" A (Plant Bldg) (Revise)		**2.50 cy**	**615**	**812**				**1,428**	**483**	**1,911**
0302- Concrete Sidewalk Around Plant Bldg Assume 200'x4'x6" (Revise)										
4000 psi Concrete	3310.100	14.82 cy		3,806	-	-	-	3,806	0	3,806
Slab Placement Count	3310.360	4.00 ea		0	-	-	-	0		0
Truck Place Slab on Grade	3310.230	14.82 cy	274	-	-	-	-	274	215	489
Formwork S.O.G. Edge Form < 1'	3100.120	108.00 sf	829	85	-	-	-	914	651	1,566
Finegrade Below Concrete	3150.650	800.00 sf	430	-	-	-	-	430	338	768
Finish- Broom	3350.110	800.00 sf	430	5	-	-	-	435	338	772
Liquid Curing Compounds	3390.170	800.00 sf	61	24	-	-	-	85	48	134
6 Mil. Vapor Barrier	3150.630	800.00 sf	61	13	-	-	-	75	48	123
Road Base Below Concrete	2305.300	14.82 cy	223	323	-	-	-	546	175	722
Expansion Joint	3150.720	108.00 sf	83	34	-	-	-	117	65	182
Expansion Joint Sealant	3150.720	216.00 lf	83	125	-	-	-	208	65	273
Oil SOG Form	3100.310	108.00 sf	0	2	-	-	-	2	0	2
Nails and Hardware	3150.200	108.00 sf	0	4	-	-	-	4	0	4
Dimension Lumber	3150.200	108.00 sf	0	32	-	-	-	32	0	32
Formwork S.O.G. Const Joints < 1'	3100.120	8.00 sf	141	13	-	-	-	154	111	265
Concrete Sidewalk Around Plant Bldg Assume 200'x4'x6" (Revise)		**14.82 cy**	**2,617**	**4,466**				**7,083**	**2,055**	**9,138**
0302- Grated Trench Slab (New)										
4000 psi Concrete	3310.100	54.83 cy	-	14,081	-	-	-	14,081		14,081
Slab Placement Count	3310.360	2.00 ea	-	0	-	-	-	0		0
Crane Place Slab on Grade	3310.230	54.83 cy	1,141	-	-	-	-	1,141	895	2,036
Formwork S.O.G. Edge Form < 1'	3100.120	330.86 sf	2,859	261	-	-	-	3,119	2,244	5,363
Formwork S.O.G. Const Joints < 1'	3100.120	15.34 sf	305	24	-	-	-	329	239	568
CJ Prep Slab	3350.170	15.34 sf	17	2	-	-	-	19	13	32
Finegrade Below Concrete	3150.650	1,480.47 sf	895	-	-	-	-	895	703	1,598
Finish- Hard Trowel	3350.110	1,480.47 sf	895		-	-	-	895	703	1,598
Liquid Curing Compounds	3390.170	1,480.47 sf	128	44	-	-	-	172	100	273
Waterstop 9" Bulb	3510.610	340.86 lf	1,325	2,147	-	-	-	3,473	1,040	4,513

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
0302- Grated Trench Slab (New)										
6 Mil. Vapor Barrier	3150.630	1,480.47 sf	128	24	-	-	-	152	100	253
Oil SOG Form	3100.310	346.20 sf	0	7	-	-	-	7	0	7
Nails and Hardware	3150.200	346.20 sf	0	14	-	-	-	14	0	14
Dimension Lumber	3150.200	346.20 sf	0	104	-	-	-	104	0	104
Rebar Bricks	3200.980	92.53 ea	0	46	-	-	-	46	0	46
Expansion Joint Sealant	3150.720	15.34 lf	7	9	-	-	-	15	5	21
Grated Trench Slab (New)		**54.83 cy**	**7,699**	**16,764**				**24,463**	**6,044**	**30,507**
0303- Assume 316.68'x10"x4.34' Grade Beam @ Plant Bldg (Revise)										
Truck Place Walls	3310.260	42.76 cy	799	-	-	-	-	799	628	1,427
4000 psi Concrete	3310.100	42.76 cy	0	10,981	-	-	-	10,981	0	10,981
Wall Placement Count	3310.360	6.00 ea		0	-	-	-	0		0
Panel Form System 0-4'	3100.180	2,748.79 sf	9,148	3,175	-	-	-	12,323	7,181	19,504
CJ Prep Walls	3350.170	75.64 sf	79	11	-	-	-	90	62	152
Finish- Top of Wall	3350.110	266.02 sf	155		-	-	-	155	122	277
Liquid Curing Walls	3390.170	3,014.81 sf	125	121	-	-	-	246	98	344
Grind/Patch Walls	3350.130	2,748.79 sf	1,372	137	-	-	-	1,510	1,077	2,587
Oil Wall Forms	3100.310	2,770.62 sf	1	55	-	-	-	56	1	57
Nails and Hardware	3150.200	2,770.62 sf	1	111	-	-	-	112	1	112
Form Ties 12"	3150.632	687.20 ea	0	1,031	-	-	-	1,031	0	1,031
Dimension Lumber	3150.200	2,770.62 sf	1	831	-	-	-	832	1	833
Rebar Templates	3200.980	316.68 lf	659	158	-	-	-	817	517	1,334
Rebar Bricks	3200.980	80.00 ea	0	40	-	-	-	40	0	40
Wall Bulkhead Forms	3150.192	21.83 sf	418	29	-	-	-	446	328	774
Assume 316.68'x10"x4.34' Grade Beam @ Plant Bldg (Revise)		**42.76 cy**	**12,758**	**16,680**				**29,438**	**10,015**	**39,453**
0303- Grated Trench Walls (New)										
Crane Place Walls	3310.260	42.60 cy	1,202	-	-	-	-	1,202	944	2,146
4000 psi Concrete	3310.100	42.60 cy	-	10,940	-	-	-	10,940		10,940
Wall Placement Count	3310.360	4.00 ea	-	0	-	-	-	0		0
Panel Form System 4-8'	3100.180	2,738.71 sf	9,027	3,163	-	-	-	12,190	7,086	19,276
Wall Bulkhead Forms	3150.192	21.87 sf	332	29	-	-	-	360	260	621
CJ Prep Walls	3350.170	301.50 sf	248	45	-	-	-	294	195	489
Finish- Top of Wall	3350.110	265.04 sf	122		-	-	-	122	96	218
Liquid Curing Walls	3390.170	3,003.75 sf	99	120	-	-	-	219	78	297
Grind/Patch Walls	3350.130	2,738.71 sf	1,083	137	-	-	-	1,220	850	2,070
Waterstop 9" Bulb	3510.610	43.40 lf	129	273	-	-	-	402	101	503
Oil Wall Forms	3100.310	2,738.71 sf	1	55	-	-	-	56	1	56
Nails and Hardware	3150.200	2,738.71 sf	1	110	-	-	-	110	1	111
Form Ties 12"	3150.632	684.68 ea	0	1,027	-	-	-	1,027	0	1,027
Dimension Lumber	3150.200	2,738.71 sf	1	822	-	-	-	822	1	823
Rebar Templates	3200.980	315.52 lf	520	158	-	-	-	678	408	1,086
Grated Trench Walls (New)		**42.60 cy**	**12,765**	**16,879**				**29,644**	**10,020**	**39,664**
0307- Assume 16ea 2'x2'x4.34' Column Concrete (Revise)										
4000 psi Concrete	3310.100	10.29 cy		2,642	-	-	-	2,642		2,642
Other Placement Count	3310.360	3.00 ea		0	-	-	-	0		0
Truck Place Piers & Columns	3310.270	10.20 cy	250	-	-	-	-	250	196	446
Formwork Rectangle Columns 0 - 8'	3100.110	555.52 sf	4,160	292	-	-	-	4,451	3,265	7,717
Liquid Curing Compounds	3390.170	619.52 sf	52	19	-	-	-	70	40	111
Grind/Patch Columns	3350.130	609.52 sf	378	30	-	-	-	408	297	705
Chamfer 3/4"	***3150.625***	***0.00 lf***	***0***	***0***	***-***	***-***	***-***	***0***	***0***	***0***
Oil Column Forms	3100.310	555.52 sf	0	11	-	-	-	11	0	11
Dimension Lumber	3150.200	555.52 sf	0	167	-	-	-	167	0	167
Nails and Hardware	3150.200	555.52 sf	0	22	-	-	-	22	0	23
Set Anchor Bolts	3150.700	64.00 ea	532	640	-	-	-	1,172	418	1,590
Finish- Top of Wall	3350.110	64.00 sf	37		-	-	-	37	29	67
Assume 16ea 2'x2'x4.34' Column Concrete (Revise)		**10.29 cy**	**5,409**	**3,823**				**9,232**	**4,246**	**13,478**
0310- Equipment Pad Concrete (Same)										
Equipment Pad Form 8"	3100.164	155.44 sf	597	96	-	-	-	693	469	1,162
Oil Equipment Pad Form	3100.310	155.44 sf	0	3	-	-	-	3	0	3
4000 psi Concrete	3310.100	19.06 cy	0	4,894	-	-	-	4,894		4,894
Other Placement Count	3310.360	2.50 ea		0	-	-	-	0		0
Crane Place Equipment Pads	3310.300	19.06 cy	313	-	-	-	-	313	246	559
Set Anchor Bolts	3150.700	30.00 ea	230	300	-	-	-	530	181	711
Liquid Curing Compounds	3390.170	768.00 sf	59	23	-	-	-	82	46	128
Finish- Hard Trowel	3350.110	768.00 sf	413		-	-	-	413	324	737
Chamfer	3150.625	272.00 lf	156	43	-	-	-	198	122	321

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
0310- Equipment Pad Concrete (Same)										
Nails and Hardware	3150.200	155.44 sf	0	6	-	-	-	6	0	6
Drill and Epoxy #4	3210.101	192.00 ea	1,475	484	-	-	-	1,958	1,158	3,116
Equipment Pad Concrete (Same)		**19.06 cy**	**3,243**	**5,849**				**9,092**	**2,546**	**11,638**
0380- Concrete Equipment @ (Plant Bldg) (Revise)										
Concrete Crane Buckets	3995.100	2.00 mnth		-	-	300	-	300		300
Generators	3995.100	2.00 mnth		-	-	600	-	600		600
Concrete Vibrators	3995.100	2.00 mnth		-	-	600	-	600		600
Formwork Freight	3150.200	2.00 ld		-	-	-	2,400	2,400		2,400
Formwork Freight	3150.200	2.00 ld		-	-	-	2,400	2,400		2,400
Air Compressor 185 cfm (66 HP) (L)	1900.010	2.00 mnth		-	-	1,500	1,410	2,910		2,910
Grove RT760/RT700, 60 ton (240 HP) (L)	1900.100	2.00 mnth	9,200	900	-	20,800	3,000	33,900	7,932	41,832
Concrete Equipment @ (Plant Bldg) (Revise)		**1.00 ls**	**9,200**	**900**		**23,800**	**9,210**	**43,110**	**7,932**	**51,042**
0385- Reinforcement @ (Plant Bldg) (Revise)										
Rebar Supply	3200.980	36.60 tn	0	45,750	-	-	-	45,750		45,750
Rebar Install (sub)	3200.980	36.60 tn	0	-	43,920	-	-	43,920	0	43,920
Rebar Acc: wire and acc	3200.980	1.00 ls		500	-	-	-	500		500
Wall Spreaders	3200.980	1.00 ls		500	-	-	-	500		500
Rebar Contingency	3200.980	3.70 tn		4,625	-	-	-	4,625		4,625
Rebar Install (sub) Contingency	3200.980	3.70 tn		-	4,440	-	-	4,440		4,440
Reinforcement @ (Plant Bldg) (Revise)		**10.00 tn**	**0**	**51,375**	**48,360**			**99,735**	**0**	**99,735**
033000 Cast-in-Place Concrete			**79,367**	**161,468**	**48,360**	**23,800**	**9,210**	**322,205**	**63,013**	**385,218**
051000 No Specification Given										
05 50- Misc Metals @ Plant Building										
Misc Fabrication #1 - Grating Cross Supports for 12' wide area	5001.130	9.00 ea	288	6,750	-	-	-	7,038	226	7,264
Anchors for Grating Cross Supports (Assuming 4 ea per end of Grating Cross Supports)	5001.120	72.00 ea	288	2,520	-	-	-	2,808	226	3,034
Alum Floor Grating 2"	5001.120	1,068.00 sf	3	37,380	-	-	-	37,383	3	37,386
Alum Grating Angle - Embed	5001.145	330.00 lf	0	4,950	-	-	-	4,950	0	4,950
Misc Metals Freight	5000.925	1.00 ls	-	2,500	-	-	-	2,500		2,500
Misc Metals @ Plant Building		**1.00 ea**	**580**	**54,100**				**54,680**	**455**	**55,134**
05 55- Bollards - 8 ea assumed @ OH Doors										
Bollards - 8" x 7.5'	5001.125	8.00 ea	1,664	2,800	-	-	-	4,464	1,306	5,770
Excavation - Dental	2317.105	16.00 cy	20	-	-	-	-	20	16	37
Backfill - Dental	2319.302	16.00 cy	64	-	-	-	-	64	50	114
Formwork Sonotube 24"	3100.112	32.00 lf	235	403	-	-	-	638	184	822
Truck Place Piers & Columns	3310.270	4.50 cy	85	-	-	-	-	85	67	151
4500 psi Concrete	3310.100	4.50 cy	-	1,155	-	-	-	1,155		1,155
Finish- Broom	3350.110	25.13 sf	11	0	-	-	-	11	9	20
Liquid Curing Compounds	3390.170	25.13 sf	2	1	-	-	-	2	1	4
John Deere 410 Backhoe (96 HP) (L)	1900.131	0.05 mnth	-	-	-	131	68	198		198
Bollards - 8 ea assumed @ OH Doors		**8.00 EA**	**2,081**	**4,359**		**131**	**68**	**6,638**	**1,633**	**8,271**
05 60- Plant Building Grating & Embed (Revised)										
Alum Floor Grating 2" (Tyson has Mat'l)	5001.120	1,122.00 sf	1,257	0	-	-	-	1,257	986	2,243
Alum Grating Angle - Embed (Tyson has Mat'l)	5001.145	320.00 lf	1,024	0	-	-	-	1,024	804	1,828
Plant Building Grating & Embed (Revised)		**1.00 ls**	**2,281**					**2,281**	**1,790**	**4,071**
051000 No Specification Given			**4,941**	**58,459**		**131**	**68**	**63,598**	**3,878**	**67,477**
061000 No Specification Given										
0600 1- Misc. Interior Improvement Allowance										
Misc. Interior Improvement Allowance	6090.500	1.00 ls	-		-	-	10,000	10,000		10,000
Misc. Interior Improvement Allowance							**10,000**	**10,000**		**10,000**
0603 4- 2x4 Metal Interior Stud Walls										
Track 3 5/8" 18 Ga.	9270.200	76.00 lf	37	488	-	-	-	525	29	554
Buy Studs 3 5/8" 20 Ga.	9270.500	2,012.00 lf	-	6,459	-	-	-	6,459		6,459
Buy Studs 6" 18 Ga. (Headers)	9270.700	28.00 lf	-	180	-	-	-	180		180
GWB 5/8" on Wood gt 10'	9250.300	3,040.00 sf	1,488	3,253	-	-	-	4,741	1,168	5,910
Taping GWB - 3 Coats	9250.850	3,040.00 sf	7,442	760		-	-	8,202	5,842	14,044
Unfaced Batts 3.5" R-11 @Wall	7210.200	1,520.00 sf	491	3,253	-	-	-	3,744	386	4,130
Studs 3 5/8" @ 16" 20 ga	9270.500	1,520.00 sf	3,349	-	-	-	-	3,349	2,629	5,978
Sub - Metal Framing	***9250.980***	***1.00 ls***	**-**	**-**		**-**	**-**			
Sub - Drywall	***9250.980***	***1.00 ls***	**-**	**-**		**-**	**-**			
2x4 Metal Interior Stud Walls		**76.00 lf**	**12,808**	**14,392**				**27,199**	**10,054**	**37,253**
07 2- FRP Paneling assumed in chem rooms on walls										
FRP Special - Paneling in Chem Rooms	5001.155	432.00 sf	1,797	2,160	-	-	-	3,957	1,411	5,368
FRP Adhesive	6090.700	1.00 ls	-	***150***	-	-	-	150		150

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
07 2- FRP Paneling assumed in chem rooms on walls										
FRP Special - Trim Pieces, Corners, Base, Edge Pieces, etc.	5001.155	1.00 ls	320	500	-	-	-	820	251	1,071
FRP Special - Caulking fo FRP	5001.155	1.00 ls	128	100	-	-	-	228	100	328
Misc Materials - FRP	5001.155	1.00 ea	-	100	-	-	-	100		100
FRP Paneling assumed in chem rooms on walls		**432.00 sf**	**2,245**	**3,010**				**5,255**	**1,762**	**7,018**
13-02 Pre-Engineered Metal Building (PEMB) 60'x100'										
Metal Building Subcontractor	13122.100	1.00 ls	-	-	***384,777***	-	-	384,777		384,777
Metal Building Subcontractor bond	13122.100	1.00 ls	-	-	*	-	-	0	0	0
Metal Building Purchase (60'x100')	13122.100	6,000.00 sf	-	-	*	-	-	0	0	0
Metal Building Erection	13122.100	1.00 ls	-	-	*	-	-	0	0	0
Metal Building Anchor Bolts (16 columns x 8 anchors per assumed)	13122.100	128.00 ea	1,024	2,560	-	-	-	3,584	804	4,388
Erect Columns	13122.100	16.00 ea	-	-	*	-	-	0	0	0
Erect Beams	13122.100	12.00 ea	-	-	*	-	-	0	0	0
Erect Girders	13122.100	18.00 ea	-	-	*	-	-	0	0	0
Erect Wind Braces	13122.100	8.00 ea	-	-	*	-	-	0	0	0
Erect Roofing Assembly	13122.100	6,000.00 sf	-	-	*	-	-	0	0	0
Erect Siding System (320'x20')	13122.100	6,400.00 sf	-	-	*	-	-	0	0	0
Non Shrink Grout (14 ea x 1'x1'x2")	3150.700	2.67 cf	85	93	-	-	-	179	67	246
Grout Bearing Plates	3150.700	16.00 ea	384	-	-	-	-	384	301	685
Grove RT528, 28 ton (130 HP) (L)	1900.100	1.00 mnth	-	-	*	-	-	0	0	0
Genie 32' Scissor Lift (Requires Power Source)	1900.300	2.00 mnth	-	-	*	-	-	0	0	0
Boom Lift (L)	1900.300	2.00 mnth	-	-	*	-	-	0	0	0
RT Telescopic Forklift (8,000 lb) (110 HP) (L)	1900.300	2.00 mnth	-	-	*	-	-	0	0	0
Interior liner panel	7460.100	6,400.00 sf	-	-	*	-	-	0	0	0
Pre-Engineered Metal Building (PEMB) 60'x100'		**1.00 LS**	**1,493**	**2,653**	**384,777**			**388,924**	**1,172**	**390,096**
061000 No Specification Given			**16,546**	**20,055**	**384,777**		**10,000**	**431,378**	**12,989**	**444,367**
071000 No Specification Given										
07 3- Damproofing @ Perimeter (mci) Assumed										
Brush on Bituminous	7110.100	1,280.00 sf	655	685	-	-	-	1,340	514	1,855
Protective Board	7110.100	1,280.00 sf	455	1,370	-	-	-	1,824	357	2,181
Misc. Materials (Rollers, Rags, etc)	7110.100	1.00 ls	-	100	-	-	-	100		100
Damproofing @ Perimeter (mci) Assumed		**1,280.00 sf**	**1,110**	**2,154**				**3,264**	**871**	**4,136**
07 6- 2" Perimeter Insulation - Rigid (mci) Assumed										
Rigid Insulation 2.0 " @ Wall	7210.400	1,280.00 sf	410	2,739	-	-	-	3,149	322	3,470
Rigid Wall Insulation Adhesive	7210.400	1,280.00 sf	-	320	-	-	-	320		320
2" Perimeter Insulation - Rigid (mci) Assumed		**1,280.00 sf**	**410**	**3,059**				**3,469**	**322**	**3,790**
071000 No Specification Given			**1,520**	**5,214**				**6,733**	**1,193**	**7,926**
081000 No Specification Given										
0800- Hollow Metal Doors										
Purchase HM Doors & Frames	8110.110	1.00 ls	-	30,000	-	-	-	30,000		30,000
Install HM Single Frames (2 ea exterior)	8110.100	6.00 ea	768	***0***	-	-	-	768	603	1,371
Install HM Double Frames (All exterior)	8110.100	3.00 ea	768	***0***	-	-	-	768	603	1,371
HM Door Leafs (4 ea interior and don't need insulated)	8110.105	12.00 ea	1,536	***0***	-	-	-	1,536	1,206	2,742
Misc. Materials	8110.100	9.00 ea	-	450	-	-	-	450		450
Purchase Finish Hardware	8115.100	1.00 ls	-	***0***	-	-	-	0		0
Install Hardware by Leaf	8115.100	12.00 ea	1,536	-	-	-	-	1,536	1,206	2,742
Hollow Metal Doors		**12.00 ea**	**4,608**	**30,450**				**35,058**	**3,617**	**38,675**
0823- Windows & Glazing Allowance										
Aluminum Windows Allowance	8510.300	1.00 ls	768	2,200	0	-	-	2,968	603	3,571
Sub - Glazing Allowance	8120.300	1.00 ls	-	-	1,500	-	-	1,500		1,500
Windows & Glazing Allowance			**768**	**2,200**	**1,500**			**4,468**	**603**	**5,071**
0830- Overhead Doors (12'x14' W Roll Up										
Coiling OH Doors Elec Operated 12' H x 14' W	8360.100	4.00 ea	-	***0***	-	-	-	0	0	0
Sub - OH Doors	8110.110	1.00 ls	-	-	60,000	-	-	60,000		60,000
Overhead Doors (12'x14' W Roll Up		**1.00 LS**		**0**	**60,000**			**60,000**		**60,000**
081000 No Specification Given			**5,376**	**32,650**	**61,500**			**99,526**	**4,220**	**103,746**
099001 Coatings										
099 0- Painting Allowance										
Painting Subcontractor Exterior (Bollards, etc)	9910.100	1.00 ls	-	-	*	-	-	0	0	0
Sub - Painting Interior (Interior Doors, Gyp, Floor Sealer)	9910.200	1.00 ls	-	-	*	-	-	0	0	0
Cure and Seal Floors	3390.170	5,760.00 sf	553	1,440	-	-	-	1,993	434	2,427
Sub - Special Coatings Floors of Chem Rooms (Trowelled Epoxy???)	9960.100	160.00 sf	-	-	***98,894***	-	-	98,894		98,894
Pipe Labels -*	10430.100	1.00 ls	320	***500***	-	-	-	820	251	1,071

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
Painting Allowance		1.00 ls	873	1,940	98,894			101,707	685	102,392
099001 Coatings			873	1,940	98,894			101,707	685	102,392
101101 Identification Systems										
10-101 Specialties - Signage, Fire Extinguishers, etc.										
Fire Extinguisher CO2 10 lbs	10520.200	5.00 ea	160	1,000	-	-	-	1,160	126	1,286
First Aid Kit	10990.100	1.00 ea	64	500	-	-	-	564	50	614
Signs - Building ID	10430.100	1.00 ls	320	2,500	-	-	-	2,820	251	3,071
Signs - Exit Signs	10430.100	5.00 ea	80	500	-	-	-	580	63	643
Signs - Warning Signs	10430.100	10.00 ea	160	500	-	-	-	660	126	786
Misc. Materials	10430.100	1.00 ls	-	100	-	-	-	100		100
Specialties - Signage, Fire Extinguishers, etc.		1.00 LS	784	5,100				5,884	615	6,499
101101 Identification Systems			784	5,100				5,884	615	6,499
120001 No Specification Given										
12-01 Furnishings Allowance (Casework, Office, etc???)										
Sub - Casework	12310.100	1.00 ls	-	-	***10,000***	-	-	10,000		10,000
Base Cabinets Wood	12350.100	20.00 lf	-	-	*	-	-	0	0	0
Wall Cabinets Wood	12350.100	14.00 lf	-	-	*	-	-	0	0	0
Countertops Wood	12350.100	20.00 lf	-	-	*	-	-	0	0	0
Furnishings Allowance (Casework, Office, etc???)		1.00 LS			10,000			10,000		10,000
120001 No Specification Given					10,000			10,000		10,000
211000 No Specification Given										
13-01 Fire Protection - Sub (Allowance)										
Fire Sprinkler Sub (Allowance)	15405.004	1.00 ls	-	-	***20,000***	-	-	20,000		20,000
Fire Protection - Sub (Allowance)					20,000			20,000		20,000
211000 No Specification Given					20,000			20,000		20,000
221000 No Specification Given										
15 - 2 Plumbing - Sub Allowance										
Plumbing Subcontract Allowance	15403.100	1.00 ls	-	-	20,000	-	-	20,000		20,000
Plumbing - Sub Allowance		1.00 LS			20,000			20,000		20,000
221000 No Specification Given					20,000			20,000		20,000
231000 No Specification Given										
15 - 1 HVAC - Sub Allowance										
HVAC Subcontractor Allowance	15402.010	1.00 ls	-	-	40,000	-	-	40,000		40,000
HVAC - Sub Allowance		1.00 LS			40,000			40,000		40,000
231000 No Specification Given					40,000			40,000		40,000
261000 No Specification Given										
16 -1 Electronic Safety & Security - Allowance										
Electrical Sub - Electronic Safety & Security Allowance	16000.001	1.00 ls	-	-	***10,000***	-	-	10,000		10,000
Electronic Safety & Security - Allowance					10,000			10,000		10,000
261000 No Specification Given					10,000			10,000		10,000
312316 Excavation										
0234- Excavation Str @ (Plant Bldg) (Revise)										
Excavation - Mass	2317.105	3,668.50 lcy	13,148	-	-	-	-	13,148	10,321	23,469
John Deere 350 Excavator (271 HP) (L)	1900.136	0.74 mnth	-	-	-	5,792	2,573	8,364		8,364
Water Truck, 4000?? Gallon	1900.210	0.74 mnth	-	-	-	3,308	882	4,190		4,190
(3rd Party) Dump Truck, 10 wheel	1900.210	256.53 hr	-	-	26,936	-	-	26,936		26,936
Komatsu 200 Excavator w/ Breaker	1900.136	0.74 mnth	-	-	-	7,644	1,617	9,261		9,261
Excavation Str @ (Plant Bldg) (Revise)		3,190.00 bcy	13,148		26,936	16,743	5,072	61,898	10,321	72,219
312316 Excavation			13,148		26,936	16,743	5,072	61,898	10,321	72,219
312323 Fill										
0235- Exterior Common Backfill @ (Plant Bldg) (Revise)										
Backfill - Mass	2319.302	483.75 lcy	13,468	-	-	-	-	13,468	10,572	24,040
Water Truck, 4000?? Gallon	1900.210	0.40 mnth	-	-	-	1,818	485	2,303		2,303
Wacker Pad Foot Trench Roller	1900.138	0.40 mnth	-	-	-	646	101	747		747
Mikasa Jumping Jack Compactor	1900.138	0.40 mnth	-	-	-	81	40	121		121
John Deere 410 Backhoe	1900.131	0.40 mnth	-	-	-	1,172	606	1,778		1,778
Exterior Common Backfill @ (Plant Bldg) (Revise)		387.00 bcy	13,468			3,717	1,232	18,417	10,572	28,989
0235- Interior Backfill @ (Plant Bldg) (Revise)										
Backfill - Mass	2319.302	897.50 lcy	12,801	-	-	-	-	12,801	10,048	22,849
Water Truck, 4000?? Gallon	1900.210	0.75 mnth	-	-	-	3,380	901	4,281		4,281
Wacker Pad Foot Trench Roller	1900.138	0.75 mnth	-	-	-	1,202	188	1,389		1,389

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
0235- Interior Backfill @ (Plant Bldg) (Revise)										
Mikasa Jumping Jack Compactor	1900.138	0.75 mnth	-	-	-	150	75	225		225
John Deere 350 Excavator (271 HP) (L)	1900.136	0.75 mnth	-	-	-	5,918	2,629	8,546		8,546
Import Fill Gravel Process (CL-6)	2302.600	718.00 bcy	-	23,909	-	-	-	23,909		23,909
Bobcat E85 Mini-Excavator (60 HP) (L)	1900.136	0.75 mnth	-	-	-	2,253	901	3,154		3,154
John Deere 350 Excavator (271 HP) (L)	1900.136	0.75 mnth	-	-	-	5,918	2,629	8,546		8,546
Interior Backfill @ (Plant Bldg) (Revise)		718.00 bcy	12,801	23,909		18,820	7,322	62,852	10,048	72,901
312323 Fill			26,268	23,909		22,537	8,554	81,269	20,620	101,889
321123 Aggregate Base Course										
0250- Road Base @ Plant Site Assumed 6" Thick (Revise)										
Sub-Grade/Compact Roads	2300.600	866.00 sy	691	-	-	-	-	691	542	1,233
Fine Grade/Compact Roads	2301.100	866.00 sy	1,382	-	-	-	-	1,382	1,085	2,466
Base - Roads	2339.510	181.25 lcy	1,414	-	-	-	-	1,414	1,110	2,524
Import Gravel Base	2339.520	145.00 bcy	-	3,098	-	-	-	3,098		3,098
Sakai SV540	1900.138	0.07 mnth	-	-	-	290	109	399		399
Water Truck, 4000?? Gallon	1900.210	0.07 mnth	-	-	-	297	79	376		376
Rental Equip - Owner Operated Blade	1950.110	0.07 mnth	-	-	938			938		938
Road Base @ Plant Site Assumed 6" Thick (Revise)		145.00 bcy	3,487	3,098	938	587	188	8,298	2,737	11,035
321123 Aggregate Base Course			3,487	3,098	938	587	188	8,298	2,737	11,035
06.00 PEMB Building			**152,310**	**311,894**	**721,404**	**63,798**	**33,092**	**1,282,497**	**120,273**	**1,402,770**
07.00 Distribution Pipeline										
330110 Site Piping										
02605-1 14" Treated Water (From Tank to Distribution) (Revised)										
Testing Pressure & Leak - Piping	1166.100	1.00 ea	220	50	-	50	-	320	173	493
Trench Excavtion 6- 8'	2333.010	1,125.00 lf	4,644	-	-	-	-	4,644	3,646	8,290
Trench Backfill 6- 8'	2333.020	1,125.00 lf	6,192	-	-	-	-	6,192	4,861	11,053
Bedding Sand	2305.200	774.32 cy	-	30,199	-	-	-	30,199		30,199
Spoils to Waste	2333.060	818.87 cy	2,254	-	-	-	-	2,254	1,769	4,023
PVC C-900 Pipe 14	2336.310	1,125.00 lf	4,644	67,473	-	-	-	72,117	3,646	75,763
DI MJ Compact Ell 22-½ 14	2511.314	6.00 ea	165	3,335	-	-	-	3,500	130	3,630
DI MJ Compact Ell 11-¼ 14	2511.314	5.00 ea	138	3,170	-	-	-	3,308	108	3,416
DI MJ Compact Tee 24x14	2511.324	1.00 ea	110	2,601	-	-	-	2,711	86	2,797
DI MJ Compact Solid Sleeve Long 14	2511.322	1.00 ea	55	487	-	-	-	542	43	585
John Deere 350 Excavator (271 HP) (L)	1900.136	0.51 mnth	-	-	-	4,027	1,789	5,815		5,815
John Deere 624 Loader (172 HP) (M)	1900.132	0.51 mnth	-	-	-	2,555	1,533	4,088		4,088
Water Truck, 4,000 Gallon (L)	1900.210	0.26 mnth	-	-	-	1,152	307	1,459		1,459
Mikasa Jumping Jack Compactor (L)	1900.138	0.26 mnth	-	-	-	51	26	77		77
Wacker/Rammer Pad Foot Trench Roller (L)	1900.138	0.26 mnth	-	-	-	563	77	640		640
Pot Hole Existing	2333.010	1.00 ea	110	-	-	-	-	110	86	197
Cross Existing	2333.010	1.00 ea	55	100	-	-	-	155	43	198
Cut Existing	2333.010	2.00 ea	110	-	-	-	-	110	86	196
Tie to Existing	2333.010	1.00 ea	55	50	-	-	-	105	43	148
Warning Tape Detectable	2333.080	1,125.00 lf	310	87	-	-	-	396	243	639
Tracer Wire	2333.080	1,140.00 lf	314	321	-	-	-	635	246	881
Tracer Wire Test Box	2333.080	1.00 ea	28	70	-	-	-	97	22	119
3500 psi Thrust Block Concrete	3310.105	45.56 cy	1,254	11,480	-	-	-	12,734	984	13,718
Valve - Gate 14"	2519.110	2.00 ea	66	16,008	-	-	-	16,074	52	16,126
Valve Box Assembly 6' Bury	2519.130	2.00 ea	165	380	-	-	-	545	130	675
Conc Block for Valve	2519.100	2.00 ea	28	80	-	-	-	108	22	129
Conc Pad for Valve Box	2519.100	2.00 ea	110	80	-	-	-	190	86	276
Valve - Marker Post	2519.100	2.00 ea	55	300	-	-	-	355	43	398
DI MEGALUG for PVC 14"	2511.612	29.00 ea	798	6,808	-	-	-	7,606	627	8,232
DI MEGALUG for PVC 24"	2511.612	4.00 ea	303	2,110	-	-	-	2,413	238	2,650
DI MJ Compact Solid Sleeve Long 24	2511.322	1.00 ea	151	1,292	-	-	-	1,443	119	1,562
Trench Box 8' Deep	2333.030	1,125.00 lf	0	-	-	3,094	-	3,094	0	3,094
Bedding Box	1900.300	0.51 mnth	-	-	-	409	26	434		434
John Deere 200 Excavator (141 HP) (L)	1900.136	0.51 mnth	-	-	-	2,427	1,124	3,551		3,551
John Deere 410 Backhoe (96 HP) (L)	1900.131	0.51 mnth	-	-	-	1,482	767	2,248		2,248
14" Treated Water (From Tank to Distribution) (Revised)		1,125.00 lf	22,333	146,480		15,810	5,647	190,270	17,531	207,801
330110 Site Piping			22,333	146,480		15,810	5,647	190,270	17,531	207,801
07.00 Distribution Pipeline			**22,333**	**146,480**		**15,810**	**5,647**	**190,270**	**17,531**	**207,801**
08.00 Feed Pipeline to PEMB										
330110 Site Piping										
02605-1 RAW Water (Existing To PEMB) Revised										

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
02605-1 RAW Water (Existing To PEMB) Revised										
Testing Pressure & Leak - Piping	1166.100	1.00 ea	220	50	-	50	-	320	173	493
Trench Excavtion 6- 8'	2333.010	1,054.00 lf	4,351	-	-	-	-	4,351	3,415	7,766
Trench Backfill 6- 8'	2333.020	1,054.00 lf	5,801	-	-	-	-	5,801	4,554	10,355
Bedding Sand	2305.200	725.46 cy	-	28,293	-	-	-	28,293		28,293
Spoils to Waste	2333.060	767.19 cy	2,111	-	-	-	-	2,111	1,657	3,769
PVC C-900 Pipe 14	2336.310	1,054.00 lf	4,351	63,215	-	-	-	67,566	3,415	70,981
DI MJ Compact Ell 90 14	2511.314	1.00 ea	28	705	-	-	-	733	22	754
DI MJ Compact Ell 22-½ 14	2511.314	5.00 ea	138	2,779	-	-	-	2,917	108	3,025
DI MJ Compact Ell 11-¼ 14	2511.314	4.00 ea	110	2,536	-	-	-	2,646	86	2,733
DI MJ Compact Tee 24x14	2511.324	1.00 ea	110	2,601	-	-	-	2,711	86	2,797
DI MJ Compact Solid Sleeve Long 14	2511.322	1.00 ea	55	487	-	-	-	542	43	585
John Deere 350 Excavator (271 HP) (L)	1900.136	0.48 mnth	-	-	-	3,775	1,677	5,451		5,451
John Deere 624 Loader (172 HP) (M)	1900.132	0.48 mnth	-	-	-	2,395	1,437	3,832		3,832
Water Truck, 4,000 Gallon (L)	1900.210	0.24 mnth	-	-	-	1,080	288	1,368		1,368
Mikasa Jumping Jack Compactor (L)	1900.138	0.24 mnth	-	-	-	48	24	72		72
Wacker/Rammer Pad Foot Trench Roller (L)	1900.138	0.24 mnth	-	-	-	528	72	600		600
Pot Hole Existing	2333.010	1.00 ea	110	-	-	-	-	110	86	196
Cut Existing	2333.010	2.00 ea	110	-	-	-	-	110	86	197
Tie to Existing	2333.010	1.00 ea	55	50	-	-	-	105	43	148
Warning Tape Detectable	2333.080	1,054.00 lf	290	81	-	-	-	371	228	599
Tracer Wire	2333.080	1,069.00 lf	294	301	-	-	-	595	231	826
Tracer Wire Test Box	2333.080	1.00 ea	28	70	-	-	-	97	22	119
3500 psi Thrust Block Concrete	3310.105	35.79 cy	985	9,020	-	-	-	10,005	773	10,778
Valve - Gate 14"	2519.110	2.00 ea	66	16,008	-	-	-	16,074	52	16,126
Valve Box Assembly 6' Bury	2519.130	2.00 ea	165	380	-	-	-	545	130	675
Conc Block for Valve	2519.100	2.00 ea	28	80	-	-	-	108	22	129
Conc Pad for Valve Box	2519.100	2.00 ea	110	80	-	-	-	190	86	277
Valve - Marker Post	2519.100	2.00 ea	55	300	-	-	-	355	43	398
DI MEGALUG for PVC 24"	2511.612	4.00 ea	303	2,110	-	-	-	2,413	238	2,650
DI MEGALUG for PVC 14"	2511.612	27.00 ea	743	6,338	-	-	-	7,081	583	7,665
DI MJ Compact Solid Sleeve Long 24	2511.322	1.00 ea	151	1,292	-	-	-	1,443	119	1,562
Trench Box 8' Deep	2333.030	1,054.00 lf	0	-	-	2,899	-	2,899	0	2,899
Bedding Box	1900.300	0.48 mnth	-	-	-	383	24	407		407
John Deere 200 Excavator (141 HP) (L)	1900.136	0.48 mnth	-	-	-	2,275	1,054	3,329		3,329
John Deere 410 Backhoe (96 HP) (L)	1900.131	0.48 mnth	-	-	-	1,389	719	2,108		2,108
RAW Water (Existing To PEMB) Revised		**1,054.00 lf**	**20,768**	**136,776**		**14,822**	**5,294**	**177,660**	**16,303**	**193,962**
330110 Site Piping			**20,768**	**136,776**		**14,822**	**5,294**	**177,660**	**16,303**	**193,962**
08.00 Feed Pipeline to PEMB			**20,768**	**136,776**		**14,822**	**5,294**	**177,660**	**16,303**	**193,962**
09.00 14" PEMB to Tank										
330110 Site Piping										
02605-1 Finished Water (PEMB To Tank) Revised										
Testing Pressure & Leak - Piping	1166.100	1.00 ea	256	50	-	50	-	356	201	557
Trench Excavtion 4- 6'	2333.010	40.00 lf	128	-	-	-	-	128	100	228
Trench Backfill 4- 6'	2333.020	40.00 lf	192	-	-	-	-	192	151	343
Bedding Sand	2305.200	27.53 cy	-	1,074	-	-	-	1,074		1,074
Spoils to Waste	2333.060	29.12 cy	93	-	-	-	-	93	73	166
PVC C-900 Pipe 14	2336.310	41.00 lf	197	2,459	-	-	-	2,656	154	2,810
DI MJ Compact Ell 45 14	2511.314	1.00 ea	29	549	-	-	-	578	23	600
DI MJ Compact Solid Sleeve Long 14	2511.322	2.00 ea	128	974	-	-	-	1,102	100	1,203
John Deere 350 Excavator (271 HP) (L)	1900.136	0.02 mnth	-	-	-	142	63	205		205
John Deere 624 Loader (172 HP) (M)	1900.132	0.02 mnth	-	-	-	90	54	144		144
Water Truck, 4,000 Gallon (L)	1900.210	0.01 mnth	-	-	-	41	11	51		51
Mikasa Jumping Jack Compactor (L)	1900.138	0.01 mnth	-	-	-	2	1	3		3
Wacker/Rammer Pad Foot Trench Roller (L)	1900.138	0.01 mnth	-	-	-	20	3	23		23
Warning Tape Detectable	2333.080	40.00 lf	13	3	-	-	-	16	10	26
Tracer Wire	2333.080	55.00 lf	18	15	-	-	-	33	14	47
Tracer Wire Test Box	2333.080	1.00 ea	32	70	-	-	-	102	25	127
3500 psi Thrust Block Concrete	3310.105	3.25 cy	104	820	-	-	-	924	82	1,006
Valve - Gate 14"	2519.110	1.00 ea	38	8,004	-	-	-	8,042	30	8,072
Valve Box Assembly 6' Bury	2519.130	1.00 ea	96	190	-	-	-	286	75	361
Conc Block for Valve	2519.100	1.00 ea	16	40	-	-	-	56	13	69
Conc Pad for Valve Box	2519.100	1.00 ea	64	40	-	-	-	104	50	154
Valve - Marker Post	2519.100	1.00 ea	32	150	-	-	-	182	25	207
DI MEGALUG for PVC 14"	2511.612	8.00 ea	256	1,878	-	-	-	2,134	201	2,335

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
Finished Water (PEMB To Tank) Revised		40.00 lf	1,692	16,316		344	131	18,484	1,328	19,812
330110 Site Piping			1,692	16,316		344	131	18,484	1,328	19,812
09.00 14" PEMB to Tank			**1,692**	**16,316**		**344**	**131**	**18,484**	**1,328**	**19,812**
09.50 Neutralized Water (Assumed to Daylight)										
330110 Site Piping										
02605-1 Assumed Neutralized Water (PEMB TO Daylight) New										
Testing Pressure & Leak - Piping	1166.100	1.00 ea	256	50	-	50	-	356	201	557
Trench Excavtion 4- 6'	2333.010	140.00 lf	448	-	-	-	-	448	352	800
Trench Backfill 4- 6'	2333.020	140.00 lf	672	-	-	-	-	672	528	1,200
Bedding Sand	2305.200	96.36 cy	-	3,758	-	-	-	3,758		3,758
Spoils to Waste	2333.060	101.90 cy	326	-	-	-	-	326	256	582
PVC C-900 Pipe 14	2336.310	140.00 lf	672	8,397	-	-	-	9,069	528	9,596
DI MJ Compact Ell 90 14	2511.314	3.00 ea	96	2,116	-	-	-	2,212	75	2,287
DI MJ Compact Ell 22-½ 14	2511.314	1.00 ea	32	556	-	-	-	588	25	613
DI MJ Compact Solid Sleeve Long 14	2511.322	1.00 ea	64	487	-	-	-	551	50	601
John Deere 350 Excavator (271 HP) (L)	1900.136	0.06 mnth	-	-	-	504	224	728		728
John Deere 624 Loader (172 HP) (M)	1900.132	0.06 mnth	-	-	-	320	192	512		512
Water Truck, 4,000 Gallon (L)	1900.210	0.03 mnth	-	-	-	144	38	182		182
Mikasa Jumping Jack Compactor (L)	1900.138	0.03 mnth	-	-	-	6	3	10		10
Wacker/Rammer Pad Foot Trench Roller (L)	1900.138	0.03 mnth	-	-	-	70	10	80		80
Warning Tape Detectable	2333.080	140.00 lf	45	11	-	-	-	56	35	91
Tracer Wire	2333.080	155.00 lf	50	44	-	-	-	93	39	132
Tracer Wire Test Box	2333.080	1.00 ea	32	70	-	-	-	102	25	127
3500 psi Thrust Block Concrete	3310.105	13.02 cy	417	3,280	-	-	-	3,697	327	4,024
Valve - Gate 14"	2519.110	1.00 ea	38	8,004	-	-	-	8,042	30	8,072
Valve Box Assembly 6' Bury	2519.130	1.00 ea	96	190	-	-	-	286	75	361
Conc Block for Valve	2519.100	1.00 ea	16	40	-	-	-	56	13	69
Conc Pad for Valve Box	2519.100	1.00 ea	64	40	-	-	-	104	50	154
Valve - Marker Post	2519.100	1.00 ea	32	150	-	-	-	182	25	207
DI MEGALUG for PVC 14"	2511.612	12.00 ea	384	2,817	-	-	-	3,201	301	3,502
Valve - Gate Flap/Drainage 14"	2519.220	1.00 ea	112	1,807	-	-	-	1,919	88	2,007
Assumed Neutralized Water (PEMB TO Daylight) New		140.00 lf	3,851	31,816		1,095	467	37,229	3,023	40,253
330110 Site Piping			3,851	31,816		1,095	467	37,229	3,023	40,253
09.50 Neutralized Water (Assumed to Daylight)			**3,851**	**31,816**		**1,095**	**467**	**37,229**	**3,023**	**40,253**
10.00 Ultra Filtration										
033000 Cast-in-Place Concrete										
0330 4- Pipe Encasement (RAW Water Under PEMB) New										
Other Placement Count	3310.360	1.00 ea	-	0	-	-	-	0		0
Formwork Pipe Encasement	3100.108	160.32 sf	1,026	168	-	-	-	1,194	805	2,000
Place Pipe Encasement	3310.195	6.72 cy	230	899	-	-	-	1,130	181	1,310
Nails and Hardware	3150.200	160.32 sf	0	6	-	-	-	6	0	6
Form Ties Specialty	3150.632	15.00 ea	96	75	-	-	-	171	75	246
Pipe Tie Downs (Medium)	3150.200	4.00 ea	128	200	-	-	-	328	100	428
Dimension Lumber	3150.200	160.32 sf	0	48	-	-	-	48	0	48
Oil SOG Form	3100.310	160.32 sf	0	3	-	-	-	3	0	3
Finish- Rough	3350.110	60.12 sf	17	0	-	-	-	18	14	31
Liquid Curing Compounds	3390.170	60.12 sf	4	2	-	-	-	6	3	9
Pipe Encasement (RAW Water Under PEMB) New		6.72 CY	1,502	1,403				2,904	1,179	4,083
033000 Cast-in-Place Concrete			1,502	1,403				2,904	1,179	4,083
111000 No Specification Given										
11-500 Process Equipment (Revise)										
Ultra Flex UF & RO Membrane Skids (Filter Tech)	11000.300	3.00 ea	28,800	2,254,113	-	-	-	2,282,913	22,608	2,305,521
Backwash Pump Skid (3 Pumps)	11700.020	1.00 ls	768	0	-	-	-	768	603	1,371
Recycle Skid	11700.020	1.00 ls	696	0	-	-	-	696	573	1,269
Recycle Feed Skid	11700.020	1.00 ls	696	0	-	-	-	696	573	1,269
RAW Water Pre-Strainer Skid	11700.020	1.00 ls	696	0	-	-	-	696	573	1,269
13,000 Neutralization Tank	11000.395	1.00 ea	696	0	-	-	-	696	573	1,269
3,000 Recycle Buffer Tank	11000.395	1.00 ea	29	0	-	-	-	29	24	53
Chlorination Feed System	11200.040	1.00 ls	1,280	2,500	-	-	-	3,780	1,005	4,785
Sodium Hydroxide/Hypochlorite System	11200.040	1.00 ls	1,280	2,500	-	-	-	3,780	1,005	4,785
Grove RT760/RT700, 60 ton (240 HP) (L)	1900.100	2.00 mnth	9,200	900	-	20,800	3,000	33,900	7,932	41,832
Process Equipment (Revise)		1.00 ls	44,141	2,260,013		20,800	3,000	2,327,954	35,470	2,363,424
111000 No Specification Given			44,141	2,260,013		20,800	3,000	2,327,954	35,470	2,363,424
402001 Process Pipe & Pipe Fittings										

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
150-55 80 Neutralized Water (New)										
PVC Sch 80 PIPE 14" PE	15211.203	53.00 lf	678	4,924	-	-	-	5,603	533	6,135
PVC Sch 80 90 EL 14" S	15211.207	2.00 ea	64	2,602	-	-	-	2,666	50	2,717
PVC Sch 80 45 EL 14" SOCxSOC	15211.208	1.00 ea	32	1,006	-	-	-	1,038	25	1,064
PVC Sch 80 Straight CPLG 14" S	15211.204	3.00 ea	96	1,148	-	-	-	1,244	75	1,319
PVC Sch 80 Flange Van Stone 14" Soc	15211.223	1.00 ea	40	754	-	-	-	794	31	826
PVC Sch 80 Cement	15211.201	3.00 qt		103	-	-	-	103		103
PVC Sch 80 Primer	15211.201	3.00 qt		92	-	-	-	92		92
NBG Kit 125# SS 14in	15125.012	2.00 ea	32	242	-	-	-	274	25	299
Valve Butterfly Flanged 125# 14in	15110.020	1.00 ea	16	2,760	-	-	-	2,776	13	2,789
Sleeve w/Ring Steel WS-20-37-S-	15121.850	1.00 ea	128	350	-	-	-	478	100	578
Link Seal Size LS-475-S	15123.100	36.00 ea	173	566	-	-	-	738	136	874
PS Pipe Stand for Allowance	15060.406	1.00 ls	384	900	-	-	-	1,284	301	1,585
Neutralized Water (New)		**53.00 lf**	**1,643**	**15,447**				**17,091**	**1,290**	**18,381**
150-55 80 RAW Water to Pre-Strainer (New)										
PVC Sch 80 PIPE 8" PE	15211.203	27.00 lf	259	980	-	-	-	1,239	203	1,443
PVC Sch 80 PIPE 14" PE	15211.203	54.00 lf	691	5,017	-	-	-	5,708	543	6,251
PVC Sch 80 90 EL 8" S	15211.207	1.00 ea	13	134	-	-	-	147	10	157
PVC Sch 80 90 EL 14" S	15211.207	4.00 ea	128	5,205	-	-	-	5,333	100	5,433
PVC Sch 80 TEE 14" S	15211.211	1.00 ea	32	2,450	-	-	-	2,482	25	2,507
PVC Sch 80 Straight CPLG 8" S	15211.204	1.00 ea	13	55	-	-	-	68	10	78
PVC Sch 80 Straight CPLG 14" S	15211.204	1.00 ea	32	383	-	-	-	415	25	440
PVC Sch 80 Cement	15211.201	4.00 qt		138	-	-	-	138		138
PVC Sch 80 Primer	15211.201	4.00 qt		122	-	-	-	122		122
PVC Sch 80 Concentric Reducer Coupling 14X8 S	15211.205	3.00 ea	96	1,795	-	-	-	1,891	75	1,967
NBG Kit 125# SS 8in	15125.012	12.00 ea	115	423	-	-	-	538	90	628
NBG Kit 125# SS 14in	15125.012	1.00 ea	16	121	-	-	-	137	13	149
Valve Butterfly Flanged 125# 8in	15110.020	4.00 ea	128	4,795	-	-	-	4,923	100	5,024
Sleeve w/Ring Steel WS-18-37-S-	15121.850	1.00 ea	128	596	-	-	-	724	100	824
Link Seal Size LS-475-S	15123.100	36.00 ea	173	566	-	-	-	738	136	874
Valve PRV Flange Bronze 150# 8"	15110.715	2.00 ea	460	24,918	-	-	-	25,377	361	25,738
PVC Sch 80 TEE 14X14X8" S	15211.212	1.00 ea	32	1,480	-	-	-	1,512	25	1,537
PS Pipe Stand for Allowance	15060.406	1.00 ls	480	1,125	-	-	-	1,605	377	1,982
RAW Water to Pre-Strainer (New)		**81.00 lf**	**2,796**	**50,303**				**53,098**	**2,194**	**55,293**
150-55 80 RAW Water (Pre-Strainer To Ultra Filtration) New										
PVC Sch 80 PIPE 14" PE	15211.203	80.00 lf	1,024	7,433	-	-	-	8,457	804	9,261
PVC Sch 80 90 EL 14" S	15211.207	6.00 ea	192	7,807	-	-	-	7,999	151	8,150
PVC Sch 80 TEE 14" S	15211.211	4.00 ea	128	9,800	-	-	-	9,928	100	10,029
PVC Sch 80 Straight CPLG 14" S	15211.204	5.00 ea	160	1,913	-	-	-	2,073	126	2,199
PVC Sch 80 CAP 14" S	15211.228	2.00 ea	64	1,079	-	-	-	1,143	50	1,193
PVC Sch 80 Cement	15211.201	4.00 qt		138	-	-	-	138	0	138
PVC Sch 80 Primer	15211.201	4.00 qt		122	-	-	-	122		122
NBG Kit 125# SS 14in	15125.012	4.00 ea	64	484	-	-	-	548	50	598
PS Pipe Stand for Allowance	15060.406	1.00 ls	480	1,125	-	-	-	1,605	377	1,982
PVC Sch 80 Flange Van Stone 14" Soc	15211.223	3.00 ea	120	2,263	-	-	-	2,383	94	2,477
RAW Water (Pre-Strainer To Ultra Filtration) New		**80.00 lf**	**2,232**	**32,164**				**34,396**	**1,752**	**36,148**
150-55 80 Backwash (Ultra to Tanks) New										
PVC Sch 80 PIPE 14" PE	15211.203	150.00 lf	1,920	13,937	-	-	-	15,857	1,507	17,364
PVC Sch 80 90 EL 14" S	15211.207	7.00 ea	224	9,108	-	-	-	9,332	176	9,508
PVC Sch 80 TEE 14" S	15211.211	2.00 ea	64	4,900	-	-	-	4,964	50	5,014
PVC Sch 80 CROSS 14" S	15211.215	2.00 ea	64	6,502	-	-	-	6,566	50	6,616
PVC Sch 80 Straight CPLG 14" S	15211.204	10.00 ea	320	3,826	-	-	-	4,146	251	4,397
PVC Sch 80 CAP 14" S	15211.228	1.00 ea	32	540	-	-	-	572	25	597
PVC Sch 80 Flange Blind 14"	15211.222	2.00 ea	64	2,641	-	-	-	2,705	50	2,755
PVC Sch 80 Cement	15211.201	6.00 qt		207	-	-	-	207		207
PVC Sch 80 Primer	15211.201	6.00 qt		184	-	-	-	184		184
NBG Kit 125# SS 14in	15125.012	9.00 ea	144	1,088	-	-	-	1,232	113	1,345
Valve Butterfly Flanged 125# 14in	15110.020	2.00 ea	32	5,520	-	-	-	5,552	25	5,577
PVC Sch 80 Flange Van Stone 14" Soc	15211.223	7.00 ea	280	5,280	-	-	-	5,560	220	5,780
PS Pipe Stand for Allowance	15060.406	1.00 ls	960	2,250	-	-	-	3,210	754	3,964
Backwash (Ultra to Tanks) New		**150.00 lf**	**4,104**	**55,981**				**60,085**	**3,222**	**63,307**
150-55 80 Waste (Ultra to Neut Tank) New										
PVC Sch 80 PIPE 8" PE	15211.203	40.00 lf	384	1,452	-	-	-	1,836	301	2,137
PVC Sch 80 PIPE 14" PE	15211.203	50.00 lf	640	4,646	-	-	-	5,286	502	5,788
PVC Sch 80 90 EL 14" S	15211.207	3.00 ea	96	3,904	-	-	-	4,000	75	4,075
PVC Sch 80 45 EL 14" SOCxSOC	15211.208	1.00 ea	32	1,006	-	-	-	1,038	25	1,064
PVC Sch 80 TEE 14X14X8" S	15211.212	3.00 ea	96	4,440	-	-	-	4,536	75	4,612

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
150-55 80 Waste (Ultra to Neut Tank) New										
PVC Sch 80 Straight CPLG 8" S	15211.204	2.00 ea	26	110	-	-	-	136	20	156
PVC Sch 80 Straight CPLG 14" S	15211.204	3.00 ea	96	1,148	-	-	-	1,244	75	1,319
PVC Sch 80 CAP 14" S	15211.228	1.00 ea	32	540	-	-	-	572	25	597
PVC Sch 80 Flange Van Stone 14" Soc	15211.223	1.00 ea	40	754	-	-	-	794	31	826
PVC Sch 80 Cement	15211.201	2.00 qt		69	-	-	-	69		69
PVC Sch 80 Primer	15211.201	2.00 qt		61	-	-	-	61		61
NBG Kit 125# SS 14in	15125.012	1.00 ea	16	121	-	-	-	137	13	149
PS Pipe Stand for Allowance	15060.406	1.00 ls	480	600	-	-	-	1,080	377	1,457
Valve Butterfly Flanged 125# 8in	15110.020	3.00 ea	96	3,596	-	-	-	3,692	75	3,768
NBG Kit 125# SS 8in	15125.012	6.00 ea	58	211	-	-	-	269	45	314
PVC Sch 80 Flange Van Stone 8" Soc	15211.223	6.00 ea	77	402	-	-	-	479	60	539
Waste (Ultra to Neut Tank) New		**90.00 lf**	**2,168**	**23,061**				**25,229**	**1,702**	**26,930**
150-55 80 Backwash Supply (New)										
PVC Sch 80 PIPE 14" PE	15211.203	180.00 lf	2,304	16,724	-	-	-	19,028	1,809	20,836
PVC Sch 80 90 EL 14" S	15211.207	7.00 ea	224	9,108	-	-	-	9,332	176	9,508
PVC Sch 80 TEE 14" S	15211.211	9.00 ea	288	22,050	-	-	-	22,338	226	22,564
PVC Sch 80 Straight CPLG 14" S	15211.204	12.00 ea	384	4,591	-	-	-	4,975	301	5,277
PVC Sch 80 Cement	15211.201	4.00 qt		138	-	-	-	138		138
PVC Sch 80 Primer	15211.201	4.00 qt		122	-	-	-	122		122
PVC Sch 80 Concentric Reducer Coupling 14X8 S	15211.205	3.00 ea	96	1,795	-	-	-	1,891	75	1,967
PVC Sch 80 Concentric Reducer Coupling 14X6 S	15211.205	1.00 ea	32	654	-	-	-	686	25	711
PVC Sch 80 Concentric Reducer Coupling 14X10 S	15211.205	3.00 ea	96	1,756	-	-	-	1,852	75	1,927
PVC Sch 80 Flange Van Stone 14" Soc	15211.223	11.00 ea	440	8,297	-	-	-	8,737	345	9,082
PVC Sch 80 Flange Van Stone 10" Soc	15211.223	3.00 ea	67	544	-	-	-	611	53	664
NBG Kit 125# SS 10in	15125.012	9.00 ea	86	699	-	-	-	786	68	854
NBG Kit 125# SS 14in	15125.012	11.00 ea	176	1,330	-	-	-	1,506	138	1,644
Valve Butterfly Flanged 125# 10in	15110.020	3.00 ea	96	4,225	-	-	-	4,321	75	4,396
Valve Check Flange 125# 10in	15110.040	3.00 ea	96	15,127	-	-	-	15,223	75	15,298
PS Pipe Stand for Allowance	15060.406	1.00 ls	960	1,575	-	-	-	2,535	754	3,289
Valve Check Flange 125# 14in	15110.040	1.00 ea	56	10,918	-	-	-	10,974	44	11,018
Expansion Joint Flanged 10"	15112.070	3.00 ea	886	3,376	-	-	-	4,262	696	4,958
PVC Sch 80 CAP 14" S	15211.228	1.00 ea	32	540	-	-	-	572	25	597
Backwash Supply (New)		**180.00 lf**	**6,320**	**103,568**				**109,888**	**4,961**	**114,849**
150-55 80 Finished Water (New)										
PVC Sch 80 PIPE 14" PE	15211.203	110.00 lf	1,408	10,220	-	-	-	11,628	1,105	12,733
PVC Sch 80 90 EL 14" S	15211.207	3.00 ea	96	3,904	-	-	-	4,000	75	4,075
PVC Sch 80 TEE 14" S	15211.211	6.00 ea	192	14,700	-	-	-	14,892	151	15,043
PVC Sch 80 Straight CPLG 14" S	15211.204	7.00 ea	224	2,678	-	-	-	2,902	176	3,078
PVC Sch 80 CAP 8" S	15211.228	1.00 ea	13	122	-	-	-	135	10	145
PVC Sch 80 Cement	15211.201	4.00 qt		138	-	-	-	138		138
PVC Sch 80 Primer	15211.201	4.00 qt		122	-	-	-	122		122
PVC Sch 80 Concentric Reducer Coupling 14X12 S	15211.205	1.00 ea	32	351	-	-	-	383	25	408
PVC Sch 80 Concentric Reducer Coupling 14X8 S	15211.205	2.00 ea	64	1,197	-	-	-	1,261	50	1,311
PVC Sch 80 Concentric Reducer Coupling 14X6 S	15211.205	1.00 ea	32	654	-	-	-	686	25	711
PVC Sch 80 Concentric Reducer Coupling 6X3 S	15211.205	1.00 ea	7	109	-	-	-	115	5	121
PVC Sch 80 Concentric Reducer Coupling 14X10 S	15211.205	3.00 ea	96	1,756	-	-	-	1,852	75	1,927
PVC Sch 80 PIPE 12" PE	15211.203	10.00 lf	128	1,343	-	-	-	1,471	100	1,571
PVC Sch 80 Concentric Reducer Coupling 12X8 S	15211.205	3.00 ea	96	1,068	-	-	-	1,164	75	1,239
PVC Sch 80 TEE 12" S	15211.211	1.00 ea	32	2,051	-	-	-	2,083	25	2,108
PVC Sch 80 Flange Van Stone 8" Soc	15211.223	9.00 ea	115	603	-	-	-	719	90	809
PVC Sch 80 TEE 8" S	15211.211	3.00 ea	38	570	-	-	-	609	30	639
PVC Sch 80 90 EL 8" S	15211.207	4.00 ea	51	537	-	-	-	589	40	629
PVC Sch 80 Flange Van Stone 10" Soc	15211.223	3.00 ea	67	544	-	-	-	611	53	664
Valve Butterfly Flanged 125# 8in	15110.020	6.00 ea	192	7,193	-	-	-	7,385	151	7,536
Valve Butterfly Flanged 125# 14in	15110.020	1.00 ea	16	2,760	-	-	-	2,776	13	2,789
Valve Butterfly Flanged 125# 10in	15110.020	3.00 ea	96	4,225	-	-	-	4,321	75	4,396
NBG Kit 125# SS 8in	15125.012	12.00 ea	115	423	-	-	-	538	90	628
NBG Kit 125# SS 10in	15125.012	9.00 ea	86	699	-	-	-	786	68	854
NBG Kit 125# SS 14in	15125.012	2.00 ea	32	242	-	-	-	274	25	299
PVC Sch 80 PIPE 8" PE	15211.203	60.00 lf	576	2,177	-	-	-	2,753	452	3,206
Sleeve w/Ring Steel WS-18-37-S-	15121.850	1.00 ea	128	596	-	-	-	724	100	824
Link Seal Size LS-475-S	15123.100	36.00 ea	173	566	-	-	-	738	136	874
Expansion Joint Flanged 10"	15112.070	3.00 ea	886	3,376	-	-	-	4,262	696	4,958
PS Pipe Stand for Allowance	15060.406	1.00 ls	1,344	10,912	-	-	-	12,256	1,055	13,311
PVC Sch 80 Straight CPLG 8" S	15211.204	6.00 ea	77	331	-	-	-	408	60	469
PVC Sch 80 Straight CPLG 12" S	15211.204	1.00 ea	32	191	-	-	-	223	25	249

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
Finished Water (New)		**110.00 lf**	**6,445**	**76,358**				**82,803**	**5,059**	**87,862**
150-55 80 6" Backwash to Recycle Skid (New)										
PVC Sch 80 PIPE 6" PE	15211.203	15.00 lf	101	434	-	-	-	535	79	614
PVC Sch 80 90 EL 6" S	15211.207	3.00 ea	20	146	-	-	-	166	16	182
PVC Sch 80 Straight CPLG 6" S	15211.204	1.00 ea	7	41	-	-	-	47	5	53
PVC Sch 80 Flange Van Stone 6" Soc	15211.223	3.00 ea	20	112	-	-	-	132	16	148
PVC Sch 80 Cement	15211.201	1.00 qt		34	-	-	-	34		34
PVC Sch 80 Primer	15211.201	1.00 qt		31	-	-	-	31		31
NBG Kit 125# SS 6in	15125.012	3.00 ea	29	100	-	-	-	129	23	151
PS Pipe Stand for Allowance	15060.406	1.00 ls	192	450	-	-	-	642	151	793
Valve Butterfly Flanged 125# 6in	15110.020	1.00 ea	16	798	-	-	-	814	13	826
6" Backwash to Recycle Skid (New)		**15.00 lf**	**385**	**2,145**				**2,530**	**302**	**2,832**
150-55 80 3" (Recycle Skid to Recycle Feed Pump Skid) (New)										
PVC Sch 80 PIPE 3" PE	15211.203	18.00 lf	121	171	-	-	-	292	95	387
PVC Sch 80 90 EL 3" S	15211.207	2.00 ea	13	23	-	-	-	36	11	47
PVC Sch 80 Straight CPLG 3" S	15211.204	1.00 ea	7	15	-	-	-	22	5	27
PVC Sch 80 Flange Van Stone 3" Soc	15211.223	7.00 ea	47	131	-	-	-	178	37	215
NBG Kit 125# SS 3in	15125.012	7.00 ea	67	76	-	-	-	143	53	196
PS Pipe Stand for Allowance	15060.406	1.00 ls	96	225	-	-	-	321	75	396
Valve Butterfly Flanged 125# 3in	15110.020	2.00 ea	32	1,534	-	-	-	1,566	25	1,591
PVC Sch 80 TEE 3" S	15211.211	1.00 ea	7	21	-	-	-	27	5	33
3" (Recycle Skid to Recycle Feed Pump Skid) (New)		**15.00 lf**	**390**	**2,195**				**2,585**	**306**	**2,891**
150-55 80 3" Finished Water to Recycle Skid) (New)										
PVC Sch 80 PIPE 3" PE	15211.203	16.00 lf	108	152	-	-	-	259	84	344
PVC Sch 80 90 EL 3" S	15211.207	1.00 ea	7	11	-	-	-	18	5	23
PVC Sch 80 Straight CPLG 3" S	15211.204	1.00 ea	7	15	-	-	-	22	5	27
PVC Sch 80 Flange Van Stone 3" Soc	15211.223	2.00 ea	13	37	-	-	-	51	11	61
NBG Kit 125# SS 3in	15125.012	2.00 ea	19	22	-	-	-	41	15	56
Valve Butterfly Flanged 125# 3in	15110.020	1.00 ea	16	767	-	-	-	783	13	796
PVC Sch 80 EPDM UNION 3" S	15211.219	1.00 ea	7	36	-	-	-	43	5	48
PS Pipe Stand for Allowance	15060.406	1.00 ls	96	225	-	-	-	321	75	396
3" Finished Water to Recycle Skid) (New)		**16.00 lf**	**272**	**1,265**				**1,538**	**214**	**1,752**
150-55 80 3" Pipe (Recycled Feed Skid to Buffer Tank) New										
PVC Sch 80 PIPE 3" PE	15211.203	16.00 lf	108	152	-	-	-	259	84	344
PVC Sch 80 45 EL 3" SOCxSOC	15211.208	1.00 ea	7	26	-	-	-	33	5	38
PVC Sch 80 Straight CPLG 3" S	15211.204	1.00 ea	7	15	-	-	-	22	5	27
PVC Sch 80 Flange Van Stone 3" Soc	15211.223	2.00 ea	13	37	-	-	-	51	11	61
PVC Sch 80 Cement	15211.201	1.00 qt		34	-	-	-	34		34
PVC Sch 80 Primer	15211.201	1.00 qt		31	-	-	-	31		31
NBG Kit 125# SS 3in	15125.012	2.00 ea	19	22	-	-	-	41	15	56
PS Pipe Stand for Allowance	15060.406	1.00 ls	96	225	-	-	-	321	75	396
3" Pipe (Recycled Feed Skid to Buffer Tank) New		**16.00 lf**	**250**	**542**				**791**	**196**	**987**
150-55 80 6" Pipe (Recycle Skid to Neut Tank) New										
PVC Sch 80 PIPE 3" PE	15211.203	32.00 lf	215	303	-	-	-	518	169	687
PVC Sch 80 90 EL 3" S	15211.207	3.00 ea	20	34	-	-	-	54	16	70
PVC Sch 80 TEE 6X6X3" S	15211.212	1.00 ea	7	61	-	-	-	68	5	73
PVC Sch 80 Straight CPLG 3" S	15211.204	2.00 ea	13	30	-	-	-	44	11	54
PVC Sch 80 Flange Van Stone 3" Soc	15211.223	2.00 ea	13	37	-	-	-	51	11	61
PVC Sch 80 Cement	15211.201	1.00 qt		34	-	-	-	34		34
PVC Sch 80 Primer	15211.201	1.00 qt		31	-	-	-	31		31
NBG Kit 125# SS 3in	15125.012	2.00 ea	19	22	-	-	-	41	15	56
PS Pipe Stand for Allowance	15060.406	1.00 ls	192	450	-	-	-	642	151	793
6" Pipe (Recycle Skid to Neut Tank) New		**32.00 lf**	**480**	**1,003**				**1,483**	**377**	**1,859**
150-55 80 Restrained Cpling Allowance (New)										
Restrained Coupling Allowance	2519.310	1.00 ls		5,000	-	-	-	5,000		5,000
Restrained Cpling Allowance (New)		**1.00 ls**		**5,000**				**5,000**		**5,000**
402001 Process Pipe & Pipe Fittings			**27,484**	**369,032**				**396,516**	**21,575**	**418,091**
10.00 Ultra Filtration			**73,126**	**2,630,448**		**20,800**	**3,000**	**2,727,374**	**58,223**	**2,785,598**
10.50 Allowance Assumptions Made Based on Dwg C3										
111000 No Specification Given										
11-500 Process & Inst Sheet C3 Allowance (New)										
Waste Tank Allowance	11900.118	1.00 ls			-	-	25,000	25,000		25,000
Metering Devices AN-201 Turbidimeter Allowance	13450.100	1.00 ls	128	0	-	-	0	128	100	228
Instrument - Flow - FM-201 Allowance	17200.000	1.00 ls	128		-	-	5,000	5,128	100	5,228

Spreadsheet Level	Phase	Takeoff Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
11-500 Process & Inst Sheet C3 Allowance (New)										
Valve Air Release ARV-201 Allowance	15110.005	1.00 ls	128		-	-	0	128	100	228
Process & Inst Sheet C3 Allowance (New)			384				30,000	30,384	301	30,685
111000 No Specification Given			384				30,000	30,384	301	30,685
10.50 Allowance Assumptions Made Based on Dwg C3			**384**				**30,000**	**30,384**	**301**	**30,685**
11.00 Re-coat Existing Tanks										
099001 Coatings										
099-2 Recoat Existing RW Tanks (Inside Only)										
Sub - Re-Coat Existing RW Tanks (Allowance)	9960.100	2.00 ea	-	-	***318,074***	-	-	318,074		318,074
Recoat Existing RW Tanks (Inside Only)					318,074			318,074		318,074
099001 Coatings					318,074			318,074		318,074
11.00 Re-coat Existing Tanks					**318,074**			**318,074**		**318,074**
12.00 Electrical & Instrumentation										
280001 No Specification Given										
16 -1 Electrical & Instrumentation - Sub Allowance										
Electrical & Instrumentation Sub - Allowance	16000.001	1.00 ls	-	-	1,250,000	-	-	1,250,000		1,250,000
Electrical & Instrumentation - Sub Allowance					1,250,000			1,250,000		1,250,000
280001 No Specification Given					1,250,000			1,250,000		1,250,000
12.00 Electrical & Instrumentation					**1,250,000**			**1,250,000**		**1,250,000**
13.00 Start-up, Disinfection & Commissioning										
330111 Disinfection of Water Utility Piping Systems										
02641- 14" Treated Water Line (From PEMB to Tank)										
Disinfection/Chlorination of PW (14")	1166.100	1.00 ea	256	50	-	-	-	306	201	507
14" Treated Water Line (From PEMB to Tank)		40.00 lf	256	50				306	201	507
02641- 14" Treated Water Line (From Tank to Distribution) (Revised)										
Disinfection/Chlorination of PW (14")	1166.100	1.00 ea	256	50	-	-	-	306	201	507
14" Treated Water Line (From Tank to Distribution) (Revised)		1,125.00 lf	256	50				306	201	507
330111 Disinfection of Water Utility Piping Systems			512	100				612	402	1,014
331600 Water Utility Storage Tanks										
11-500 Disinfect Tank (New Tank) (Same)										
Labor Initial Clean Tank	13031.100	80.00 hr	2,560		-	-	-	2,560	2,010	4,570
Labor to Disinfect Tank	13031.100	200.00 hr	6,400		-	4,000	-	10,400	5,024	15,424
Chlorine to Disinfect Tank	13031.100	500.00 gal		2,000	-	-	-	2,000		2,000
Safety Equipment (Disinfect Tank)	1116.100	1.00 ls	640	1,250	100		-	1,990	502	2,492
Pump, Mix Tank, Hose & Sprayer	1900.030	1.00 ls	-	-	-	2,000		2,000		2,000
Generators 25 kw, Multiquip	1900.020	0.50 mnth	-	-	-	400	250	650		650
Ventilation Fan	1900.300	0.50 mnth	-	-	-	2,000	125	2,125		2,125
Disinfect Tank (New Tank) (Same)		1.00 ls	9,600	3,250	100	8,400	375	21,725	7,536	29,261
331600 Water Utility Storage Tanks			9,600	3,250	100	8,400	375	21,725	7,536	29,261
460103 Startup & Commissioning Procedures										
11-500 Startup, Disinfection & Commissioning (Same)										
Startup, Disinfection & Commissioning	11000.005	1.00 ls	6,400		10,000	-	-	16,400	5,024	21,424
Startup, Disinfection & Commissioning (Same)		1.00 ls	6,400		10,000			16,400	5,024	21,424
460103 Startup & Commissioning Procedures			6,400		10,000			16,400	5,024	21,424
13.00 Start-up, Disinfection & Commissioning			**16,512**	**3,350**	**10,100**	**8,400**	**375**	**38,737**	**12,962**	**51,699**
*** unassigned ***										
011000 Summary										
01 -100 CMAR General Conditions (Same)										
Survey & Layouts (PLS Survey)	1630.100	1.00 ls		0	20,000	-	-	20,000		20,000
CMAR General Conditions (Same)		43.00 wk			20,000			20,000		20,000
011000 Summary					20,000			20,000		20,000
*** unassigned ***					**20,000**			**20,000**		**20,000**

Estimate Totals

Description	Amount	Cuts/Adds	Net Amount	Totals	Hours	Rate	Cost Basis	Cost per Unit	Percent of Total
Labor	540.513		540.513		15.772.433 hrs				5.47%
Material	3.502.858		3.502.858						35.43%
Subcontract	3.256.543		3.256.543						32.93%
Equipment	238.031		238.031		23.536.834 hrs				2.41%
Other	275.426		275.426						2.79%
	7,813,371			**7,813,371**					**79.02 #####**
Labor Burden	194,585					36.000 %	C		1.97%
Per Diem	189,269					12.000 $/hr	H		1.91%
Small Tools & Equip	27,026					5.000 %	C		0.27%
2 Year Perf. & Pav. Bond	63.393						B		0.64%
Inland Marine Insurance	4,761					2.000 %	C		0.05%
Builders Risk Insurance	18,787					0.190 %	T		0.19%
Profit & Overhead	664,895					8.000 %	T		6.72%
Owner's Contingency	718,087					8.000 %	T		7.26%
Contractor's Contingency	193,883					2.000 %	T		1.96%
Total				***9.888.057***					

Filter Tech Systems, Inc.

Designers & Manufacturers of UltraFlex UltraFiltration Systems
2844 Chipeta Avenue Grand Junction, CO 81501
Tel (888) 287-8292 or (970) 254-2855 Fax (970) 254-2858

* * * Scope * * *

FTS Proposal 21-1360
8 October 2021

Town of Ouray, CO
UltraFlex UltraFiltration System

System Design: **Three (3) 700 GPM UltraFlex XIGA UltraFiltration Trains** to treat the incoming raw water for the removal of particulate matter including colloidal turbidity, giardia, cryptosporidium, bacteria and viruses.

This scope comprises a fully-operational membrane system with all necessary ancillary and peripheral equipment as described below.

Raw Water Feed Equipment

Two (2) **Pressure Relief Valves**
14" Line Size
One service and one redundant
Inlet/Outlet Pressure Gauges
Inlet/Outlet Pressure Transmitters, Isolation Valve per Transmitter

One (1) **Lug-Style Butterfly Valve**
14" Line Size
Manual Operation w/ Handwheel

One (1) **Wafer-Style Check Valve**
14" Line Size

One (1) **Air-Relief Valve**
2" Connection Size
Valve Operation Sized for 14" Line

One (1) Raw Water Turbidimeter
On-line continuous read turbidimeter with digital read out & signal output
Inlet Isolation Valve and Auto-Shutoff Valve

One (1) Raw Water Sodium Hypochlorite Feed System
To feed Sodium Hypochlorite neat from a drum
Pre-Feed for UltraFlex Trains
Chemical Dosing Pump and Pressure-Relief Return Valve

One (1) 150 Micron Strainer Skid
14" Line Size per Skid
Two (2) Strainers per Skid
10" Line Size Per Strainer
With Auto Flush Valve & Isolation Valves
Inlet & Outlet Sample Valves
Inlet & Outlet Pressure Gauges and Transmitters
Isolation Valve per Gauge, Transmitter
One Skid per Train

UltraFlex Train Feed Equipment

Three (3) Lug-Style Butterfly Valves
8" Line Size
Manual Operation w/ Handwheel
One per Train

Three (3) Raw Water Magnetic Flow Meters
8" Line Size
Raw Water Flow Rate & Total Indication for each train
With Remote-Mount Signal Converter and 20' Cable
One per Train

Three (3) Electrically-Actuated Lug-Style Butterfly Valves
8" Line Size
Electric Actuator and Modulator per Valve
One per Train

UltraFlex UltraFiltration Skid
The following components will be pre-fabricated, pre-assembled, pre-piped, pre-wired

Three (3) UltraFlex UltraFiltration Trains
700 gpm feed flow rate per train

Fourty-Eight (48) X-Flow AquaFlex 55 8" x 60" hollow-fiber modules per train

592.0 square feet of membrane area per module
0.8 mm fiber diameter
0.02 micron pore size
2 – 12 pH range during operation
1 – 13 pH range during cleaning
0 – 40° C Temperature range
500 ppm chlorine maximum

All Valving, Piping, Meters, Analyzers etc. necessary for a fully function UltraFiltration Membrane Skid. Further Detail to come.

UltraFlex Train Effluent Equipment

Three (3) Wafer-Style Check Valves
8" Line Size
One per Train

Filtered Water Equipment

One (1) Combined Filtered Water Turbidimeter
On-line continuous read with digital read out & signal output
Inlet Isolation Valve and Auto-Shutoff Valve

One (1) Combined Filtered Water Chlorine Analyzer
On-line continuous read with digital read out & signal output
Inlet Isolation Valve

One (1) Combined Filtered Water pH & Temperature Analyzer
On-line continuous read with digital read out & signal output
Inlet Isolation Valve

One (1) Filtered Water Magnetic Flow Meter
14" Line Size
Filtered Water Flow Rate & Total Indication
With Remote-Mount Signal Converter and 20' Cable
One per Train

One (1) Wafer-Style Check Valve
14" Line Size

One (1) Filtered Water Sodium Hypochlorite Feed System
To feed Sodium Hypochlorite neat from a drum
Pre-Feed for UltraFlex Trains
Chemical Dosing Pump and Pressure-Relief Return Valve

One (1) Electrically-Actuated Lug-Style Butterfly Valve
14" Line Size
UltraFlex Treatment System Auto-Shutoff Valve

Finished Water Tank Equipment (tank by others)

Two (2) Level Floats
High/Low Tank Level Indication

One (1) Ultrasonic Level Sensor
Tank Level Indication

Finished Water/Distribution Equipment

One (1) Finished Water pH & Temperature Analyzer
On-line continuous read with digital read out & signal output
Inlet Isolation Valve

Two (2) Pressure Transmitters
Inlet/Outlet Transmitters for existing Distribution Pressure Relief Valve
Isolation Valve per Transmitter

One (1) Finished Water Magnetic Flow Meter
14" Line Size
Finished Water Flow Rate & Total Indication
With Remote-Mount Signal Converter and 20' Cable

One (1) Compressed Air System (For Pressure Decay Test)
Compressors and Receiver
Particulate Filter, Oil Filter, Tank Drain

UltraFlex Backwash Supply System

One (1) Electrically-Actuated Lug-Style Butterfly Valve
14" Line Size
UltraFlex Backwash Supply Valve

Three (3) Backwash Supply Pumps
Vertical Split Case Cast Pump with VFD
2790 gpm @ 40 psi.
Includes: Suction & Discharge Isolation Valves per pump
Discharge Check Valve per pump
Pressure Gauge per pump

Pressure Transmitter per pump
Mounted to a skid comprised of fiberglass grating and channel supports

One (1) Reduced Pressure Zone Backflow Preventer
16" Assembly with Gate Valves
Inlet/Outlet Pressure Gauges and Transmitters
Isolation Valve per Transmitter, Gauge

One (1) Backwash Supply Flow Meter
16" Magnetic Flow Meter
Backwash Supply Flow Rate & Total Indication
With Remote-Mount Signal Converter and 20' Cable

One (1) CEB Caustic Feed Pump
Peristaltic Metering Pump
Pressure-Relief Return Valve

One (1) CEB Chlorine Feed Pump
Peristaltic Metering Pump
Pressure-Relief Return Valve

One (1) CEB Acid Feed Pump
Peristaltic Metering Pump
Pressure-Relief Return Valve

One (1) Static Mixer
16" Sch 80 PVC Flanged-End Static Mixer with three (3) chemical injection ports

One (1) Wafer-Style Check Valve
16" Line Size

One (1) Backwash Effluent pH Meter
pH probes, Sample Assembly and controller

CEB Neutralization Tank

One (1) Neutralization Tank
13,000 Gal. Approx. Volume

One (1) Electrically-Actuated Butterfly Valve
16" Line Size
Tank Inlet Valve

Two (2) Level Floats
High/Low Tank Level Indication

One (1) Ultrasonic Level Sensor
Tank Level Indication

One (1) Lug-Style Butterfly Valve
6" Line Size
Tank Outlet Isolation Valve

Backwash Recycle Buffer Tank

One (1) Recycle Buffer Storage Tank
3,000 Gal. Approx. Volume

One (1) Electrically-Actuated Butterfly Valve
16" Line Size
Tank Inlet Valve

Two (2) Level Floats
High/Low Tank Level Indication

One (1) Ultrasonic Level Sensor
Tank Level Indication

Two (2) Lug-Style Butterfly Valves
3" Line Size
Tank Outlet Isolation Valves

Backwash Recycle Feed Equipment

Two (2) Recycle Skid Feed Pumps
Vertical Centrifugal Design
80 gpm @ 40 psi.
Includes: Suction & Discharge Isolation Valves per pump
Discharge Check Valve per pump
Pressure Gauge per pump
Pressure Transmitter per pump
Mounted to a skid comprised of fiberglass grating and channel supports

Two (2) 150 Micron Strainers
3" Line Size Per Strainer
With Auto Flush Valve & Isolation Valves
Inlet & Outlet Pressure Gauges and Transmitters

Isolation Valve per Gauge, Transmitter

One (1) Sodium Hypochlorite Feed System

To feed Sodium Hypochlorite neat from a drum
Pre-Feed for UltraFlex Trains
Chemical Dosing Pump, Pressure-Relief Return Valve and Static Mixer

One (1) Recycle Skid Feed Magnetic Flow Meters

3" Line Size
Skid Feed Flow Rate & Total Indication for each train
With Remote-Mount Signal Converter and 20' Cable

Backwash Recycle Skid

The following components will be pre-fabricated, pre-assembled, pre-piped, pre-wired

One (1) UltraFlex UltraFiltration Skid

80 gpm feed flow rate

Six (6) X-Flow AquaFlex 55 8" x 60" hollow-fiber modules

592.0 square feet of membrane area per module
0.8 mm fiber diameter
0.02 micron pore size
2 - 12 pH range during operation
1 - 13 pH range during cleaning
0 - 40° C Temperature range
500 ppm chlorine maximum

All Valving, Piping, Meters, Analyzers etc. necessary for a fully function UltraFiltration Membrane Skid. Further Detail to come.

Filter Controls

One (1) Filter Control Panel

PLC-based automatic control of UltraFlex filter skids and all ancillary equipment.

UltraFlex Control System will control and monitor all functions of the UltraFlex UltraFiltration Skids.

Control System Features:

- Automatic Start/Stop based on signal from outside source
- Manual "push-button" start operation
- Automatic Control of Filter Flow Rate

- Automatic Backwash
- Automatic Chemically-Enhanced Backwash
- Automatic Control of Filter Backwash Rates
- Point-and-Click access to all Timers and Set Points
- Historic Trending of skid parameters and water quality data
- Windows-based PC Touchscreen for Operator Interface Station

Remote access to all control functions via modem, internet or Smart Phone.

Filter Control Panels, one per skid

NEMA 12 Enclosure completely assembled with electric connections to equipment on skid.

3-position Illuminated HOA switches for each automatic valve

Operator access to valves, timers and set points will be via panel-mount touch screen.

One (1) Operator Interface Station

Desk Top PC with 22" flat screen monitor

One Lot Computer Software & Manuals

Start Up and Training

One Lot Start Up Assistance and Operator Training

As required or as requested.

One Lot Return Visits

Pre-construction and post start up site visits as requested or as required for the first two years of operation.

One Lot Technical Support

Free 24/7 Telephone Support for the life of the plant.
No Service Contract Required.

Four (4) Operation & Maintenance Manuals

Items **NOT** included (but not limited to) that must be provided by others:

Installation Drawings & Design
Excavation and Site Work; Concrete, Building, Utilities
Unloading and Setting Equipment
Mechanical Installation
Electrical Installation

Electrical Service to Filter Control Panel
Piping to and from Skid
Sales Taxes, Licenses, Permits

48 hours before you dig, CALL UTILITY NOTIFICATION CENTER OF COLORADO (UNCC)
811
Gas,Electric,Telephone,CATV and Panhandle Eastern Pipeline Locations

PLANS FOR PERMITTING - 30%

CITY OF OURAY

WATER TREATMENT PLANT

PWSID NO: CO0146588, OURAY COUNTY, CO

SECTION 31, TOWNSHIP 44 NORTH, RANGE 7 WEST OF THE NEW MEXICO P.M.

OCTOBER 2021

PREPARED FOR

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

SILAS CLARKE
CITY ADMINISTRATOR
970.325.7060

EMERGENCY CONTACT

JOE COLEMAN
PUBLIC WORKS DIRECTOR
970.325.7074

CIVIL ENGINEERING

NICK MARCOTTE, P.E.
P.E. NO. 47164
ELEMENT ENGINEERING, LLC
12687 W. CEDAR DR., SUITE 300
LAKEWOOD, CO 80228
303.378.2969

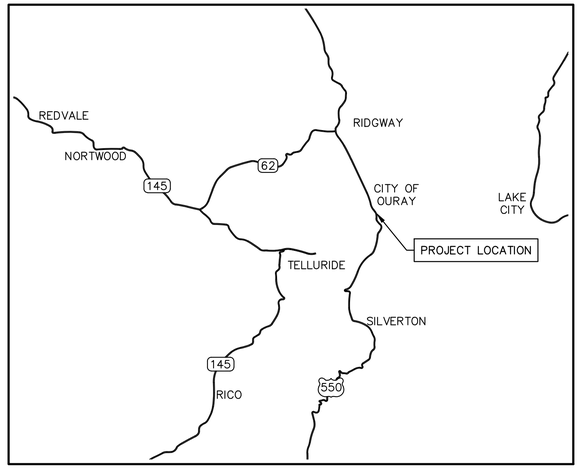
ARCHITECTURAL ENGINEERING

STRUCTURAL ENGINEERING

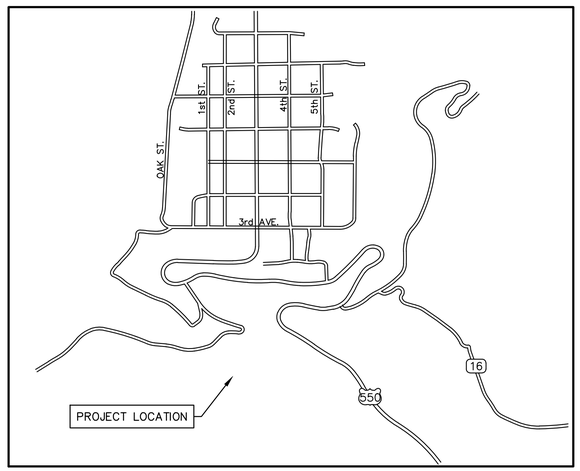
ELECTRICAL ENGINEERING

MECHANICAL ENGINEERING

UTILITIES
SEWER – CITY OF OURAY
WATER – CITY OF OURAY
ELECTRICITY – XXX
CABLE – XXX



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

CIVIL
C1 COVER
C2 GENERAL NOTES
C3 PROCESS & INSTRUMENTATION DIAGRAM
C4 HYDRAULIC PROFILE
C5 TOPOGRAPHIC SURVEY
C6 GRADING PLAN
C7 SITE PLAN
C8 PROCESS BUILDING – DESIGN NOTES
C9 PROCESS BUILDING – PLAN VIEW
C10 PROCESS BUILDING – ABOVE FINISHED FLOOR
C11 PROCESS BUILDING – ISOMETRIC
C12 PROCESS BUILDING – ELEVATION VIEW
C13 PROCESS BUILDING – ELEVATION VIEW
C14 GENERAL DETAILS
C15 GENERAL DETAILS

ARCHITECTURAL

STRUCTURAL
S0.0
S1.0
S2.0
S2.1
S2.2

ELECTRICAL
E1
E2
E3
E4

MECHANICAL – HVAC
M1
M2
M3
M4
M5

MECHANICAL – PLUMBING
P1
P2
P3
P4

CONTROLS
CT1

DATE

THESE PLANS HAVE BEEN APPROVED BY THE CITY OF OURAY. A REPRESENTATIVE WILL OBSERVE THE WORK FOR COMPLIANCE WITH THE APPROVED PLANS, BUT DOES NOT GUARANTEE THE CONTRACTOR'S PERFORMANCE. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF THE FACILITIES IN ACCORDANCE WITH THE APPROVED PLANS AND WITH APPLICABLE RULES AND REGULATIONS. WORK NOT PERFORMED IN ACCORDANCE WITH THE APPROVED PLANS WILL NOT BE ACCEPTED. ACCEPTANCE OF THE WORK DOES NOT RELIEVE THE CONTRACTOR OF THEIR OBLIGATIONS UNDER APPLICABLE WARRANTEES.

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
WWW.ELEMENTENGINEERING.NET

REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

COVER

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
OCT 2021

JOB NUMBER
0111.0001

SCALE
NTS

EDITION
PERMITTING

SHEET
C1 OF C15

GENERAL CIVIL CONSTRUCTION NOTES:

1. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

2. THE CONTRACTOR SHALL PROVIDE ALL BONDS AND INSURANCE REQUIRED BY THE CONTRACT DOCUMENTS.

3. UNLESS OTHERWISE APPROVED BY THE ENGINEER AND OWNER CONSTRUCTION SHALL BE LIMITED TO HOURS BETWEEN 7:00 AM AND 5:00 PM, MONDAY THROUGH FRIDAY. IF THE CONTRACTOR WISHES TO WORK ON SATURDAY OR SUNDAY THE ENGINEER MUST BE NOTIFIED BY WEDNESDAY NOON PRIOR TO THAT WEEKEND FOR APPROVAL.

4. THE CONTRACTOR IS TO PROVIDE A DETAILED CONSTRUCTION SCHEDULE DELINEATING CONSTRUCTION MILESTONES AND THE NATURE OF WORK BEING PERFORMED. THE SCHEDULE SHALL DETAIL ACTIVITIES FROM THE START OF CONSTRUCTION THROUGH STARTUP. THIS SCHEDULE SHALL BE PROVIDED TO THE ENGINEER TWO (2) WEEKS PRIOR TO CONSTRUCTION AND UPDATED WEEKLY.

5. THE CONTRACTOR SHALL PERFORM ALL WORK NECESSARY TO COMPLETE THE PROJECT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DRAWINGS INCLUDING SUCH INCIDENTALS AS MAY BE NECESSARY TO MEET APPLICABLE AGENCY REQUIREMENTS AND PROVIDE A COMPLETED PROJECT.

6. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR AND EQUIPMENT AND PERFORM WORK SHOWN OR IMPLIED AS NECESSARY FOR THE COMPLETED TREATMENT, PUMPING, AND DISTRIBUTION SYSTEM, READY FOR USE.

7. THE ENGINEER HAS ATTEMPTED TO LOCATE EXISTING SUBSURFACE UTILITIES, HOWEVER, SOME MAY EXIST THAT ARE NOT SHOWN. THE CONTRACTOR SHALL POTHOLE AS NECESSARY AND EXERCISE CARE IN HIS WORK SO AS TO AVOID DAMAGE TO ANY UTILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL CONSIDER EXPLORATORY POTHOLING AS NECESSARY TO LOCATE ALL EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK. THIS IS INCIDENTAL TO THE PROJECT AND IS NOT CONSIDERED A SEPARATE PAY ITEM.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING. ALL DIMENSIONS, ELEVATIONS, AND LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO BEGINNING THE WORK.

9. ANY SUBSURFACE CONDITIONS ENCOUNTERED THAT ARE UNUSUAL OR DIFFERENT THAN THOSE INDICATED BY THE ENGINEER SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.

10. CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL PERMITS REQUIRED OF THIS WORK AND SHALL FAITHFULLY ADHERE TO THE ALL PERMIT REQUIREMENTS.

11. TEMPORARY AND PERMANENT EROSION CONTROL STRUCTURE METHODS SHALL BE IN ACCORDANCE WITH ADAMS COUNTY REGULATIONS AND ARE TO BE UTILIZED DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AN ADAMS COUNTY AND CDPHE SWMP/PERMIT, AND SHALL COMPLY WITH ALL REQUIREMENTS OF THESE PERMITS.

12. ALL EROSION CONTROL STRUCTURES SHOWN OR AS REQUIRED DURING CONSTRUCTION SHALL BE CONTINUOUSLY MAINTAINED THROUGH WARRANTY PERIOD AND UNTIL RE-VEGETATION TAKES HOLD. CONTRACTOR IS NOT REQUIRED TO MAINTAIN THE SITE AFTER RE-VEGETATION HAS TAKEN HOLD.

13. CONTRACTOR SHALL CLEAN UP, SEED, AND RESTORE DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF THE WORK IN THE AFFECTED AREA.

14. ALL EXISTING FACILITIES SHALL BE MAINTAINED IN-PLACE BY THE CONTRACTOR UNLESS OTHERWISE SHOWN OR DIRECTED. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO SUPPORT, MAINTAIN, OR OTHERWISE PROTECT EXISTING UTILITIES AND OTHER FACILITIES AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR TO LEAVE EXISTING FACILITIES IN AN EQUAL OR BETTER-THAN-ORIGINAL CONDITION.

15. THE CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES, WARNING SIGNS, CONES IN ACCORDANCE WITH STATE, LOCAL AND FEDERAL GUIDELINES TO ENSURE THE SAFETY OF WORKERS AND THE PUBLIC. ALL BARRICADES, SIGNS SHALL BE IN PLACE PRIOR TO THE BEGINNING OF ANY CONSTRUCTION ACTIVITY.

16. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL FOR A TRAFFIC CONTROL PLAN. THE TRAFFIC CONTROL PLAN MUST BE SUBMITTED AND APPROVED BY ADAMS COUNTY AND THE OWNER'S REPRESENTATIVE.

17. UNLESS OTHERWISE GRANTED PERMISSION BY THE OWNER IN WRITING, THE CONTRACTOR MUST ALLOW ACCESS TO ALL PROPERTIES FOR BOTH RESIDENTS AND EMERGENCY VEHICLES.

18. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE CLEANLINESS AND SAFETY OF ALL ROADWAYS ADJACENT TO THE PROJECT SITE. IF AT ANY TIME, THESE ROADWAYS ARE FOUND TO BE DANGEROUS OR NOT PASSABLE DUE TO DEBRIS OR MUD, THE COUNTY MAY SHUT THE PROJECT DOWN.

19. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER OF ANY PROBLEM IN CONFORMING TO THE APPROVED PLANS FOR ANY ELEMENT OF THE PROPOSED IMPROVEMENTS PRIOR TO ITS CONSTRUCTION.

20. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AND THE FACILITY OPERATOR FOR LOCATION OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, AS WELL AS ANY INDEPENDENT LOCATOR FOR PRIVATE LINES.

21. THE CONTRACTOR SHALL NOTIFY THE INSPECTOR AT LEAST 48 HOURS PRIOR TO ANY DESIRED INSPECTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

22. SERVICE TRENCHES AND UTILITY MAIN TRENCHES SHALL BE COMPACTED THROUGHOUT THE DEPTH OF THE TRENCH PER THE SPECIFICATIONS.

23. THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF APPROVED DRAWINGS ON THE CONSTRUCTION SITE AT ALL TIMES WHEREON HE WILL RECORD ANY APPROVED DEVIATIONS IN THE CONSTRUCTION FROM THE APPROVED DRAWINGS AS WELL AS THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES. THESE FIELD RECORD DRAWINGS SHALL BE KEPT UP TO DATE AT ALL TIMES AND SHALL BE AVAILABLE FOR INSPECTION BY THE OWNER'S REPRESENTATIVE UPON REQUEST.

24. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO INITIAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL SUBMIT A CLEAN SET OF FIELD RECORD DRAWINGS CONTAINING ALL AS-BUILT INFORMATION TO THE ENGINEER. ALL INFORMATION SHOWN ON THE CONTRACTOR'S FIELD RECORD DRAWINGS SHALL BE SUBJECT TO VERIFICATION BY THE ENGINEER. IF SIGNIFICANT ERRORS OR DEVIATIONS ARE NOTED BY THE ENGINEER, AN AS-BUILT SURVEY PREPARED AND STAMPED BY A REGISTERED PROFESSIONAL LAND SURVEYOR SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE.

25. ALL SUBMITTAL RECORDS ARE TO BE KEPT ONSITE AS WELL AS ALL DAILY INSPECTION REPORTS, INCLUDING, BUT NOT LIMITED TO, COMPACTION TESTS, CONCRETE TESTS, ETC.

26. ALL EQUIPMENT AND MATERIAL IS TO BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS. ALL EQUIPMENT STARTUP SHALL BE PROVIDED BY A MANUFACTURER APPROVED FIELD REPRESENTATIVE. MANUFACTURER FIELD TRAINING FOR THE OPERATIONS STAFF SHALL ALSO BE PROVIDED AT EITHER THE TIME OF STARTUP OR AT ANOTHER TIME AS APPROVED BY THE OPERATOR.

27. MANHOLE VAULT/EXTERIOR JOINTS SHALL BE WRAPPED IN 12" WIDE CONSEAL CS 2012 OR APPROVED EQUAL.

28. MEGALUGS AND CONCRETE THRUST BLOCKS WILL BE REQUIRED FOR ALL MAIN LINES. TRACER WIRE IS REQUIRED ON ALL PIPES. TRACER WIRE SHALL BE 12 GAUGE DIRECT BURY SOLID SINGLE STRAND COPPER WIRE WITH TEST STATIONS AT TERMINATIONS OF PROPOSED PIPE.

29. PIPE BEDDING SHALL BE SQUEEGEE 6" BELOW THE BOTTOM OF THE PIPE AND 12" ABOVE THE PIPE.

30. ALL BURIED DUCTILE IRON PIPE, FITTINGS, VALVES AND OTHER APPURTENANCES SHALL BE WRAPPED WITH POLYETHYLENE SHEETING.

31. FOR ALL VALVES TO BE ABANDONED: CLOSE VALVE, REMOVE AND DISPOSE OF VALVE BOX AND COVER, FILL HOLE WITH APPROVED MATERIAL AND RESTORE SITE.

32. FOR ALL PIPE TO BE ABANDONED: AT A MINIMUM, UNLESS OTHERWISE NOTED ON THE PLANS, ALL ENDS ARE TO BE CAPPED WITH CONCRETE. ABANDONED WATERLINES ABOVE OR BELOW THE NEW WATERLINE ADN/OR CONFLICTS WITH CLEARANCES SHALL BE REMOVED (18" BEYOND O.D.) AND CAPPED WITH CONCRETE. ACTIVE WATERLINES WILL REQUIRE PLUGS/CI CAPS AND THRUST BLOCKS. THE COST FOR THIS WILL BE INCLUDED IN THE INSTALLATION OF THE WATERLINE.

33. NO TEMPORARY OR PERMANENT THRUST BLOCKS ALLOWED AGAINST NEW OR EXISTING PIPE. TEMPORARY THRUST BLOCKS (4X4 AGAINST TRENCH WALL) WILL BE ALLOWED.

34. ALL BOLTS FOR ABOVE GRADE FITTINGS SHALL BE ASTM 316 STAINLESS STEEL.

35. CONTRACTOR SHALL FIELD VERIFY INVERTS PRIOR TO COMPLETING CONNECTIONS TO EXISTING STRUCTURES. IF ANY DISCREPANCIES ARE FOUND THE ENGINEER SHALL BE CONTACTED IMMEDIATELY.

36. ALL YARD VALVES SHALL HAVE EXTENSIONS THAT TERMINATE 4-FOOT BELOW THE TOP OF THE VALVE BOX.

37. CONTRACTOR SHALL HAUL OFF AND DISPOSE OF ANY EXCESS SPOIL MATERIAL, ANY MISCELLANEOUS DEBRIS, AND ANY STRUCTURES, PIPING OR OTHER DEBRIS CALLED OUT TO BE DEMOLISHED AT HIS OWN EXPENSE. ALL MATERIAL MUST BE DISPOSED OF IN AN APPROVED OFFSITE LOCATION.

38. PIPE, FITTINGS, AND ACCESSORIES SHALL BE HANDLED IN SUCH A MANNER THAT WILL ENSURE INSTALLATION IN SOUND, UNDAMAGED CONDITION. EQUIPMENT, TOOLS, AND METHODS USED IN HANDLING AND INSTALLING PIPE AND FITTINGS SHALL NOT DAMAGE THE PIPE AND FITTINGS.

39. THE INTERIOR OF ALL PIPE AND FITTINGS SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER PRIOR TO INSTALLATION. BEFORE JOINTING, ALL JOINT CONTACT SURFACES SHALL BE WIRE BRUSHED IF NECESSARY, WIPED CLEAN, AND KEPT CLEAN UNTIL JOINTING IS COMPLETED.

40. PRECAUTIONS SHALL BE TAKEN TO PREVENT FOREIGN MATERIAL FROM ENTERING THE PIPE DURING INSTALLATION. DEBRIS, TOOLS, CLOTHING, OR OTHER OBJECTS SHALL NOT BE PLACED IN OR ALLOWED TO ENTER THE PIPE. END OF LINES TO BE PLUGGED TO PREVENT DEBRIS OR ANIMALS FROM ENTERING PIPE.

41. CUTTING SHALL BE DONE IN A NEAT MANNER, WITHOUT DAMAGE TO THE PIPE OR THE LINING. CUTS SHALL BE SMOOTH, STRAIGHT, AND AT RIGHT ANGLES TO THE PIPE AXIS. AFTER CUTTING, THE ENDS OF THE PIPE SHALL BE DRESSED WITH A FILE OR POWER GRINDER TO REMOVE ALL ROUGHNESS AND SHARP EDGES. THE CUT ENDS OF PUSH-ON JOINT PIPE SHALL BE SUITABLY BEVELED.

42. NO DEFLECTION SHALL BE PERMITTED ON INTERIOR PIPE AND FITTINGS.

43. DIAMETRICALLY OPPOSITE NUTS SHALL BE TIGHTENED PROGRESSIVELY AND EVENLY.FINAL TIGHTENING SHALL BE DONE WITH A TORQUE LIMITING WRENCH SET FOR THE TORQUE RECOMMENDED BY THE MANUFACTURER FOR ALL FITTINGS AND SERVICE SADDLES.

44. BEFORE THE JOINT IS ASSEMBLED, THE FLANGE FACES SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATERIAL WITH A POWER WIRE BRUSH. THE GASKET SHALL BE CENTERED AND THE CONNECTING FLANGES DRAWN UP WATERTIGHT WITHOUT UNNECESSARY STRESSING OF THE FLANGES. ALL BOLTS SHALL BE TIGHTENED IN A PROGRESSIVE DIAMETRICALLY OPPOSITE SEQUENCE USING TORQUE WRENCHES AT SETTINGS RECOMMENDED BY THE MANUFACTURER. WHERE DISSIMILAR FLANGES ARE CONNECTED, AN INSULATING CONNECTION SHALL BE PROVIDED.

45. ALL JOINTS SHALL BE WATERTIGHT AND FREE FROM LEAKS. EACH LEAK WHICH IS DISCOVERED WITHIN THE CORRECTION PERIOD STIPULATED IN THE GENERAL PROVISIONS SHALL BE REPAIRED BY AND AT THE EXPENSE OF THE CONTRACTOR.

46. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PUMPING EQUIPMENT; PIPING CONNECTIONS BETWEEN THE PIPING AND THE NEAREST AVAILABLE SOURCE OF TEST WATER; PRESSURE GAUGES; AND OTHER EQUIPMENT, MATERIALS, AND FACILITIES NECESSARY FOR THE TESTS.

47. ALL CONTRACTOR INSTALLED PIPE, FITTINGS, VALVES, PIPE JOINTS, AND OTHER MATERIALS WHICH ARE FOUND TO BE DEFECTIVE SHALL BE REMOVED AND REPLACED WITH NEW AND ACCEPTABLE MATERIALS, AND THE AFFECTED PORTION OF THE PIPING RETESTED BY AND AT THE EXPENSE OF THE CONTRACTOR.

48. FLEXIBLE COUPLINGS AND FLANGE ADAPTERS SHALL BE DESIGNED TO RELIVE STRESS IN PIPELINES DUE TO THERMAL EXPANSION/CONTRACTION, DIFFERENTIAL SETTLEMENT OR MISALIGNMENT AND MECHANICAL VIBRATION. FLEXIBLE COUPLINGS SHALL CONSIST OF A SLEEVE WHICH SHALL FIT OVER THE ENDS OF THE TWO PIPE SECTIONS TO BE JOINED. THE COUPLING SHALL FORM A WATER TIGHT SEAL BY COMPRESSING RESILIENT WEDGE-SHAPED GASKETS BETWEEN THE ENDS OF THE SLEEVE AND THE PIPE SECTIONS. THE GASKETS SHALL BE COMPRESSED BY TWO RETAINER RINGS BOLTED TO ONE ANOTHER ON THE OUTSIDE OF THE COUPLING SLEEVE. FLANGE ADAPTERS SHALL BE EQUIVALENT TO FLEXIBLE COUPLINGS EXCEPT THAT ONE RETAINER RING AND GASKET SHALL BE REPLACED WITH A FLANGED CONNECTION ON THE COUPLING SLEEVE.

49. ALL VALVES SHALL HAVE THE MANUFACTURER AND SIZE OF THE VALVE VISIBLY CAST ON THE BODY OR ON A PLATE ATTACHED TO THE BODY OF THE VALVE. VALVES AND REQUIRED OPERATING APPURTENANCES SHALL BE THE PRODUCT OF THE SAME MANUFACTURER. VALVE SEALS SHALL BE ABLE TO PROVIDE TIGHT CLOSURE AND PREVENT METAL-TO-METAL CONTACT. VALVES SHALL OPEN RIGHT. ALL VALVES OVER 6-FEET HIGH NEED CHAINS.

50. VALVE COMPONENTS SHALL WITHSTAND THE ENVIRONMENTAL CONDITIONS AND PROVIDE CONTINUOUS TROUBLE-FREE SERVICE.

51. ANY MATERIAL TO BE IN CONTACT WITH POTABLE WATER SHALL BE NSF 61 CERTIFIED.

52. THE CONTRACTOR IS RESPONSIBLE FOR:

52.1. NOTIFYING CUSTOMERS WHO MAY BE AFFECTED BY A WATER OUTAGE DURING CONSTRUCTION BY FACE TO FACE CONTACT AND DOOR HANGAR.

52.2. OBTAINING, AT THE CONTRACTORS EXPENSE, APPLICABLE LICENSES, PERMITS, BONDS, ETC.

53. CONTRACTOR SHALL CONTACT ELECTRIC COMPANY TWO WEEKS IN ADVANCE OF ANY EXCAVATION WITHIN 10 FEET OF A UTILITY POLE.

54. CONTRACTOR TO LOCATE AND EXPOSE EXISTING SERVICE LINES, VERIFY SIZE AND MATERIAL, HAVE NECESSARY PARTS ON SITE FOR TEMPORARY WATER HOOKUP. CONNECTION TO SERVICE LINE IMMEDIATELY AFTER CUTTING TO PREVENT WATER FROM DRAINING FROM THE HOUSE.

55. THE CONTRACTOR SHALL SUBMIT, FOR RECORD, PRODUCT INFORMATION AND LAYOUTS FOR THE FOLLOWING ASSEMBLIES. THE SELECTION, SIZING, AND LAYOUT OF THESE ASSEMBLIES IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL MEET THE SPECIFICATION AND MANUFACTURER'S REQUIREMENTS. THESE SUBMITTALS SHALL CLEARLY INDICATE THE BASIS OF DESIGN, LOCATION OF ATTACHMENT POINTS TO THE STRUCTURE, AND MAGNITUDE OF THE LOADS IMPOSED ON THE STRUCTURAL SYSTEM.

55.1. PIPE SUPPORTS AND PIPE HANGERS
55.2. METAL GRATING

TESTING AND INSPECTION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL REQUIRED OR NECESSARY INSPECTIONS ARE COMPLETED BY AUTHORIZED INSPECTORS PRIOR TO PROCEEDING WITH THE SUBSEQUENT WORK WHICH COVERS OR THAT IS DEPENDENT ON THE WORK TO BE INSPECTED. FAILURE TO OBTAIN NECESSARY INSPECTION(S) AND APPROVAL(S) SHALL RESULT IN THE CONTRACTOR BEING FULLY RESPONSIBLE FOR ANY ISSUES ARISING FROM UN-INSPECTED WORK.

2. NEWLY INSTALLED WATER MAINS SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH THE SPECIFICATIONS.

3. NEWLY INSTALLED WATER MAINS, PIPING, EQUIPMENT, ETC. MUST BE DISINFECTED PER AWWA STANDARD C651 (LATEST EDITION). THE WATER STORAGE TANK SHALL BE DISINFECTED PER AWWA STANDARD C652 (LATEST EDITION). THE PREFERRED METHOD FOR CHLORINATION OF WATER MAINS IS TO USE SUFFICIENT CHLORINE TABLETS TO PRODUCE A 25 MG/L SOLUTION. TABLETS SHOULD BE ATTACHED TO THE TOP OF THE PIPE WITH AN APPROVED ADHESIVE CERTIFIED TO NSF STANDARD 61, PRIOR TO THE PIPE INSTALLATION IN THE TRENCH. CHLORINATION OF ANY FINISHED PIPELINE SHALL BE COMPLETED PRIOR TO HYDROSTATIC TESTING.

4. CONTRACTOR IS REQUIRED TO PERFORM CLEAR WATER SAMPLING. ENGINEER MUST SEE PASSING LAB RESULTS PRIOR TO CONNECTING SERVICE LINES TO ALL TEMPORARY AND NEW LINES.

5. THE WATER QUALITY CONTROL DIVISION OF THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REQUIRES ALL WATER LINE CONTRACTORS POSSESS A CURRENT DISCHARGE PERMIT FOR THE DISCHARGES OF CHLORINATED AND PROCESS WATERS ASSOCIATED WITH THE INSTALLATION OF NEW MAINS, TANKS, ETC.

BACKFILLING AND COMPACTION NOTES:

A. ALL TRENCHES SHALL BE BACKFILLED AFTER PIPE, FITTINGS AND APPURTENANCES HAVE BEEN INSTALLED, INSPECTED AND APPROVED BY THE city ENGINEER.

B. WHENEVER A COMPACTION REQUIREMENT VALUE IS SPECIFIED HEREIN, THE OPTIMUM MOISTURE CONTENT AND STANDARD PROCTOR DENSITY SHALL BE DETERMINED IN ACCORDANCE WITH ASSHTO T-99 FOR NINETY-FIVE PERCENT (95%).

DENSITY REQUIREMENTS IN TRENCH – THE CONTRACTOR SHALL OBTAIN A STANDARD PROCTOR DENSITY OF NINETY-FIVE (95%) STANDARD PROCTOR FOR THE TOTAL DEPTH OF ALL TRENCHES IN OPEN FIELDS AND IN DEDICATED ROWS. BACKFILLING SHALL BE DONE WITH GOOD SOUND EARTH, SAND OR GRAVEL, AND NO BITUMINOUS PAVEMENT, CONCRETE, ROCK OR OTHER LUMPY MATERIAL SHALL BE USED IN THE BACKFILL UNLESS THESE MATERIALS ARE SCATTERED AND DO NOT EXCEED SIX INCHES (6") IN ANY DIMENSION AND NOT PLACED WITHIN ONE FOOT OF THE 2-1/2' LIMIT. MATERIAL OF PERISHABLE, SPONGY OR OTHERWISE IMPROPER NATURE SHALL NOT BE USED IN BACKFILLING AND NO MATERIAL GREATER THAN TWO INCHES (2") IN ANY DIMENSION SHALL BE PLACED WITHIN ONE FOOT (1') OF ANY PIPE OR ROADWAY SURFACE, MANHOLE OR STRUCTURE. BACKFILLING SHALL BE ACCOMPLISHED IN THE ZONE IN LAYERS NOT TO EXCEED TWO FEET (2') OR AS RECOMMENDED BY TESTER. ALL BACKFILL MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE city ENGINEER.

COMPACTED FILL – COMPACTION SHALL BE DONE BY THE USE OF VIBRATORY EQUIPMENT, TAMPING ROLLERS, PNEUMATIC TIRE ROLLERS OR OTHER MECHANICAL TAMPERS OF THE TYPE AND SIZE APPROVED THE OWNERS. HAND TAMPERS SHALL BE USED AROUND ALL MANHOLES, VALVE BOXES, AND ANY SURFACE STRUCTURE. THE BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS OF SUCH DEPTHS AS ARE CONSIDERED PROPER FOR THE TYPE OF COMPACTING EQUIPMENT BEING USED IN RELATION TO THE BACKFILL MATERIAL BEING PLACED. EACH LAYER SHALL BE EVENLY SPREAD, PROPERLY MOISTENED AND COMPACTED. ANY DAMAGE TO THE PIPE AS A RESULT OF CONTRACTOR'S OPERATION SHALL BE REPAIRED AND/OR REPLACED.

PROCEDURE AT STREET ZONE – THE TOP TWO AND ONE-HALF-FOOT (2-1/2') FROM FINISH STREET GRADE OR GROUND SURFACE, AS THE CASE MAY BE, SHALL BE COMPACTED IN HORIZONTAL LAYERS NOT EXCEEDING EIGHT INCHES (8") IN THICKNESS, USING APPROVED HAND PNEUMATIC OR MECHANICAL TYPE TAMPERS TO OBTAIN A STANDARD PROCTOR DENSITY OF NINETY-FIVE PERCENT (95%) FLOODING AND JETTING ARE NOT PERMITTED.

COMPACTION TESTS – COMPACTION TESTS WILL BE TAKEN BY AN APPROVED TESTING LABORATORY AT LOCATIONS DESIGNATED BY THE city ENGINEER. ALL EXPENSES INVOLVED IN THESE TESTS WILL BE BORNE BY THE CONTRACTOR. RESULTS OF THE TESTS WILL BE MADE AVAILABLE TO THE OWNERS ENGINEER IMMEDIATELY AND COPIES OF TEST RESULTS WILL BE SUPPLIED TO THE OWNERS ENGINEER ONCE PER WEEK. A FINAL TYPED BOUND COPY OF FINAL TEST RESULTS MUST BE SUBMITTED TO THE city ENGINEER AT THE END OF THE PROJECT. IN ALL CASES WHERE THE TESTS INDICATE COMPACTION LESS THAN THAT REQUIRED IN THESE STANDARDS, ADDITIONAL COMPACTION AND TESTS WILL BE REQUIRED UNTIL THESE SPECIFICATIONS ARE MET. PROBATIONARY ACCEPTANCE OF THE LINES BY THE city WILL BE CONTINGENT UPON SATISFACTORY COMPACTION RESULTS. NO HYDROSTATIC TESTING OF THE FORCE MAIN WILL BE ALLOWED UNTIL SATISFACTORY COMPACTION IS OBTAINED FREQUENCY OF TESTING WILL BE AS FOLLOWS:

A. ONE (1) TEST AT EVERY ABOVE GROUND APPURTENANCE (I.E. VALVE BOX, MANHOLE) AT TWO-FOOT (2.0') INCREMENTS.
B. ONE (1) TEST EVERY TWO-HUNDRED (200) LF OF MAINLINE AND 1 TEST PER SERVICE LINE TRENCHES AT TWO-FOOT (2.0') INCREMENTS BEGINNING TWO FEET (2') ABOVE SQUEEGE TO FINAL GRADE AND ONE TEST AT FINAL GRADE.

ABBREVIATIONS:

CL	CHLORINE
M	METER
PS	PUMP SKID
UF	ULTRAFILTRATION
XX	XXX
XX	XXX
XX	XXX

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300 720.749.4165
LAKEWOOD, CO 80228 WWW.ELEMENTENGINEERING.NET

REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

GENERAL NOTES

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
OCT 2021

JOB NUMBER
0111.0001

SCALE
NTS

EDITION
PERMITTING

SHEET
C2 OF C15

RAW WATER AND EXISTING TREATMENT AREA PIPING

TK-101
EXISTING 0.5 MG RAW WATER STORAGE TANK
LE 101
LT 101

TK-102
EXISTING 0.5 MG RAW WATER STORAGE TANK
LE 102
LT 102

BV-201
PRV-201
PT 201
PT 202
BV-202
BV-203
PRV-202
PT 203
PT 204
BV-204

ARV-201
AN-201
RAW WATER TURBIDIMETER
M
FM-201

PRE-STRAINER SKID
PI 301
PI 303
BV-301
BV-303
ST-301
ST-302
BV-302
BV-304
PI 302
PI 304

BV-802
NEUTRALIZATION TANK 13,000 GALLONS
TK-802

RECYCLE BUFFER TANK 3,000 GALLONS
TK-801
BV-801

WASTE TANK XXX GALLONS
TK-803

PU-801
RECYCLE SKID-900

BW SUPPLY
UF-BW
FW
RW
UF SKID-400
UF SKID-500
UF SKID-600
UF SKID-700

BACKWASH PUMP SKID 1000

TK-XXX
PROPOSED 1 MG FINISHED WATER STORAGE TANK

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WATER TREATMENT PLANT

PROCESS & INSTRUMENTATION DIAGRAM

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

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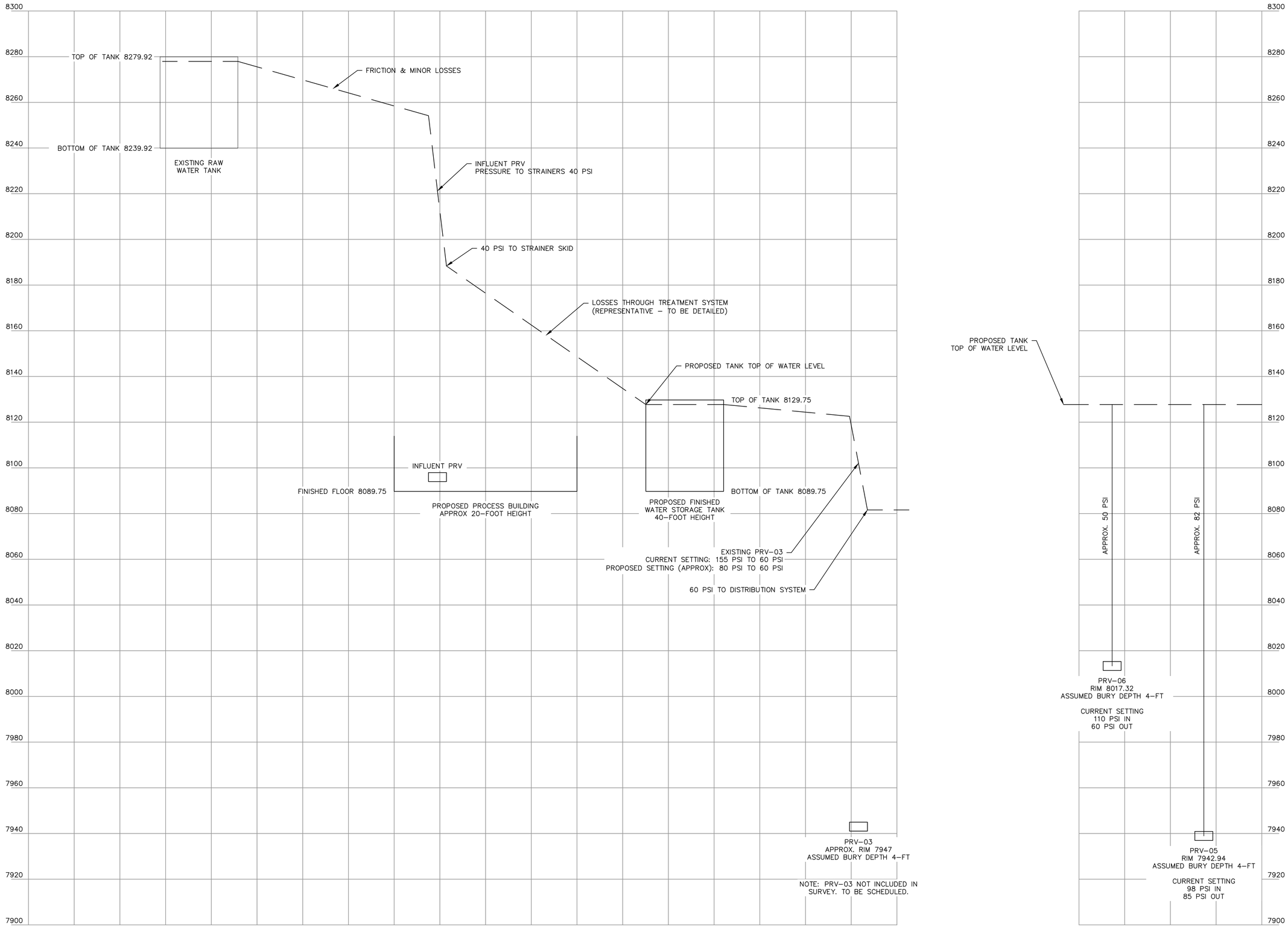
DATE
OCT 2021

JOB NUMBER
0111.0001

SCALE
NTS

EDITION
PERMITTING

SHEET
C3 OF C15



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NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

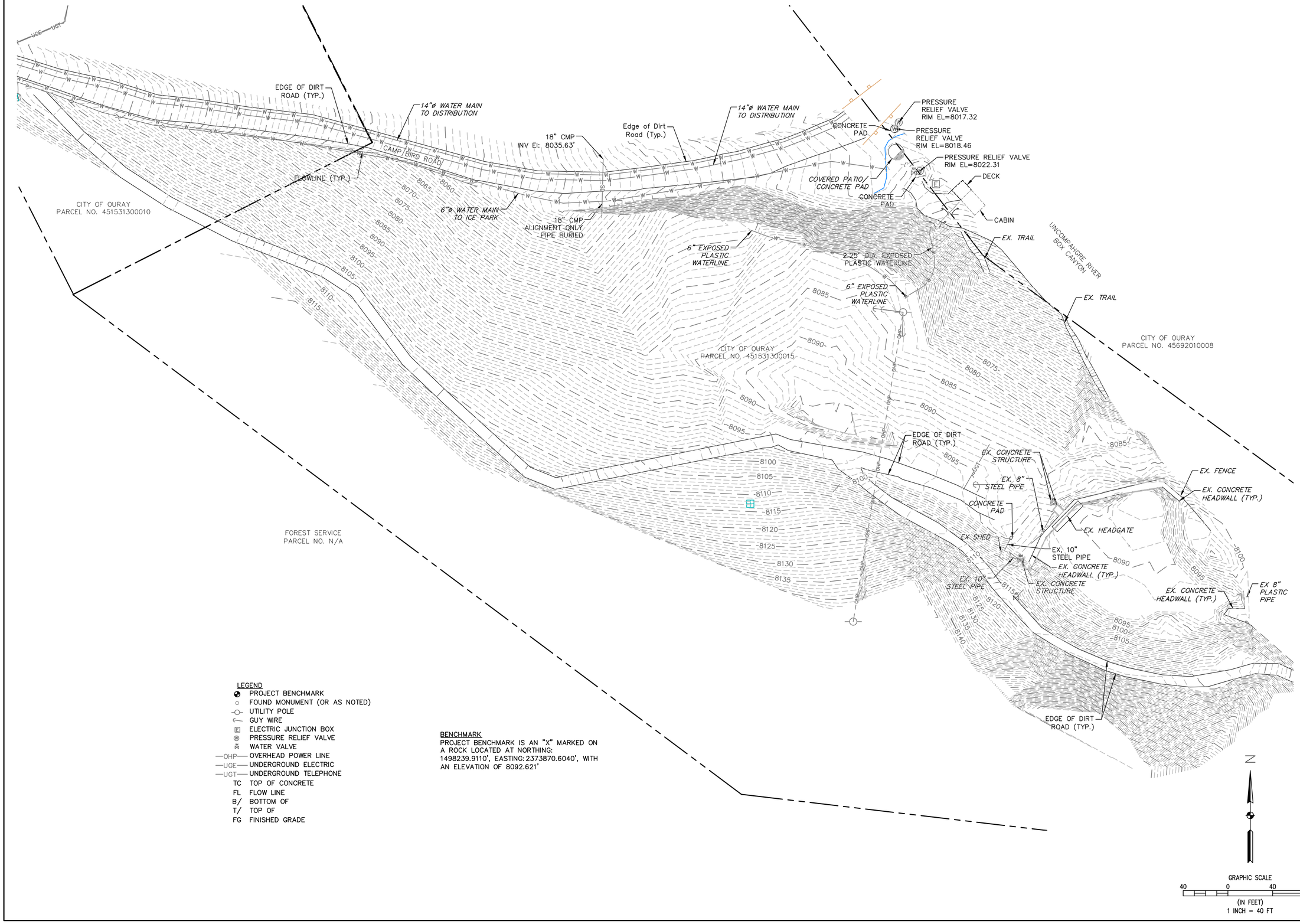
HYDRAULIC PROFILE

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE: OCT 2021
JOB NUMBER: 0111.0001
SCALE: NTS
EDITION: PERMITTING
SHEET: C4 OF C15



LEGEND

- PROJECT BENCHMARK
- FOUND MONUMENT (OR AS NOTED)
- UTILITY POLE
- GUY WIRE
- ELECTRIC JUNCTION BOX
- PRESSURE RELIEF VALVE
- WATER VALVE
- —OHP— OVERHEAD POWER LINE
- —UGE— UNDERGROUND ELECTRIC
- —UGT— UNDERGROUND TELEPHONE
- TC TOP OF CONCRETE
- FL FLOW LINE
- B/ BOTTOM OF
- T/ TOP OF
- FG FINISHED GRADE

BENCHMARK

PROJECT BENCHMARK IS AN "X" MARKED ON A ROCK LOCATED AT NORTHING: 1498239.9110', EASTING: 2373870.6040', WITH AN ELEVATION OF 8092.621'

N

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 INCH = 40 FT

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NO.	DESCRIPTION	DATE	BY
-	-	-	-

WATER TREATMENT PLANT

TOPOGRAPHIC SURVEY

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
OCTOBER 2021

JOB NUMBER
0111.0001

SCALE
1" = 40'

EDITION
PERMITTING

SHEET
C5 OF C15

CAMP BIRD ROAD

CITY OF OURAY
PARCEL NO. 451531300010

CITY OF OURAY
PARCEL NO. 451531300015

CITY OF OURAY
PARCEL NO. 45692010008

FOREST SERVICE
PARCEL NO. N/A

UNCOMPAHGRE RIVER
BOX CANYON

PROPOSED BUILDING
F.F.E.=8089.75

TANK PAD
ELEV=8088.5

TOW=87.40
BOW=81.09
FL=86.40
FL=86.00
TOW=87.72
BOW=86.84
FL=86.72
FG=87.72
TOW=96.60
BOW=87.40
TOW=90.40
BOW=88.10
FC=88.75
TOW=96.15
BOW=88.75
FG=87.40
FG=87.80
LP=87.30
HP=89.45
FG=88.70
FG=89.07
TOW=97.05
BOW=89.12
TOW=98.00
BOW=90.00
TOW=86.90
BOW=85.80
LP=86.90
FL=86.00
TOW=87.40
BOW=87.00
FG=87.40
TOW=90.15
BOW=87.40
FL=86.40
FL=86.54
TOW=88.20
BOW=87.60
FG=87.80
FL=87.06
TOW=89.00
BOW=88.26
FL=87.26
TOW=95.50
BOW=88.50
TOW=91.40
BOW=88.50
FL=87.50
FG=88.31
HP=88.63
TOW=91.44
BOW=88.68

9.8%
1.5%
2%
1%

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 INCH = 40 FT

N

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NO.	DESCRIPTION	DATE	BY
-	-	-	-

WATER TREATMENT PLANT

GRADING PLAN

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC

DATE
OCTOBER 2021

JOB NUMBER
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SCALE
1" = 40'

EDITION
PERMITTING

SHEET
C6 OF C15

RAW WATER INTAKE
FINISHED WATER OUT
UGT
USE
UGT
CAMP BIRD ROAD
CITY OF OURAY
PARCEL NO. 451531300010
PROPOSED 16'
GRAVEL
ACCESS DRIVE
1,129 LF OF
14" C900 PVC
5%
1,055 LF OF
14" C900 PVC
FOREST SERVICE
PARCEL NO. N/A
CITY OF OURAY
PARCEL NO. 451531300015
UNCOMPAHGRE RIVER
BOX CANYON
CITY OF OURAY
PARCEL NO. 45692010008
OHP
PROPOSED
RETAINING WALL
PROPOSED 20' GRAVEL
DRIVE/PARKING AREA
20'
TYP.
PROPOSED
RETAINING WALL
PROPOSED 60'x100'
WATER TREATMENT
FACILITY
PROPOSED
RETAINING WALL
PROPOSED
1,000,000 GALLON
WATER TANK
N
GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 INCH = 40 FT

ELEMENT ENGINEERING LLC
1268F W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80226
720.749.4165
WWW.ELEMENTENGINEERING.NET

REVISIONS

NO.	DESCRIPTION	DATE	BY
-	-	-	-

WATER TREATMENT PLANT

SITE PLAN

CITY OF OURAY
320 6TH AVENUE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC

DATE
OCTOBER 2021

JOB NUMBER
0111.0001

SCALE
1" = 40'

EDITION
PERMITTING

SHEET
C7 OF C15

BOTH HORIZONTAL TRENCHES MAY BE ABLE TO BE MADE THINNER.

PLACE HOLDER FOR RECYCLE SKID FEED PUMPS. NEED FROM FILTER TECH.

RECEIVED FROM FT, BUT HASN'T BEEN ADDED TO DRAWINGS.

NEUTRALIZATION TANK RETURN LINE NEEDS TO BE ADDED

ELEVATION CONNECTIONS TO TANKS TBD

SIZE DISCHARGE PIPE. SHOWN AS 14"

DOESN'T MATCH FT'S SCOPE OF SUPPLY. REVISE DRAWINGS OR SCOPE OF SUPPLY.

GRAPHIC SCALE

4 0 4 8

(IN FEET)

ELEMENT ENGINEERING LLC

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LAKEWOOD, CO 80228

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NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

PROCESS BUILDING DESIGN NOTES

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
OCT 2021

JOB NUMBER
0111.0001

SCALE
1/4" = 1'

EDITION
PERMITTING

SHEET
C8 OF C15

PROCESS BUILDING
100' L X 60' W X 20' H

100'

60'

12-FT H X 14-FT W
ROLL-UP DOOR (TYP OF 4)

9'-2½"

2'

20'-9½"

2'

11'-2½"

3'

43'-7"

5'

12'

BACKWASH SUPPLY

FINISHED WATER TO TANK

FUTURE ULTRA FILTRATION SKID

ULTRA FILTRATION SKID 3 (700 GPM)

ULTRA FILTRATION SKID 2 (700 GPM)

ULTRA FILTRATION SKID 1 (700 GPM)

RECYCLE SKID

BACKWASH PUMP SKID
(3) 1,400 GPM PUMPS

6'

NEUTRALIZATION TANK
13,000 GAL
144" D X 198" H

4'

RECYCLE BUFFER
TANK
3,000 GAL
91" D X 120" H

33'-7"

9'-2½"

2'

APPROX. 1,000 GAL SEPTIC TANK TO BE LOCATED OUTSIDE PROCESS BUILDING. SEPTIC TANK TO ACCEPT BUILDING DRAINS (FLOOR AND EQUIPMENT)

3'-6½"

RAW WATER

WASTE

NEUTRALIZED WATER TO DISCHARGE

BACKWASH

5'

RAW WATER

8-INCH PRV (TYP OF 2)

RAW WATER ENTRANCE
TO PROCESS BUILDING

6'-9½"

2'

13'-5"

8'

10'	10'	14'	10'
ACID ROOM HYDROCHLORIC ACID SODIUM BISULFITE	BASE ROOM SODIUM HYDROXIDE SODIUM HYPOCHLORITE	ELECTRICAL/MECHANICAL ROOM	OFFICE

GRAPHIC SCALE
4 0 4 8
(IN FEET)

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12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
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REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT
PROCESS BUILDING PLAN VIEW
CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
OCT 2021

JOB NUMBER
0111.0001

SCALE
1/4" = 1'

EDITION
PERMITTING

SHEET
C9 OF C15

PROCESS BUILDING
100' L X 60' W X 20' H

100'

60'

12-FT H X 14-FT W
ROLL-UP DOOR (TYP OF 4)

9'-2½"

11'-2½"

3'

12'

5'

9'-2½"

2'

43'-7"

33'-7"

2'

FUTURE ULTRA FILTRATION SKID

ULTRA FILTRATION SKID 3 (700 GPM)

ULTRA FILTRATION SKID 2 (700 GPM)

ULTRA FILTRATION SKID 1 (700 GPM)

RECYCLE SKID

BACKWASH PUMP SKID
(3) 1,400 GPM PUMPS

6'

NEUTRALIZATION TANK
13,000 GAL
144" D X 198" H

4'

RECYCLE BUFFER
TANK
3,000 GAL
91" D X 120" H

APPROX. 1,000 GAL SEPTIC TANK TO BE LOCATED OUTSIDE PROCESS BUILDING. SEPTIC TANK TO ACCEPT BUILDING DRAINS (FLOOR AND EQUIPMENT)

3'-6½"

RAW WATER

RAW WATER

8-INCH PRV (TYP OF 2)

RAW WATER ENTRANCE
TO PROCESS BUILDING

20'-9½"

2'

6'-9½"

2'

13'-5"

5'

8'

10'	10'	14'	10'
ACID ROOM HYDROCHLORIC ACID SODIUM BISULFITE	BASE ROOM SODIUM HYDROXIDE SODIUM HYPOCHLORITE	ELECTRICAL/MECHANICAL ROOM	OFFICE

GRAPHIC SCALE
4 0 4 8
(IN FEET)

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LAKEWOOD, CO 80228
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REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

PROCESS BUILDING ABOVE FINISHED FLOOR

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
OCT 2021

JOB NUMBER
0111.0001

SCALE
1/4" = 1'

EDITION
PERMITTING

SHEET
C10 OF C15

ELEMENT ENGINEERING LLC

12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228

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REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

PROCESS BUILDING ISOMETRIC VIEWS

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

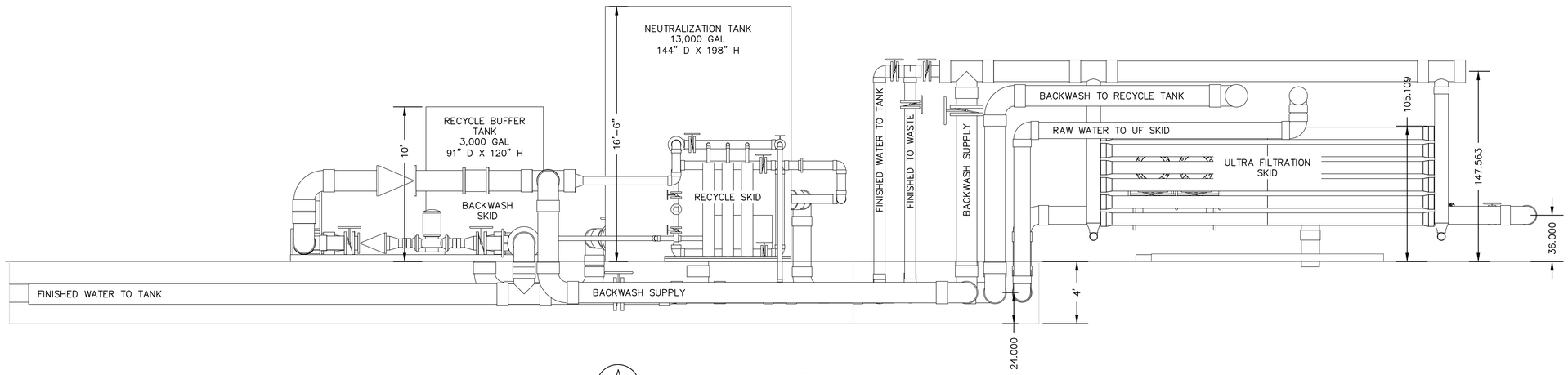
DATE
OCT 2021

JOB NUMBER
0111.0001

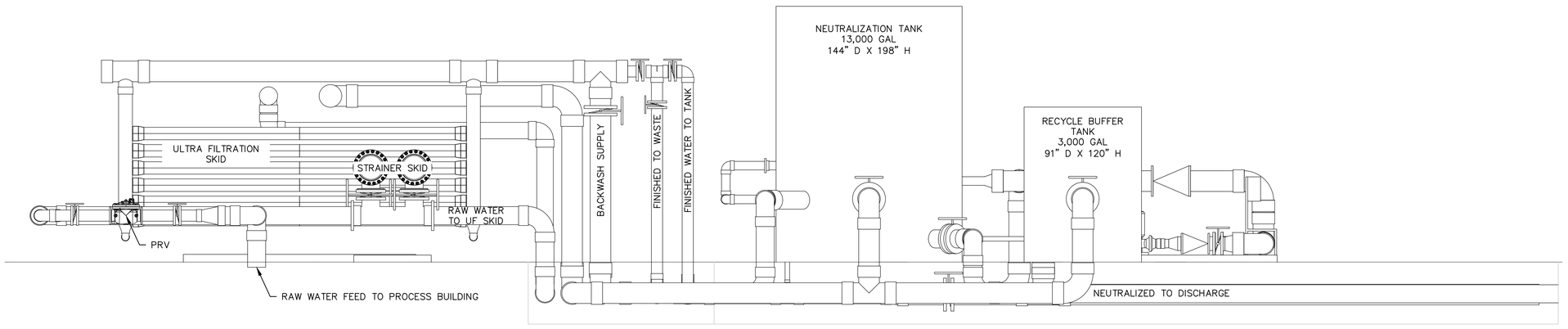
SCALE
NTS

EDITION
PERMITTING

SHEET
C11 OF C15



A / XXX — PROCESS BUILDING – NORTH ELEVATION VIEW
1/4" = 1'



B / XXX — PROCESS BUILDING – SOUTH ELEVATION VIEW
1/4" = 1'

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LAKEWOOD, CO 80228
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REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

PROCESS BUILDING ELEVATION VIEW

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

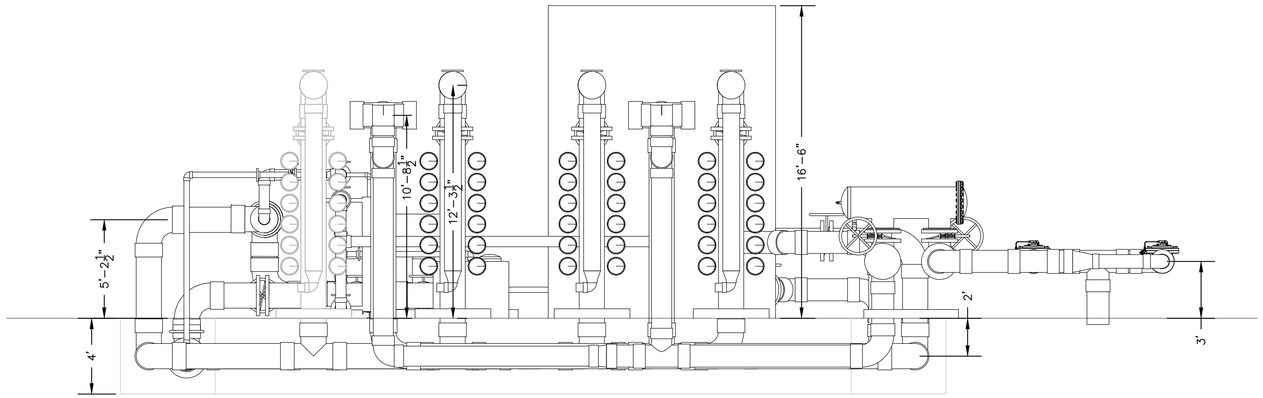
DATE
OCT 2021

JOB NUMBER
0111.0001

SCALE
1/4" = 1'

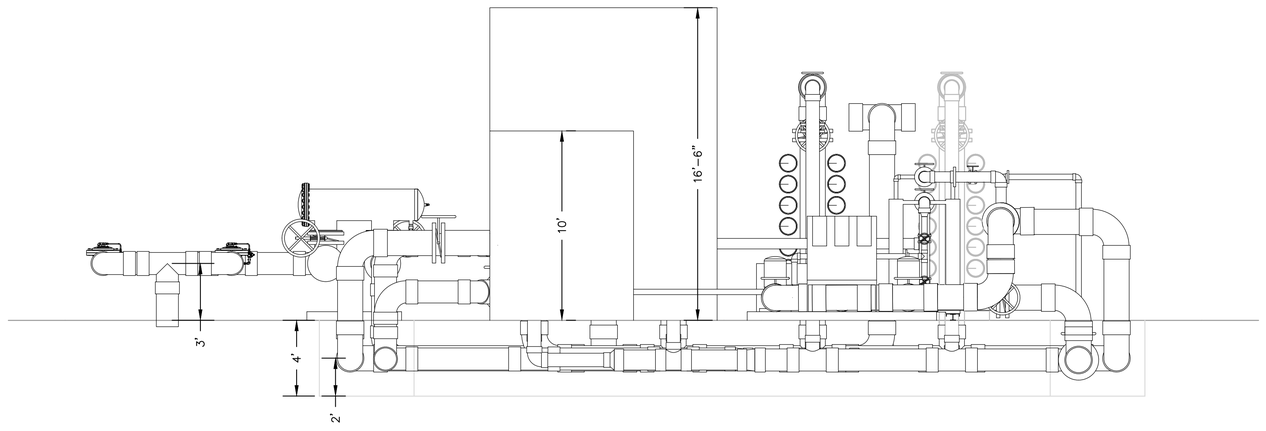
EDITION
PERMITTING

SHEET
C12 OF C15



A
XXX

PROCESS BUILDING – NORTH ELEVATION VIEW
1/4" = 1'



B
XXX

PROCESS BUILDING – EAST ELEVATION VIEW
1/4" = 1'

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LAKEWOOD, CO 80228
720.749.4165
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REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

PROCESS BUILDING ELEVATION VIEW

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

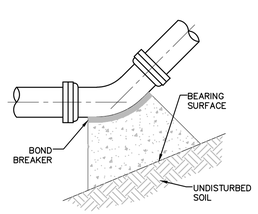
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OCT 2021

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0111.0001

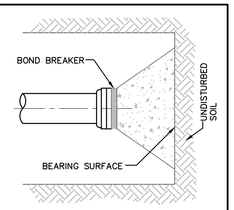
SCALE
1/4" = 1'

EDITION
PERMITTING

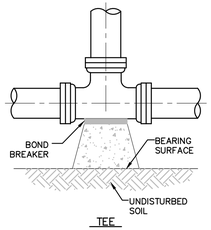
SHEET
C13 OF C15



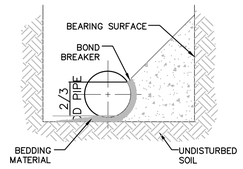
11 1/4°, 22 1/2°, 45° AND 90° BENDS



DEAD END



TEE



TYPICAL CROSS SECTION

MINIMUM BEARING SURFACE AREA
(IN SQUARE FEET)

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11 1/4°	22 1/2°	45°	90°	
4" & LOWER	1.00	1.00	1.00	N/A	1.50
6"	1.00	1.25	2.25	N/A	3.00
8"	1.00	2.00	4.00	N/A	5.25
12"	2.25	4.50	8.75	N/A	11.25
16"	3.75	7.50	14.50	27.00	19.00
20"	5.00	10.00	19.50	35.50	25.00
24"	7.00	14.00	27.75	51.00	36.00

NOTES:

1. ON 16" AND 20" TRANSMISSION MAINS, ALL BENDS SHALL BE BOTH RODDED AND KICKBLOCKED.
2. BEARING SURFACES SHOWN IN CHART ARE MIN.
3. BASED ON 150 PSI INTERNAL PIPE PRESSURE PLUS WATER HAMMER.
   2" – 4", 6", 8", 12" WATER HAMMER = 110 PSI
   16", 20" AND 24" WATER HAMMER = 70 PSI
4. BASED ON 3,000 PSF SOIL BEARING CAPACITY.
5. ALL VALVES, TEES, BENDS AND PLUGS SHALL BE BOTH RODDED AND KICKBLOCKED.

CITY OF OURAY

CONCRETE KICKBLOCKS
BEARING SURFACES & INSTALLATION

Scale: *NONE* | Date: *SEPTEMBER 2021*

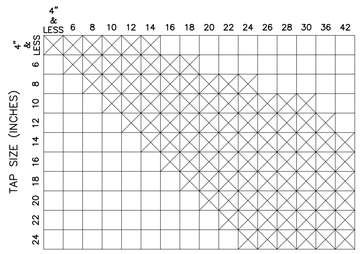
Revised:

CONCRETE KICKBLOCKS

WATER MAIN AND TAP SIZE COMBINATIONS WHICH REQUIRE A CONC KICKBLOCK BEHIND THE MAIN AT THE TAPPING SLEEVE OR SADDLE

ALL WATER MAINS

☒ INDICATED CONC KICKBLOCK REQD
MAIN SIZE (INCHES)



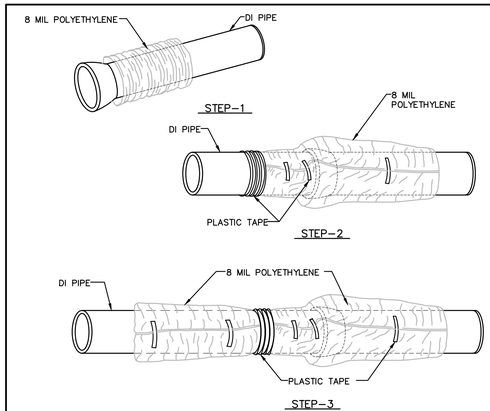
ANY KICKBLOCK REQUIREMENTS FOR WATER MAIN AND TAP SIZE COMBINATIONS OTHER THAN THOSE SHOWN ABOVE WILL REQUIRE SPECIAL DESIGN APPROVAL BY THE COMPANY ENGINEER.

CITY OF OURAY

CONCRETE KICKBLOCKS TABLE

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



FIELD INSTALLATION–POLYETHYLENE WRAP

STEP–1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

STEP–2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF TWO–INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

STEP–3 ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FT INTERVALS.

ALL FITTINGS, VALVES, BELL JOINT RESTRAINTS TO BE WRAPPED.

CITY OF OURAY

POLYETHYLENE WRAP

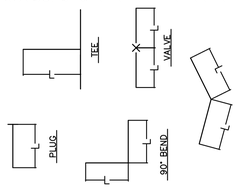
Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

ROD DIAMETER, GRADE & LENGTH OF RESTRAINED PIPE

PIPE SIZE	4" AND LESS			6"			8"			12"			16"			20"			24"		
FITTING	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G
90° BEND, TEE, PLUG, VALVE	3/4"	50'	MS	3/4"	71'	MS	3/4"	94'	MS	3/4"	134'	HS	1"	173'	HS	1 ¼"	212'	HS	–	250'	–
45° BEND	3/4"	25'	MS	3/4"	35'	MS	3/4"	46'	MS	3/4"	66'	HS	1"	85'	HS	1 ¼"	104'	HS	–	122'	–
22 1/2° BEND	3/4"	12'	MS	3/4"	17'	MS	3/4"	23'	MS	3/4"	32'	HS	1"	41'	HS	1 ¼"	50'	HS	–	59'	–
11 1/4° BEND	–	–	–	–	–	–	3/4"	7'	MS	3/4"	10'	HS	1"	13'	HS	1 ¼"	15'	HS	–	18'	–

NOTES:
1. LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. LENGTHS SHOWN ARE MEGALUGS NOT ALLOWED FOR 24" & LARGER PIPES.
3. D=ROD DIAMETER, L=LENGTH, G=GRADE, MS=MILD STEEL, HS=HIGH STRENGTH.
4. BASED ON 5.0 GROUND COVER, REQUIRES PLUS WATER HAMMER.
5. BASED ON 3,000 PSF SOIL BEARING CAPACITY.
6. MS = MILD STEEL ROD ASTM A 36.
7. HS = HIGH STRENGTH ROD ASTM A 193 GRADE B7.
8. NUTS SHALL BE ASTM A 563 GRADE A OR B HEAVY HEXAGON HEAVY SERIES. HS NUTS SHALL CONFORM TO ASTM A194 GRADE 2H.
9. SEE TIED PIPE DETAIL W–25. ALSO, TIE ROD COUPLING DETAIL W–20, CLAMP AND SET SCREW DETAIL W–22.
10. LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED TOGETHER AND IS NOT NECESSARILY THE LENGTH OF THE RODS.
11. WATER DISTRICT RESTRAINED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.
12. CROSSES MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.
13. VALVES SHALL BE RESTRAINED WITH MEGALUG MECHANICAL JOINT RESTRAINT DEVICE ON EACH SIDE OF THE FITTING OR VALVE. MECHANICAL JOINT RESTRAINT DEVICE SHALL BE PER DETAIL W–24.
14. EXISTING VALVE WILL BE REQUIRED TO BE CLOSED WHEN EXCAVATING NEXT TO AN EXISTING VALVE.
15. ON PLUGS, TEES AND BENDS, KICKBLOCKS SHALL BE USED IN ADDITION TO RESTRAINT.
16. WATER DISTRICT RESERVES THE RIGHT TO REQUIRE MORE RESTRAINT THAN SHOWN. SHALL BE BASED ON THE SIZE OF THE PIPE NOT THE SIZE OF THE VALVE.
17. IF INTERNAL PRESSURE EXCEEDS 250 PSI OR IF PIPE DIAMETER IS OVER 10", THE DESIGN ENGINEER WILL PROVIDE LENGTH OF RESTRAINED PIPE FOR REVIEW.

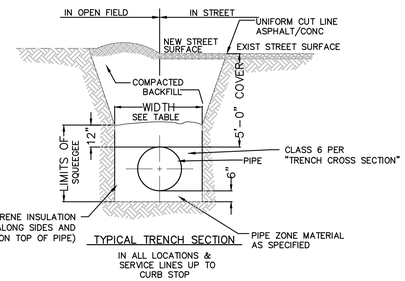


CITY OF OURAY

LENGTH OF RESTRAINED PIPE

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



TYPICAL TRENCH SECTION

IN ALL LOCATIONS & SERVICE LINES UP TO CURB STOP

PIPE ø	MIN WIDTH	MAX WIDTH
4" & LESS	1'–4"	2'–4"
6"	1'–6"	2'–6"
8"	1'–8"	2'–8"
12"	2'–0"	3'–0"
16"	2'–4"	3'–4"
20"	2'–8"	3'–8"
24"	4'–0"	5'–0"

NOTES:

1. MIN COVER TO BE 7.0' BELOW GRADE.
2. TRENCH WALLS TO BE SUPPORTED AS REQUIRED BY OSHA.
3. PIPE SHALL BE BEDDED WITH SQUEEGEE FROM 6" BELOW THE BOTTOM OF THE PIPE TO 12" ABOVE THE TOP OF THE PIPE.
4. COMPACTION SHALL BE IN ACCORDANCE WITH SPECIFICATIONS
5. TAPPING SADDLES REQUIRED IN AREAS WHERE THE BEDDING SECTION IS USED.
6. NEW STREET SURFACE SHALL COMPLY WITH COUNTY STANDARDS.

CITY OF OURAY

TYPICAL TRENCH SECTION
PIPE PROTECTION

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

PIPE BEDDING:

(A) INSTALLATION OF BEDDING AND PIPE: AFTER COMPLETION OF THE TRENCH EXCAVATION AND PROPER PREPARATION OF THE FOUNDATION, SIX INCHES (6") OF BEDDING MATERIAL SHALL BE PLACED ON THE TRENCH BOTTOM FOR SUPPORT UNDER THE PIPE. BELL HOLES SHALL BE DUG DEEP ENOUGH TO PROVIDE A MINIMUM OF TWO INCHES (2") OF CLEARANCE BETWEEN THE BELL AND BEDDING MATERIAL. ALL PIPE SHALL BE INSTALLED IN SUCH A MANNER AS TO ENSURE FULL SUPPORT OF THE PIPE BARREL OVER ITS ENTIRE LENGTH. AFTER THE PIPE IS ADJUSTED FOR LINE AND GRADE, AND THE JOINT IS MADE, THE BEDDING MATERIAL SHALL BE CAREFULLY PLACED AND TAMPED UNDER THE HAUNCHES OF THE PIPE AND IN THE PREVIOUSLY DUG BELL HOLES.

TAMPING IS HEREIN DEFINED AS THE ACT OF PLACING APPROVED BEDDING MATERIAL UNDER THE HAUNCHES OF THE PIPE, PAYING PARTICULAR ATTENTION TO VOIDS, BELL HOLES, AND SLING HOLES. THE PURPOSE OF TAMPING IS TO ENSURE UNIFORM SUPPORT FOR THE PIPE.

THE LIMITS OF BEDDING SHALL BE FROM SIX INCHES (6") BELOW THE BOTTOM OF THE PIPE TO TWELVE INCHES (12") ABOVE THE TOP OF THE PIPE. APPROVED BACKFILL MAY THEN BE INSTALLED TO THE GROUNDLINE. SEE SECTION 6 OF THESE STANDARDS FOR BACKFILL AND COMPACTION OF BACKFILL. COMPACTION OF BEDDING IS NOT REQUIRED. THE ONLY REQUIREMENT IS SUFFICIENT TAMPING TO ACHIEVE UNIFORM SUPPORT UNDER THE PIPE. SEE THE DETAILS FOR A TYPICAL TRENCH CROSS SECTION.

(B) BEDDING MATERIAL: THE BEDDING MATERIAL SHALL BE A CLEAN WELL–GRADED SAND OR SQUEEGEE SAND AND SHALL CONFORM TO THE FOLLOWING LIMITS WHEN TESTED BY MEANS OF LABORATORY SIEVES:

WELL–GRADED SAND

SIEVE SIZE	TOTAL PERCENT PASSING BY WEIGHT
3/8 INCH	100
NO. 4	95–100
NO. 8	80–100
NO. 16	50–85
NO. 30	25–60
NO. 50	10–30
NO. 100	2–10
NO. 200	0

SQUEEGEE SAND

SIEVE SIZE	TOTAL PERCENT PASSING BY WEIGHT
3/8 INCH	100
NO. 100	0–5

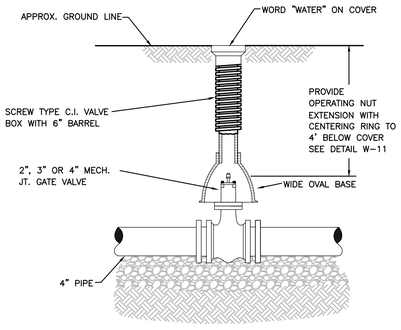
IF APPROVED BY THE DISTRICT, FINES FROM THE TRENCH WALLS AND SPOILS PILE MAY BE USED TO PROVIDE UNIFORM SUPPORT FOR THE PIPE. NO ROCK OR STONE LARGER THAN THAT ALLOWED BY THE SIEVE ANALYSIS, OR ANY OTHER DETRIMENTAL SUBSTANCE, SHALL BE PLACED CLOSER TO THE PIPE THAN SIX INCHES (6"). APPROVED BEDDING MATERIALS SHALL BE STOCKPILED ON THE JOBSITE TO BE USED IN THE EVENT NATURAL MATERIALS BECOME UNSATISFACTORY. THE DISTRICT RESERVES THE RIGHT TO REQUIRE THE USE OF THE SPECIFIED BEDDING MATERIAL AT ANY TIME.

CITY OF OURAY

PIPE BEDDING

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



6–INCH VALVE BOXES

MATERIALS:

VALVE BOX PARTS SHALL BE MADE FROM GRAY CAST IRON, ASTM A48 CLASS 20A.

USE OF AN ALUMINUM ALLOY AS A CASTING MATERIAL IS NOT ACCEPTABLE.

APPROVED PATTERNS:

VALVE BOXES SHALL BE THE THREE–PIECE ADJUSTABLE SCREW TYPE AND THE FOLLOWING TWO PATTERNS ARE ACCEPTABLE.

1. TYLER SCREW–TYPE 6–INCH CAST IRON VALVE BOX ASSEMBLY SERIES 6860 WITH NO. 160 LARGE OVAL BASE OR ENGINEER APPROVED EQUAL.

2. CLAY AND BAILEY SCREW–TYPE 6–INCH CAST IRON VALVE BOX ASSEMBLY NO. P–108 WITH NO. 160 LARGE OVAL BASE OR ENGINEER APPROVED EQUAL.

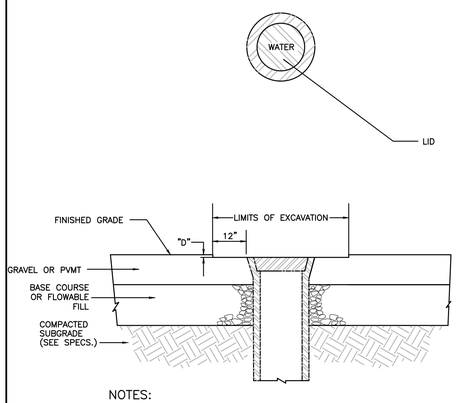
NOTES:
1. ALL C.I. SHALL BE WRAPPED WITH 8 MIL. MIN. THICKNESS POLYETHYLENE.
2. VALVE NUT SHALL BE CENTERED.
3. VALVE BOX SHALL BE PLUMB.

CITY OF OURAY

VALVE BOX DETAIL

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



NOTES:

1. "D" = 6" FOR GRAVEL ROADS (VALVE BOX COVERED)
2. VALVE BOX VEGETATED (NON ROADWAY) AREAS SHALL BE 6" ABOVE GRADE.

CITY OF OURAY

VALVE BOX FINISHING DETAIL

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300 720.749.4165
LAKEWOOD, CO 80228 WWW.ELEMENTENGINEERING.NET

REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

GENERAL DETAILS

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

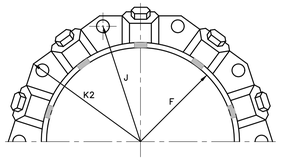
DATE
OCT 2021

JOB NUMBER
0111.0001

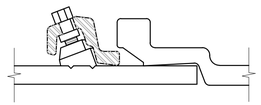
SCALE
NTS

EDITION
PERMITTING

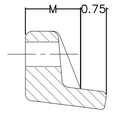
SHEET
C14 OF C15



MECHANICAL JOINT RESTRAINT



WEDGE DETAIL



BOLT HOLE DETAIL

DIMENSIONS

	NOMINAL PIPE SIZE	NO OF BOLTS	NO OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES	
D I	4" OR LESS	4	2					
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	
	16"	12	12	22.50	21.00	17.54	1.56	
	20"	14	14	27.00	25.50	21.74	1.69	D I

NOTES:

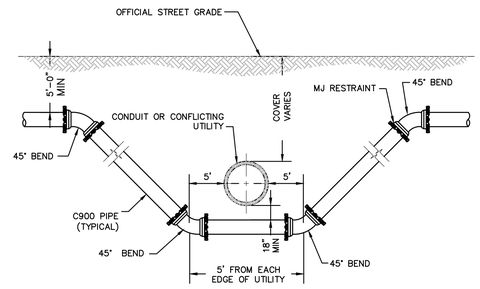
1. 2" PIPING RESTRAINTS SHALL BE EBBA IRON 6500 OR APPROVED EQUAL
2. OTHER MECHANICAL JOINT RESTRAINT DEVICES MUST BE APPROVED BEFORE INSTALLATION.

CITY OF OURAY

MECHANICAL JOINT RESTRAINT DETAILS

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



NOTES:

1) LENGTH OF EXTENSION OF PIPE AND RESTRAINED JOINTS SHALL BE IN ACCORDANCE WITH THESE ENGINEERING STANDARDS.

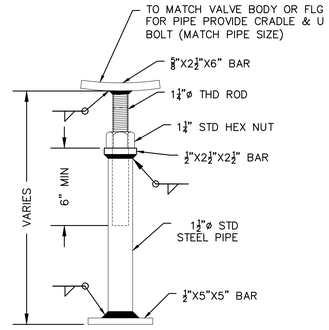
2) CATHODIC PROTECTION SHALL BE AS REQUIRED IN ACCORDANCE WITH THESE ENGINEERING STANDARDS.

CITY OF OURAY

OPEN CUT CROSSING BENEATH CONDUIT OR CONFLICTING UTILITY

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

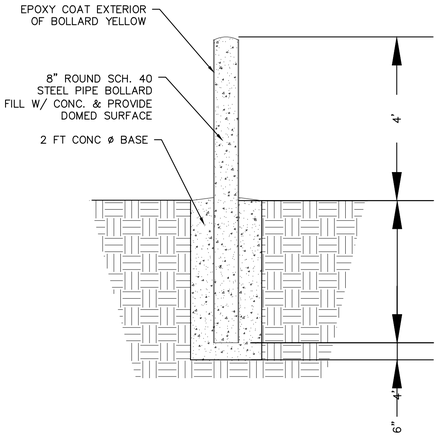


CITY OF OURAY

ADJUSTABLE PIPE SUPPORT

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

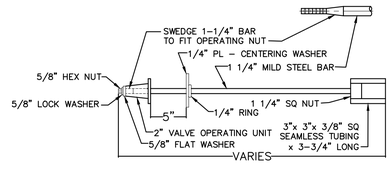


CITY OF OURAY

PIPE BOLLARD DETAIL

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:



VALVE OPERATOR EXTENSION

EXTENSIONS ARE REQUIRED ON ALL VALVES WHERE TOP OF NUTS ARE GREATER THAN 5'. MULTIPLE EXTENSIONS ARE NOT ALLOWED.

CITY OF OURAY

VALVE OPERATOR EXTENSION

Scale: *NONE* | Date: *SEPTEMBER 2021*

Revised:

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300 720.749.4165
LAKEWOOD, CO 80228 WWW.ELEMENTENGINEERING.NET

REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

GENERAL DETAILS

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

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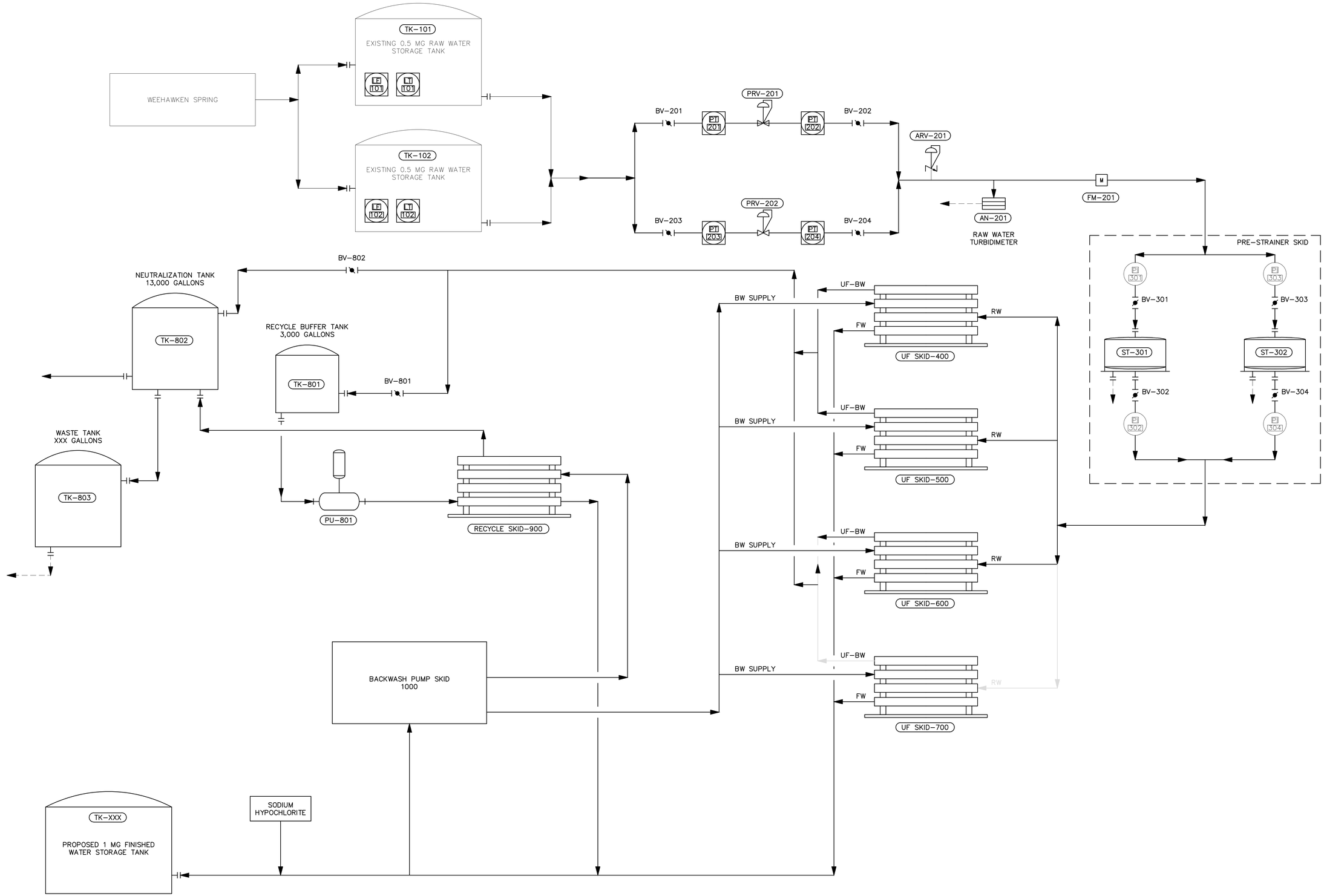
DATE
OCT 2021

JOB NUMBER
0111.0001

SCALE
NTS

EDITION
PERMITTING

SHEET
C15 OF C15



ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
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REVISIONS

NO.	DESCRIPTION	DATE	BY

WATER TREATMENT PLANT

PROCESS & INSTRUMENTATION DIAGRAM

CITY OF OURAY
320 6TH AVE
OURAY, CO 81427

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC

DATE
OCT 2021

JOB NUMBER
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SCALE
NTS

EDITION
PERMITTING

SHEET
C3 OF C15

COLORADO
Department of Public Health & Environment

ENVIRONMENTAL CHECKLIST

Use the Discussion and References space at the end of each section to document your responses. For example, explain how you determined the level of impact and document the reasoning if checking PA (possible adverse) for any resource. Attach additional pages if necessary.

1. Brief project description, including identification of selected alternative:

On March 2, 2021, the City of Ouray was issued a Final Evaluation of Surface Water Influence to Sources letter by CDPHE that stated that the city's raw water source, Spring No. 1 Weehawken, will be classified as groundwater under the direct influence of surface water (GWUDI). As documented in the letter, systems with sources classified as GWUID are required to comply with the Surface Water Treatment Rules (SWTR). The proposed project will bring the city into compliance with state regulations for surface water treatment. The proposed project includes the following components:

1. New Water Treatment Plant including three (3) 700 gallon per minute ultra-filtration treatment skids, with liquid sodium hypochlorite disinfection.
2. 1-million gallon finished water storage tanks.
3. Permitting of new surface water source - Weehawken Creek.

2. Describe if the project will improve or maintain water quality, and if the project addresses a TMDL, and/or Watershed Management Plan.

The project will improve water quality. The existing treatment system only provides disinfection, which does not meet the requirements of the SWTR. The proposed system will include ultra filtration treatment as well as disinfection. The project does not address a TMDL or Watershed Management Plan.

3. Provide latitude and longitude of the proposed project (if a transmission / distribution / collection line identify the center point not the whole line):

38 deg 00' 52.25" N, 107 deg 40' 21.51"W

4. Provide discharge (WW) or source (DW) information: N/A □

Existing source is Spring No. 1 Weehawken. Proposed additional source is Weehawken Creek.

5. Provide NPDES/PWSID number:

PWSID: CO-0146588

6. Provide primary waterbody name and waterbody ID, secondary name (if available), and State designated surface water use:

See question 4.

7. Did your analysis consider how this project impacts community planning efforts in other areas (i.e. transportation, housing, etc.)?

There are no expected impacts to community planning efforts in other areas as a result of this project.

Y = Yes N = No PA = Possible Adverse

1. Physical Aspects - Topography, Geology and Soils

Y ☑ N ☐ PA ☐ a. Are there physical conditions (e.g., steep slopes, shrink-swells soils, etc.) that might be adversely affected by or might affect construction of the facilities?

Y ☐ N ☐ PA ☑ b. Are there similar limiting physical conditions in the planning area that might make development unsuitable?

Y ☑ N ☐ PA ☐ c. Are there any unusual or unique geological features that might be affected?

Y ☐ N ☑ PA ☐ d. Are there any hazardous areas (slides, faults, etc.) that might affect construction or development?

Discussion and References:

Numerous construction concerns exist with the project due to site location and conditions. The water treatment plant must be constructed in a difficult location due to the topography of the city. To mitigate construction concerns, this project is being designed, bid, and constructed as a Construction Manager at Risk (CMAR) project. A construction firm has already been retained by the city and is involved in the preliminary design. Element and the city will work with the construction firm to work to revise any design elements to reduce construction concern.

2. Climate

Y ☐ N ☑ PA ☐ a. Are there any unusual or special meteorological constraints in the planning area that might result in an air quality problem?

Y ☐ N ☑ PA ☐ b. Are there any unusual or special meteorological constraints in the planning area that might affect the feasibility of the proposed alternative?

Discussion and References:

3. Population

Y ☐ N ☑ PA ☐ a. Are the proposed growth rates excessive (exceeding State projections, greater than 6% per annum for the 20 year planning period)?

Y ☐ N ☑ PA ☐ b. Will additional growth be induced or growth in new areas encouraged as a result of facilities construction?

Y ☐ N ☑ PA ☐ c. Will the facilities serve areas which are largely undeveloped areas at present?

Discussion and References:

4. Housing, Industrial and Commercial Development and Utilities

Y ☐ N ☑ PA ☐ a. Will existing homes or business be displaced as a result of construction of this property?

Y ☐ N ☑ PA ☐ b. Will new housing serviced by this facility affect existing facilities, transportation patterns, environmentally sensitive areas, or be in special hazard or danger zones?

Y ☐ N ☑ PA ☐ c. Will new housing create strains on other utilities and services - policies, power, water supply, schools, hospital care, etc.?

Discussion and References:

5. Economics and Social Profile

Y ☐ N ☑ PA ☐ a. Will certain landowners benefit substantially from the development of land due to location and size of the facilities?
Y ☐ N ☑ PA ☐ b. Will the facilities adversely affect land values?
Y ☐ N ☑ PA ☐ c. Are any poor or disadvantaged groups especially affected by this project?

Discussion and References:

6. Land Use

Y ☐ N ☑ PA ☐ a. Will projected growth defeat the purpose of local land use controls (if any)?
Y ☐ N ☑ PA ☐ b. Is the location of the facilities incompatible with local land use plans?
Y ☐ N ☑ PA ☐ c. Will inhabited areas be adversely impacted by the project site?
Y ☐ N ☑ PA ☐ d. Will new development have adverse effects on older existing land uses (agriculture, forest land, etc.)?
Y ☐ N ☑ PA ☐ e. Will this project contribute to changes in land use in association with recreation (skiing, parks, etc.), mining or other large industrial or energy developments?

Discussion and References:

7. Floodplain Development

Y ☐ N ☑ PA ☐ a. Does the planning area contain 100 year floodplains?
If yes -
Y ☐ N ☑ PA ☐ b. Will the project be constructed in a 100 year floodplain?
Y ☐ N ☑ PA ☐ c. Will the project serve direct or indirect development in a 100 year floodplain anywhere in the planning area?

Discussion and References:

8. Wetlands

Y ☐ N ☑ PA ☐ a. Does the planning area contain wetlands as defined by the U.S. Fish and Wildlife Service?
If yes -
Y ☐ N ☑ PA ☐ b. Will any structure of the facility be located in wetlands?
Y ☐ N ☑ PA ☐ c. Will the project serve growth and development which will directly or indirectly affect wetlands?

Discussion and References:

9. Wild and Scenic Rivers

Y ☐ N ☑ PA ☐ a. Does the planning area contain a designated or proposed wild and scenic river?
If yes -
Y ☐ N ☑ PA ☐ b. Will the project be constructed near the river?

Y ☐ N ☑ PA ☐ c. Will projected growth and development take place contiguous to or upstream from the river segment?

Y ☐ N ☑ PA ☐ d. Will the river segment be used for disposal of effluent?

Discussion and References:

10. Cultural Resources (Archeological/Historical)

Y ☐ N ☑ PA ☐ a. Are there any properties (historic, architectural, and archeological) in the planning area which are listed on or eligible for listing on the National Register of Historic Places?

If yes -

Y ☐ N ☑ PA ☐ b. Will the project have direct or indirect adverse impacts on any listed or eligible property?

Discussion and References:

11. Flora and Fauna (including endangered species)

Y ☐ N ☑ PA ☐ a. Are there any designated threatened or endangered species or their habitat in the planning area?

Y ☐ N ☑ PA ☐ b. Will the project have direct or indirect adverse impacts on any such designated species?

Y ☐ N ☑ PA ☐ c. Will the project have direct or indirect adverse impacts on fish, wildlife or their habitat including migratory routes, wintering or calving areas?

Y ☐ N ☑ PA ☐ d. Does the planning area include a sensitive habitat area designed by a local, State or Federal wildlife agency?

Discussion and References:

12. Recreation and Open Space

Y ☐ N ☑ PA ☐ a. Will the project eliminate or modify recreational open space, parks or areas of recognized scenic or recreational value?

Y ☐ N ☑ PA ☐ b. Is it feasible to combine the project with parks, bicycle paths, hiking trails, waterway access and other recreational uses?

Discussion and References:

13. Agricultural Lands

Y ☐ N ☑ PA ☐ a. Does the planning area contain any environmentally significant agricultural lands (prime, unique, statewide importance, local importance, etc.) as defined in the EPA Policy to Protect Environmentally Significant Agricultural Lands dated September 8, 1978?

Y ☐ N ☑ PA ☐ b. Will the project directly or indirectly encourage the irreversible conversion of Environmentally Significant Agricultural Lands to uses which result in the loss of these lands as an environmental or essential food production resource?

Discussion and References:

14. Air Quality

Y ☐ N ☑ PA ☐	a.	Are there any direct air emissions from the project (e.g., odor controls, sludge incinerator) which do not meet Federal and State emission standards contained in the State Air Quality Implementation Plan (SIP)?
Y ☐ N ☑ PA ☐	b.	Is the project service area located in an area without an approved or conditionally approved SIP?
Y ☐ N ☑ PA ☐	c.	Is the increased capacity of the project greater than 1 mgd?
Y ☐ N ☑ PA ☐	d.	Do the population projections used in the facilities plan exceed the Sate or area wide projections in the SIP by more than 5%?
Y ☐ N ☑ PA ☐	e.	Does the project conform to the requirements of the SIP? (See EPA regulations under Section 316 of the Clean Air Act.)
Y ☐ N ☑ PA ☐	f.	Is the project inconsistent with the SIP of an adjoining State that may be impacted by the Project?
Y ☐ N ☑ PA ☐	g.	Does the project violate national ambient Air Quality Standards in an attainment or unclassified area?
Y ☐ N ☑ PA ☐	h.	Will the facilities create an odor nuisance problem?

Discussion and References:

15. Water Quality and Quantity (Surface/Groundwater)

Y ☐ N ☑ PA ☐	a.	Are present stream classifications in the receiving stream being challenged as too low to protect present or recent uses?
Y ☐ N ☑ PA ☐	b.	Is there a substantial risk that the proposed discharge will not meet existing stream standards or will not be of sufficient quality to protect present or recent stream uses?
Y ☐ N ☑ PA ☐	c.	Will construction of the project and development to be served by the project result in non-point water quality problems (sedimentation, urban stormwater, etc.)?
Y ☐ N ☑ PA ☐	d.	Will water rights be adversely affected by the project?
Y ☐ N ☑ PA ☐	e.	Will the project cause a significant amount of water to be transferred from one sub-basin to another (relative to the 7-day, 10 year flow of the diverted basin)?
Y ☐ N ☑ PA ☐	f.	Will stream habitat be affected as a result of the change in flow or stream bank modification?
Y ☐ N ☑ PA ☐	g.	Are stream conditions needed for deciding upon the required limitations inadequately specified in the 208 Plan? If so, have the wasteload allocations calculations been performed and approved by the State and EPA?
Y ☐ N ☑ PA ☐	h.	Is an Antidegradation Review required?
Y ☐ N ☑ PA ☐	i.	Will the project adversely affect the quantity or quality of a groundwater resource?
Y ☐ N ☑ PA ☐	j.	Does the project adversely affect an aquifer used as a potable drinking water supply?
Y ☐ N ☑ PA ☐	k.	Are there additional cost effective water conservation measures that could be adopted by community to reduce sewage generation?

Discussion and References:

16. Public Health

Y ☐ N ☑ PA ☐	a.	Will there be adverse direct or indirect noise impacts from the project?
Y ☐ N ☑ PA ☐	b.	Will there be a vector problem (e.g., mosquito) from the project?

Y ☐ N ☑ PA ☐ c. Will there be any unique public health problems as a result of the project (e.g., increased disease risks)?

Discussion and References:

17. Solid Waste (Sludge Management)

Y ☐ N ☑ PA ☐ a. Will sludge disposal occur in an area with inadequate sanitary landfills or on land unsuitable for land application?

Y ☐ N ☑ PA ☐ b. Are there special problems with the sludge that makes disposal difficult (hazardous, difficult to treat)?

Y ☐ N ☑ PA ☐ c. Is the technology selected for sludge disposal controversial?

Discussion and References:

18. Energy

Y ☐ N ☑ PA ☐ a. Are there additional cost effective measures to reduce energy consumption or increase energy recovery which could be included in this project?

Discussion and References:

19. Land Application

Y ☐ N ☑ PA ☐ a. Has a new or unproven technique been selected?

Y ☐ N ☑ PA ☐ b. Is there considerable public controversy about the project?

Y ☐ N ☑ PA ☐ c. Will the project require additional water rights or impact existing water Rights?

Y ☐ N ☑ PA ☐ d. Is the project multi-purpose?

Discussion and References:

20. Regionalization

Y ☐ N ☑ PA ☐ a. Are there jurisdictional disputes or controversy over the project?

Y ☐ N ☑ PA ☐ b. Is conformance with the 208 plan in question?

Y ☐ N ☑ PA ☐ c. Is the proliferation of small treatment plants and septic systems creating a significant health problem?

Y ☐ N ☑ PA ☐ d. Have inter-jurisdictional agreements been signed?

Discussion and References:

21. Public Participation

Y ☐ N ☑ PA ☐ a. Is there a substantial level of public controversy?

Y ☑ N ☐ PA ☐ b. Is there adequate evidence of public participation in the project?

Discussion and References:

22. Environmental Laws

Y ☐ N ☑ PA ☐ a. Does the project threaten to violate any State, Federal or local law or requirement imposed to protect the environment?

Discussion and References:

Prepared By: Alice Arsenault, PE, Project Manager, Element Engineering
Name, Title, and Affiliation

Date: 11/29/2021

COLORADO
Department of Public Health & Environment

ENVIRONMENTAL CHECKLIST

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2. Describe if the project will improve or maintain water quality, and if the project addresses a TMDL, and/or Watershed Management Plan.

The project will improve water quality. The existing treatment system only provides disinfection, which does not meet the requirements of the SWTR. The proposed system will include ultra filtration treatment as well as disinfection. The project does not address a TMDL or Watershed Management Plan.

3. Provide latitude and longitude of the proposed project (if a transmission / distribution / collection line identify the center point not the whole line):

38 deg 00' 52.25" N, 107 deg 40' 21.51"W

4. Provide discharge (WW) or source (DW) information: N/A □

Existing source is Spring No. 1 Weehawken. Proposed additional source is Weehawken Creek.

5. Provide NPDES/PWSID number:

PWSID: CO-0146588

6. Provide primary waterbody name and waterbody ID, secondary name (if available), and State designated surface water use:

See question 4.

7. Did your analysis consider how this project impacts community planning efforts in other areas (i.e. transportation, housing, etc.)?

There are no expected impacts to community planning efforts in other areas as a result of this project.

Y = Yes N = No PA = Possible Adverse

1. Physical Aspects - Topography, Geology and Soils

Y ☑ N ☐ PA ☐ a. Are there physical conditions (e.g., steep slopes, shrink-swells soils, etc.) that might be adversely affected by or might affect construction of the facilities?

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Discussion and References:

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2. Climate

Y ☐ N ☑ PA ☐ a. Are there any unusual or special meteorological constraints in the planning area that might result in an air quality problem?

Y ☐ N ☑ PA ☐ b. Are there any unusual or special meteorological constraints in the planning area that might affect the feasibility of the proposed alternative?

Discussion and References:

3. Population

Y ☐ N ☑ PA ☐ a. Are the proposed growth rates excessive (exceeding State projections, greater than 6% per annum for the 20 year planning period)?

Y ☐ N ☑ PA ☐ b. Will additional growth be induced or growth in new areas encouraged as a result of facilities construction?

Y ☐ N ☑ PA ☐ c. Will the facilities serve areas which are largely undeveloped areas at present?

Discussion and References:

4. Housing, Industrial and Commercial Development and Utilities

Y ☐ N ☑ PA ☐ a. Will existing homes or business be displaced as a result of construction of this property?

Y ☐ N ☑ PA ☐ b. Will new housing serviced by this facility affect existing facilities, transportation patterns, environmentally sensitive areas, or be in special hazard or danger zones?

Y ☐ N ☑ PA ☐ c. Will new housing create strains on other utilities and services - policies, power, water supply, schools, hospital care, etc.?

Discussion and References:

5. Economics and Social Profile

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Y ☐ N ☑ PA ☐ b. Will the facilities adversely affect land values?
Y ☐ N ☑ PA ☐ c. Are any poor or disadvantaged groups especially affected by this project?

Discussion and References:

6. Land Use

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Y ☐ N ☑ PA ☐ d. Will new development have adverse effects on older existing land uses (agriculture, forest land, etc.)?
Y ☐ N ☑ PA ☐ e. Will this project contribute to changes in land use in association with recreation (skiing, parks, etc.), mining or other large industrial or energy developments?

Discussion and References:

7. Floodplain Development

Y ☐ N ☑ PA ☐ a. Does the planning area contain 100 year floodplains?
If yes -
Y ☐ N ☑ PA ☐ b. Will the project be constructed in a 100 year floodplain?
Y ☐ N ☑ PA ☐ c. Will the project serve direct or indirect development in a 100 year floodplain anywhere in the planning area?

Discussion and References:

8. Wetlands

Y ☐ N ☑ PA ☐ a. Does the planning area contain wetlands as defined by the U.S. Fish and Wildlife Service?
If yes -
Y ☐ N ☑ PA ☐ b. Will any structure of the facility be located in wetlands?
Y ☐ N ☑ PA ☐ c. Will the project serve growth and development which will directly or indirectly affect wetlands?

Discussion and References:

9. Wild and Scenic Rivers

Y ☐ N ☑ PA ☐ a. Does the planning area contain a designated or proposed wild and scenic river?
If yes -
Y ☐ N ☑ PA ☐ b. Will the project be constructed near the river?

Y ☐ N ☑ PA ☐ c. Will projected growth and development take place contiguous to or upstream from the river segment?

Y ☐ N ☑ PA ☐ d. Will the river segment be used for disposal of effluent?

Discussion and References:

10. Cultural Resources (Archeological/Historical)

Y ☐ N ☑ PA ☐ a. Are there any properties (historic, architectural, and archeological) in the planning area which are listed on or eligible for listing on the National Register of Historic Places?

If yes -

Y ☐ N ☑ PA ☐ b. Will the project have direct or indirect adverse impacts on any listed or eligible property?

Discussion and References:

11. Flora and Fauna (including endangered species)

Y ☐ N ☑ PA ☐ a. Are there any designated threatened or endangered species or their habitat in the planning area?

Y ☐ N ☑ PA ☐ b. Will the project have direct or indirect adverse impacts on any such designated species?

Y ☐ N ☑ PA ☐ c. Will the project have direct or indirect adverse impacts on fish, wildlife or their habitat including migratory routes, wintering or calving areas?

Y ☐ N ☑ PA ☐ d. Does the planning area include a sensitive habitat area designed by a local, State or Federal wildlife agency?

Discussion and References:

12. Recreation and Open Space

Y ☐ N ☑ PA ☐ a. Will the project eliminate or modify recreational open space, parks or areas of recognized scenic or recreational value?

Y ☐ N ☑ PA ☐ b. Is it feasible to combine the project with parks, bicycle paths, hiking trails, waterway access and other recreational uses?

Discussion and References:

13. Agricultural Lands

Y ☐ N ☑ PA ☐ a. Does the planning area contain any environmentally significant agricultural lands (prime, unique, statewide importance, local importance, etc.) as defined in the EPA Policy to Protect Environmentally Significant Agricultural Lands dated September 8, 1978?

Y ☐ N ☑ PA ☐ b. Will the project directly or indirectly encourage the irreversible conversion of Environmentally Significant Agricultural Lands to uses which result in the loss of these lands as an environmental or essential food production resource?

Discussion and References:

14. Air Quality

Y ☐ N ☑ PA ☐	a.	Are there any direct air emissions from the project (e.g., odor controls, sludge incinerator) which do not meet Federal and State emission standards contained in the State Air Quality Implementation Plan (SIP)?
Y ☐ N ☑ PA ☐	b.	Is the project service area located in an area without an approved or conditionally approved SIP?
Y ☐ N ☑ PA ☐	c.	Is the increased capacity of the project greater than 1 mgd?
Y ☐ N ☑ PA ☐	d.	Do the population projections used in the facilities plan exceed the Sate or area wide projections in the SIP by more than 5%?
Y ☐ N ☑ PA ☐	e.	Does the project conform to the requirements of the SIP? (See EPA regulations under Section 316 of the Clean Air Act.)
Y ☐ N ☑ PA ☐	f.	Is the project inconsistent with the SIP of an adjoining State that may be impacted by the Project?
Y ☐ N ☑ PA ☐	g.	Does the project violate national ambient Air Quality Standards in an attainment or unclassified area?
Y ☐ N ☑ PA ☐	h.	Will the facilities create an odor nuisance problem?

Discussion and References:

15. Water Quality and Quantity (Surface/Groundwater)

Y ☐ N ☑ PA ☐	a.	Are present stream classifications in the receiving stream being challenged as too low to protect present or recent uses?
Y ☐ N ☑ PA ☐	b.	Is there a substantial risk that the proposed discharge will not meet existing stream standards or will not be of sufficient quality to protect present or recent stream uses?
Y ☐ N ☑ PA ☐	c.	Will construction of the project and development to be served by the project result in non-point water quality problems (sedimentation, urban stormwater, etc.)?
Y ☐ N ☑ PA ☐	d.	Will water rights be adversely affected by the project?
Y ☐ N ☑ PA ☐	e.	Will the project cause a significant amount of water to be transferred from one sub-basin to another (relative to the 7-day, 10 year flow of the diverted basin)?
Y ☐ N ☑ PA ☐	f.	Will stream habitat be affected as a result of the change in flow or stream bank modification?
Y ☐ N ☑ PA ☐	g.	Are stream conditions needed for deciding upon the required limitations inadequately specified in the 208 Plan? If so, have the wasteload allocations calculations been performed and approved by the State and EPA?
Y ☐ N ☑ PA ☐	h.	Is an Antidegradation Review required?
Y ☐ N ☑ PA ☐	i.	Will the project adversely affect the quantity or quality of a groundwater resource?
Y ☐ N ☑ PA ☐	j.	Does the project adversely affect an aquifer used as a potable drinking water supply?
Y ☐ N ☑ PA ☐	k.	Are there additional cost effective water conservation measures that could be adopted by community to reduce sewage generation?

Discussion and References:

16. Public Health

Y ☐ N ☑ PA ☐	a.	Will there be adverse direct or indirect noise impacts from the project?
Y ☐ N ☑ PA ☐	b.	Will there be a vector problem (e.g., mosquito) from the project?

Y ☐ N ☑ PA ☐ c. Will there be any unique public health problems as a result of the project (e.g., increased disease risks)?

Discussion and References:

17. Solid Waste (Sludge Management)

Y ☐ N ☑ PA ☐ a. Will sludge disposal occur in an area with inadequate sanitary landfills or on land unsuitable for land application?

Y ☐ N ☑ PA ☐ b. Are there special problems with the sludge that makes disposal difficult (hazardous, difficult to treat)?

Y ☐ N ☑ PA ☐ c. Is the technology selected for sludge disposal controversial?

Discussion and References:

18. Energy

Y ☐ N ☑ PA ☐ a. Are there additional cost effective measures to reduce energy consumption or increase energy recovery which could be included in this project?

Discussion and References:

19. Land Application

Y ☐ N ☑ PA ☐ a. Has a new or unproven technique been selected?

Y ☐ N ☑ PA ☐ b. Is there considerable public controversy about the project?

Y ☐ N ☑ PA ☐ c. Will the project require additional water rights or impact existing water Rights?

Y ☐ N ☑ PA ☐ d. Is the project multi-purpose?

Discussion and References:

20. Regionalization

Y ☐ N ☑ PA ☐ a. Are there jurisdictional disputes or controversy over the project?

Y ☐ N ☑ PA ☐ b. Is conformance with the 208 plan in question?

Y ☐ N ☑ PA ☐ c. Is the proliferation of small treatment plants and septic systems creating a significant health problem?

Y ☐ N ☑ PA ☐ d. Have inter-jurisdictional agreements been signed?

Discussion and References:

21. Public Participation

Y ☐ N ☑ PA ☐ a. Is there a substantial level of public controversy?

Y ☑ N ☐ PA ☐ b. Is there adequate evidence of public participation in the project?

Discussion and References:

22. Environmental Laws

Y ☐ N ☑ PA ☐ a. Does the project threaten to violate any State, Federal or local law or requirement imposed to protect the environment?

Discussion and References:

Prepared By: ~~Alice Arsenault, PE, Project Manager, Element Engineering~~
Name, Title, and Affiliation

Date: 11/29/2021

COLORADO
Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

March 2, 2021

JOE COLEMAN
OURAY CITY OF - PWSID CO0146588
PO BOX 468
OURAY CO 81427

Final Evaluation of Surface Water Influence to Sources

Dear JOE COLEMAN:

The Water Quality Control Division (Division) has completed an evaluation of the OURAY CITY OF (the "Supplier") Spring No. 1 Weehawken (WL002) in accordance with Drinking Water Program Policy 3, *Evaluation of Ground Water Sources to Determine Direct Influence of Surface Water*. The result of this analysis is that the source will be classified as groundwater under the direct influence of surface water (GWUDI).

This evaluation of the source as GWUDI was conducted by the Division utilizing data collected by the system from April 2020 through October 2020. The specific information for each water source evaluated for the system is presented in Table 1.

Table 1: Result of Final GWUDI Evaluation

WSF Number	Water System Facility (WSF) Name	Previous Classification	Current Classification	Primary Justification
WL002	Spring No. 1 Weehawken	Groundwater	GWUDI	Multiple moderate and high risk MPA results and multiple total coliform positive results

Due to the fact that insufficient data was present to make a final GWUDI determination, the Division required the data presented in Table 2 to be collected.

Table 2: Minimal Monitoring Requirements

Parameter	Location	Frequency	Sampling Dates
Conductivity and Temperature	WL002	2X per 7-day week	April 2020 through October 2020
Raw Water Total coliform *(w/ E. coli)*	WL002	1X month	April 2020 through October 2020
Microscopic Particulate Analysis (MPA)	WL002	3X as specified	1st in Apr/May 2020, 2nd in June/July 2020, 3rd in Aug/Sept 2020
Aerobic Spores	Not Required	Not Required	Not Required

Results of Evaluation

The Division analyzed the data collected as well as took into account the history of the well, the well construction methods and the proximity to surface water in order to make a final determination of GWUDI. Table 3 summarizes the data collected by the system and analyzed by the Division. Figures 1 and further show the results of the data collection for temperature and conductivity.

Table 3: Summary of Data Evaluation

Parameter	Result	Conclusion
Temperature and Conductivity	The data does not show significant variations of temperature and conductivity over short periods of time.	The temperature and conductivity data indicates a low risk of surface water influence on WL002.
Total coliform ***(w/ E. coli)***	Four of seven result showed the presence of total coliform. All results were absent for *E. coli*.	The total coliform and *E. coli* results indicate a moderate risk of surface water influence on WL002.
MPA	8/28/18 Score 12, Moderate Risk 8/5/19 Score 13, Moderate Risk 5/19/20 Score 30, High Risk 7/27/20 Score 20, High Risk 10/27/20 Score 6, Low Risk 10/28/20 (at source) Score 0, Low Risk	The MPA results indicate a high risk of surface water influence on WL002.

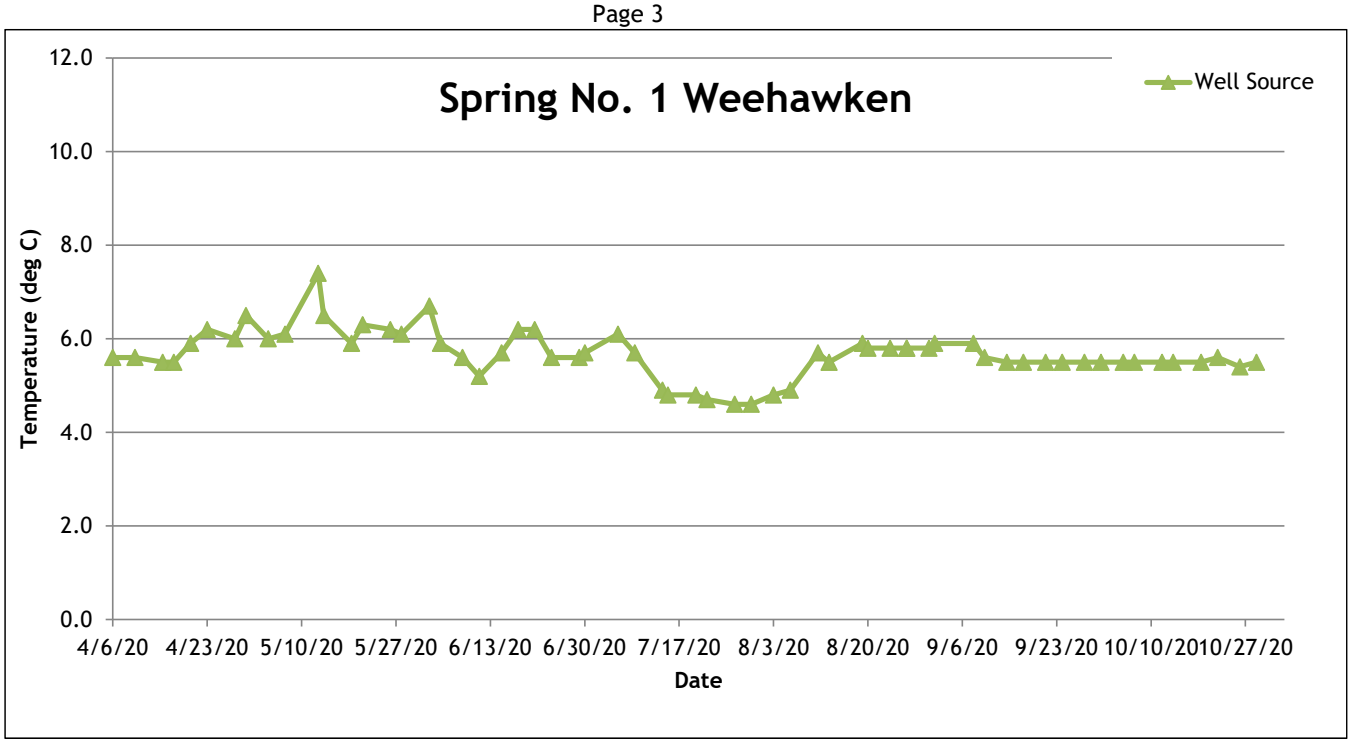


Figure 1: Temperature monitoring on Spring No. 1 Weehawken

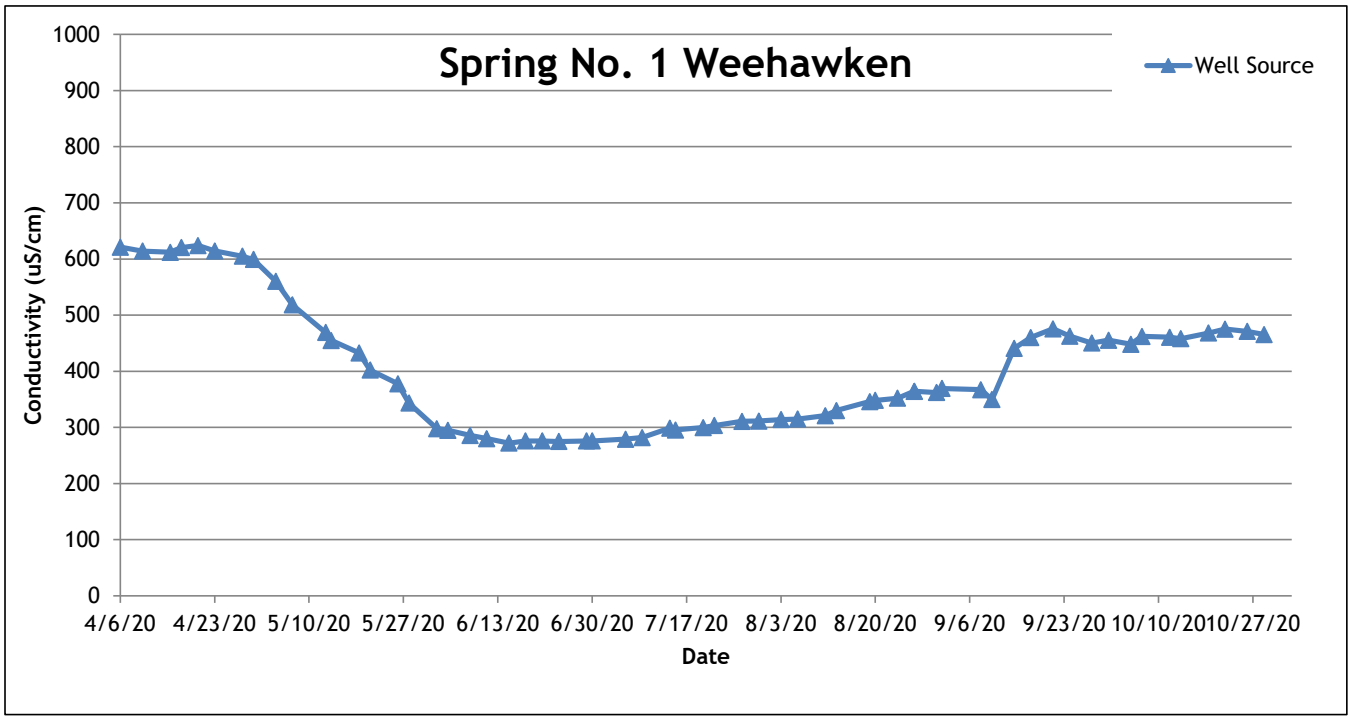


Figure 2: Conductivity monitoring on Spring No. 1 Weehawken

Evaluation Conclusions

Based upon the data collected by the Supplier and evaluated by the Division, the Division finds that the Supplier's water source (Spring No. 1 Weehawken) will be regulated by the Division as a GWUDI sources. This classification determination is effective as of the date of this letter; it is considered to be final unless evidence is submitted to the Division that conditions with Spring No. 1 Weehawken have changed to warrant further investigation with regard to the influence of surface water to the well. Systems with sources classified as GWUDI are required to comply with the Surface Water Treatment Rules (SWTR) outlined in 5 CCR 1002-11, §§8-10. Information regarding the SWTR requirements that are applicable to the system will be provided in a separate letter.

If there are any questions regarding the contents of this letter and/or requirements for the Supplier, please contact Bryan Pickle by phone at 303-692-3527 or by email at bryan.pickle@state.co.us.

ec:
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File: CO0146588, OURAY COUNTY, COMMUNITY - GWUDI

COLORADO
Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

March 2, 2021

JOE COLEMAN
OURAY CITY OF - PWSID CO0146588
PO BOX 468
OURAY CO 81427

Requirements Notice
Reclassification to Ground Water Under the Direct Influence of Surface Water (GWUDI)

Dear JOE COLEMAN:

The Colorado Department of Public Health and Environment ("Department") notified **OURAY CITY OF** ("Supplier") that SPRING NO 1 WEEHAWKEN (002) has been reclassified to ground water under the direct influence of surface water (GWUDI). Listed below are the specific regulatory requirements associated with the reclassification.

Treatment
Section 11.8(1)(b)(iv) of the Colorado Primary Drinking Water Regulations 5 CCR 1002-11 ("Regulation 11") requires any ground water source determined to be GWUDI to provide adequate surface water treatment for the source within eighteen (18) months of receiving notification from the Department. Adequate surface water treatment is considered to be a treatment system that is designed and operated to:

1. Achieve at least 99.99 percent (4-log) inactivation and/or removal of viruses and at least 99.9 percent (3-log) inactivation and/or removal of Giardia lamblia cysts. The inactivation of viruses and Giardia lamblia is primarily accomplished by disinfection with chlorine.
2. Achieve at least 99 percent (2-log) removal of Cryptosporidium. Cryptosporidium cyst removal is achieved by filtration.
3. Additionally, the outcome of a source water risk assessment required by the Long Term 2 Enhanced Surface Water Treatment Rule may require additional treatment that is capable of removing/inactivating up to 99.9997 percent (5.5-log) of Cryptosporidium.

Section 11.8 of Regulation 11 requires additional daily turbidity and chlorine residual monitoring. The Supplier should consider the costs and benefits of adding/upgrading treatment to all water sources and the potential for other and future sources to be classified as GWUDI. The Supplier must install adequate surface water treatment by **October 1, 2022**. Alternatively, the Supplier may discontinue use by physically disconnecting GWUDI sources.

Waterworks Plan and Specification Approval
Section 11.4(1) of Regulation 11 requires plans and specifications associated with the construction or modifications of any waterworks to be submitted to the Department for review and approval. This includes, but is not limited to:

1. Commencing construction of any new waterworks.
2. Making improvements to or modifying any existing treatment.
3. Initiating the use of a new source.

Approval, for any changes, must be obtained prior to installation/operation. For community water systems, all plans and specifications must be prepared by a Professional Engineer registered in the State of Colorado. If the Supplier chooses to install filtration, note that water quality monitoring will be required to justify the design of the filtration system. Attachment A outlines the water quality that must be collected. The Department recommends the Supplier begin water quality monitoring as soon as possible to collect sufficient data to justify any design.

A copy of the design criteria and information regarding plan reviews, including all forms and guidance, can be obtained from the Department's website at wqcdcompliance.com/eng. If you have technical questions regarding plans and specifications submittal and review or questions about the approval process, please contact the Engineering Section at 303-692-6298.

Interim Measures
In accordance with Section 11.8(3)(a)(ii) of Regulation 11, the Supplier is required to implement interim measures until full surface water treatment is installed and operational. In order to protect public health and to comply with Regulation 11, all reclassified sources are evaluated by the Department to determine the degree of interim measures that are appropriate until adequate treatment is approved and installed. Until adequate surface water treatment is approved, installed and operational, the following interim measures are required for all reclassified GWUDI systems:

1. Immediately, the Supplier must operate continuous chemical disinfection treatment prior to each entry point to the distribution system.
2. The Supplier must begin maintaining 2.0 mg/L disinfection residual at all entry points served by SPRING NO 1 WEEHAWKEN (002) by **June 1, 2021**. On **June 1, 2021**, the Supplier must begin daily monitoring of the entry point. The first monthly operating report (MOR) must be submitted by **July 10, 2021** and monthly thereafter. Please visit wqcdcompliance.com/mors for reporting forms and additional reporting instructions.

A minimum entry point chemical disinfectant residual level of 2.0 mg/L must be maintained at all times unless a Department approved alternative minimum residual level is requested and obtained. Technical questions regarding alternative level approval should be directed to the Engineering Section. If the Supplier would like to request a reduction of the required disinfectant residual, the Supplier must contact the Department by **April 1, 2021**.

The disinfection residual must be measured, recorded and reported in accordance with the requirements in Sections 11.8(3)(c) and 11.8(3)(f) of Regulation 11, respectively. If additional interim measures are required in the future, the Department will notify the Supplier in writing.

Monitoring Schedule
As a result of the source water reclassification the Supplier's monitoring requirements may have changed. Please visit wqcdcompliance.com/schedules to access the Supplier's monitoring schedule and regularly check the website as schedules are updated on a weekly basis. If you have any problems accessing the schedule, or if you do not have computer access, please call 303-692-3556.
If there are any questions regarding the contents of this letter and/or requirements for the Supplier, please contact your compliance specialist:

Ben Keilly
720-507-7761
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ec:
JOE COLEMAN - COLEMANJ@CITYOFOURAY.COM; AC

CLIFF JARAMILLO - JARAMILLOC@CITYOFOURAY.COM; OPERATOR
DR. ELISABETH LAWACZECK - ELAWACZECK@OURAYCOUNTYCO.GOV; OURAY COUNTY ENVIRONMENTAL HEALTH DEPT

File: CO0146588, OURAY COUNTY, COMMUNITY – GROUNDWATER UNDER THE DIRECT INFLUENCE OF SURFACE WATER (GWUDI)

Attachment A: Water Quality Data Monitoring

As a result of the reclassification to GWUDI, the Supplier may choose to install filtration on the source. If filtration is chosen, the Supplier must collect sufficient water quality data to justify selection of a given filtration technology in accordance with Section 1.2.3 of the State of Colorado Design Criteria for Potable Water Systems (Policy 5, DCPWS).

Section 1.2.3 discusses that if Bag or Cartridge filtration is chosen, then in addition to water quality specified in Section 1.2.3, additional data must be collected in accordance with Section 4.3.9.5 of the DCPWS to ensure that the filtration will comply with Regulation 11. The options available to justify the selection of bag or cartridge filtration include: turbidity results, pilot/demonstration studies, or a particulate removal study. A summary of the options is below (for additional information consult the DCPWS):

- **Turbidity (Section 4.3.9.5a of the DCPWS):** Weekly raw water turbidity samples from March through June (one year preferred) to ensure turbidity stays below 1.49 NTU at all times. The Supplier should consider purchasing a turbidimeter so that samples can easily be analyzed on-site (for example: Hach 2100Q).
- **Pilot/Demonstration Study (Section 4.3.9.5b):** Install a filter onsite during the month of most challenging conditions and demonstrate the filter achieves less than 1.49 NTU turbidity as well as will work economically (doesn't require too frequent filter change out).
- **Particulate Removal Study (Section 4.3.9.5c):** Using a turbidimeter and the procedure outlined in Appendix L of the DCPWS, the Supplier can demonstrate that the proposed filtration is capable of removing the turbidity in the water. Weekly sampling must occur for two months.

City of Ouray
Raw Water Sampling Data

	Weehawken Spring						Weehawken Creek					
	9/21/2020		3/24/2021		8/31/2021		9/21/2020		3/24/2021		8/31/2021	
Microbiology												
Total Coliform	Absent	Unitless	Absent	Unitless	Present	Unitless	Present	Unitless	Present	Unitless	Present	Unitless
E. Coli	Absent	Unitless	Absent	Unitless	Absent	Unitless	Absent	Unitless	Absent	Unitless	Absent	Unitless
General Chemistry												
Alkalinity, Bicarbonate as CaCO3	45	mg/L	64	mg/L	62	mg/L	53	mg/L	70	mg/L	61	mg/L
Alkalinity, Carbonate as CaCO3	<10	mg/L	<10.0	mg/L	<10.0	mg/L	<10.0	mg/L	<10.0	mg/L	<10.0	mg/L
Alkalinity, Hydroxide as CaCO3	<10	mg/L	<10.0	mg/L	<10.0	mg/L	<10.0	mg/L	<10.0	mg/L	<10.0	mg/L
Alkalinity, Total as CaCO3	45	mg/L	64	mg/L	62	mg/L	53	mg/L	70	mg/L	61	mg/L
Ammonia as N	<0.1	mg NH3-N/L	<0.100	mg NH3-N/L	<0.100	mg NH3-N/L	0.124	mg NH3-N/L	<0.100	mg NH3-N/L	<0.100	mg NH3-N/L
Chloride	<1	mg/L	1.26	mg/L	<1.0	mg/L	<1	mg/L	<1	mg/L	<1.00	mg/L
Conductivity	419	umho/cm @ 25°C	610	umho/cm @ 25°C	370	umho/cm @ 25°C	146	umho/cm @ 25°C	160	umho/cm @ 25°C	146	umho/cm @ 25°C
Cyanide, Total	<0.01	mg/L	<0.0100	mg/L	<0.0100	mg/L	<0.0100	mg/L	<0.0100	mg/L	<0.0100	mg/L
Fluoride	0.296	mg/L	0.294	mg/L	0.313	mg/L	0.15	mg/L	0.166	mg/L	0.126	mg/L
H2S	0.0147	mg/L	0.00888	mg/L	0.00726	mg/L	0.00795	mg/L	0.00462	mg/L	0.00782	mg/L
Nitrate as N	0.16	mg/L	0.206	mg/L	0.205	mg/L	0.041	mg/L	0.186	mg/L	0.171	mg/L
Nitrate+Nitrite as N by IC	0.16	mg/L	0.206	mg/L	0.205	mg/L	0.0408	mg/L	0.186	mg/L	0.171	mg/L
Nitrite as N	<0.020	mg/L	<0.020	mg/L	<0.020	mg/L	<0.020	mg/L	<0.020	mg/L	<0.020	mg/L
Ortho-Phosphate as P	<0.05	mg/L	<0.0500	mg/L	<0.0500	mg/L	<0.0500	mg/L	<0.0500	mg/L	<0.0500	mg/L
pH	7.22	pH units	7.34	pH units	7.3	pH units	7.82	pH units	7.71	pH units	7.6	pH units
pH Temperature, degrees C					19.8	pH units					19.6	pH units
Phosphorus, Total	<0.05	mg P/L	<0.0500	mg P/L	<0.0500	mg P/L	<0.0500	mg P/L	<0.0500	mg P/L	<0.0500	mg P/L
Total Dissolved Solids	320	mg/L	410	mg/L	210	mg/L	145	mg/L	95	mg/L	70	mg/L
Sulfate	158	mg/L	241	mg/L	105	mg/L	8.2	mg/L	10.3	mg/L	8.5	mg/L
Sulfide	<0.05	mg/L	<0.0500	mg/L	<0.0500	mg/L	0.053	mg/L	<0.0500	mg/L	<0.0500	mg/L
Total Organic Carbon	0.538	mg/L	0.579	mg/L	<0.500	mg/L	<0.500	mg/L	0.576	mg/L	<0.500	mg/L
Dissolved Organic Carbon	<0.5	mg/L	<0.500	mg/L	<0.500	mg/L	<0.500	mg/L	<0.500	mg/L	<0.500	mg/L
Turbidity	0.04	NTU	0.16	NTU	<0.0100	NTU	1.18	NTU	0.76	NTU	3.3	NTU
Ironganics												
Aluminum	<0.05	mg/L	<0.050	mg/L	<0.050	mg/L	0.063	mg/L	<0.050	mg/L	0.514	mg/L
Asbestos	ND	Fibers/liter (Longer than 10 µm)	ND	Fibers/liter (Longer than 10 µm)	ND	Fibers/liter (Longer than 10 µm)	ND	Fibers/liter (Longer than 10 µm)	ND	Fibers/liter (Longer than 10 µm)	ND	Fibers/liter (Longer than 10 µm)
Iron	<0.05	mg/L	<0.050	mg/L	<0.050	mg/L	<0.050	mg/L	<0.050	mg/L	0.221	mg/L
Silica (SiO2)	6.97	mg/L	7.31	mg/L	6.39	mg/L	5.91	mg/L	5.66	mg/L	7.89	mg/L
Silicon	3.26	mg/L	3.42	mg/L	2.99	mg/L	2.76	mg/L	2.65	mg/L	3.69	mg/L
Sodium	3.77	mg/L	4.89	mg/L	2.89	mg/L	3.11	mg/L	2.91	mg/L	2.58	mg/L
Antimony	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L
Arsenic	<0.0010	mg/L	<0.0010	mg/L	<0.0010	mg/L	<0.0010	mg/L	<0.0010	mg/L	<0.0010	mg/L
Barium	0.065	mg/L	0.0953	mg/L	0.0501	mg/L	0.0377	mg/L	0.0412	mg/L	0.0349	mg/L
Beryllium	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L
Cadmium	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L
Chromium	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L
Copper	<0.0020	mg/L	0.0013	mg/L	0.0005	mg/L	<0.0005	mg/L	0.0012	mg/L	0.0008	mg/L
Lead	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L
Manganese	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L	<0.0020	mg/L	0.009	mg/L
Nickel	0.002	mg/L	0.0057	mg/L	0.0038	mg/L	0.0007	mg/L	0.0014	mg/L	0.0017	mg/L
Selenium	<0.0010	mg/L	<0.0010	mg/L	<0.0010	mg/L	<0.0010	mg/L	<0.0010	mg/L	<0.0010	mg/L
Silver	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L
Thallium	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L	<0.0005	mg/L
Zinc	<0.0100	mg/L	<0.0100	mg/L	0.0181	mg/L	<0.0100	mg/L	<0.0100	mg/L	<0.0100	mg/L
Mercury	<0.0002	mg/L	<0.0002	mg/L	<0.0002	mg/L	<0.0002	mg/L	<0.0002	mg/L	<0.0002	mg/L
Organic Compounds												
Dichlorodifluoromethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Chloromethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Vinyl chloride	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Bromomethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Chloroethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Trichlorofluoromethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,1-Dichloroethene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Methylene chloride	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
trans-1,2-Dichloroethene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,1-Dichloroethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
cis-1,2-Dichloroethene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
2,2-Dichloropropane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Bromochloromethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Chloroform	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Carbon tetrachloride	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,1,1-Trichloroethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,1-Dichloropropene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Benzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,2-Dichloroethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Trichloroethene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Dibromoethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,2-Dichloropropane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Bromodichloromethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
cis-1,3-Dichloropropene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Toluene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Tetrachloroethene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
trans-1,3-Dichloropropene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,1,2-Trichloroethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Dibromochloromethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,3-Dichloropropane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Analyte												
Chlorobenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Ethylbenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,1,1,2-Tetrachloroethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
m+p - Xylene	<1.00	ug/L	<0.500	ug/L	<1.00	ug/L	<1.00	ug/L	<1.00	ug/L	<1.00	ug/L
o-Xylene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Total Xylenes	<1.50	ug/L	<0.500	ug/L	<0.500	ug/L	<1.50	ug/L	<0.500	ug/L	<0.500	ug/L
Bromoform	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Styrene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Isopropyl benzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Bromobenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
n-Propyl benzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,1,2,2-Tetrachloroethane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
2-Chlorotoluene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,2,3-Trichloropropane	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,3,5-Trimethylbenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
4-Chlorotoluene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
tert-Butylbenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,2,4-Trimethylbenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
sec-Butylbenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
p-Isopropyl toluene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,3-Dichlorobenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,4 Dichlorobenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
n-Butylbenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,2-Dichlorobenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Hexachlorobutadiene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,2,4-Trichlorobenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Naphthalene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
1,2,3-Trichlorobenzene	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L	<0.500	ug/L
Field Parameters												
pH	7.73	pH units					8.37	pH units				
Temperature	41.9	Fahrenheit					46	Fahrenheit				
TDS	258	mg/L					90	mg/L				

City of Ouray
Water Efficiency Plan



Prepared for:

Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, CO 80203

Wright Water Engineers, Inc.

September 2014

051-036.100

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1.0 EXECUTIVE SUMMARY

The City of Ouray (City) has completed and adopted this Water Efficiency Plan (Plan) in order to evaluate, prioritize and implement water efficiency activities. The goals of these activities are to provide data to the City on system operations, to reduce system losses, to develop estimates of the avoided costs as a result of increased efficiencies, and to increase public awareness and support for the efficiency activities. The Plan focuses on foundational activities that are proposed to be implemented by the City for the main water supply infrastructure. The City will also consider implementation of education and outreach measures. The City plans to lead by example and implement water savings measures such as fixture retrofits and irrigation efficiencies, as feasible. The implementation of the Plan will help the City to improve water demand forecasts, plan for infrastructure needs, and manage its water demands within its physically and legally available water supply. The goals, screening, evaluation of measures, and implementation plan are shown in Appendices A through F. All of the measures are voluntary and are subject to City Council approval and budget constraints over the planning period. Through this Plan, the City is demonstrating leadership to other small communities in Colorado.

2.0 PROFILE OF EXISTING WATER SYSTEM

2.1 Overview of Existing Water Supply System

2.1.1 Service Area

The City provides treated water to a service area of approximately 615 acres, encompassing the City as well as three subdivisions outside of the city limits: 1) Pinecrest, 2) Whispering Pines, and 3) Panoramic Heights (which includes smaller subdivisions within it). The City also provides raw water to the Mineral Farms Subdivision, which has its own water treatment and distribution system (see Map 1).

2.1.2 Water Supply Sources

The City's primary water source, Weehawken Spring, located in the Canyon Creek drainage (see Map 1). Weehawken Spring and Pipeline are decreed for 7.632 cubic feet per second (cfs) for domestic and fire uses and is associated with a storage water right. Weehawken Spring is also an alternate point of diversion for up to 5.2 cfs of more senior water decreed to Oak Creek Supply Line (see Table 1). Weehawken Spring provides water for both non-potable and potable uses.

Treated Weehawken Spring water is used as the main drinking source throughout the service area. The City has additional surface and storage water rights that can be used to provide water supply as needed and as physically available (see Table 1).

Geothermal water for the Ouray Hot Springs Pool is derived from numerous water rights for springs and wells located in the city. This Plan focuses on the non-geothermal water supply.

2.1.3 Key Existing Facilities

Water from Weehawken Spring is collected by three pipelines that flow into a concrete vault. The concrete vault contains an overflow pipe that discharges excess water to Canyon Creek. From the vault, water is conveyed through approximately 2.5 miles of 10-inch transmission line to two 500,000 gallon storage tanks. Prior to reaching the storage tanks, a portion of the flow from Weehawken Spring is diverted at the Mineral Farms Subdivision, which has its own water treatment and distribution system. There is no meter at the water source or at the transmission line to the Mineral Farms Subdivision. A second pipeline runs from Mineral Farms to the storage tanks in order to provide system redundancy.

The two storage tanks function as one unit. Excess raw water in the tanks exits the older tank through a pipe directly into the Uncompahgre River. At the outlet of the storage tank, prior to treatment, a tee provides water to the Ice Park in the winter. There is also a dedicated line to a micro-hydro plant that generates power when temperatures are above freezing and there is water supply available after the City's potable demands have been met. The potable water is treated using chlorine gas prior to distribution. There are four meters in the chorine shed that monitor: 1) inflow to the tanks, 2) outflow to the City (two meters), and 3) outflow to the Ice Park/micro-hydro station.

There are two pipelines for outflow to the distribution system in order to provide redundancy in the event of a pipe failure. The system now uses both pipelines during normal operations.

The water distribution system in the City consists of approximately 11 miles of pipeline. The main water distribution lines, including the lines from the water supply to the treatment and distribution system are shown on Map 1. The system currently serves approximately 1,400 taps, and has 90 fire hydrants and 12 pressure reducing valves (PRVs). The system has three main pressure zones: 1) the Jim Brown Zone, 2) the Center of Town Zone, and 3) the North Zone. PRVs are used to adjust pressure between the three zones. The PRV locations are shown on Map

1. The Jim Brown Zone serves an elevation range from 7,735 to 7,970, the Center of Town Zone serves an elevation range from 7,680 feet to 7,830 feet, and the North Zone serves an elevation range from 7,590 feet to 7,760 feet (Boyle Engineering Corp., 2003).

After use, water is discharged through the sewer lines to the Wastewater Treatment Plant (WWTP), which has a capacity to treat approximately 363,000 gallons per day (gpd). The WWTP consists of two aerated lagoons with a total surface area of approximately 1.2 acres (see Map 1). The City's WWTP provides service within the city limits, Pinecrest, and Panoramic Heights. The Whispering Pines and Mineral Farms subdivisions utilize septic treatment.

2.2 Water Supply Reliability

The Colorado Water Conservation Board (CWCB) prepared the Statewide Water Supply Initiative (SWSI) in 2004 to identify current and future water needs to the year 2030 and to examine water supply projects that will help to meet future demands. In 2010, the CWCB updated the SWSI to consider future water demands to the year 2050, to identify non-consumptive needs in each major basin, to assess available water supply in Colorado, and to discuss identified projects to further meet future demands.

The 2004 SWSI identifies a water supply gap of 150 acre-feet per year by the year 2030 for the City of Ouray. The report states, "Approximately 25 percent of increased demand may require augmentation based on potential downstream calls" (CWCB, 2004). While the 2010 SWSI report does not specifically address the City, the report does identify a 300 acre-foot per year water supply gap for Ouray County by the year 2050 (CWCB, 2010).

Historically, the City has not experienced issues with physical water supply yield, even during periods of drought. However, the City's water supply has been called out by more senior water rights in very dry years (see Section 2.3). As new meter and data collection systems (i.e., SCADA) are available to the City, future water use records may provide more accurate yield estimates and provide data to promote water efficiency measures.

2.3 Supply-Side Limitations and Future Needs

Non-revenue water can be grouped into two categories; water that is put to use but not billed and water that is lost due to system infrastructure. Lack of meters in the City makes it difficult to estimate the amount of non-revenue water going to dust suppression on City streets, hot springs pool cooling, leaks and system losses, or other uses. Future water demands and potential supply-

side limitations should be revisited when additional data is available. This Plan aims to help the City manage water demands within its legal and physical water supply.

As stated above, the City has not historically experienced issues with water supply yield. However, during extremely dry years (e.g., 2002 and 2012), the City's water supply has been susceptible to administration by the Colorado Division of Water Resources (CDWR). In 2012, the City diverted water under an Emergency Substitute Water Supply Plan. To secure its water supply, the City is working to obtain a water augmentation plan for use when the City's potable and non-potable water rights are curtailed during dry years.

3.0 PROFILE OF WATER DEMANDS AND HISTORICAL DEMAND MANAGEMENT

The City does not meter individual taps and instead relies on Equivalent Residential Units (EQRs) surveys to account for water use. One EQR represents a single family home with an assumed water demand of 350 gallons per day. The City charges a flat rate for water use per. Due to lack of individual metering data, this Plan bases the City's demands on EQRs and does not include estimates of non-revenue water.

3.1 Demographics and Key Characteristics of the Service Area

3.1.1 Customer Categories

Based on an EQR survey of taps performed by the City in 2005, the City provides treated water to the following customer categories: single family homes, multi-family homes, irrigation, lodging, city offices, churches, restaurants, and retail and office space (see Table 2). Single family homes are considered one EQR; the remaining categories are assigned an EQR value based on estimated water use (see Appendix G). The City also provides treated water for dust suppression and cleaning City streets as well as cooling of the hot springs pools, which are not included as EQR categories and thus are considered non-revenue water.

The non-potable water for the micro-hydro plant and Ice Park are measured at the storage tank meters and can be separated from the treated water that enters the distribution system.

3.1.2 Population Statistics

Based on population data from the Colorado Department of Local Affairs (DOLA), the City's 2010 population was approximately 1,000 people. A summary of The City's population from

1990 through 2010 is provided in Table 3. The average annual population increase over the 21 year period is 2.3 percent. In addition to City residents, the City provides treated water to three subdivisions outside city limits, which are not included in the population values. The City is a tourist destination and serves many non-residents, which are reflected in the lodging and restaurant EQRs.

3.2 Historical Water Demands

The City's 2005 EQR survey is the basis for historical demand analysis, as discussed below.

3.2.1 Annual Water Demands

The City charges for water delivery on an EQR basis, as discussed above. Based on a 2011 survey, there are 1,338 EQRs in the City. At a rate of 350 gallons per day per EQR, the total system demands are approximately 171 million gallons per year or 525 acre-feet per year based on 1,338 EQRs.

3.2.2 Approximate Water Use by Customer Category

Table 2 and Figure 1 provide an approximate breakdown of EQRs by sector based on a survey performed by the City in 2005. Single family and multi-family homes represent the highest water demand for the City, at a combined 71 percent of the EQRs.

3.3 Past and Current Demand Management Activities and Impact to Demands

During the 2012 drought period, the City issued a resolution requesting citizens to curtail using water for irrigation uses (see Appendix H). Other existing demand management activities include increases to water rates, a Capital Improvement Plan (Boyle Engineering Corp., 2003) and bill stuffers (See Appendices A through D). Due to the lack of data, it is not feasible to quantify the effects on water demands that these activities have had to date.

3.4 Demand Forecasts

The City is working on an augmentation plan that addresses long term development based on current EQRs and the 2.3 percent growth rate for 50 years. Outdoor irrigation demands were also estimated for the long-term forecast. Based on these assumptions, the City's total water demand in 2063 is estimated to be 1,825 acre-feet per year (see Table 4). The City may have additional

demands due to hot-springs cooling, dust suppression or other uses that are not currently accounted for.

4.0 INTEGRATED PLANNING AND WATER EFFICIENCY BENEFITS AND GOALS

4.1 Water Efficiency and Water Supply Planning

In order to remain compliant with debt covenants, the number of major capital improvements that can be financed in the City budget are limited. This restriction is currently applicable due to significant capital improvements completed in recent years. Current water projects being managed by the City include firming the legal water supply through water rights work, installation of a micro-hydro system on the water mains, and installation of a meter and backflow prevention for the Panoramic Heights subdivision. By completing the proposed foundational water activities, such as a Capital Improvement Plan update, future operations, maintenance, repairs and improvements can occur on budget and within a reasonable time frame.

Incorporation of water efficiency into water supply planning can have beneficial financial outcomes for the City as a water supplier, including elimination, downsizing, or postponement of water supply system projects. Currently, the costs for implementing the Plan and the cost savings associated with the efficiencies cannot be accurately estimated due to lack of metering data.

4.2 Water Efficiency Benefits

In addition to water supply benefits, a Water Efficiency Plan may also have positive economic, societal, and environmental impacts for the City. For example, the City's hot spring pools are powered by a micro-hydro plant using non-treated water from Weehawken Spring. By increasing efficiency and lowering demands for municipal system uses, more water will be available to deliver to the micro-hydro system, creating income and renewable energy. Better documentation of water use, decreased water demands, and improved forecasted water demands will result in the following benefits for the City:

- Decreased volume of treated water and associated treatment chemicals.

- Decreased operational costs related to reducing the volume of treated and delivered water. This may include replacement costs, requirements to increase or expand treatment or delivery capacity, or power costs.
- Efficiency measures will help to keep water demands within the City's current water rights and physical water supply availability.
- Potentially increased volume of non-treated water available for hydro-power use.
- Potentially increased instream flow in the Uncompahgre River.

This Plan and the associated measures demonstrate the City's effort to manage its water resources responsibly.

4.3 Water Efficiency Goals

The City's Water Efficiency Plan will be an iterative process beginning with building data and management tools and meeting foundational goals before setting more ambitious and specific water efficiency goals (see Section 7.3 Review and Update). Lack of accurate water use data makes it difficult to set quantitative goals based on water savings. The qualitative goals for the City of Ouray Water Efficiency Plan are as follows:

1. *Better Water Use Data Collection and Monitoring.* Develop a plan to improve monitoring of the main components of system infrastructure in order to document water uses and non-revenue water (including both non-revenue water that is used and non-revenue water due to system losses). This plan will focus on adding meters to the system infrastructure in locations that will allow for tracking overall water delivery and identify data discrepancies that may be due to leaks or non-revenue uses. This does not include individual meters for end-users. This goal will be measured by the City's improved ability to track the water use through the main infrastructure points of the system and the use of this data towards reaching the remaining goals.
2. *Asses Costs for System Operations.* The City will be able to estimate the incremental cost for treating and delivering water based on the system meters (see Goal 1), system operational costs, capacity data and water rights considerations. This will primarily be accomplished through an update to the Capital Improvement Plan. This will allow the City to quantify the cost-savings of efficiency measures on a broad scale, which is an important factor in

planning for City infrastructure growth and maintenance. The success of this measure will be determined by installing system meters, data collection and analysis, and an update to the Capital Improvement Plan.

3. *Decrease System Losses.* Implement measures to help to detect and track system losses enabling the City to ultimately decrease losses. This goal may be achieved through multiple activities including identifying non-metered sources, leak detection, winterization and/or other efficiency measures. This goal should be completed subsequent to adding meters to the main system and analyzing data in order to identify the most likely loss locations within the system. The lack of current data on amount of system losses prohibits quantifying this goal at this time.

4. *Public Awareness and Acceptance.* Through education, outreach, and leading by example, the City will create awareness amongst the public of the importance of water conservation and support for water efficiency activities. Studies indicate that educational measures can reduce individual water use by up to 5 percent (Barta, 2004). Indications for the success of this goal include public support for funding and implementation of the proposed efficiency activities through the Public Works Budget, as well as implementation and voluntary conservation measures.

The first water efficiency goal for the City focuses on accurate data collection of system operations and losses. The information from the first goal will contribute to achieving goals nos. 2, 3 and 4. All four water efficiency goals are used to screen and evaluate the potential water efficiency measures, as discussed below.

5.0 SELECTION OF WATER EFFICIENCY ACTIVITIES

An extensive list of water efficiency activities is required to be evaluated for implementation as part of the Plan per C.R.S. 37-60-126 (1-4 and 5) and the Guidebook of Best Practices for Municipal Water Conservation in Colorado (Aquacraft Inc., 2010). The City is smaller than the minimum municipality size required to comply with this State statute. Nonetheless, the City has considered all of the measures that are practical and appropriate. The lists and evaluation results are included in Appendices A through E2.

5.1 Summary of Selection Process

Water efficiency activities were screened using the following initial qualitative criteria:

- Contributes to the City's qualitative goals, as described in Section 4.3 of this Plan
- Additional Pros and Cons:
  - Appropriateness of measure given the City's infrastructure and lack of individual meters.
  - Feasibility based on financial and staff resources.
- Prioritization of foundational activities.

City staff provided review and input on the candidate measures as well as a sense of the political and public views in the City that are relevant to water conservation. Overall, the City desires to lead by example and to encourage voluntary conservation over enforcement measures or creating efficiency programs required to be administered by the City.

After screening all of the potential activities, 11 measures were moved forward for detailed evaluation. The detailed evaluation includes a qualitative and quantitative analysis, to the extent feasible, of each measure (see Appendices E1 and E2). A ten year planning period was assumed as a practical means of evaluation. Cost estimates were based on materials, contracts, and/or staff time requirements. The total estimated cost for all measures is $2.6 million. Of this total, $2.4 million is solely for water line replacement. Water savings were estimated on the basis of a percentage of savings over current water deliveries. The total estimated water savings for all proposed measures, over the ten year period, is 208.3 million gallons.

The cost-benefit of each proposed measure was estimated as a dollar per thousand gallons saved basis. Cost ranged from $0.0006 to $18.15 per thousand gallons saved. Education measures had the lowest cost while infrastructure upgrades had the highest costs (see Appendix E2). In addition to the cost-benefit information in Appendix E2, factors in the priorities for implementation of measures include benefits to overall system operations and management and providing information for understanding current water uses and future demands.

City staff reviewed the 11 measures for feasibility, for overall consistency, and for appropriateness for the City of Ouray. The measures are complimentary and should be undertaken in the order recommended in Section 6 to help the City meet its water efficiency goals. The implementation of measures is voluntary and will continue to be subject to Council approval and budget constraints.

5.2 Demand Management Activities

The recommended Demand Management activities, which are based on screening and evaluation, primarily focus on proposed foundational activities to better estimate the City's water use and delivery. The City also evaluated educational opportunities that may be feasible at this time. The City discussed ordinances and technical incentives as a whole, but these measures were not considered appropriate for the City to implement at this time.

5.2.1 Foundational Activities

The total estimated water savings for the proposed foundational activities over the ten-year planning period is approximately 185 million gallons. The foundational activities were screened and the following were selected for further evaluation (see Appendix A). The evaluation of measures provides information on the potential cost and savings associated with the proposed activity. City Council approval and meeting budgetary constraints are necessary to implement measures (see Section 6).

Water Rate Adjustments

The City's existing budget process incorporates a 2 percent increase to water rates on an annual basis, pending annual review by the Public Works Department and final approval by City Council. The intention of this rate increase is to allow the Public Works Department to keep up with system costs while maintaining a balanced utilities budget and avoid larger annual increases to customer rates. The rate increase also allows the Public Works Department to build a fund balance that can be used to finance capital improvement projects. This rate adjustment will be incorporated into the analysis in the Capital Improvement Plan when estimating the revenue available to the Public Works Department. A change in rate structure based on use by individual taps is not supported by the public at this time and is not recommended as individual taps are not metered.

Control of Apparent Losses (with Metering on System Infrastructure)

This measure proposes that the City will install meters at additional points in the water delivery system in order to better track water usage. Preliminary design suggests that meters may be installed at the nine PRVs in the system (see Map 1). In future management, the meter data will help to identify system leaks and to target the location needing repairs. The meter data will help

to track the total system deliveries as well as use within specific portions of the water supply system. This information will help to implement the subsequent water conservation measures. The water savings from this proposed measure are realized in the System Water Audit. The estimated cost for installation of nine system meters is $140,500 (see Appendix I for details).

System Water Audit (for Primary System Infrastructure)

Using existing and new meter data, the City proposes to compare the actual usage to the calculated demands for the water supply system. Areas of the system with a discrepancy will be targeted for further investigation into leaks, losses, un-metered use or other causes for discrepancy between the calculated and actual water use. System audits are recommended in order to see the gains in system efficiency estimated through installation of system meters (see above).

Leak Detection Study

This measure proposes that the City hire a contractor to perform a leak detection survey on the 11 miles of ductile iron pipe in its main distribution system. If funds allow, the older portion of the transmission line from the water source to the system may be inspected as well. The results of this investigation will be integrated into the Capital Improvement Plan and addressed as soon as feasible. The estimated cost of the leak detection study is $18,500 (see Appendix J for details).

Water Line Replacement Program

To provide for more of the ongoing maintenance and replacement needs, an annual budget item to contract for the replacement of water lines is proposed to be included in the Public Works budget. This measure proposes that 2,500 feet of pipe is replaced each year. This program will also be integrated into the Capital Improvement Plan. This measure is the most expensive, at a total of $2.4 million over ten years. However, given the age of existing lines, replacement is necessary to maintain the system over time. Adjustments to the extent of replacement and frequency of replacement may be made, as needed, to meet City budgets and approvals.

Capital Improvement Plan (existing – to be updated)

The City completed a Water Infrastructure Master Plan in 2003 (Boyle Engineering Corp., 2003). This measures proposes that the City will update the document to incorporate work completed since 2003, newly identified infrastructure needs, current and forecasted Public

Works Department budgets, and the annual water line replacement program. Once updated, City staff will oversee the budgeting and implementation of the Plan throughout the planning period. The estimated cost for updates to the Capital Improvement Plan is $18,750. By expending funds for this measure first, the Capital Improvement Plan can inform the budget process in future years to address all other proposed measures.

5.2.2 Targeted Technical Assistance and Incentives

City staff reviewed information on several of the incentive and technical assistance measures (see Appendix B). No measures were selected for detailed evaluation or implementation at this time. The activities considered under incentive measures may be implemented by the City on its own properties to provide a leading example and offer demonstration sites (see Section 5.2.4). Reasons for elimination of technical assistance measures include:

- There is very limited irrigated area in the city and automation of irrigation is not common and may not be cost-effective.
- Establishing, advertising, and managing a rebate program for installation of water efficient fixtures would require significant City staff resources. Given the small population size of the City, these types of program are not practical and would not likely have a sufficient water savings benefit for the cost.
- Some measures or associated cost savings to individuals are not feasible without individual tap meters. At this time, the City is not proposing to install individual tap meters.

5.2.3 Ordinances and Regulations

The City is focused on water conservation through foundational activities and through encouragement and education of water users. It is noted that the City Code, §9-11 states that "it shall be unlawful to waste water". This section of code also includes irrigation restriction measures the City vote to implement in case of drought. This section appears to support the City's authority to promote efficiency and eliminate water waste. No new ordinances or regulations were considered at this time (see Appendix C).

5.2.4 Education Activities

The total estimated water savings for the proposed educational measures over the ten-year planning period is approximately 23 million gallons. The screening of educational activities is shown on Appendix D and selected voluntary measures are summarized below.

Bill Stuffers

The City sends billing to customers once per year, and proposes to continue to provide water conservation information with the mailings. City staff will prepare information sheets for inclusion in the mailings. The estimated cost for Bill Stuffers on an annual basis over 10 years is $6,500.

Newspaper Articles

The City has an established relationship with the local newspaper. City staff may work with the paper to provide educational information on water conservation and City water issues to the public. This measure proposes that the newspaper will print one article per quarter on water conservation subjects. The estimated cost over the planning period is $5,600.

Web Pages and Social Media

This measure proposes that City staff provide quarterly updates to the City's website on conservation and voluntary measures. Additionally, City staff will address water conservation education and City water issues on its existing social media accounts. The estimated cost for all social media management for water education is $9,800 over ten years.

City Demonstration Activities and Public Presentations

The City may implement various measures in order to conserve water and provide educational opportunities. These voluntary measures may include rain-sensor controlled irrigation in City parks, low-flow fixtures that meet EPA WasterSense specifications, or low water demand landscaping, such as xeriscaping. These efforts will be integrated with ongoing City maintenance, repairs and development of new projects. The successful water efficiency measures implemented by the City may provide a basis for developing guidelines or policies in the future,

City staff proposes to make a presentation during two City Council meetings per year on water efficiency progress and City water issues. It is anticipated that at least one of these meetings will

update the Council on water use data from new meters and analyses on the non-revenue water in the system. These meetings are open to the public and are attended by decision-makers for the implementation of water efficiency measures. Based on a materials and staff time, the cost for this measure is approximately $7,100 over ten years.

Customer Water Use and Landscape Design and Maintenance Workshops

This measure proposes that the City will host water-use and landscape design workshops approximately once every three years. The workshops will combine indoor water efficiency with water efficient landscape design and maintenance information in order to reach a broader audience. These events may be in combination with other city-wide outreach activities, such as Spring Cleanup. Regional watershed groups, private business and volunteers may be able to provide assistance in the workshops. The estimated cost for this measure is $3,700 over ten years.

6.0 IMPLEMENTATION AND MONITORING PLAN

6.1 Implementation Plan

The plan for implementation of the proposed water efficiency activities identifies key steps for implementation (i.e., milestones) and the parties responsible for implementation (see Appendix F). The implementation plan proposes that all measures be implemented for the water efficiency benefits, as well as the overall benefits to system operations and management of the City's water resources. The preliminary estimated costs for each activity are shown in Appendix F and total $2.6 million dollars over ten years (of which, $2.4 million is for water line replacement). Implementation and monitoring of data is proposed to be primarily the responsibility of the Public Works staff. The Community Development Coordinator may lead education and outreach measures. The City Administrator is responsible for developing the annual budget, which is ultimately approved by City Council. It is noted that implementation of proposed measures will continue to be subject to budget constraints and Council approval.

The proposed Capital Improvement Plan is recommended for completion early in the planning period in order to refine cost information and integrate the costs of the proposed measures into the City's budget. Installation of meters and a leak detection survey should also be completed as soon as feasible. The implementation plan may be modified based on updates to the Capital Improvement Plan. It is assumed that all funding will come from the City budget (which

includes the Public Works budget and water system revenues). The City may pursue grant funding and/or financing to help to implement these activities.

The system meter data and Capital Improvement Plan will also help to identify the savings from avoided costs associated with efficiency activities. Compiling this information is important to build public support as well as for future budgeting (see Goal No. 2). At this time, the City does not charge by volume and, therefore, no losses to revenues are expected due to water efficiency activities.

Within the planning period, the City may be able to make significant reductions in non-revenue waters that occur due to system losses and leaks. If system meter data also indicate that there are significant non-revenue losses due to excessive use by consumers, this may be indicative of wasting water or, more likely, losses on the consumer's end. If these losses are indicated by system meter data, the City will consider addressing individual efficiencies in Plan updates. Installation of individual meters will be considered as a first step for reducing individual water losses so that other consumer efficiency measures are cost-effective.

6.2 Monitoring Plan

The monitoring plan is integrated with the implementation plan in Appendix F. Only measures metered by the current and proposed system infrastructure meters are proposed for a data-based monitoring program. In future updates of this Plan, when baseline meter data is available for the system, additional monitoring may be recommended. The monitoring plan calls for collecting data at least bi-annually from meters and inputting the information into a database that tracks system water use. The goal of this is to identify discrepancies that may indicate leaks, losses or other issues. One of the education measures includes bi-annual presentations to City Council, which will assist decision makers with staying up-to-date on the implementation of this Plan and new water management issues. One of these presentations per year should include a discussion and analysis based on the system-wide meter data.

7.0 PUBLIC REVIEW AND FORMAL APPROVAL

The process of review and approval of this Plan is summarized in this section. No new policies were proposed for implementation, and therefore, no policy adoption process was required.

7.1 Public Review Process

City staff aimed to develop a Plan that is appropriate for the City of Ouray and its citizens. The City Council conducted a preliminary review of the Plan at its April 21, 2014 meeting. The City made the draft Plan available for public review on June 2, 2014, which opened the public comment period. The draft Plan was announced at a City Council meeting and copies of it were available on the City's website and at the City's front desk. The Community Development Coordinator accepted public comments in writing and via email. The comments received from the public are summarized as follows:

- *[summary of public comments]*

After 60 days, the public review period closed. The issues raised by the public were addressed by

- *(Incorporate, revise, not addressed because, etc.).*

7.2 Local Adoption and State Approval Processes

The final version of the Plan integrated preliminary comments from City Council as well as public comments. The City Council adopted the Plan at their August 4, 2014 meeting in Resolution No. -2014 (see Appendix K).

7.3 Periodic Review and Update

An annual update to the City Council on the monitoring data and water conservation issues is identified as an education measure for implementation. This measure will help to keep the Plan relevant and raise awareness of water efficiency issues. A review and update of the Plan is proposed for five to seven years from adoption. The update will address levels of implementation and changes to the City's water demands as well as other new issues.

The Plan review should include an evaluation of the baseline data collected from the system-wide meters and the system-wide audit. This information may help to refine previous estimates for activities and/or identify new water efficiency activities.

The adoption and implementation of the Plan is an important step in raising public awareness and establishing water resource management as part of City policy. This foundation will help to

implement updates to the Plan, potentially including additional measures and monitoring as the City grows and water efficiency technologies advance.

8.0 CONCLUSION

The City of Ouray has completed and adopted this voluntary Water Efficiency Plan in order to meet its goals of improved data and understanding of system operations, reduction of losses, improved ability to estimate costs savings associated with water efficiencies, and promotion of public awareness of water conservation. The Plan focuses on proposed measures that are appropriate for the size of the City and within its budget and staff resources. The Plan will be updated periodically in order to revise measures based on funding, new data and the City's future needs.

9.0 REFERENCES

Aquacraft Inc. (2010). *Guidebook of Best Practices for Municipal Water Conservation in Colorado.* Colorado WaterWise.

Barta, R. (2004). *Stretching Urban Water Supplies in Colorado.* Colorado Water Resource Research Institute.

Boyle. (October 2003). *Ouray Water Distribution Master Plan.*

CWCB. (2004). *Statewide Water Supply Initiative (SWSI).*

CWCB. (2010). *Statewide Water Supply Initiative (SWSI).*

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Tables

Table 1
City of Ouray Water Efficiency Plan
Water Rights Inventory - Potable Water

Water Right Name	Adjudication Date	Appropriation Date	Administration Number	Case Number	Use	Decreed Diversion Rate (CFS)	Decreed Storage Volume (AF)	Comments
Weehawken Spring	12/6/1904	7/1/1889	19551.14427	CA1254	Fire, Domestic, Storage	3.816	--	Sole source of supply for City's potable water
Weehawken Creek	12/6/1904	4/15/1895	19551.16541	CA1254	Fire, Domestic, Storage	3.816	--	Reserved for future use
New Reservoir (South Reservoir)	12/6/1904	7/1/1889	19551.14427	CA1254	Fire, Domestic, Storage	--	2.25	In use, spills to Uncompahgre River
Oak Creek	12/6/1904	10/1/1881	19551.11597	CA1254	Fire, Domestic, Storage	5.2	--	Reserved for future use
Oak Creek Reservoir (North Reservoir)	12/6/1904	10/1/1881	19551.11597	CA1254	Fire, Domestic, Storage	--	0.79	Reserved for future use
Oak Creek Alt Point Weehawken Spring and Creek	12/6/1904	10/1/1881	19551.11597	W-1208	Fire, Domestic, Storage	--	--	Alternate Point of Diversion for 5.2 cfs; limited to the flow in Oak Creek
Total	**--**	**--**	**--**	**--**	**--**	**12.832**	**3.04**	**--**

Table 2
City of Ouray Water Efficiency Plan
Total EQRs by Customer Category

Category	Percentage of Total Water Demand based on 2005 Survey
Single Family Homes	40%
Multi-Family Homes	31%
Irrigation	14%
Lodging	5%
City Offices	4%
Churches	3%
Restaurants	2%
Retail and Office Space	2%

Notes:

Based on 2005 EQR Survey.

Table 3
City of Ouray Water Efficiency Plan
City of Ouray Historical Population

Year	(1) Population	(2) Annual Percent Increase or Decrease
1990	644	--
1991	659	2.3%
1992	684	3.8%
1993	694	1.5%
1994	742	6.9%
1995	779	5.0%
1996	806	3.5%
1997	780	-3.2%
1998	782	0.3%
1999	799	2.2%
2000	820	2.6%
2001	832	1.5%
2002	849	2.0%
2003	860	1.3%
2004	883	2.7%
2005	890	0.8%
2006	898	0.9%
2007	939	4.6%
2008	972	3.5%
2009	978	0.6%
2010	1,001	2.4%
Average		**2.3%**

Notes:

1) Based on data from the Colorado Department of Local Affairs. DOLA website www.dola.colorado.gov accessed on November 6, 2013.

2) (Current year's population / previous year's population) - 1, as a percentage.

Table 4
City of Ouray Water Efficiency Plan
Long-Term Water Demand Estimate

Month	Demands	
	Acre-Feet	cfs
January	145	2.4
February	132	2.4
March	145	2.4
April	142	2.4
May	163	2.9
June	167	3.4
July	172	3.4
August	166	3.2
September	155	3.0
October	151	2.5
November	141	2.4
December	145	2.4
Annual	**1,825**	
Max cfs		**3.4**

Notes:

Demands are based on estimated full build-out of 4,365 EQRs using 350 gpd/EQR, calculated by applying historical growth rate of 2.3% to 2011 EQR count for a 50 year projection. Additional estimated demands for irrigation were also included in the demands.

Map

N

1 inch = 2,000 feet

0 2,000 Feet

Legend

- Water System Features
- Valve - zone separation

Meters

- Existing
- Proposed (at location of existing PRVs)

Pipelines

- Weehawken Pipeline - Approximate
- Water Lines

Boundaries

- Waste Water Treatment Plant Ponds
- Subdivisions Included In Service Area
- Ouray City Limits

Panoramic Heights

Whispering Pines

WASTEWATER TREATMENT PLANT

MICRO HYDRO POWER PLANT

Pinecrest

WATER TANKS

Mineral Farms

MINERAL FARMS PUMP STATION

WEEHAWKEN SPRING COLLECTION BOX

Note: Water line locations derived from a scanned map provided by the City of Ouray.

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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WRIGHT WATER ENGINEERS, INC.
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DURANGO, CO. 81301
(970) 259-7411

City of Ouray

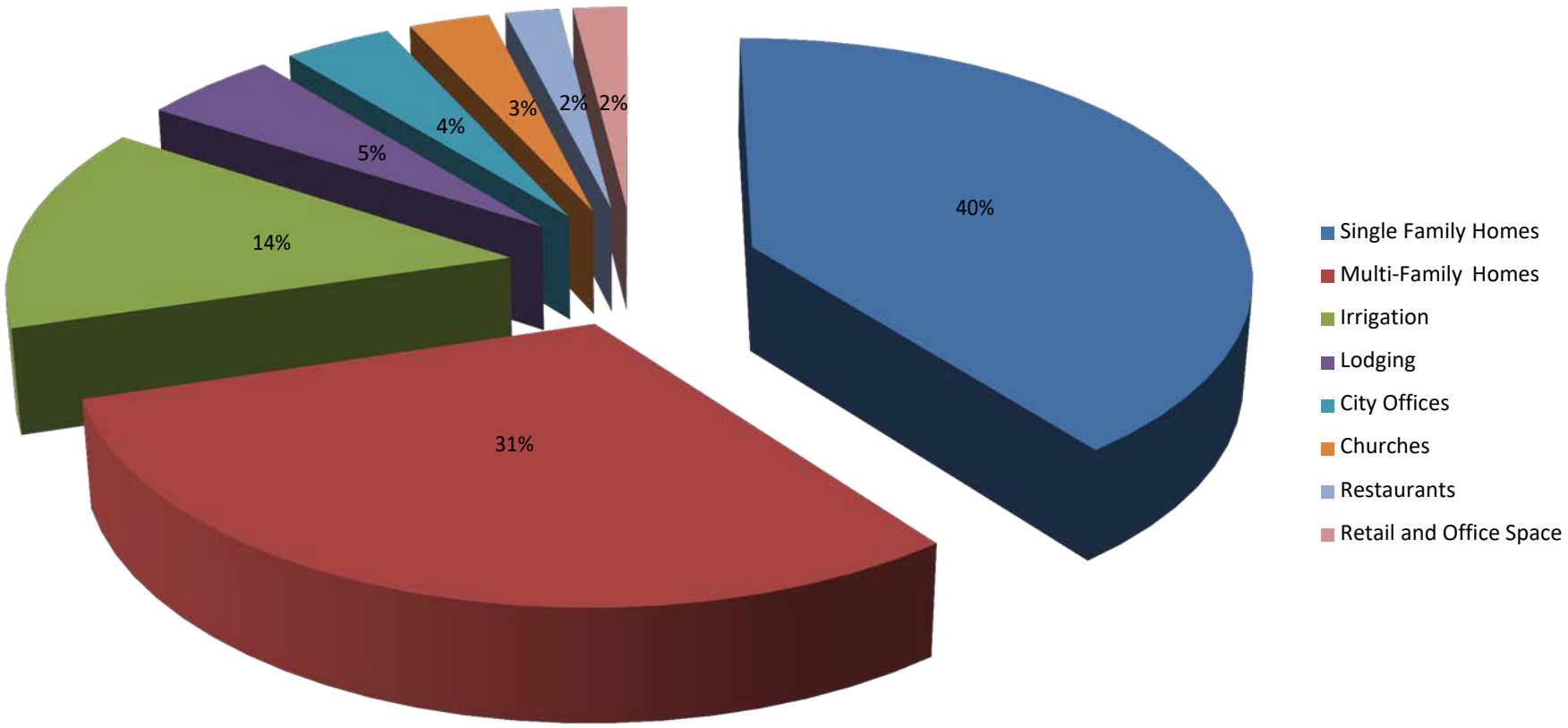
Water System Overview

Project No.
051-036.100

DRAFT
MAP
1

Figure

Figure 1
City of Ouray Water Efficiency Plan
Total EQRs by Customer Category



Appendices

Appendix A

Identification and Screening of Foundational Activities

Appendix A
City of Ouray Water Efficiency Plan
Identification and Screening of Foundational Activities

Water Efficiency Activities for Screening	State Statute Requirement	Identification		Qualitative Screening					Carry to Evaluation	Reason for Elimination
		Existing/ Potential Activity	Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
Water Use Efficiency Oriented Rates and Tap Fees										
Volumetric Billing	VII, VII	Potential	System-Wide	X	X				Not at This Time	Not feasible until all accounts are metered
Water Rate Adjustments		Existing	System-Wide		X				Yes	Is currently done on an annual basis during the City's budget process
Frequency of Billing		Potential	System-Wide	X	X				Not at This Time	Is currently done on an annual basis during the City's budget process
Inclining/Tiered Rates		Potential	System-Wide		X				Not at This Time	Is currently done on an annual basis during the City's budget process
Water Budgets		Potential	System-Wide		X				Not at This Time	Is currently done on an annual basis during the City's budget process
Tap Fees with Water Use Efficiency Incentives		Potential	System-Wide		X				Not at This Time	Not feasible until all accounts are metered
System Water Loss Management and Control										
System Water Audit	N/A	Potential	System-Wide	X	X	X		In coordination with installing new meters, will improve overall data. May reduce amount of leak detection required or increase amount of billing for water	Yes	
Control of Apparent Losses (with Metering on system Infrastructure)		Potential	System-Wide	X	X	X		To be incorporated with locations of new system meters	Yes	
Leak Detection and Repair		Potential	System-Wide	X	X	X		Reducing leaks will more accurately determine how much water is being used and appropriate billing; cost and ongoing requirement for detection may limit feasibility; updating City's GIS resources for water supply system is integral to managing data and analysis and tracking work completed.	Yes	
Water Line Replacement Program		Existing	System-Wide			X		A review of the budget process for line replacement may result in changes to the annual allocation to better match system needs.	Yes	
Planning										
Integrated Water Resources Plans	N/A	Potential	System-Wide		X			City is already working on water resources planning in other areas	Not at This Time	The City's water rights and water supply work are ongoing and an additional resource plan is not needed at this time.
Master Plans/Water Supply Plans		Potential	System-Wide	X			X	Master Plan components are included in the CIP and the City's water rights activities	Not at This Time	Master Plan concepts to be included in updated CIP
Capital Improvement Plans		Existing	System-Wide	X	X	X		Existing Master Plan/CIP should be updated to reflect work completed since plan was issued in 2003 and to include major projects	Yes	
Feasibility Studies		Potential	System-Wide	X	X			Cost not effective at this time due to lack of overall data	Not at This Time	More valuable once more meter data is available
Staff										
Water Conservation Coordinator	N/A	Potential	System-Wide	X			X	Not enough infrastructure or data to implement level of conservation requiring coordinator at this time	Not at This Time	More valuable once additional measures are in place

Note: measures for further evaluation highlighted in blue.

Appendix B

Identification and Screening of Targeted Technical Assistance Activities

Appendix B
City of Ouray Water Efficiency Plan
Identification and Screening of Targeted Technical Assistance Incentives

Water Efficiency Activities for Screening	State Statute Requirement	Identification					Qualitative Screening					Carry to Evaluation	Reason for Elimination
		Existing or Potential Activity	SWSI Framework Levels: Level 1 Municipal Uses	SWSI Framework Levels: Level 2 Customers with the Largest Water Use	SWSI Framework Levels: Level 3 Customer Type(s) in Service Area	Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
Installation of Water Efficient Fixtures and Appliances													
Indoor Audits	I	Potential	X	X	X		X	X	X	X		Not at This Time	Lack of incentives at this time due to lack of metering
Toilet Retrofits		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Urinal Retrofits		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Showerhead Retrofits		Potential		X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Faucet Retrofits (e.g. aerator installation)		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Water Efficient Washing Machines		Potential		X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Water Efficient Dishwashers		Potential		X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Efficient Swamp Cooler and Air Conditioning Use		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Low Water Use Landscapes													
Drought Resistant Vegetation	II	Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Removal of Phreatophytes		Potential										No	Phreatophytes are not extensive and existing wetlands are beneficially environmentally
Irrigation Efficiency Evaluations/Outdoor Water Audits		Potential	X	X			X	X	X	X		Not at This Time	Lack of incentives at this time due to lack of metering
Outdoor Irrigation Controllers		Potential	X	X			X					Not at This Time	Lack of incentives at this time due to lack of metering
Irrigation Scheduling/Timing		Potential	X	X								Not at This Time	Lack of incentives at this time due to lack of metering
Rain Sensors		Potential	X	X			X					Not at This Time	Lack of incentives at this time due to lack of metering
Residential Outdoor Meter Installations		Potential			X							Not at This Time	Meter program not advanced at this time
Xeriscaping		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Other Low Water Use Landscapes		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Irrigation Equipment Retrofits		Potential	X	X			X		X			Not at This Time	Lack of incentives at this time due to lack of metering
Water Efficient Industrial and Commercial Water-Using Processes													
Specialized Nonresidential Surveys, Audits, and Equipment Efficiency Improvements	III	Potential	X	X			X	X	X			Not at This Time	Lack of incentives at this time due to lack of metering. Additional education and outreach before targeting individual users.
Commercial Indoor Fixture and Appliance Rebates/Retrofits		Potential		X						X		Not at This Time	Lack of incentives at this time due to lack of metering
Cooling Equipment Efficiency		Potential		X								No	Unlikely to be significant water savings given cold climate
Restaurant Equipment		Potential		X								Not at This Time	Lack of incentives at this time due to lack of metering
Incentives													
Toilet Rebates	X	Potential		X	X				X		Minor decrease in system losses compared to larger infrastructure loss detection; better addressed through education/awareness and state or federal rebates	Not at This Time	Cost of rebates not City's priority for water conservation funds
Urinal Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Showerhead Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Water Efficient Faucet or Aerator Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Water Efficient Washing Machine Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Water Efficient Dishwasher Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Efficient Irrigation Equipment Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Landscape Water Budgets Information and Customer Feedback		Potential		X	X				X	X	Relatively low cost if audits focused on largest irrigated areas; improvements can be educational opportunity, help compare calculated water demands with usage data	Not at This Time	Engage water users in workshop activities (see Appendix D)
Turf Replacement Programs/Xeriscaping Incentives		Potential		X	X					X	Limited amount of grass in City. Building code for new development has some landscape requirements	Not at This Time	Cost greater than benefits
Give-Aways		Potential		X	X				X		Requires sourcing and City to fund	Not at This Time	Cost of give-aways not City's priority for water conservation funds

Appendix C

Identification and Screening of Ordinances and Regulations Activities

Appendix C
City of Ouray Water Efficiency Plan
Identification and Screening of Ordinances and Regulations

Water Efficiency Activities for Screening	State Statute Requirement	Identification					Qualitative Screening					Carry to Evaluation	Reason for Elimination
		Existing or Potential Activity	SWSI Framework Levels: Level 1 Customer Type(s) within the Existing Service Area	SWSI Framework Levels: Level 2 New Development	SWSI Framework Levels: Level 3 Point of Sales on Existing Building Stock	Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
General Water Use Regulations													
Waste Water Ordinance	IX	Existing	X	X	X			X		X		Not at This Time	Existing code adequate at this time (see Section 9-11)
Time of Day Watering Restriction		Existing	X							X		Not at This Time	Existing code adequate at this time (see Section 9-11)
Day of Week Watering Restriction		Existing	X							X		Not at This Time	Existing code adequate at this time (see Section 9-11)
Water Overspray Limitations		Potential									Partially covered under existing code	Not at This Time	Existing code adequate at this time (see Section 9-11)
Landscape Design/Installation Rules and Regulations													
Rules and Regulations for Landscape Design/Installation	IX	Potential	X	X						X	May reduce demands without requiring meters to be installed	Not at This Time	Current building code encourages xeriscaping and drip irrigation (see Section 7.4.D.h).
Landscaper Training and Certification		Potential		X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Soil Amendment Requirements		Potential		X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Turf Restrictions		Potential	X	X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Irrigation Equipment Requirements		Potential	X	X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Outdoor Water Audits/Irrigation Efficiency Regulations		Potential	X	X	X		X	X	X	X	Limited availability of city to work with audits therefore not appropriate to mandate at this time	Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Outdoor Green Building Construction		Potential	X	X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Indoor and Commercial Regulations													
High Efficiency Fixture and Appliance Replacement	IX	Potential	X	X							High cost to local businesses	Not at This Time	Cost to businesses not supported by data on benefits due to lack of audits/meters
Commercial Cooling and Process Water Requirements		Potential	X	X							High cost to local businesses, not enough data on benefits	Not at This Time	Limited amount of cooling due to climate, lack of data at this time
Green Building Construction		Potential	X	X								Not at This Time	Inadequate data to analyze costs/benefits and support a requirement
Indoor Plumbing Requirements		Potential	X	X					X			Not at This Time	Inadequate data to analyze costs/benefits and support a requirement
City Facility Requirements		Potential	X						X	X	City may incorporate on a voluntary basis when undertaking new projects	Not at This Time	Inadequate data to analyze costs/benefits and support a requirement. May be done voluntarily
Required Indoor Residential Audits		Potential	X	X				X	X		See Appendix B	Not at This Time	Inadequate data to analyze costs/benefits and support a requirement. May be done voluntarily
Required Indoor Commercial Audits		Potential	X	X				X	X		See Appendix B	Not at This Time	Inadequate data to analyze costs/benefits and support a requirement. May be done voluntarily
Commercial Water Wise Use Regulations (Car Washes, Restaurants, etc.)		Potential	X	X						X		Not at This Time	Cost to businesses not supported by data on benefits due to lack of audits/meters

Appendix D

Identification and Screening of Education Activities

Appendix D
City of Ouray Water Efficiency Plan
Identification and Screening of Education Activities

Water Efficiency Activities for Screening	Identification					Qualitative Screening					Carry to Evaluation	Reason for Elimination
	Existing/Potential Activity	SWSI Framework Levels			Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
		Level 1 One-Way	Level 2 One-Way with Feedback	Level 3 Two-Way Communication								
Customer Education												
Bill Stuffers	Existing	X							X	Cost of developing, printing, inserting in bills	Yes	
Newsletter	Potential	X							X	Cost of developing, printing	Not at This Time	Can be accomplished through other less costly measures
Newspaper Articles	Potential	X							X	Low cost; misinformation or misunderstandings possible	Yes	
Mass Mailings	Potential	X							X	Cost of developing, printing	Not at This Time	Can be accomplished through other less costly measures
Web Pages	Existing	X							X	Combine with Existing City website	Yes	
Water Fairs	Potential		X						X		Not at This Time	Given the limited population and limited resources of City staff, water fairs are not practical for the City at this time
K-12 Teacher and Classroom Education Programs	Potential		X						X		Not at This Time	Given the limited resources of City staff and schools, classroom activities are not practical for the City at this time
Message Development/Campaign	Potential		X						X		Not at This Time	To be considered when more user-based conservation measures are appropriate
Interactive Websites	Potential		X						X		Not at This Time	Existing website and contact information sufficient at this time
Social Networking	Potential			X					X		Not at This Time	Existing efforts in small community sufficient at this time
Customer Surveys	Potential		X						X		Not at This Time	To be considered after initial phases of system meters and leak detection have refined customer-sided issues.
Focus Groups	Potential			X					X		Not at This Time	To be considered when more user-sided implementation measures are proposed
Citizen Advisory Boards	Potential			X			X		X		Not at This Time	Existing volunteer boards may overlap some of these functions and already place a large demand on volunteers
Technical Assistance												
Customer Water Use and Landscape Design and Maintenance Workshops	Potential			X					X	Grant or assistance may be available from regional water entities; coordinate outreach with other city-wide services. Landscape workshops may include partnering with other organizations or businesses.	Yes	Customer water use and landscape workshops were combined to improve attendance and reduce staff time requirements.
Xeriscaping Demonstration Garden	Potential	X							X	City does not have adequate resources or locations at this time	Not at This Time	
Water Conservation Expert Available	Potential			X				X	X	Cost prohibitive for City to solely provide expert	Not at This Time	Refer people to experts associated with other regional water entities

Note: measures for further evaluation highlighted in blue.

Appendix E1

Evaluation and Selection of Proposed Water Efficiency Activities

Appendix E1
City of Ouray Water Efficiency Plan
Evaluation and Selection of Proposed Efficiency Activities

Water Efficiency Activities for Evaluation	Existing/ Potential Activity	Targeted Customer Category	Review of Qualitative Screening: Qualitative Goals: Provides or Improves Water Use Data Collection and Monitoring	Qualitative Goals: Provides Operational Cost Information	Qualitative Goals: Helps to Decrease System Losses	Qualitative Goals: Promotes Public Acceptance or Public Education	Evaluation: Projected Water Savings: Total Water Savings (gallons)	Projected Water Savings: Average Annual Water Savings (gallons)	Projected Implementation Costs	Quantitative Goals: Improved ability to track water use through main system infrastructure	Quantitative Goals: Provides data on quantity of water processed by system	Quantitative Goals: Reduction in system losses as meter data becomes available	Quantitative Goals: Public approval of funding allocations to activity	Notes on Additional Pros/Cons to Consider	Final Selection: Selected for Implementation	Final Selection: If Eliminated, Reason Why Eliminated
Foundational Activities																
Water Rate Adjustments	Existing	System-Wide		X			0	0	$ 3,500					Is currently done on an annual basis during the City's budget process	Yes	
System Wide Water Audits	Potential	System-Wide	X	X	X		29,587,271	2,958,727	$ 31,500	X	X	X	X	In coordination with installing new meters, will improve overall data. May reduce amount of leak detection required or increase amount of billing for water	Yes	
Control of Apparent Losses (with Metering on System Infrastructure)	Potential	System-Wide	X	X	X				$ 140,500	X	X	X	X	To be incorporated with locations of new system meters	Yes	
Leak Detection Study	Potential	System-Wide	X	X	X		7,396,818	-	$ 18,500		X	X	X	Reducing leaks will more accurately determine how much water is being used and appropriate billing; cost and ongoing requirement for detection may limit feasibility; updating City's GIS resources for water supply system is integral to managing data and analysis and tracking work completed.	Yes	
Water Line Replacement Program	Existing	System-Wide			X		133,142,719	2,958,727	$ 2,416,000			X	X	A review of the budget process for line replacement may result in changes to the allocation. This will be done in combination with the CIP (see below)	Yes	
Capital Improvement Plans	Existing	System-Wide	X	X	X		14,793,635	1,479,364	$ 18,750	X	X	X	X	Existing Master Plan/CIP should be updated to reflect work completed since plan was issued in 2003 and to include major projects	Yes	
Targeted Technical Assistance																
None at this time	Potential	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ordinances and Regulations																
None at this time	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public Education and Outreach																
Bill Stuffers	Existing	Residential & Commercial				X	5,748,750	127,750	$ 6,500				X	Cost of developing, printing, inserting in bills	Yes	
Newspaper Articles	Potential	Residential & Commercial				X	5,748,750	127,750	$ 5,600				X	Low cost; misinformation or misunderstandings possible	Yes	
Web Pages and Social Media	Existing	Residential & Commercial				X	5,748,750	127,750	$ 9,800				X	Combine with Existing City website	Yes	
City Demonstration Activities and Public Presentations	Potential	All			X	X	29,587	2,959	$ 7,100				X	Instead of offering incentive programs or rebates, the City will implement various measures such as rain-sensor controlled irrigation, low-flow fixtures, and climate appropriate landscaping to conserve water and provide educational examples. City staff will also make presentations during public council meetings bi-annually on water conservation issues relevant to the City.	Yes	
Customer Water Use Workshops and Landscape Design and Maintenance Workshops	Potential	Residential				X	6,093,675	112,846	$ 3,667				X	Grant or assistance may be available from regional water entities; coordinate outreach with other city-wide services. Landscape workshops may include partnering with other organizations or businesses.	Yes	

Notes:
Only measures selected for further evaluation are included here (see appendices A-D)
See Appendix E2 for detailed cost and water savings assumptions.

Appendix E2

Cost and Water Savings Calculations for Proposed Water Efficiency Activities

Appendix E2
City of Ouray Water Efficiency Plan
Cost and Water Savings Calculations for Proposed Efficiency Activities
DRAFT

Water Efficiency Activities for Evaluation		Total Cost					Total Water Savings*			Cost per Thousand Gallons Saved ($)	Notes on Measure
	Planning Period (No. of Years)	Quantity (#)	One Time Labor/ Material ($)	Average Annual Staff Labor ($ = # hrs x $35/hr)	Annual Materials ($)	Total Cost in Planning Period ($)	Gallons saved per unit	Annual Gallons Saved	Total Gallons Saved		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Foundational Activities											
Water Rate Adjustments	10	10	$ -	$ 350	$ -	$ 3,500	0	0	0	N/A	Assumes 10 hours of staff time to prepare and discuss the budget item for a rate increase and obtain Council approval. Because water is charged at a flat rate, increased cost do not correlate to water conservation by individuals. Increased revenue for the utilities department helps enable necessary operations, maintenance and repairs and thus indirectly assist in conservation.
Control of Apparent Losses (with Metering on System Infrastructure)	10	9	$ 126,500	$ 1,400	$ -	$ 140,500	2,958,727	2,958,727	29,587,271	$ 5.81	Assumes $5,000 consultant fees and 40 hours of staff time to properly determine the specifications for 9 meters on the system (one at each PRV). The meters will include a meter, SCADA connection, SCADA upgrade and power for the meter at a total cost of approximately $13,500 per meter (see Appendix K for details). Savings accrued from meter monitoring are combined with the system-wide water audits which utilize the meter data to identify leaks and losses.
System Water Audit	10	10	$ -	$ 3,150	$ -	$ 31,500					Assumes 90 hrs/yr of staff time to collect data, compile and analyze water use system wide. Assumed savings of 1% per year due to identifying leaks/losses and improved management. Assumes is implemented in year 1 of the 10 year planning period. Cost savings to reducing volume of water processed by system are not included in this cost analysis.
Leak Detection Study	10	1	$ 4,500	$ 1,400	$ -	$ 18,500	7,396,818	-	7,396,818	$ 2.50	Assumes cost of $4,500 for 11 miles of ductile iron pipe (see quote from UTS, Inc., Appendix J) for total distribution system, excluding the Wehawken spring transmission line, completed once during the plan period and assumes staff time of 40 hours to assist in survey. Savings are 2.5% per year. Cost savings to improved system operations and reduced emergencies are not included. Assumes study is completed in year 1 of the 10 year planning period.
Water Line Replacement Program	10	10		$ 2,100	$ 239,500	$ 2,416,000	2,958,727	2,958,727	133,142,719	$ 18.15	Assumes replacement of 2,500 ft of line using DIP each year by contractor. Estimate material cost of $28/ft of DIP, plus $65/ft for installation, plus $7,000 to connect to existing lines (labor and material), plus 60 hours/year of staff time to coordinate and inspect the work. Assumes burying pipe to 5 ft depth (not anticipated to have significant rock work). Results in 1% savings, cumulative each year.
Capital Improvement Plan	10	1	$ 10,000	$ 875	$ -	$ 18,750	1,479,364	1,479,364	14,793,635	$ 1.27	Assumes a one-time consultant cost of $10,000 to update the current Master Plan/CIP and 25 hours per year of City staff time to integrate the CIP into the annual utilities budget and have approved by council. Water savings from improved condition of infrastructure is estimated to be 0.5% per year in addition to savings from pipe replacement program (see above). Assumes update to CIP is completed in year 1 of 10 year planning period.
Public Education and Outreach											
Bill Stuffers	10	10	$ -	$ 350	$ 300	$ 6,500	127,750	127,750	5,748,750	$ 0.0011	Assumes 5 hours per year to prepare flyer with information, 5 hours per year to prepare mailing, and annual cost of $300 per year to print for 1,000 accounts. Assumes savings of 0.1% from voluntary conservation resulting from education and conservation is cumulative over the planning period.
Newspaper Articles	10	40	$ -	$ 560	$ -	$ 5,600	127,750	127,750	5,748,750	$ 0.0010	Assumes 4 articles per year, 4 hrs of staff time per article. Assumes savings of 0.1% from voluntary conservation resulting from article education over 1,000 account holders.
Web Pages and/or social media	10	40	$ -	$ 980	$ -	$ 9,800	127,750	127,750	5,748,750	$ 0.0017	Assumes 6 hrs of staff time per quarter to provide updated water conservation content to web manager, and put conservation content on Facebook and/or other social media, plus 1 hr per quarter of web managers time. Assumes savings of 0.1% from voluntary conservation over 1,000 account holders and program begins in year 1 of 10 year planning period.
City Demonstration Activities and Public Presentations	10	-	-	$ 210	$ 500	$ 7,100	2,959	2,959	29,587	$ 4.17	Instead of offering incentive programs or rebates, the City will implement various measures such as rain-sensor controlled irrigation, low-flow fixtures, and climate appropriate landscaping to conserve water and provide educational examples. It is assumed that $500 per year is budgeted in staff time or materials purchase to implement conservation measures. Additionally, City staff will make public presentations on water conservation issues relevant to the City during City Council meetings an estimated 2 times per year, requiring 3 hours of staff time per presentation. The resulting saving to the City and through education is assumed to be 0.01%.
Customer Water Use and Landscape Design and Maintenance Workshops	10	3	-	$ 233	$ 133	$ 3,667	338,538	112,846	6,093,675	$ 0.0006	Assumes 1 workshop every 3 years, requiring $400 in supplies/give-aways, and 20 hrs of staff time per event (plus volunteer from local garden community/business). Costs may be reduced by teaming with local watershed partners group or seeking grant funding. Assumes 10 households per event each with a 15% savings on outdoor irrigation of 0.08 acres (average City lawn size) from implementing outdoor water conservation methods and 2% savings on indoor water demands for each household and program begins in year 1 of 10 year planning period..
					Total Cost	**$ 2,661,417**		**Total Water Saved:**	**208,289,955**		

Notes:

(1) Only measures selected for further evaluation are included here (see appendices A-D).
(2) Planning period for implementation of measure. Because of lack of metering, existing conservation efforts have not been quantified and will only be addressed in the future planning period.
(3) Total number of units to be implemented over the planning period for each measure.
(4) Capital costs to implement the program such as purchase of equipment. Labor required to manage the program, install equipment or otherwise carry out the measure is also included.
(5) Annual City staff labor costs for maintaining the equipment or program.
(6) Annual material costs for maintaining the equipment or program. If installation of equipment is annually completed by contractor, the contractor costs are included in this column.
(7) Equals (Column 2 x (Column 5 + Column 6) + (Column 3 x (Column 4 + Column 5)).
(8) May be based on savings per unit x no. of units or may be a percentage of water savings over the entire system (see notes in Column 12).
(9) Equals water saved on an annual basis by the measure.
(10) Equals Column 8 X Column 9 x Column 2.
(11) Equals Column 7 / Column 10.
(12) Notes on implementation of the measures. Notes on the basis of assumptions for the calculations used in this sheet.

* Total gallons as baseline is 908 AF in 2010 (see Table 3) = 295,872,708 gallons. Savings from Public Education and Outreach are based on a household demand of 350 gallons per day (= 75 gpdpc x 3.5 persons/home + 87 gpd averaged outdoor use). Savings associated with existing conservation measures is not shown due to lack of historical meter data to determine savings. All calculations are based on a current baseline and projected forward.

Appendix F

Proposed Implementation and Monitoring Plan

Appendix F
City of Ouray Water Efficiency Plan
Proposed Implementation and Monitoring Plan

Selected Water Efficiency Activities	Period of Implementation	Implementation Actions	Milestone Deadlines	Total Budget	Entity/Staff Responsible for Implementation	Entity/Staff Responsible for Data Collection	Schedule of Data Collection	Coordination and Public Involvement	Additional Comments
Water Rate Adjustments	10 years	Annual Budget Item	Annual City Budget Approval	2 percent increase on existing rates and $3,500 of staff effort	City Administrator			Public comment during Council adoption of budget	City policy is to propose a 2% rate increase every year. This percent increase may be adjusted annually based on that years budget considerations.
Control of Apparent Losses (with Metering on System Infrastructure)	2 years	Identify meters to be purchased and have budget approval	1 year	$140,500	City Administrator Public Works Director Consultant/Supplier			Public Comment during budget process	Controlling losses will reduce system operational costs by reducing the amount of water treated and delivered into the system. The amount of losses and costs of operations may be compared to estimate savings once baseline loss data is available.
		Installation of meters	2 years		Public Works Director				
		Create meter monitoring and database program	2 years		Public Works Director Consultant				
System Wide Water Audits	8 years (beginning once meters are in place)	bi-annual data entry and review	bi-annual once meters in place	$31,500	Public Works Director	Public Works Director	January and June		Monitoring will begin once meters are installed. At installation, the City's database for meter records will be revised to incorporate new data and analyze results to help to identify un-metered water and losses which will reduce operational costs without reducing revenues.
		annual reporting of data and analysis as a City Council presentation	annual once meters are in place		Public Works Director	Public Works Director	Meeting before budget process	public input during presentations and budget process	
Leak Detection Study	2 years	Obtain funding and contract approval from City	1 year	$18,500	City Administrator Public Works Director				Results of study will be used to identify losses in the meter data and to direct replacement and repair program. The results of the study can be used to estimate losses to the system and the reduction in the amount of water needed in the system.
		Conduct leak detection study	2 years		Public Works Director Contractor	Public Works Director	Once during leak detection study		
Water Line Replacement Program	10 years	annual budget item and contract approval	Annual City Budget Approval	$2,416,000	City Administrator Public Works Director			Public Comment during budget process	Line replacement will coincide with system metering and savings from reduced losses may be identified in the meter data.
		City staff and contractor complete line replacements	Annually		Public Works Director Contractor				
Capital Improvement Plans	2 years (CIP affects funding plan for all other measures)	Obtain funding and contract approval from City	1 year	$18,750	City Administrator Public Works Director			Public Comment during budget process	CIP update may identify thresholds water volume that would require new infrastructure (such as storage or treatment facilities). The costs from the CIP can be used to estimate savings from reducing system losses and overall demands through conservation.
		City staff and consultant complete CIP updates	2 years		Public Works Director Consultant				
		City staff integrate into annual budget process each year	Annually after 2 years		City Administrator Public Works Director			Public Comment during budget process	
Bill Stuffers	10 years	city staff prepare flyers and include in billing notices	Annually	$6,500	Community Development Coordinator			Public will receive flyers	Flyers to include City staff contact information
Newspaper Articles	10 years	city staff work with local newspaper quarterly	Quarterly	$5,600	Community Development Coordinator			Public audience through local newspaper	Articles to include City staff contact information
Web Pages and Social Media	10 years	city staff incorporate water conservation issues into existing social media and web page presence	Quarterly	$9,800	Community Development Coordinator			Social media provides opportunity for 2-way communications	
City Demonstration Activities and Public Presentations	10 years	City install water conservation features (landscape, fixtures, etc.)	when retrofits or new work is being undertaken	$7,100	Public Works Director Community Development Coordinator			The City's conservation measures will be publicly visible	
		Public presentations at City Council meetings	Bi-annually		Public Works Director Community Development Coordinator			Public audience at Council Meetings	This measure will help to provide information to decision makers on conservation issues and the City's Water Conservation Plan implementation
Customer Water Use Workshops and Landscape Design and Maintenance Workshops	10 years	City sponsored workshop for residents	Every three years	$3,667	Public Works Director Community Development Coordinator			Public participation and feedback	

Total Cost for Implementation of All Proposed Measures: $2,661,417

Notes:
All measures selected for implementation are included (see Appendix E)
Deadlines are based on time from the approval of the Water conservation Plan. For example '1 year' is 1 year from the time the plan is approved
Data collection is only for system-wide meters and the leak detection study. Future updates to the plan may consider more extensive monitoring once system baseline data is available.
For cost estimate basis, see Appendix E2: Cost and Water Savings Calculations for Efficiency Measures

Appendix G

Section 9-10 City of Ouray Code Water and Sewer Use Rate

A. No water or sewer main, or facilities of the City may be extended without the approval of the City.

B. The City may, at its own expense, extend its water or sewer mains as deemed feasible or necessary. The City may provide for such extensions in accordance with its Subdivision Regulations, by contract with any person desiring such extensions, or by improvement district. Any such contract shall be on terms approved by the City and may provide for the size of the mains or lines to be extended, the apportionment of the costs of the extensions, reimbursement provisions for subsequent connections onto such extension, or such other provisions as City Council deems in the public interest.

C. All such mains, lines, easements, and facilities connected to the City system shall be conveyed and dedicated to the City, free and clear of all liens and encumbrances.

9-9 Right of Entry

A. Whenever necessary to make an inspection or investigation to perform any duty, or to enforce any of the provisions of this Chapter, any authorized City representative may enter upon any building or premises served by City water or sewer at any reasonable time for such purposes. If the building is occupied, he shall present proper credentials and request entry. If such building is unoccupied, he shall make reasonable efforts to locate the owners or persons in possession of the premises and request entry. If entry is refused, he shall have recourse to all remedies provided by law to secure entry, including issuance of an inspection warrant by the Municipal Court.

B. The right of entry shall apply but not be limited to the following functions: to determine the location and conditions of all hydrants, pipes, fixtures, plumbing, and meters, to read meters, to make repairs, to perform dye and smoke tests, and to investigate violations of this Chapter.

9-10 Water and Sewer Use Rates

A. Water and sewer use rates will be calculated on the basis of a single family dwelling. An equivalency factor (EQR) will be applied to the base rate to scale fees to normal usage for the particular structure or business.

B. Rate Structure

TYPE OF FACILITY	**PER UNIT/SPACE**	**SERVICE FEE**	**ADDITIONAL EQR**
Single Family Dwelling	1.00	$36.00 per property	
Multiple Family Dwelling Townhouse	1.00	$36.00 per unit	.25 per public washing machine

Condominium			
Apartment Building	1.00 per apartment	$36.00 per property	.25 per public washing machine
Permanent Trailers Mobile Home Park	1.00 per space	$36.00 per property	
Overnight Mobile Home Park RV Park Campground	1.00 per Manager's Unit; .22 per space with sewer hookup; .11 per all other spaces	$36.00 per property	.25 per public washing machine; 1.00 per public dump station
Hotels, Motels, Bed and Breakfasts	1.00 per Manager's Unit; .16 per bed; .02 per kitchen facility	$36.00 per property	.05 per 1,000 gallons for swimming pools, hot tubs, etc; .25 per public washing machine .03 per bed
Hospitals Nursing Homes	.20 per bed	$36.00 per property	
Churches	1.00 per parsonage .01 per seat	$36.00 per property	.70 per social area or kitchen facility
Private Clubs	.01 per seat	$36.00 per property	.70 per social area or kitchen facility 1.00 per bar
Schools	.06 per student	$36.00 per property	
Offices Day Workers Medical Center	.30 per 1,000 sq. ft	$36.00 per property	
Small Shops	.30 per space	$36.00 per property	
Factories Plants Livery Barns	.50 per 1,000 sq. ft	$36.00 per property	
Movie Theaters Arenas	.50 per 1,000 sq. ft	$36.00 per property	
Grocery Store Market	.30 per 1,000 sq. ft	$36.00 per property	
Service Station	.50 per pump	$36.00 per property	
Car Wash	1.20 per wash bay	$36.00 per property	
Laundry (Public)	.25 per machine	$36.00 per property	
Laundry Business	1.00 per machine	$36.00 per property	
Taverns/ Bar	2.00 per 1st 20 seats .60 per additional 10 seats	$36.00 per property	
Food Service	2.00 per 1st 20 seats .60 per additional 10 seats	$36.00 per property	
Deli, Ice Cream Parlor	1.00 per 1st 20 seats .30 per additional 10	$36.00 per property	

	seats		
Beauty/Barber Shop	1.00 per property	$36.00 per property	
Private Swimming Pool	.05 per 1,000 gallon if on City Water or Sewer System		
Ouray County Historical Society Museum	1.00 per museum unit	$36.00 per property	
Daycare	.02 per child capacity	$36.00 per property	
Emergency Response Facility	1.00 per facility	$36.00 per property	

C. Water and Sewer Rates

1. Water Base Rate is $16.59 per month per EQR

2. Water Debt Repayment Surcharge is $7.00 per month per EQR, prorated for the first 1.0 EQR, plus $3.50 for additional EQR's. For a master billing account, each lot with a single-family residence or each RV space shall be charged $7.00 per month per unit. Section 9-10-D-2 shall not apply to the Water Debt Repayment Surcharge calculation with respect to doubling the rate for users outside of the City limits.

3. Sewer Base Rate $25.94 per month per EQR.

4. Service Fee is set out in Subsection B.

5. A discount of $36.00 shall be allowed if charges for entire year are paid in advance by February 15th.

D. Special Charges

1. If any user is discharging toxic or other pollutants in concentrations higher than that of a residential user which causes increased treatment or system costs, a surcharge may be imposed based upon the excess concentrations.

2. All water user rates for users outside of the City limits shall be classified according to the above contained and set forth classifications, but the rates therefore shall be twice the rates applicable to users inside the City limits.

3. In all special cases where the water and sewer user does not come within any of the above set forth classifications and does not use a water meter due to unusual circumstances, or to unusual or intermittent requirements of the use of water and sewer, City Council may establish a special rate therefore, but no such special water and sewer rate contract shall be entered into for a period longer than one (1) year at a time and the rate or

rates for such special usage of sewer and sewer under any special contract shall be based as nearly as may be practical upon general water and sewer rate structure herein provided.

4. In cases where there is a transfer of City utility account customers due to the conveyance of property served by the City's water and sewer system, there shall be a $25.00 Utility Account Transfer Charge billed to the new property owner as a new customer of the utility account. This charge shall be incurred and billed at the time of such transfer, with payment due within thirty (30) days of billing.

E. Additional Provisions

All customers shall be required to properly complete and submit to the City, information, declarations, and surveys upon the City's request, as appropriate to facilitate the administration of this Chapter and the EQR system.

9-11 Restriction of Water Use

A. City Council, by a majority vote, may limit the use of City water to specific times, days, and uses as appropriate. Water use contrary to such limits is unlawful.

B. Action to limit the use of water shall comply with the local disaster emergency provisions of Chapter 2 of this Code.

C. No watering hose larger than 3/4" diameter and no watering nozzle larger than 1/4" diameter may be used.

D. All watering and continuous water flows shall be terminated during fire alarms.

E. Unlawful Acts

The following shall be considered unlawful and are declared a nuisance:

1. It shall be unlawful for any person to sell or give water away to be used on premises other than those for which service is authorized. The City may authorize temporary use at construction sites or in emergencies.

2. It shall be unlawful to open or close any fire hydrant, stop, or curb valve, or to turn on, or turn off, the water service to any property without lawful authority to do so.

3. It shall be unlawful to cause or allow any pollutant to be introduced in the City water system or to cross connect it with any irrigation water system or other system.

4. It shall be unlawful to waste water.

9-12 Use of Fire Hydrants

Appendix H

City of Ouray Resolution No. 7 - 2012

A RESOLUTION OF THE CITY COUNCIL
OF THE CITY OF OURAY, COLORADO
(RESOLUTION NO. 7, 2012)

A Resolution of the City of Ouray implementing water conservation standards for 2012.

WHEREAS, the City of Ouray received notice from the Colorado Division of Water Resources ("Division") that the City's water rights were called on May 3, 2012; and

WHEREAS, the City submitted an Emergency Substitute Water Supply Plan to the Division in response to the water call on June 13, 2012 in order to allow the City to still draw the allocated water right amounts; and

WHEREAS, the Division has notified the City that the Emergency Substitute Water Supply Plan must include that the City demonstrate efforts by the citizens of the community to conserve water; and

WHEREAS, pursuant to Section 9-14 of the City of Ouray Municipal Code, the City Council has authority to limit the use of City water to specific times, days and uses as appropriate;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF OURAY, COLORADO, as follows:

THE CITY COUNCIL ASKS CITIZENS WHOSE PROPERTY IS EAST OF THE CENTERLINE OF MAIN STREET TO LIMIT YARD IRRIGATION TO ONLY TUESDAYS, THURSDAYS,AND SATURDAYS. THE CITY COUNCIL ASKS CITIZENS WHOSE PROPERTY IS WEST OF THE CENTERLINE OF MAIN STREET TO LIMIT YARD IRRIGATION TO WEDNESDAYS, FRIDAYS, AND SUNDAYS. THE CITY COUNCIL ASKS THAT ALL CITIZENS NOT CONDUCT YARD IRRIGATION ON MONDAYS NOR BETWEEN THE HOURS OF 10:00 AM AND 4:00 PM. WATERING BY A HANDHELD HOSE IS EXEMPTED FROM THESE WATER CONSERVATION STANDARDS.

THE CITY OF OURAY WILL ONLY CONDUCT DUST CONTROL OPERATIONS THREE DAYS A WEEK AS NEEDED. LIKEWISE, THE CITY OF OURAY WILL LIMIT IRRIGATION OPERATIONS IN **ALL CITY PARKS TO ONE DAY A WEEK.**

THIS RESOLUTION SHALL BE EFFECTIVE UPON ADOPTION.

ADOPTED this 6th day of August, 2012, by the Ouray City Council.

CITY OF OURAY, COLORADO

By_____
Robert E. Risch, Mayor

ATTEST:

_____
Kathy Elmont, City Clerk

X:\Clerk\Coundf1Resolutions\20! 2'1res1207.doc

Appendix I

Meter Information

MODEL X143IP

Intermediate Power Generator

Product Description

The X143IP Intermediate Power Generator is a self-contained power generation system designed to be mounted on a Cla-Val Automatic Control Valve.

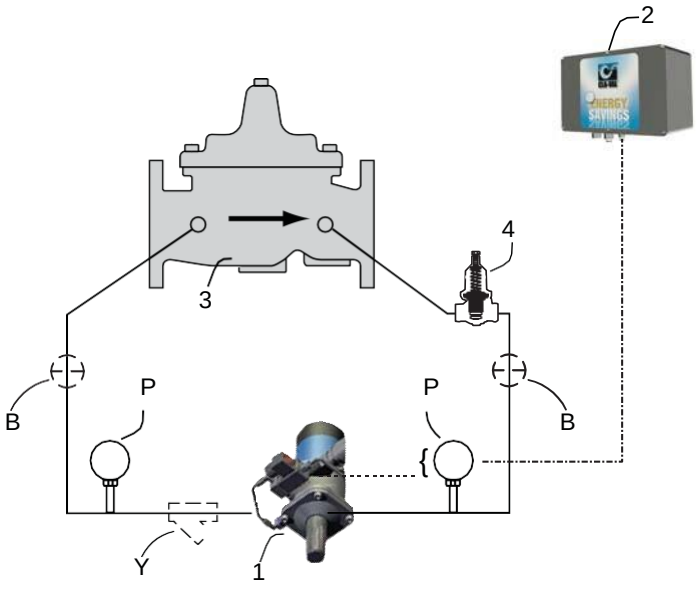
The X143IP uses the pressure drop across the valve to produce up to 14 watts of power to run electronic equipment located at the valve site.



CE patent pending

Product Features

- Designed to be installed within the pilot system of a Cla-Val Automatic Control Valve
- Factory installed or field retrofittable to an existing valve
- Up to 14 watts continuous draw
- Up to 42 watts non-continuous draw
- 12 psi differential pressure minimum at 15 gpm
- 12 Volt Battery with 12 and/or 24 VDC Output
- Automatic shutdown of the X143IP when battery is fully charged helps to maximize both battery and generator life span
- Applications include powering electronic valve controls, data loggers, position controls and communications equipment



Typical Schematic Diagram

Supplied Equipment

1 Power Generator Unit
2 Electronics & Battery Housing
3 Cla-Val Automatic Control Valve
Y Y-Strainer

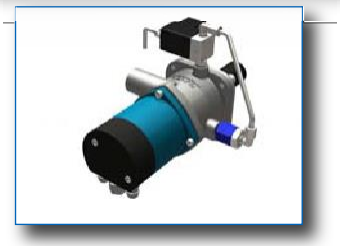
Optional Equipment

P Gauges
B Isolation Valves
4 Pressure Reducing Valve

Note: Maximum inlet pressure is 150 psi.
Please consult factory if pressure is above 150 psi.

Power Generator Specifications

- 12V DC or 24V DC output
- 12 PSI minimum differential pressure required
- Up to 14 watts generator power output
- 3/4-inch female connection
- Upper recharging threshold: 13.5 VDC
- Lower recharging threshold: 12 VDC



1



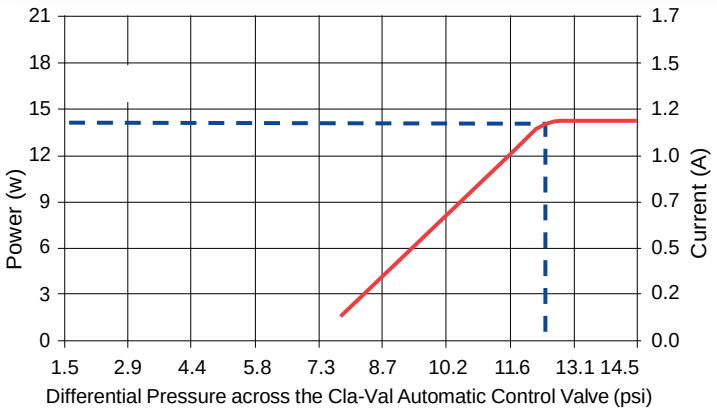
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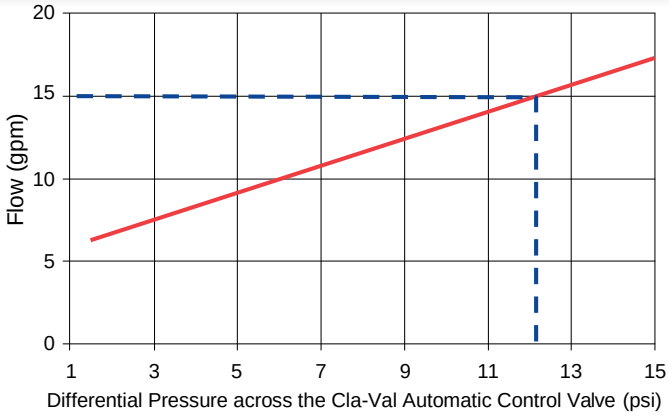
visit www.cla-val.com to learn more about this and other Electronic Products

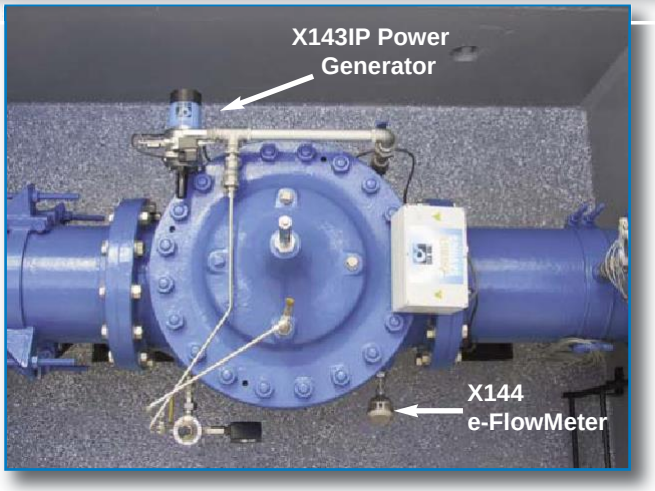
Power Output

Voltage Output	Maximum Continuous (24h/24)	Maximum Non-Continuous
12 volts	1.2 A (14 W)	3.5 A (42 W)
24 volts	0.6 A (14 W)	1.7 A (42 W)

Power and Flow Charts







Typical Installation: Pressure Reducing Valve Station X143IP providing power to operate electronic valve controls, data logger, pressure transducers and the Cla-Val X144 e-FlowMeter™

Easy retrofit: The X143IP Power Generator is installed as part of the pilot system of an existing Cla-Val Automatic Control valve to provide power without compromising valve performance and without tying into to the grid

CLA-VAL

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e-FlowMeter



Patent Pending

- **The e-FlowMeter can be retrofitted to an existing Cla-Val Automatic Control Valve or factory assembled on a new valve**
- **IP 68 Submersible**
- **Provides flow data with accuracy +/- 2% of Full Scale**
- **Mounts on either inlet body tapping of the Cla-Val Control Valve**
- **Stainless Steel Construction**
- **4-20mA Loop Powered**
- **Plug-and-Play Metering**
- **No Moving Parts**
- **Independent laboratory tested:**
  - **Utah State University,**
  - **Imperial College - London**

[redacted]



Installation view of the X144 e-FlowMeter

Note: Consult Factory for Angle Pattern Applications

The Cla-Val Model X144 e-FlowMeter is a vortex shedding insertion flow meter designed to be retrofitted into a Cla-Val Automatic Control Valve to provide accurate flow measurement data without the need to install a separate meter.

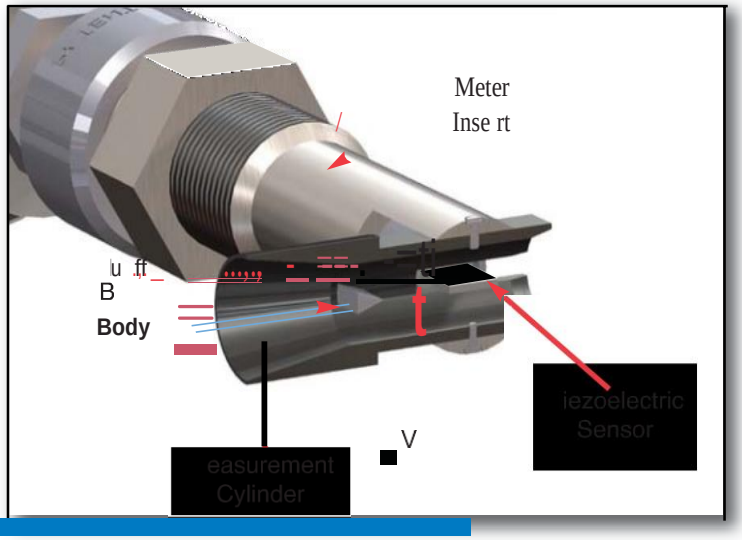
Configured for installation in the inlet tapping of a Gia-Val Automatic Control Valve , the X144 can be used in valves directly downstream of a flow disturbance such as elbows, valves or a reducer. (See page 2 for installation guidelines)

The X144 e-FlowMeter employs an innovative swivel mechanism which allows the meter to be inserted into tappings as small as 1/2-inch. For applications involving installation in close proximity to pump discharge, please consult factory with details.

Frequency Measurement

The X144 e-FlowMeter uses the vortex shedding method to measure flow. The meter is inserted into the inlet tapping of the valve and the measurement cylinder is oriented parallel to the direction of flow. The flow enters the measurement cylinder where it encounters the bluff body, generating vortices, which in turn, deflects off the piezoelectric sensor.

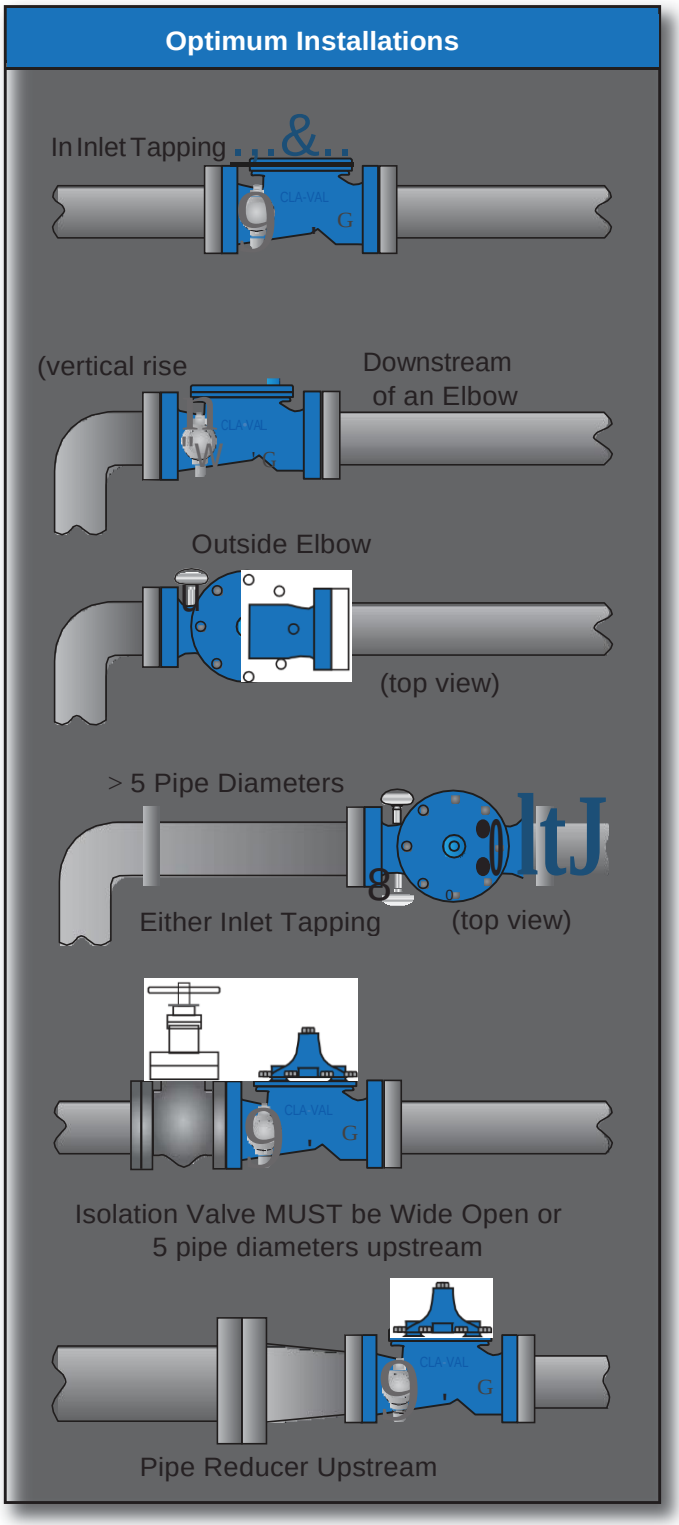
The sensor counts the vortices and communicates the data to the meter's integral circuit board. The flow data signal is converted to 4-20mA, or transistor (NPN) pulse, depending on the desired application.



Installation Guidelines and Typical Applications

Installation Locations

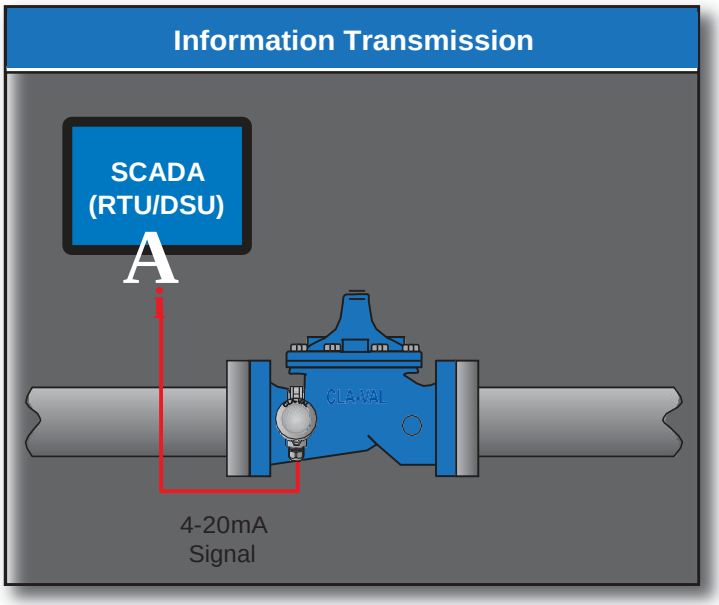
For optimum performance , it is recommended that the valve in which the X144 e-FlowMeter is installed be located as shown below.



Note : Consult factory for other installation configurations

Information Transmission

The X144 e-FlowMeter measures and transmits flow information via a 4-20mA signal to SCADA equipment.

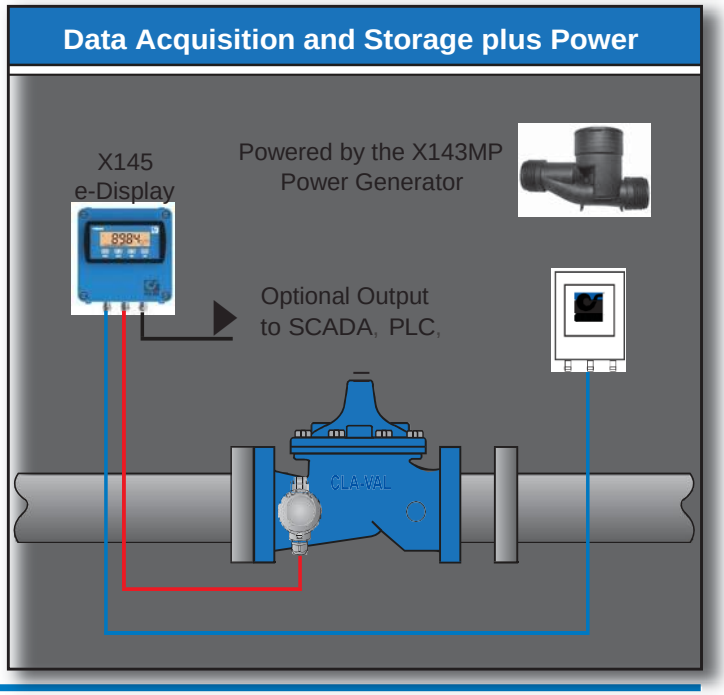


Data Acquisition and Storage using Cla-Val Power Generator

- The X144 e-FlowMeterconnects to most commercially available loggers with the choice of 4-20mA or pulse output.

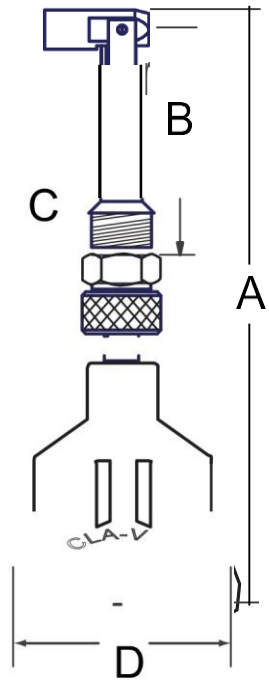
  e-flowMeter, providing access to real-timedata
- Both thee-Display and the e-FlowMeter can be powered by the Cla-Val X143MP Micro-Turbine Power Generator

To learn more about the X143MP Power Generator, visit www.cla-val.com/electronic-products



X144 Dimensions

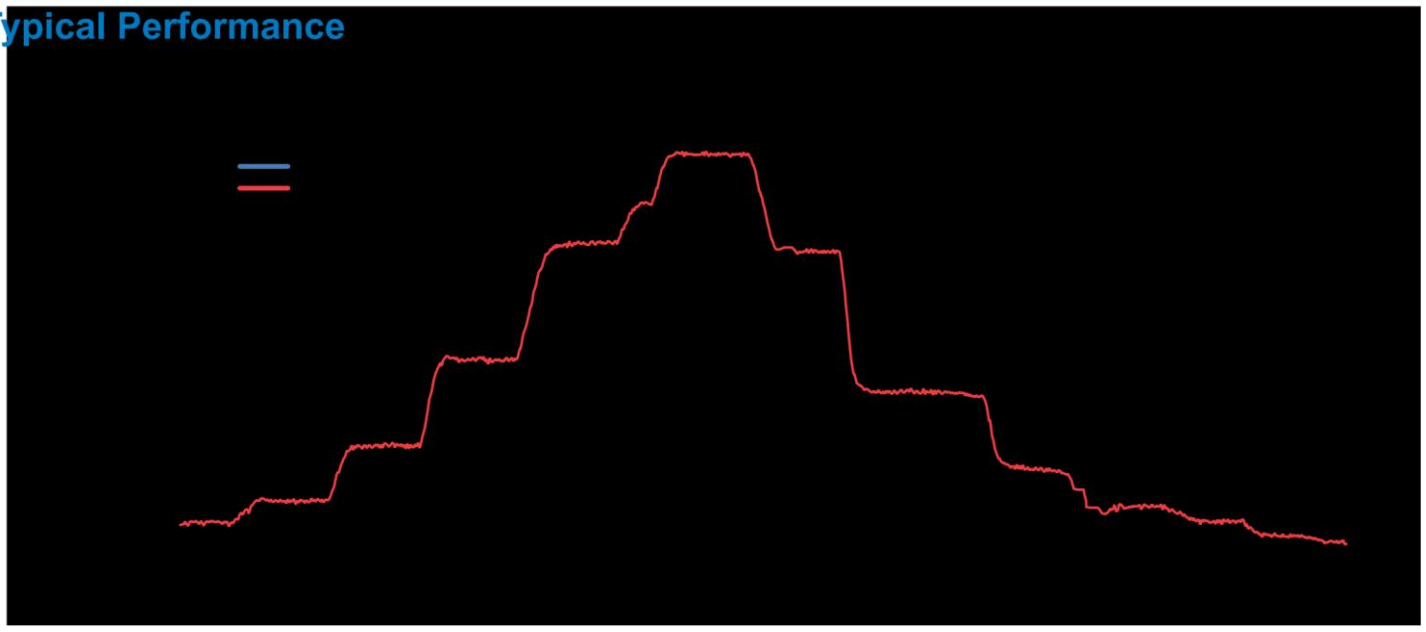
		1	2	3	4
F ll Port Valve Sizes		2 , 2-1/2, 3	4 6	8 10	1 , 14, 16, 18, 20, 24, 30**
R duced Port Valve Sizes		4	6 8	1 , 12	1 , 16, 18, 20, 24**
O erall Length (in inches)	A	8 85	9 45	1 .18	1 .91
I sertion Length (in inches)	B	2 3	2 8	6 8	1 .6
P pe Thread (NPT)	C	1 2"	3 4"	1	1
O erall Width (in inches)	D	3 25	3 25	3 25	3 25



*2X144 e-FlowMeter may be installed on new valves only
** Consult factory for larger applications

X144 e-FlowMeter Operational Flow Range= from 0.3 ft/s to 20 ft/s

Typical Performance



Options

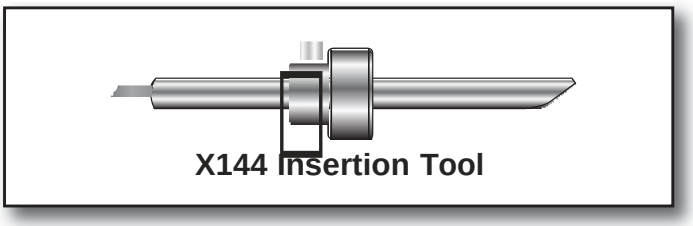
- emote Mounted Display - X145 e-Display
- Field Optimization using e-FlowMeter Customer Software
- Pulsed output proportional to flow rate for low power consumption

X145 e-Display

Product Details

Insertion Tool and Locking Ring

- Required for installation
- Tool allows the proper installation and alignment of the bluff body to be parallel to upstream flow.



X144 Insertion Tool

Power Requirement

- 12/24 VDC, 0.7 Watts minimum.

X144 e-Flow Meter Sizing

- The X144 threads directly into the inlet tapping of a Cla-Val Control Valve. The size of the e-FlowMeter is dependent on the specific valve size for which it has been calibrated - no additional fittings are required. **See dimension chart on previous page.**

Cabling

- The unit is supplied with 20 feet of shielded cable.

X144 e-FlowMeter Analog Range (4-20mA Scaling): Factory Settings

Port Style	Line Size inches (mm)	**2" (50) (100-49 Body)	2-1/2" (65)	3" (80)	4" (100)	6" (150)	8" (200)	10" (250)	12" (300)	14" (350)	16" (400)	18" (450)	20" (500)	24" (600)	30" (750)
Full Port Valves 4mA=0 (GPM-l/s)	20mA Range (GPM)	260	375	575	1000	2250	3900	6000	8750	10500	14000	17500	22000	31000	52000
	20mA Range (l/s)	16.4	23.7	36.3	63.1	140	245	380	550	660	880	1100	1390	1950	3280
Full Port Pulse Weight*	Gal/Pulse	5	6.5	9.5	17	38	65	100	150	175	235	290	365	515	865
	l/Pulse	19	25	36	65	145	245	380	565	660	890	1100	1380	1950	3275
Reduced Port Valves 4mA=0 (GPM-l/s)	20mA Range (GPM)	not available			675	1600	2900	4500	5650	7750	9350	Consult Factory			
	20mA Range (l/s)				42.5	100	180	285	355	490	590				
Reduced Port Valves Pulse Weight*	Gal/Pulse				11.5	26	48	75	95	130	155				
	l/Pulse				44	99	180	285	360	495	585				

* **Note:** * Pulse Width = 250ms **2" X144 e-FlowMeter may be installed on new valves only

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www.cla-val.com

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Represented By:

CLA-VAL™

— MODEL — **X145**

Cla-Val e-Display



Model X145

- **Displays: Flow Rate, Total, Pressure, Position and mA**
- **IP-67 Submersible**
- **SCADA compatible**
- **Customizable units**
- **Backlight optional**
- **Integral wall-mount hardware included**

The Cla-Val Model X145 “e-Display” displays rate up to five digits and totals up to eight digits. The e-Display can be programmed to automatically or manually toggle between rate and totalizing functions. Standard features include an optional backlit display with bargraph, on-screen custom engineering units, max/min display and alarm and pulse outputs.

Designed to be wall-mounted, the X145 e-Display is easy to set- up and is ideal for installation with the Cla-Val X144 e-FlowMeter.

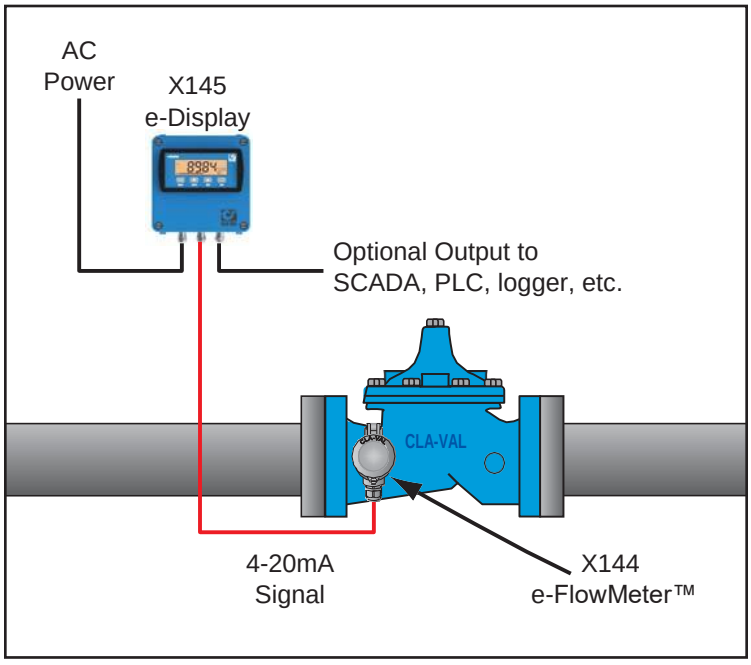
Advanced Features

- **Pulse output available for SCADA, PLC and logging applications**
- **Configurable for low-flow cut-off**
- **Noise filter**
- **Optional password protection**
- **Math functions (Linear, Square Root, Programmable Exponent)**



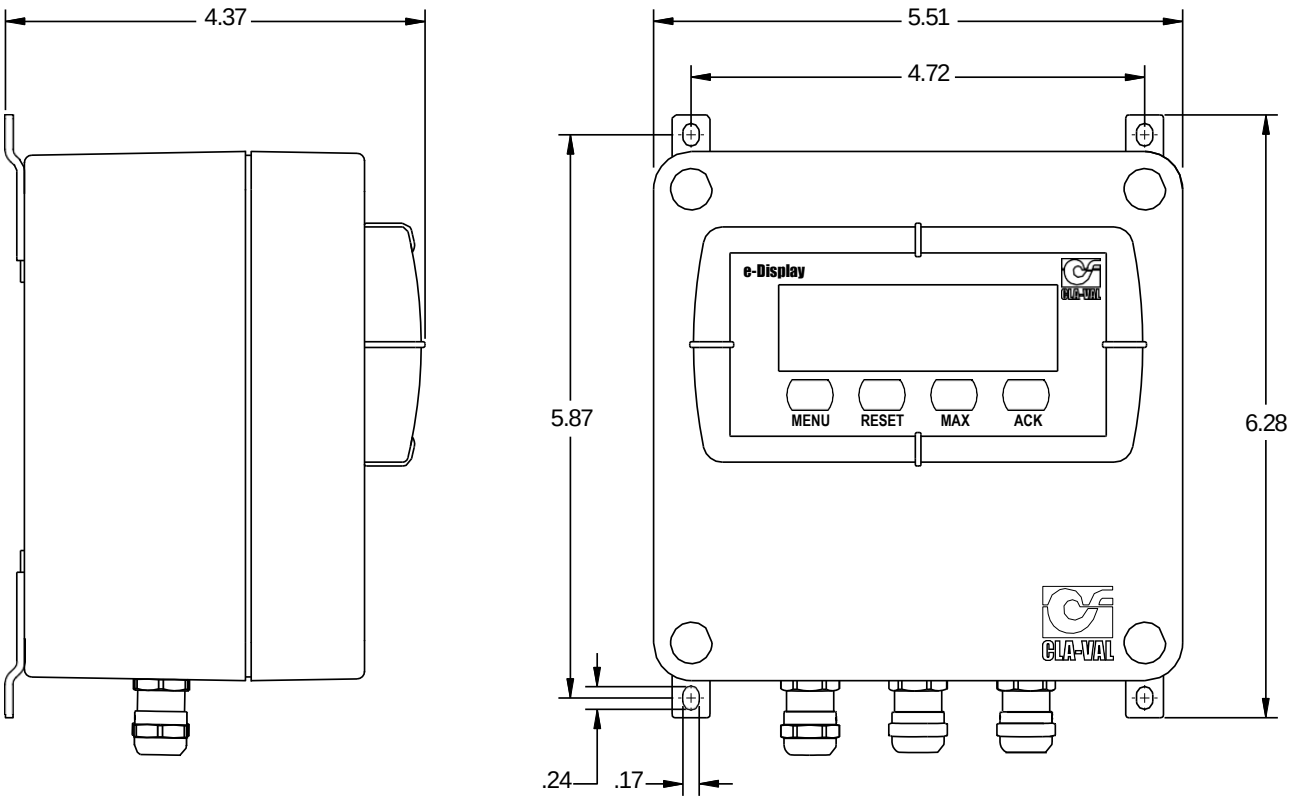
The Cla-Val Model X144 e-FlowMeter™ is a vortex shedding insertion flow meter designed to be retrofitted into a Cla-Val Automatic Control Valve to provide accurate flow measurement data without the need to install a separate meter.

Typical Installation



To learn more about Cla-Val Electronic Products, visit www.cla-val.com

Dimensions



Technical Data

Power Input:	**AC: 110 - 240V 50/60Hz DC: 8 -24VDC**
Display:	**Configurable**
Operating Temp. Range:	**-15° F to +150° F (-25° C to +65° C)**
Protection:	**IP67**
Configuration:	**Factory Configured - Field Adjustable**



E-X145

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Fax: 41-21-643-15-50

www.cla-val.com

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Represented By:

Appendix J

Leak Survey Proposal- UTS, Inc.

UTILITY Technical Services, Inc.

PO Box 3613, Englewood, CO 80155
Phone: 303-773-2808 Fax: 303-799-3436

WATER SYSTEM LEAK SURVEY PROPOSAL
FOR THE
Town of OURAY, COLORADO
For
Wright Water Engineers

Ryan Huggins
Water Resource Consultant
Wright Water Engineers
Durango, CO

Februray 14, 2014

Per our phone conversation this morning, the cost of a water main leak survey for the Town of Ouray, Colorado water system would be $3500-4500 which cover up to 60,000 lineal feet of pipeline. Expenses are not included. Expenses added would be mileage to and from Ouray @ .55 per mile, lodging and meals. The survey would be completed in 3-4 days. Terms are net 30 days. These prices could change if conditions stated were to change.

If awarded, UTILITY TECHNICAL SERVICES, INC. proposes that the survey take place before summer irrigation systems are turned on. This will allow the survey to proceed without usage interference. This leak survey proposal is valid for ninety (90) days after receipt. A certificate of insurance can be provided upon your request.

Please note that this does require accurate mapping/drawings of the portion of the system being survived and the help of one knowledgeable water employee.

We hope that this proposal meets with your approval. Please feel free to call or email with any questions.

Attached is our proposed leak survey equipment and procedure

Dave Anderson

Thank you for your inquiry to **UTILITY TECHNICAL SERVICES, INC**. As a qualified contractor for your water system leak survey, we would like to offer the following for your consideration.

UTILITY TECHNICAL SERVICES, INC. specializes in helping municipal and private water districts locate unaccountable water losses throughout their systems. Established in 1985, this Colorado owned and operated firm has helped hundreds of communities throughout the western region of the United States in solving their water problems with excellent results.

As an active member of the Colorado Rural Water Association, the Wyoming Rural Water Association, the Wyoming Water Quality & Pollution Control Association, and the Rocky Mountain AWWA for the past twenty years, **UTILITY TECHNICAL SERVICES, INC**. understands the current problems facing the water industry.

The two major factors concerning unaccountable water loss are 1) leakage and 2) inaccurate metering. **UTILITY TECHNICAL SERVICES, INC**. addresses these two problems by providing complete water system leak surveys, leak locates, and comprehensive leak reports. UTILITY TECHNICAL SERVICES, INC. also offers a yearly leak detection survey contract. This yearly contract includes a no charge follow-up call on problem areas when our technician is in the area, less any expense charges incurred while there. Please let us know if you would like more information regarding our yearly contract

Proposed Methodology

The leak survey begins at one end of the system (or portion of the system) to be surveyed, and proceeds section by section until that portion is completed. The sensors are placed at intervals determined in part by the pipe size, material, as well as availability of access and pressure. Larger pipe diameters, non-metallic pipe, and low pressures require closer contact points. Generally, the set-up length desired on a water distribution system is one city block. Commercial set-ups vary depending on external noise loads. On metallic pipelines, magnetic sensors are placed on gate valves, fire hydrants, or service line connections.

The key to our method is that all spans of pipeline are scanned for leak noise through the full frequency range and not just at convenient contact points. This is crucial, since we have seen leaks that are not detectable by any other method. If pipeline access is relatively easy, as in main line valves or fire hydrants at each intersection, the survey can proceed quite rapidly. Minimum survey quantity is two miles per day, but with proper preparation, along with knowledgeable assistance, four to five miles are possible. The equipment will also detect multiple leaks on a single set-up. If necessary, leaks can be detected and pinpointed at much greater distances, over 2,000 lineal feet in some cases.

Weather conditions generally do not affect the survey, however, snow cover and frozen valve boxes will hamper the progress of pinpointing leaks.

Leaks can be pinpointed later, after the entire system is surveyed, or at the time of the survey. If pinpointing is carried out during the survey, the utility department can start excavating and making repairs early. Pinpointing later reduces the chances of chasing down consumption noises.

Equipment

The equipment used is the SubSurface LC-2500 leak noise correlator. This includes the correlator (micro-processor) itself, radio transmitters, which amplify and send the noise (vibration) signals to the correlator, accelerometers, which are used for metallic pipe contact. Accelerometers pick up the noise from the pipe wall. The correlator includes multiple noise frequency filters, with a total of 20 ranges that can be combined in a number of arrangements. This allows the technician to scan many overlapping frequency range location, and size estimation. The correlator computes and gives the results on an LCD screen, whereby the operator can make his determining decision.

The Subsurface LD-18 Professional Water Leak Detector is also used. This instrument includes an amplifier with meter display, filter controls, ground microphone and hand switch. The large meter display of sound loudness, allows the user to pinpoint the exact leak location. This instrument is used to verify the correlator results.

Procedure

The leak survey begins at one end of the system (or portion of the system) to be surveyed and proceeds section by section until completed. The sensors are placed at intervals determined in part by the pipe size and material, as well as the availability of access and pressure. Generally, the set-up length desired on a water distribution system is one city block, or approximately 350 feet. Before we arrive, the city should locate and clean valve boxes as needed, as well as provide a detailed map that includes pipe size, type, and location to avoid delays in the survey. We require that the district furnish one knowledgeable person with a vehicle to assist in the survey. This person will:

1. help the technician in placement of sensors on the pipeline;
2. offer helpful information on pipe size, type, or layout, if different than mapping;
3. act on behalf of the district concerning public relations;
4. open or close PRVs, related valves, fire hydrants, or customer service valves;
5. aid in directing traffic, if required, in order to insure the safety of all.

Results

Records of all Set-Ups, measurements, and leak locations are kept in a Daily Report. The Leak Location Form is provided to the district for each leak found. The district provided map is also clearly marked with leak noise locations, which are in turn keyed to the individual leak record sheets. Leak noises are classified from slight to heavy based on the frequency with which they best respond. This information is utilized by the client to set priorities for repairs as well as to estimate the quantity of water loss. An average survey will produce one leak per mile of pipeline with the average leak size at 5 to 6 gpm. Results will vary depending on pipe age, system pressure, bedding materials, and total percentage of unaccounted for water. Using one truck with equipment, a survey will take in four to five miles a day under normal working conditions. Individual leak locates average about thirty minutes each, if there is no interference.

Technician

In the distribution field since 1973, **David Anderson** has a background that puts him in touch with the needs of the water industry. Firstly, Dave was in sales for two of the leading suppliers of waterworks equipment in the Midwest and Western United States, and secondly, he was a manufacturing representative for MUELLER CO. Dave has also contributed papers to the AWWA, which were published in the national handbook “Introduction to Water Distribution Systems”.

He has helped conduct leak detection seminars for the AWWA, Washington State Department of Social and Health Service, Colorado Rural Water, Wyoming Rural Water, South Dakota Rural Water, New Mexico Rural Water and for the National Rural Water Association. Dave has also received factory meter training.

REFERENCES

1.	Town of Castle Rock Mr. John Chrestensen Water Superintendent Phone: 303.814.6408	25 – 50 miles, surveys annually since 1990
2.	Town of Gunnison Mr. Joe Doherty Water Superintendent Phone: 970.641.8330 Email: joe@cityofgunnison.co.gov	surveys annually since 1986
3.	Town of Breckenridge Mr. Gary Roberts Water Superintendent Phone: 970.485.0156 Email: gary@townofbreckenridge.com	approx. 25 miles, surveys annually since 1989
4.	Town of Laramie Mr. Cal VanZee Water Superintendent Phone: 307.721.5206 Fax: 307.742.7174 Email: cvanzee@ci.laramie.wy.us	approx. 25 miles, surveys annually since 1993

Appendix K

City of Ouray Resolution

No. _____

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Wright Water Engineers, Inc.

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1.0 EXECUTIVE SUMMARY

The City of Ouray (City) has completed and adopted this Water Efficiency Plan (Plan) in order to evaluate, prioritize and implement water efficiency activities. The goals of these activities are to provide data to the City on system operations, to reduce system losses, to develop estimates of the avoided costs as a result of increased efficiencies, and to increase public awareness and support for the efficiency activities. The Plan focuses on foundational activities that are proposed to be implemented by the City for the main water supply infrastructure. The City will also consider implementation of education and outreach measures. The City plans to lead by example and implement water savings measures such as fixture retrofits and irrigation efficiencies, as feasible. The implementation of the Plan will help the City to improve water demand forecasts, plan for infrastructure needs, and manage its water demands within its physically and legally available water supply. The goals, screening, evaluation of measures, and implementation plan are shown in Appendices A through F. All of the measures are voluntary and are subject to City Council approval and budget constraints over the planning period. Through this Plan, the City is demonstrating leadership to other small communities in Colorado.

2.0 PROFILE OF EXISTING WATER SYSTEM

2.1 Overview of Existing Water Supply System

2.1.1 Service Area

The City provides treated water to a service area of approximately 615 acres, encompassing the City as well as three subdivisions outside of the city limits: 1) Pinecrest, 2) Whispering Pines, and 3) Panoramic Heights (which includes smaller subdivisions within it). The City also provides raw water to the Mineral Farms Subdivision, which has its own water treatment and distribution system (see Map 1).

2.1.2 Water Supply Sources

The City's primary water source, Weehawken Spring, located in the Canyon Creek drainage (see Map 1). Weehawken Spring and Pipeline are decreed for 7.632 cubic feet per second (cfs) for domestic and fire uses and is associated with a storage water right. Weehawken Spring is also an alternate point of diversion for up to 5.2 cfs of more senior water decreed to Oak Creek Supply Line (see Table 1). Weehawken Spring provides water for both non-potable and potable uses.

Treated Weehawken Spring water is used as the main drinking source throughout the service area. The City has additional surface and storage water rights that can be used to provide water supply as needed and as physically available (see Table 1).

Geothermal water for the Ouray Hot Springs Pool is derived from numerous water rights for springs and wells located in the city. This Plan focuses on the non-geothermal water supply.

2.1.3 Key Existing Facilities

Water from Weehawken Spring is collected by three pipelines that flow into a concrete vault. The concrete vault contains an overflow pipe that discharges excess water to Canyon Creek. From the vault, water is conveyed through approximately 2.5 miles of 10-inch transmission line to two 500,000 gallon storage tanks. Prior to reaching the storage tanks, a portion of the flow from Weehawken Spring is diverted at the Mineral Farms Subdivision, which has its own water treatment and distribution system. There is no meter at the water source or at the transmission line to the Mineral Farms Subdivision. A second pipeline runs from Mineral Farms to the storage tanks in order to provide system redundancy.

The two storage tanks function as one unit. Excess raw water in the tanks exits the older tank through a pipe directly into the Uncompahgre River. At the outlet of the storage tank, prior to treatment, a tee provides water to the Ice Park in the winter. There is also a dedicated line to a micro-hydro plant that generates power when temperatures are above freezing and there is water supply available after the City's potable demands have been met. The potable water is treated using chlorine gas prior to distribution. There are four meters in the chorine shed that monitor: 1) inflow to the tanks, 2) outflow to the City (two meters), and 3) outflow to the Ice Park/micro-hydro station.

There are two pipelines for outflow to the distribution system in order to provide redundancy in the event of a pipe failure. The system now uses both pipelines during normal operations.

The water distribution system in the City consists of approximately 11 miles of pipeline. The main water distribution lines, including the lines from the water supply to the treatment and distribution system are shown on Map 1. The system currently serves approximately 1,400 taps, and has 90 fire hydrants and 12 pressure reducing valves (PRVs). The system has three main pressure zones: 1) the Jim Brown Zone, 2) the Center of Town Zone, and 3) the North Zone. PRVs are used to adjust pressure between the three zones. The PRV locations are shown on Map

1. The Jim Brown Zone serves an elevation range from 7,735 to 7,970, the Center of Town Zone serves an elevation range from 7,680 feet to 7,830 feet, and the North Zone serves an elevation range from 7,590 feet to 7,760 feet (Boyle Engineering Corp., 2003).

After use, water is discharged through the sewer lines to the Wastewater Treatment Plant (WWTP), which has a capacity to treat approximately 363,000 gallons per day (gpd). The WWTP consists of two aerated lagoons with a total surface area of approximately 1.2 acres (see Map 1). The City's WWTP provides service within the city limits, Pinecrest, and Panoramic Heights. The Whispering Pines and Mineral Farms subdivisions utilize septic treatment.

2.2 Water Supply Reliability

The Colorado Water Conservation Board (CWCB) prepared the Statewide Water Supply Initiative (SWSI) in 2004 to identify current and future water needs to the year 2030 and to examine water supply projects that will help to meet future demands. In 2010, the CWCB updated the SWSI to consider future water demands to the year 2050, to identify non-consumptive needs in each major basin, to assess available water supply in Colorado, and to discuss identified projects to further meet future demands.

The 2004 SWSI identifies a water supply gap of 150 acre-feet per year by the year 2030 for the City of Ouray. The report states, "Approximately 25 percent of increased demand may require augmentation based on potential downstream calls" (CWCB, 2004). While the 2010 SWSI report does not specifically address the City, the report does identify a 300 acre-foot per year water supply gap for Ouray County by the year 2050 (CWCB, 2010).

Historically, the City has not experienced issues with physical water supply yield, even during periods of drought. However, the City's water supply has been called out by more senior water rights in very dry years (see Section 2.3). As new meter and data collection systems (i.e., SCADA) are available to the City, future water use records may provide more accurate yield estimates and provide data to promote water efficiency measures.

2.3 Supply-Side Limitations and Future Needs

Non-revenue water can be grouped into two categories; water that is put to use but not billed and water that is lost due to system infrastructure. Lack of meters in the City makes it difficult to estimate the amount of non-revenue water going to dust suppression on City streets, hot springs pool cooling, leaks and system losses, or other uses. Future water demands and potential supply-

side limitations should be revisited when additional data is available. This Plan aims to help the City manage water demands within its legal and physical water supply.

As stated above, the City has not historically experienced issues with water supply yield. However, during extremely dry years (e.g., 2002 and 2012), the City's water supply has been susceptible to administration by the Colorado Division of Water Resources (CDWR). In 2012, the City diverted water under an Emergency Substitute Water Supply Plan. To secure its water supply, the City is working to obtain a water augmentation plan for use when the City's potable and non-potable water rights are curtailed during dry years.

3.0 PROFILE OF WATER DEMANDS AND HISTORICAL DEMAND MANAGEMENT

The City does not meter individual taps and instead relies on Equivalent Residential Units (EQRs) surveys to account for water use. One EQR represents a single family home with an assumed water demand of 350 gallons per day. The City charges a flat rate for water use per. Due to lack of individual metering data, this Plan bases the City's demands on EQRs and does not include estimates of non-revenue water.

3.1 Demographics and Key Characteristics of the Service Area

3.1.1 Customer Categories

Based on an EQR survey of taps performed by the City in 2005, the City provides treated water to the following customer categories: single family homes, multi-family homes, irrigation, lodging, city offices, churches, restaurants, and retail and office space (see Table 2). Single family homes are considered one EQR; the remaining categories are assigned an EQR value based on estimated water use (see Appendix G). The City also provides treated water for dust suppression and cleaning City streets as well as cooling of the hot springs pools, which are not included as EQR categories and thus are considered non-revenue water.

The non-potable water for the micro-hydro plant and Ice Park are measured at the storage tank meters and can be separated from the treated water that enters the distribution system.

3.1.2 Population Statistics

Based on population data from the Colorado Department of Local Affairs (DOLA), the City's 2010 population was approximately 1,000 people. A summary of The City's population from

1990 through 2010 is provided in Table 3. The average annual population increase over the 21 year period is 2.3 percent. In addition to City residents, the City provides treated water to three subdivisions outside city limits, which are not included in the population values. The City is a tourist destination and serves many non-residents, which are reflected in the lodging and restaurant EQRs.

3.2 Historical Water Demands

The City's 2005 EQR survey is the basis for historical demand analysis, as discussed below.

3.2.1 Annual Water Demands

The City charges for water delivery on an EQR basis, as discussed above. Based on a 2011 survey, there are 1,338 EQRs in the City. At a rate of 350 gallons per day per EQR, the total system demands are approximately 171 million gallons per year or 525 acre-feet per year based on 1,338 EQRs.

3.2.2 Approximate Water Use by Customer Category

Table 2 and Figure 1 provide an approximate breakdown of EQRs by sector based on a survey performed by the City in 2005. Single family and multi-family homes represent the highest water demand for the City, at a combined 71 percent of the EQRs.

3.3 Past and Current Demand Management Activities and Impact to Demands

During the 2012 drought period, the City issued a resolution requesting citizens to curtail using water for irrigation uses (see Appendix H). Other existing demand management activities include increases to water rates, a Capital Improvement Plan (Boyle Engineering Corp., 2003) and bill stuffers (See Appendices A through D). Due to the lack of data, it is not feasible to quantify the effects on water demands that these activities have had to date.

3.4 Demand Forecasts

The City is working on an augmentation plan that addresses long term development based on current EQRs and the 2.3 percent growth rate for 50 years. Outdoor irrigation demands were also estimated for the long-term forecast. Based on these assumptions, the City's total water demand in 2063 is estimated to be 1,825 acre-feet per year (see Table 4). The City may have additional

demands due to hot-springs cooling, dust suppression or other uses that are not currently accounted for.

4.0 INTEGRATED PLANNING AND WATER EFFICIENCY BENEFITS AND GOALS

4.1 Water Efficiency and Water Supply Planning

In order to remain compliant with debt covenants, the number of major capital improvements that can be financed in the City budget are limited. This restriction is currently applicable due to significant capital improvements completed in recent years. Current water projects being managed by the City include firming the legal water supply through water rights work, installation of a micro-hydro system on the water mains, and installation of a meter and backflow prevention for the Panoramic Heights subdivision. By completing the proposed foundational water activities, such as a Capital Improvement Plan update, future operations, maintenance, repairs and improvements can occur on budget and within a reasonable time frame.

Incorporation of water efficiency into water supply planning can have beneficial financial outcomes for the City as a water supplier, including elimination, downsizing, or postponement of water supply system projects. Currently, the costs for implementing the Plan and the cost savings associated with the efficiencies cannot be accurately estimated due to lack of metering data.

4.2 Water Efficiency Benefits

In addition to water supply benefits, a Water Efficiency Plan may also have positive economic, societal, and environmental impacts for the City. For example, the City's hot spring pools are powered by a micro-hydro plant using non-treated water from Weehawken Spring. By increasing efficiency and lowering demands for municipal system uses, more water will be available to deliver to the micro-hydro system, creating income and renewable energy. Better documentation of water use, decreased water demands, and improved forecasted water demands will result in the following benefits for the City:

- Decreased volume of treated water and associated treatment chemicals.

- Decreased operational costs related to reducing the volume of treated and delivered water. This may include replacement costs, requirements to increase or expand treatment or delivery capacity, or power costs.
- Efficiency measures will help to keep water demands within the City's current water rights and physical water supply availability.
- Potentially increased volume of non-treated water available for hydro-power use.
- Potentially increased instream flow in the Uncompahgre River.

This Plan and the associated measures demonstrate the City's effort to manage its water resources responsibly.

4.3 Water Efficiency Goals

The City's Water Efficiency Plan will be an iterative process beginning with building data and management tools and meeting foundational goals before setting more ambitious and specific water efficiency goals (see Section 7.3 Review and Update). Lack of accurate water use data makes it difficult to set quantitative goals based on water savings. The qualitative goals for the City of Ouray Water Efficiency Plan are as follows:

1. *Better Water Use Data Collection and Monitoring.* Develop a plan to improve monitoring of the main components of system infrastructure in order to document water uses and non-revenue water (including both non-revenue water that is used and non-revenue water due to system losses). This plan will focus on adding meters to the system infrastructure in locations that will allow for tracking overall water delivery and identify data discrepancies that may be due to leaks or non-revenue uses. This does not include individual meters for end-users. This goal will be measured by the City's improved ability to track the water use through the main infrastructure points of the system and the use of this data towards reaching the remaining goals.
2. *Asses Costs for System Operations.* The City will be able to estimate the incremental cost for treating and delivering water based on the system meters (see Goal 1), system operational costs, capacity data and water rights considerations. This will primarily be accomplished through an update to the Capital Improvement Plan. This will allow the City to quantify the cost-savings of efficiency measures on a broad scale, which is an important factor in

planning for City infrastructure growth and maintenance. The success of this measure will be determined by installing system meters, data collection and analysis, and an update to the Capital Improvement Plan.

3. *Decrease System Losses.* Implement measures to help to detect and track system losses enabling the City to ultimately decrease losses. This goal may be achieved through multiple activities including identifying non-metered sources, leak detection, winterization and/or other efficiency measures. This goal should be completed subsequent to adding meters to the main system and analyzing data in order to identify the most likely loss locations within the system. The lack of current data on amount of system losses prohibits quantifying this goal at this time.

4. *Public Awareness and Acceptance.* Through education, outreach, and leading by example, the City will create awareness amongst the public of the importance of water conservation and support for water efficiency activities. Studies indicate that educational measures can reduce individual water use by up to 5 percent (Barta, 2004). Indications for the success of this goal include public support for funding and implementation of the proposed efficiency activities through the Public Works Budget, as well as implementation and voluntary conservation measures.

The first water efficiency goal for the City focuses on accurate data collection of system operations and losses. The information from the first goal will contribute to achieving goals nos. 2, 3 and 4. All four water efficiency goals are used to screen and evaluate the potential water efficiency measures, as discussed below.

5.0 SELECTION OF WATER EFFICIENCY ACTIVITIES

An extensive list of water efficiency activities is required to be evaluated for implementation as part of the Plan per C.R.S. 37-60-126 (1-4 and 5) and the Guidebook of Best Practices for Municipal Water Conservation in Colorado (Aquacraft Inc., 2010). The City is smaller than the minimum municipality size required to comply with this State statute. Nonetheless, the City has considered all of the measures that are practical and appropriate. The lists and evaluation results are included in Appendices A through E2.

5.1 Summary of Selection Process

Water efficiency activities were screened using the following initial qualitative criteria:

- Contributes to the City's qualitative goals, as described in Section 4.3 of this Plan
- Additional Pros and Cons:
  - Appropriateness of measure given the City's infrastructure and lack of individual meters.
  - Feasibility based on financial and staff resources.
- Prioritization of foundational activities.

City staff provided review and input on the candidate measures as well as a sense of the political and public views in the City that are relevant to water conservation. Overall, the City desires to lead by example and to encourage voluntary conservation over enforcement measures or creating efficiency programs required to be administered by the City.

After screening all of the potential activities, 11 measures were moved forward for detailed evaluation. The detailed evaluation includes a qualitative and quantitative analysis, to the extent feasible, of each measure (see Appendices E1 and E2). A ten year planning period was assumed as a practical means of evaluation. Cost estimates were based on materials, contracts, and/or staff time requirements. The total estimated cost for all measures is $2.6 million. Of this total, $2.4 million is solely for water line replacement. Water savings were estimated on the basis of a percentage of savings over current water deliveries. The total estimated water savings for all proposed measures, over the ten year period, is 208.3 million gallons.

The cost-benefit of each proposed measure was estimated as a dollar per thousand gallons saved basis. Cost ranged from $0.0006 to $18.15 per thousand gallons saved. Education measures had the lowest cost while infrastructure upgrades had the highest costs (see Appendix E2). In addition to the cost-benefit information in Appendix E2, factors in the priorities for implementation of measures include benefits to overall system operations and management and providing information for understanding current water uses and future demands.

City staff reviewed the 11 measures for feasibility, for overall consistency, and for appropriateness for the City of Ouray. The measures are complimentary and should be undertaken in the order recommended in Section 6 to help the City meet its water efficiency goals. The implementation of measures is voluntary and will continue to be subject to Council approval and budget constraints.

5.2 Demand Management Activities

The recommended Demand Management activities, which are based on screening and evaluation, primarily focus on proposed foundational activities to better estimate the City's water use and delivery. The City also evaluated educational opportunities that may be feasible at this time. The City discussed ordinances and technical incentives as a whole, but these measures were not considered appropriate for the City to implement at this time.

5.2.1 Foundational Activities

The total estimated water savings for the proposed foundational activities over the ten-year planning period is approximately 185 million gallons. The foundational activities were screened and the following were selected for further evaluation (see Appendix A). The evaluation of measures provides information on the potential cost and savings associated with the proposed activity. City Council approval and meeting budgetary constraints are necessary to implement measures (see Section 6).

Water Rate Adjustments

The City's existing budget process incorporates a 2 percent increase to water rates on an annual basis, pending annual review by the Public Works Department and final approval by City Council. The intention of this rate increase is to allow the Public Works Department to keep up with system costs while maintaining a balanced utilities budget and avoid larger annual increases to customer rates. The rate increase also allows the Public Works Department to build a fund balance that can be used to finance capital improvement projects. This rate adjustment will be incorporated into the analysis in the Capital Improvement Plan when estimating the revenue available to the Public Works Department. A change in rate structure based on use by individual taps is not supported by the public at this time and is not recommended as individual taps are not metered.

Control of Apparent Losses (with Metering on System Infrastructure)

This measure proposes that the City will install meters at additional points in the water delivery system in order to better track water usage. Preliminary design suggests that meters may be installed at the nine PRVs in the system (see Map 1). In future management, the meter data will help to identify system leaks and to target the location needing repairs. The meter data will help

to track the total system deliveries as well as use within specific portions of the water supply system. This information will help to implement the subsequent water conservation measures. The water savings from this proposed measure are realized in the System Water Audit. The estimated cost for installation of nine system meters is $140,500 (see Appendix I for details).

System Water Audit (for Primary System Infrastructure)

Using existing and new meter data, the City proposes to compare the actual usage to the calculated demands for the water supply system. Areas of the system with a discrepancy will be targeted for further investigation into leaks, losses, un-metered use or other causes for discrepancy between the calculated and actual water use. System audits are recommended in order to see the gains in system efficiency estimated through installation of system meters (see above).

Leak Detection Study

This measure proposes that the City hire a contractor to perform a leak detection survey on the 11 miles of ductile iron pipe in its main distribution system. If funds allow, the older portion of the transmission line from the water source to the system may be inspected as well. The results of this investigation will be integrated into the Capital Improvement Plan and addressed as soon as feasible. The estimated cost of the leak detection study is $18,500 (see Appendix J for details).

Water Line Replacement Program

To provide for more of the ongoing maintenance and replacement needs, an annual budget item to contract for the replacement of water lines is proposed to be included in the Public Works budget. This measure proposes that 2,500 feet of pipe is replaced each year. This program will also be integrated into the Capital Improvement Plan. This measure is the most expensive, at a total of $2.4 million over ten years. However, given the age of existing lines, replacement is necessary to maintain the system over time. Adjustments to the extent of replacement and frequency of replacement may be made, as needed, to meet City budgets and approvals.

Capital Improvement Plan (existing – to be updated)

The City completed a Water Infrastructure Master Plan in 2003 (Boyle Engineering Corp., 2003). This measures proposes that the City will update the document to incorporate work completed since 2003, newly identified infrastructure needs, current and forecasted Public

Works Department budgets, and the annual water line replacement program. Once updated, City staff will oversee the budgeting and implementation of the Plan throughout the planning period. The estimated cost for updates to the Capital Improvement Plan is $18,750. By expending funds for this measure first, the Capital Improvement Plan can inform the budget process in future years to address all other proposed measures.

5.2.2 Targeted Technical Assistance and Incentives

City staff reviewed information on several of the incentive and technical assistance measures (see Appendix B). No measures were selected for detailed evaluation or implementation at this time. The activities considered under incentive measures may be implemented by the City on its own properties to provide a leading example and offer demonstration sites (see Section 5.2.4). Reasons for elimination of technical assistance measures include:

- There is very limited irrigated area in the city and automation of irrigation is not common and may not be cost-effective.
- Establishing, advertising, and managing a rebate program for installation of water efficient fixtures would require significant City staff resources. Given the small population size of the City, these types of program are not practical and would not likely have a sufficient water savings benefit for the cost.
- Some measures or associated cost savings to individuals are not feasible without individual tap meters. At this time, the City is not proposing to install individual tap meters.

5.2.3 Ordinances and Regulations

The City is focused on water conservation through foundational activities and through encouragement and education of water users. It is noted that the City Code, §9-11 states that “it shall be unlawful to waste water”. This section of code also includes irrigation restriction measures the City vote to implement in case of drought. This section appears to support the City’s authority to promote efficiency and eliminate water waste. No new ordinances or regulations were considered at this time (see Appendix C).

5.2.4 Education Activities

The total estimated water savings for the proposed educational measures over the ten-year planning period is approximately 23 million gallons. The screening of educational activities is shown on Appendix D and selected voluntary measures are summarized below.

Bill Stuffers

The City sends billing to customers once per year, and proposes to continue to provide water conservation information with the mailings. City staff will prepare information sheets for inclusion in the mailings. The estimated cost for Bill Stuffers on an annual basis over 10 years is $6,500.

Newspaper Articles

The City has an established relationship with the local newspaper. City staff may work with the paper to provide educational information on water conservation and City water issues to the public. This measure proposes that the newspaper will print one article per quarter on water conservation subjects. The estimated cost over the planning period is $5,600.

Web Pages and Social Media

This measure proposes that City staff provide quarterly updates to the City's website on conservation and voluntary measures. Additionally, City staff will address water conservation education and City water issues on its existing social media accounts. The estimated cost for all social media management for water education is $9,800 over ten years.

City Demonstration Activities and Public Presentations

The City may implement various measures in order to conserve water and provide educational opportunities. These voluntary measures may include rain-sensor controlled irrigation in City parks, low-flow fixtures that meet EPA WasterSense specifications, or low water demand landscaping, such as xeriscaping. These efforts will be integrated with ongoing City maintenance, repairs and development of new projects. The successful water efficiency measures implemented by the City may provide a basis for developing guidelines or policies in the future,

City staff proposes to make a presentation during two City Council meetings per year on water efficiency progress and City water issues. It is anticipated that at least one of these meetings will

update the Council on water use data from new meters and analyses on the non-revenue water in the system. These meetings are open to the public and are attended by decision-makers for the implementation of water efficiency measures. Based on a materials and staff time, the cost for this measure is approximately $7,100 over ten years.

Customer Water Use and Landscape Design and Maintenance Workshops

This measure proposes that the City will host water-use and landscape design workshops approximately once every three years. The workshops will combine indoor water efficiency with water efficient landscape design and maintenance information in order to reach a broader audience. These events may be in combination with other city-wide outreach activities, such as Spring Cleanup. Regional watershed groups, private business and volunteers may be able to provide assistance in the workshops. The estimated cost for this measure is $3,700 over ten years.

6.0 IMPLEMENTATION AND MONITORING PLAN

6.1 Implementation Plan

The plan for implementation of the proposed water efficiency activities identifies key steps for implementation (i.e., milestones) and the parties responsible for implementation (see Appendix F). The implementation plan proposes that all measures be implemented for the water efficiency benefits, as well as the overall benefits to system operations and management of the City's water resources. The preliminary estimated costs for each activity are shown in Appendix F and total $2.6 million dollars over ten years (of which, $2.4 million is for water line replacement). Implementation and monitoring of data is proposed to be primarily the responsibility of the Public Works staff. The Community Development Coordinator may lead education and outreach measures. The City Administrator is responsible for developing the annual budget, which is ultimately approved by City Council. It is noted that implementation of proposed measures will continue to be subject to budget constraints and Council approval.

The proposed Capital Improvement Plan is recommended for completion early in the planning period in order to refine cost information and integrate the costs of the proposed measures into the City's budget. Installation of meters and a leak detection survey should also be completed as soon as feasible. The implementation plan may be modified based on updates to the Capital Improvement Plan. It is assumed that all funding will come from the City budget (which

includes the Public Works budget and water system revenues). The City may pursue grant funding and/or financing to help to implement these activities.

The system meter data and Capital Improvement Plan will also help to identify the savings from avoided costs associated with efficiency activities. Compiling this information is important to build public support as well as for future budgeting (see Goal No. 2). At this time, the City does not charge by volume and, therefore, no losses to revenues are expected due to water efficiency activities.

Within the planning period, the City may be able to make significant reductions in non-revenue waters that occur due to system losses and leaks. If system meter data also indicate that there are significant non-revenue losses due to excessive use by consumers, this may be indicative of wasting water or, more likely, losses on the consumer's end. If these losses are indicated by system meter data, the City will consider addressing individual efficiencies in Plan updates. Installation of individual meters will be considered as a first step for reducing individual water losses so that other consumer efficiency measures are cost-effective.

6.2 Monitoring Plan

The monitoring plan is integrated with the implementation plan in Appendix F. Only measures metered by the current and proposed system infrastructure meters are proposed for a data-based monitoring program. In future updates of this Plan, when baseline meter data is available for the system, additional monitoring may be recommended. The monitoring plan calls for collecting data at least bi-annually from meters and inputting the information into a database that tracks system water use. The goal of this is to identify discrepancies that may indicate leaks, losses or other issues. One of the education measures includes bi-annual presentations to City Council, which will assist decision makers with staying up-to-date on the implementation of this Plan and new water management issues. One of these presentations per year should include a discussion and analysis based on the system-wide meter data.

7.0 PUBLIC REVIEW AND FORMAL APPROVAL

The process of review and approval of this Plan is summarized in this section. No new policies were proposed for implementation, and therefore, no policy adoption process was required.

7.1 Public Review Process

City staff aimed to develop a Plan that is appropriate for the City of Ouray and its citizens. The City Council conducted a preliminary review of the Plan at its April 21, 2014 meeting. The City made the draft Plan available for public review on June 2, 2014, which opened the public comment period. The draft Plan was announced at a City Council meeting and copies of it were available on the City's website and at the City's front desk. The Community Development Coordinator accepted public comments in writing and via email. The comments received from the public are summarized as follows:

- *[summary of public comments]*

After 60 days, the public review period closed. The issues raised by the public were addressed by

- *(Incorporate, revise, not addressed because, etc.).*

7.2 Local Adoption and State Approval Processes

The final version of the Plan integrated preliminary comments from City Council as well as public comments. The City Council adopted the Plan at their August 4, 2014 meeting in Resolution No. -2014 (see Appendix K).

7.3 Periodic Review and Update

An annual update to the City Council on the monitoring data and water conservation issues is identified as an education measure for implementation. This measure will help to keep the Plan relevant and raise awareness of water efficiency issues. A review and update of the Plan is proposed for five to seven years from adoption. The update will address levels of implementation and changes to the City's water demands as well as other new issues.

The Plan review should include an evaluation of the baseline data collected from the system-wide meters and the system-wide audit. This information may help to refine previous estimates for activities and/or identify new water efficiency activities.

The adoption and implementation of the Plan is an important step in raising public awareness and establishing water resource management as part of City policy. This foundation will help to

implement updates to the Plan, potentially including additional measures and monitoring as the City grows and water efficiency technologies advance.

8.0 CONCLUSION

The City of Ouray has completed and adopted this voluntary Water Efficiency Plan in order to meet its goals of improved data and understanding of system operations, reduction of losses, improved ability to estimate costs savings associated with water efficiencies, and promotion of public awareness of water conservation. The Plan focuses on proposed measures that are appropriate for the size of the City and within its budget and staff resources. The Plan will be updated periodically in order to revise measures based on funding, new data and the City's future needs.

9.0 REFERENCES

Aquacraft Inc. (2010). *Guidebook of Best Practices for Municipal Water Conservation in Colorado.* Colorado WaterWise.

Barta, R. (2004). *Stretching Urban Water Supplies in Colorado.* Colorado Water Resource Research Institute.

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CWCB. (2004). *Statewide Water Supply Initiative (SWSI).*

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Tables

Table 1
City of Ouray Water Efficiency Plan
Water Rights Inventory - Potable Water

Water Right Name	Adjudication Date	Appropriation Date	Administration Number	Case Number	Use	Decreed Diversion Rate (CFS)	Decreed Storage Volume (AF)	Comments
Weehawken Spring	12/6/1904	7/1/1889	19551.14427	CA1254	Fire, Domestic, Storage	3.816	--	Sole source of supply for City's potable water
Weehawken Creek	12/6/1904	4/15/1895	19551.16541	CA1254	Fire, Domestic, Storage	3.816	--	Reserved for future use
New Reservoir (South Reservoir)	12/6/1904	7/1/1889	19551.14427	CA1254	Fire, Domestic, Storage	--	2.25	In use, spills to Uncompahgre River
Oak Creek	12/6/1904	10/1/1881	19551.11597	CA1254	Fire, Domestic, Storage	5.2	--	Reserved for future use
Oak Creek Reservoir (North Reservoir)	12/6/1904	10/1/1881	19551.11597	CA1254	Fire, Domestic, Storage	--	0.79	Reserved for future use
Oak Creek Alt Point Weehawken Spring and Creek	12/6/1904	10/1/1881	19551.11597	W-1208	Fire, Domestic, Storage	--	--	Alternate Point of Diversion for 5.2 cfs; limited to the flow in Oak Creek
Total	**--**	**--**	**--**	**--**	**--**	**12.832**	**3.04**	**--**

Table 2
City of Ouray Water Efficiency Plan
Total EQRs by Customer Category

Category	Percentage of Total Water Demand based on 2005 Survey
Single Family Homes	40%
Multi-Family Homes	31%
Irrigation	14%
Lodging	5%
City Offices	4%
Churches	3%
Restaurants	2%
Retail and Office Space	2%

Notes:

Based on 2005 EQR Survey.

Table 3
City of Ouray Water Efficiency Plan
City of Ouray Historical Population

Year	(1) Population	(2) Annual Percent Increase or Decrease
1990	644	--
1991	659	2.3%
1992	684	3.8%
1993	694	1.5%
1994	742	6.9%
1995	779	5.0%
1996	806	3.5%
1997	780	-3.2%
1998	782	0.3%
1999	799	2.2%
2000	820	2.6%
2001	832	1.5%
2002	849	2.0%
2003	860	1.3%
2004	883	2.7%
2005	890	0.8%
2006	898	0.9%
2007	939	4.6%
2008	972	3.5%
2009	978	0.6%
2010	1,001	2.4%
Average		**2.3%**

Notes:

1) Based on data from the Colorado Department of Local Affairs. DOLA website www.dola.colorado.gov accessed on November 6, 2013.

2) (Current year's population / previous year's population) - 1, as a percentage.

Table 4
City of Ouray Water Efficiency Plan
Long-Term Water Demand Estimate

Month	Demands	
	Acre-Feet	cfs
January	145	2.4
February	132	2.4
March	145	2.4
April	142	2.4
May	163	2.9
June	167	3.4
July	172	3.4
August	166	3.2
September	155	3.0
October	151	2.5
November	141	2.4
December	145	2.4
Annual	**1,825**	
Max cfs		**3.4**

Notes:

Demands are based on estimated full build-out of 4,365 EQRs using 350 gpd/EQR, calculated by applying historical growth rate of 2.3% to 2011 EQR count for a 50 year projection. Additional estimated demands for irrigation were also included in the demands.

Map

N

1 inch = 2,000 feet

0 2,000 Feet

Legend

- Water System Features
- Valve - zone separation

Meters

- Existing
- Proposed (at location of existing PRVs)

Pipelines

- Weehawken Pipeline - Approximate
- Water Lines

Boundaries

- Waste Water Treatment Plant Ponds
- Subdivisions Included In Service Area
- Ouray City Limits

Panoramic Heights

Whispering Pines

WASTEWATER TREATMENT PLANT

MICRO HYDRO POWER PLANT

Pinecrest

WATER TANKS

Mineral Farms

MINERAL FARMS PUMP STATION

WEEHAWKEN SPRING COLLECTION BOX

Note: Water line locations derived from a scanned map provided by the City of Ouray.

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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WRIGHT WATER ENGINEERS, INC.
1666 N MAIN AVE STE C
DURANGO, CO. 81301
(970) 259-7411

City of Ouray

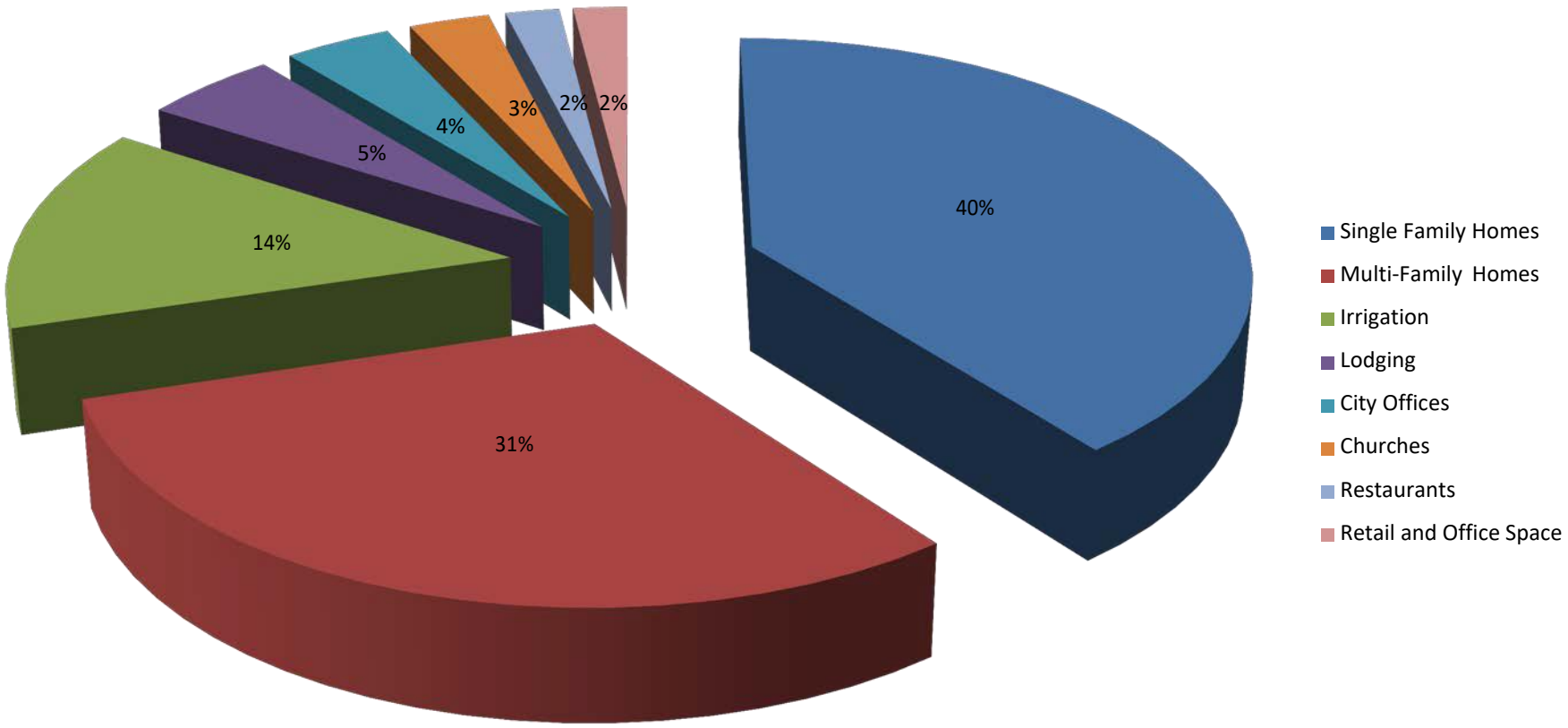
Water System Overview

Project No.
051-036.100

DRAFT
MAP
1

Figure

Figure 1
City of Ouray Water Efficiency Plan
Total EQRs by Customer Category



Appendices

Appendix A

Identification and Screening of Foundational Activities

Appendix A
City of Ouray Water Efficiency Plan
Identification and Screening of Foundational Activities

Water Efficiency Activities for Screening	State Statute Requirement	Identification		Qualitative Screening					Carry to Evaluation	Reason for Elimination
		Existing/ Potential Activity	Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
Water Use Efficiency Oriented Rates and Tap Fees										
Volumetric Billing	VII, VII	Potential	System-Wide	X	X				Not at This Time	Not feasible until all accounts are metered
Water Rate Adjustments		Existing	System-Wide		X				Yes	Is currently done on an annual basis during the City's budget process
Frequency of Billing		Potential	System-Wide	X	X				Not at This Time	Is currently done on an annual basis during the City's budget process
Inclining/Tiered Rates		Potential	System-Wide		X				Not at This Time	Is currently done on an annual basis during the City's budget process
Water Budgets		Potential	System-Wide		X				Not at This Time	Is currently done on an annual basis during the City's budget process
Tap Fees with Water Use Efficiency Incentives		Potential	System-Wide		X				Not at This Time	Not feasible until all accounts are metered
System Water Loss Management and Control										
System Water Audit	N/A	Potential	System-Wide	X	X	X		In coordination with installing new meters, will improve overall data. May reduce amount of leak detection required or increase amount of billing for water	Yes	
Control of Apparent Losses (with Metering on system Infrastructure)		Potential	System-Wide	X	X	X		To be incorporated with locations of new system meters	Yes	
Leak Detection and Repair		Potential	System-Wide	X	X	X		Reducing leaks will more accurately determine how much water is being used and appropriate billing; cost and ongoing requirement for detection may limit feasibility; updating City's GIS resources for water supply system is integral to managing data and analysis and tracking work completed.	Yes	
Water Line Replacement Program		Existing	System-Wide			X		A review of the budget process for line replacement may result in changes to the annual allocation to better match system needs.	Yes	
Planning										
Integrated Water Resources Plans	N/A	Potential	System-Wide		X			City is already working on water resources planning in other areas	Not at This Time	The City's water rights and water supply work are ongoing and an additional resource plan is not needed at this time.
Master Plans/Water Supply Plans		Potential	System-Wide	X			X	Master Plan components are included in the CIP and the City's water rights activities	Not at This Time	Master Plan concepts to be included in updated CIP
Capital Improvement Plans		Existing	System-Wide	X	X	X		Existing Master Plan/CIP should be updated to reflect work completed since plan was issued in 2003 and to include major projects	Yes	
Feasibility Studies		Potential	System-Wide	X	X			Cost not effective at this time due to lack of overall data	Not at This Time	More valuable once more meter data is available
Staff										
Water Conservation Coordinator	N/A	Potential	System-Wide	X			X	Not enough infrastructure or data to implement level of conservation requiring coordinator at this time	Not at This Time	More valuable once additional measures are in place

Note: measures for further evaluation highlighted in blue.

Appendix B

Identification and Screening of Targeted Technical Assistance Activities

Appendix B
City of Ouray Water Efficiency Plan
Identification and Screening of Targeted Technical Assistance Incentives

Water Efficiency Activities for Screening	State Statute Requirement	Identification					Qualitative Screening					Carry to Evaluation	Reason for Elimination
		Existing or Potential Activity	SWSI Framework Levels: Level 1 Municipal Uses	SWSI Framework Levels: Level 2 Customers with the Largest Water Use	SWSI Framework Levels: Level 3 Customer Type(s) in Service Area	Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
Installation of Water Efficient Fixtures and Appliances													
Indoor Audits	I	Potential	X	X	X		X	X	X	X		Not at This Time	Lack of incentives at this time due to lack of metering
Toilet Retrofits		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Urinal Retrofits		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Showerhead Retrofits		Potential		X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Faucet Retrofits (e.g. aerator installation)		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Water Efficient Washing Machines		Potential		X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Water Efficient Dishwashers		Potential		X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Efficient Swamp Cooler and Air Conditioning Use		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Low Water Use Landscapes													
Drought Resistant Vegetation	II	Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Removal of Phreatophytes		Potential										No	Phreatophytes are not extensive and existing wetlands are beneficially environmentally
Irrigation Efficiency Evaluations/Outdoor Water Audits		Potential	X	X			X	X	X	X		Not at This Time	Lack of incentives at this time due to lack of metering
Outdoor Irrigation Controllers		Potential	X	X			X					Not at This Time	Lack of incentives at this time due to lack of metering
Irrigation Scheduling/Timing		Potential	X	X								Not at This Time	Lack of incentives at this time due to lack of metering
Rain Sensors		Potential	X	X			X					Not at This Time	Lack of incentives at this time due to lack of metering
Residential Outdoor Meter Installations		Potential			X							Not at This Time	Meter program not advanced at this time
Xeriscaping		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Other Low Water Use Landscapes		Potential	X	X	X					X		Not at This Time	Lack of incentives at this time due to lack of metering
Irrigation Equipment Retrofits		Potential	X	X			X		X			Not at This Time	Lack of incentives at this time due to lack of metering
Water Efficient Industrial and Commercial Water-Using Processes													
Specialized Nonresidential Surveys, Audits, and Equipment Efficiency Improvements	III	Potential	X	X			X	X	X			Not at This Time	Lack of incentives at this time due to lack of metering. Additional education and outreach before targeting individual users.
Commercial Indoor Fixture and Appliance Rebates/Retrofits		Potential		X						X		Not at This Time	Lack of incentives at this time due to lack of metering
Cooling Equipment Efficiency		Potential		X								No	Unlikely to be significant water savings given cold climate
Restaurant Equipment		Potential		X								Not at This Time	Lack of incentives at this time due to lack of metering
Incentives													
Toilet Rebates	X	Potential		X	X				X		Minor decrease in system losses compared to larger infrastructure loss detection; better addressed through education/awareness and state or federal rebates	Not at This Time	Cost of rebates not City's priority for water conservation funds
Urinal Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Showerhead Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Water Efficient Faucet or Aerator Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Water Efficient Washing Machine Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Water Efficient Dishwasher Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Efficient Irrigation Equipment Rebates		Potential		X	X				X			Not at This Time	Cost of rebates not City's priority for water conservation funds
Landscape Water Budgets Information and Customer Feedback		Potential		X	X				X	X	Relatively low cost if audits focused on largest irrigated areas; improvements can be educational opportunity, help compare calculated water demands with usage data	Not at This Time	Engage water users in workshop activities (see Appendix D)
Turf Replacement Programs/Xeriscaping Incentives		Potential		X	X					X	Limited amount of grass in City. Building code for new development has some landscape requirements	Not at This Time	Cost greater than benefits
Give-Aways		Potential		X	X				X		Requires sourcing and City to fund	Not at This Time	Cost of give-aways not City's priority for water conservation funds

Appendix C

Identification and Screening of Ordinances and Regulations Activities

Appendix C
City of Ouray Water Efficiency Plan
Identification and Screening of Ordinances and Regulations

Water Efficiency Activities for Screening	State Statute Requirement	Identification					Qualitative Screening					Carry to Evaluation	Reason for Elimination
		Existing or Potential Activity	SWSI Framework Levels: Level 1 Customer Type(s) within the Existing Service Area	SWSI Framework Levels: Level 2 New Development	SWSI Framework Levels: Level 3 Point of Sales on Existing Building Stock	Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
General Water Use Regulations													
Waste Water Ordinance	IX	Existing	X	X	X			X		X		Not at This Time	Existing code adequate at this time (see Section 9-11)
Time of Day Watering Restriction		Existing	X							X		Not at This Time	Existing code adequate at this time (see Section 9-11)
Day of Week Watering Restriction		Existing	X							X		Not at This Time	Existing code adequate at this time (see Section 9-11)
Water Overspray Limitations		Potential									Partially covered under existing code	Not at This Time	Existing code adequate at this time (see Section 9-11)
Landscape Design/Installation Rules and Regulations													
Rules and Regulations for Landscape Design/Installation	IX	Potential	X	X						X	May reduce demands without requiring meters to be installed	Not at This Time	Current building code encourages xeriscaping and drip irrigation (see Section 7.4.D.h).
Landscaper Training and Certification		Potential		X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Soil Amendment Requirements		Potential		X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Turf Restrictions		Potential	X	X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Irrigation Equipment Requirements		Potential	X	X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Outdoor Water Audits/Irrigation Efficiency Regulations		Potential	X	X	X		X	X	X	X	Limited availability of city to work with audits therefore not appropriate to mandate at this time	Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Outdoor Green Building Construction		Potential	X	X								Not at This Time	Limited amount of outdoor irrigated area exists in City; not high priority
Indoor and Commercial Regulations													
High Efficiency Fixture and Appliance Replacement	IX	Potential	X	X							High cost to local businesses	Not at This Time	Cost to businesses not supported by data on benefits due to lack of audits/meters
Commercial Cooling and Process Water Requirements		Potential	X	X							High cost to local businesses, not enough data on benefits	Not at This Time	Limited amount of cooling due to climate, lack of data at this time
Green Building Construction		Potential	X	X								Not at This Time	Inadequate data to analyze costs/benefits and support a requirement
Indoor Plumbing Requirements		Potential	X	X					X			Not at This Time	Inadequate data to analyze costs/benefits and support a requirement
City Facility Requirements		Potential	X						X	X	City may incorporate on a voluntary basis when undertaking new projects	Not at This Time	Inadequate data to analyze costs/benefits and support a requirement. May be done voluntarily
Required Indoor Residential Audits		Potential	X	X				X	X		See Appendix B	Not at This Time	Inadequate data to analyze costs/benefits and support a requirement. May be done voluntarily
Required Indoor Commercial Audits		Potential	X	X				X	X		See Appendix B	Not at This Time	Inadequate data to analyze costs/benefits and support a requirement. May be done voluntarily
Commercial Water Wise Use Regulations (Car Washes, Restaurants, etc.)		Potential	X	X						X		Not at This Time	Cost to businesses not supported by data on benefits due to lack of audits/meters

Appendix D

Identification and Screening of Education Activities

Appendix D
City of Ouray Water Efficiency Plan
Identification and Screening of Education Activities

Water Efficiency Activities for Screening	Identification					Qualitative Screening					Carry to Evaluation	Reason for Elimination
	Existing/Potential Activity	SWSI Framework Levels			Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
		Level 1 One-Way	Level 2 One-Way with Feedback	Level 3 Two-Way Communication								
Customer Education												
Bill Stuffers	Existing	X							X	Cost of developing, printing, inserting in bills	Yes	
Newsletter	Potential	X							X	Cost of developing, printing	Not at This Time	Can be accomplished through other less costly measures
Newspaper Articles	Potential	X							X	Low cost; misinformation or misunderstandings possible	Yes	
Mass Mailings	Potential	X							X	Cost of developing, printing	Not at This Time	Can be accomplished through other less costly measures
Web Pages	Existing	X							X	Combine with Existing City website	Yes	
Water Fairs	Potential		X						X		Not at This Time	Given the limited population and limited resources of City staff, water fairs are not practical for the City at this time
K-12 Teacher and Classroom Education Programs	Potential		X						X		Not at This Time	Given the limited resources of City staff and schools, classroom activities are not practical for the City at this time
Message Development/Campaign	Potential		X						X		Not at This Time	To be considered when more user-based conservation measures are appropriate
Interactive Websites	Potential		X						X		Not at This Time	Existing website and contact information sufficient at this time
Social Networking	Potential			X					X		Not at This Time	Existing efforts in small community sufficient at this time
Customer Surveys	Potential		X						X		Not at This Time	To be considered after initial phases of system meters and leak detection have refined customer-sided issues.
Focus Groups	Potential			X					X		Not at This Time	To be considered when more user-sided implementation measures are proposed
Citizen Advisory Boards	Potential			X			X		X		Not at This Time	Existing volunteer boards may overlap some of these functions and already place a large demand on volunteers
Technical Assistance												
Customer Water Use and Landscape Design and Maintenance Workshops	Potential			X					X	Grant or assistance may be available from regional water entities; coordinate outreach with other city-wide services. Landscape workshops may include partnering with other organizations or businesses.	Yes	Customer water use and landscape workshops were combined to improve attendance and reduce staff time requirements.
Xeriscaping Demonstration Garden	Potential	X							X	City does not have adequate resources or locations at this time	Not at This Time	
Water Conservation Expert Available	Potential			X				X	X	Cost prohibitive for City to solely provide expert	Not at This Time	Refer people to experts associated with other regional water entities

Note: measures for further evaluation highlighted in blue.

Appendix E1

Evaluation and Selection of Proposed Water Efficiency Activities

Appendix E1
City of Ouray Water Efficiency Plan
Evaluation and Selection of Proposed Efficiency Activities

Water Efficiency Activities for Evaluation	Existing/ Potential Activity	Targeted Customer Category	Review of Qualitative Screening: Qualitative Goals: Provides or Improves Water Use Data Collection and Monitoring	Qualitative Goals: Provides Operational Cost Information	Qualitative Goals: Helps to Decrease System Losses	Qualitative Goals: Promotes Public Acceptance or Public Education	Evaluation: Projected Water Savings: Total Water Savings (gallons)	Projected Water Savings: Average Annual Water Savings (gallons)	Projected Implementation Costs	Quantitative Goals: Improved ability to track water use through main system infrastructure	Quantitative Goals: Provides data on quantity of water processed by system	Quantitative Goals: Reduction in system losses as meter data becomes available	Quantitative Goals: Public approval of funding allocations to activity	Notes on Additional Pros/Cons to Consider	Final Selection: Selected for Implementation	Final Selection: If Eliminated, Reason Why Eliminated
Foundational Activities																
Water Rate Adjustments	Existing	System-Wide		X			0	0	$ 3,500					Is currently done on an annual basis during the City's budget process	Yes	
System Wide Water Audits	Potential	System-Wide	X	X	X		29,587,271	2,958,727	$ 31,500	X	X	X	X	In coordination with installing new meters, will improve overall data. May reduce amount of leak detection required or increase amount of billing for water	Yes	
Control of Apparent Losses (with Metering on System Infrastructure)	Potential	System-Wide	X	X	X				$ 140,500	X	X	X	X	To be incorporated with locations of new system meters	Yes	
Leak Detection Study	Potential	System-Wide	X	X	X		7,396,818	-	$ 18,500		X	X	X	Reducing leaks will more accurately determine how much water is being used and appropriate billing; cost and ongoing requirement for detection may limit feasibility; updating City's GIS resources for water supply system is integral to managing data and analysis and tracking work completed.	Yes	
Water Line Replacement Program	Existing	System-Wide			X		133,142,719	2,958,727	$ 2,416,000			X	X	A review of the budget process for line replacement may result in changes to the allocation. This will be done in combination with the CIP (see below)	Yes	
Capital Improvement Plans	Existing	System-Wide	X	X	X		14,793,635	1,479,364	$ 18,750	X	X	X	X	Existing Master Plan/CIP should be updated to reflect work completed since plan was issued in 2003 and to include major projects	Yes	
Targeted Technical Assistance																
None at this time	Potential	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ordinances and Regulations																
None at this time	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Public Education and Outreach																
Bill Stuffers	Existing	Residential & Commercial				X	5,748,750	127,750	$ 6,500				X	Cost of developing, printing, inserting in bills	Yes	
Newspaper Articles	Potential	Residential & Commercial				X	5,748,750	127,750	$ 5,600				X	Low cost; misinformation or misunderstandings possible	Yes	
Web Pages and Social Media	Existing	Residential & Commercial				X	5,748,750	127,750	$ 9,800				X	Combine with Existing City website	Yes	
City Demonstration Activities and Public Presentations	Potential	All			X	X	29,587	2,959	$ 7,100				X	Instead of offering incentive programs or rebates, the City will implement various measures such as rain-sensor controlled irrigation, low-flow fixtures, and climate appropriate landscaping to conserve water and provide educational examples. City staff will also make presentations during public council meetings bi-annually on water conservation issues relevant to the City.	Yes	
Customer Water Use Workshops and Landscape Design and Maintenance Workshops	Potential	Residential				X	6,093,675	112,846	$ 3,667				X	Grant or assistance may be available from regional water entities; coordinate outreach with other city-wide services. Landscape workshops may include partnering with other organizations or businesses.	Yes	

Notes:
Only measures selected for further evaluation are included here (see appendices A-D)
See Appendix E2 for detailed cost and water savings assumptions.

Appendix E2

Cost and Water Savings Calculations for Proposed Water Efficiency Activities

Appendix E2
City of Ouray Water Efficiency Plan
Cost and Water Savings Calculations for Proposed Efficiency Activities
DRAFT

Water Efficiency Activities for Evaluation		Total Cost					Total Water Savings*			Cost per Thousand Gallons Saved ($)	Notes on Measure
	Planning Period (No. of Years)	Quantity (#)	One Time Labor/ Material ($)	Average Annual Staff Labor ($ = # hrs x $35/hr)	Annual Materials ($)	Total Cost in Planning Period ($)	Gallons saved per unit	Annual Gallons Saved	Total Gallons Saved		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Foundational Activities											
Water Rate Adjustments	10	10	$ -	$ 350	$ -	$ 3,500	0	0	0	N/A	Assumes 10 hours of staff time to prepare and discuss the budget item for a rate increase and obtain Council approval. Because water is charged at a flat rate, increased cost do not correlate to water conservation by individuals. Increased revenue for the utilities department helps enable necessary operations, maintenance and repairs and thus indirectly assist in conservation.
Control of Apparent Losses (with Metering on System Infrastructure)	10	9	$ 126,500	$ 1,400	$ -	$ 140,500	2,958,727	2,958,727	29,587,271	$ 5.81	Assumes $5,000 consultant fees and 40 hours of staff time to properly determine the specifications for 9 meters on the system (one at each PRV). The meters will include a meter, SCADA connection, SCADA upgrade and power for the meter at a total cost of approximately $13,500 per meter (see Appendix K for details). Savings accrued from meter monitoring are combined with the system-wide water audits which utilize the meter data to identify leaks and losses.
System Water Audit	10	10	$ -	$ 3,150	$ -	$ 31,500					Assumes 90 hrs/yr of staff time to collect data, compile and analyze water use system wide. Assumed savings of 1% per year due to identifying leaks/losses and improved management. Assumes is implemented in year 1 of the 10 year planning period. Cost savings to reducing volume of water processed by system are not included in this cost analysis.
Leak Detection Study	10	1	$ 4,500	$ 1,400	$ -	$ 18,500	7,396,818	-	7,396,818	$ 2.50	Assumes cost of $4,500 for 11 miles of ductile iron pipe (see quote from UTS, Inc., Appendix J) for total distribution system, excluding the Wehawken spring transmission line, completed once during the plan period and assumes staff time of 40 hours to assist in survey. Savings are 2.5% per year. Cost savings to improved system operations and reduced emergencies are not included. Assumes study is completed in year 1 of the 10 year planning period.
Water Line Replacement Program	10	10		$ 2,100	$ 239,500	$ 2,416,000	2,958,727	2,958,727	133,142,719	$ 18.15	Assumes replacement of 2,500 ft of line using DIP each year by contractor. Estimate material cost of $28/ft of DIP, plus $65/ft for installation, plus $7,000 to connect to existing lines (labor and material), plus 60 hours/year of staff time to coordinate and inspect the work. Assumes burying pipe to 5 ft depth (not anticipated to have significant rock work). Results in 1% savings, cumulative each year.
Capital Improvement Plan	10	1	$ 10,000	$ 875	$ -	$ 18,750	1,479,364	1,479,364	14,793,635	$ 1.27	Assumes a one-time consultant cost of $10,000 to update the current Master Plan/CIP and 25 hours per year of City staff time to integrate the CIP into the annual utilities budget and have approved by council. Water savings from improved condition of infrastructure is estimated to be 0.5% per year in addition to savings from pipe replacement program (see above). Assumes update to CIP is completed in year 1 of 10 year planning period.
Public Education and Outreach											
Bill Stuffers	10	10	$ -	$ 350	$ 300	$ 6,500	127,750	127,750	5,748,750	$ 0.0011	Assumes 5 hours per year to prepare flyer with information, 5 hours per year to prepare mailing, and annual cost of $300 per year to print for 1,000 accounts. Assumes savings of 0.1% from voluntary conservation resulting from education and conservation is cumulative over the planning period.
Newspaper Articles	10	40	$ -	$ 560	$ -	$ 5,600	127,750	127,750	5,748,750	$ 0.0010	Assumes 4 articles per year, 4 hrs of staff time per article. Assumes savings of 0.1% from voluntary conservation resulting from article education over 1,000 account holders.
Web Pages and/or social media	10	40	$ -	$ 980	$ -	$ 9,800	127,750	127,750	5,748,750	$ 0.0017	Assumes 6 hrs of staff time per quarter to provide updated water conservation content to web manager, and put conservation content on Facebook and/or other social media, plus 1 hr per quarter of web managers time. Assumes savings of 0.1% from voluntary conservation over 1,000 account holders and program begins in year 1 of 10 year planning period.
City Demonstration Activities and Public Presentations	10	-	-	$ 210	$ 500	$ 7,100	2,959	2,959	29,587	$ 4.17	Instead of offering incentive programs or rebates, the City will implement various measures such as rain-sensor controlled irrigation, low-flow fixtures, and climate appropriate landscaping to conserve water and provide educational examples. It is assumed that $500 per year is budgeted in staff time or materials purchase to implement conservation measures. Additionally, City staff will make public presentations on water conservation issues relevant to the City during City Council meetings an estimated 2 times per year, requiring 3 hours of staff time per presentation. The resulting saving to the City and through education is assumed to be 0.01%.
Customer Water Use and Landscape Design and Maintenance Workshops	10	3	-	$ 233	$ 133	$ 3,667	338,538	112,846	6,093,675	$ 0.0006	Assumes 1 workshop every 3 years, requiring $400 in supplies/give-aways, and 20 hrs of staff time per event (plus volunteer from local garden community/business). Costs may be reduced by teaming with local watershed partners group or seeking grant funding. Assumes 10 households per event each with a 15% savings on outdoor irrigation of 0.08 acres (average City lawn size) from implementing outdoor water conservation methods and 2% savings on indoor water demands for each household and program begins in year 1 of 10 year planning period..
					Total Cost	**$ 2,661,417**		**Total Water Saved:**	**208,289,955**		

Notes:

(1) Only measures selected for further evaluation are included here (see appendices A-D).
(2) Planning period for implementation of measure. Because of lack of metering, existing conservation efforts have not been quantified and will only be addressed in the future planning period.
(3) Total number of units to be implemented over the planning period for each measure.
(4) Capital costs to implement the program such as purchase of equipment. Labor required to manage the program, install equipment or otherwise carry out the measure is also included.
(5) Annual City staff labor costs for maintaining the equipment or program.
(6) Annual material costs for maintaining the equipment or program. If installation of equipment is annually completed by contractor, the contractor costs are included in this column.
(7) Equals (Column 2 x (Column 5 + Column 6) + (Column 3 x (Column 4 + Column 5)).
(8) May be based on savings per unit x no. of units or may be a percentage of water savings over the entire system (see notes in Column 12).
(9) Equals water saved on an annual basis by the measure.
(10) Equals Column 8 X Column 9 x Column 2.
(11) Equals Column 7 / Column 10.
(12) Notes on implementation of the measures. Notes on the basis of assumptions for the calculations used in this sheet.

* Total gallons as baseline is 908 AF in 2010 (see Table 3) = 295,872,708 gallons. Savings from Public Education and Outreach are based on a household demand of 350 gallons per day (= 75 gpdpc x 3.5 persons/home + 87 gpd averaged outdoor use). Savings associated with existing conservation measures is not shown due to lack of historical meter data to determine savings. All calculations are based on a current baseline and projected forward.

Appendix F

Proposed Implementation and Monitoring Plan

Appendix F
City of Ouray Water Efficiency Plan
Proposed Implementation and Monitoring Plan

Selected Water Efficiency Activities	Period of Implementation	Implementation Actions	Milestone Deadlines	Total Budget	Entity/Staff Responsible for Implementation	Entity/Staff Responsible for Data Collection	Schedule of Data Collection	Coordination and Public Involvement	Additional Comments
Water Rate Adjustments	10 years	Annual Budget Item	Annual City Budget Approval	2 percent increase on existing rates and $3,500 of staff effort	City Administrator			Public comment during Council adoption of budget	City policy is to propose a 2% rate increase every year. This percent increase may be adjusted annually based on that years budget considerations.
Control of Apparent Losses (with Metering on System Infrastructure)	2 years	Identify meters to be purchased and have budget approval	1 year	$140,500	City Administrator Public Works Director Consultant/Supplier			Public Comment during budget process	Controlling losses will reduce system operational costs by reducing the amount of water treated and delivered into the system. The amount of losses and costs of operations may be compared to estimate savings once baseline loss data is available.
		Installation of meters	2 years		Public Works Director				
		Create meter monitoring and database program	2 years		Public Works Director Consultant				
System Wide Water Audits	8 years (beginning once meters are in place)	bi-annual data entry and review	bi-annual once meters in place	$31,500	Public Works Director	Public Works Director	January and June		Monitoring will begin once meters are installed. At installation, the City's database for meter records will be revised to incorporate new data and analyze results to help to identify un-metered water and losses which will reduce operational costs without reducing revenues.
		annual reporting of data and analysis as a City Council presentation	annual once meters are in place		Public Works Director	Public Works Director	Meeting before budget process	public input during presentations and budget process	
Leak Detection Study	2 years	Obtain funding and contract approval from City	1 year	$18,500	City Administrator Public Works Director				Results of study will be used to identify losses in the meter data and to direct replacement and repair program. The results of the study can be used to estimate losses to the system and the reduction in the amount of water needed in the system.
		Conduct leak detection study	2 years		Public Works Director Contractor	Public Works Director	Once during leak detection study		
Water Line Replacement Program	10 years	annual budget item and contract approval	Annual City Budget Approval	$2,416,000	City Administrator Public Works Director			Public Comment during budget process	Line replacement will coincide with system metering and savings from reduced losses may be identified in the meter data.
		City staff and contractor complete line replacements	Annually		Public Works Director Contractor				
Capital Improvement Plans	2 years (CIP affects funding plan for all other measures)	Obtain funding and contract approval from City	1 year	$18,750	City Administrator Public Works Director			Public Comment during budget process	CIP update may identify thresholds water volume that would require new infrastructure (such as storage or treatment facilities). The costs from the CIP can be used to estimate savings from reducing system losses and overall demands through conservation.
		City staff and consultant complete CIP updates	2 years		Public Works Director Consultant				
		City staff integrate into annual budget process each year	Annually after 2 years		City Administrator Public Works Director			Public Comment during budget process	
Bill Stuffers	10 years	city staff prepare flyers and include in billing notices	Annually	$6,500	Community Development Coordinator			Public will receive flyers	Flyers to include City staff contact information
Newspaper Articles	10 years	city staff work with local newspaper quarterly	Quarterly	$5,600	Community Development Coordinator			Public audience through local newspaper	Articles to include City staff contact information
Web Pages and Social Media	10 years	city staff incorporate water conservation issues into existing social media and web page presence	Quarterly	$9,800	Community Development Coordinator			Social media provides opportunity for 2-way communications	
City Demonstration Activities and Public Presentations	10 years	City install water conservation features (landscape, fixtures, etc.)	when retrofits or new work is being undertaken	$7,100	Public Works Director Community Development Coordinator			The City's conservation measures will be publicly visible	
		Public presentations at City Council meetings	Bi-annually		Public Works Director Community Development Coordinator			Public audience at Council Meetings	This measure will help to provide information to decision makers on conservation issues and the City's Water Conservation Plan implementation
Customer Water Use Workshops and Landscape Design and Maintenance Workshops	10 years	City sponsored workshop for residents	Every three years	$3,667	Public Works Director Community Development Coordinator			Public participation and feedback	

Total Cost for Implementation of All Proposed Measures: $2,661,417

Notes:
All measures selected for implementation are included (see Appendix E)
Deadlines are based on time from the approval of the Water conservation Plan. For example '1 year' is 1 year from the time the plan is approved
Data collection is only for system-wide meters and the leak detection study. Future updates to the plan may consider more extensive monitoring once system baseline data is available.
For cost estimate basis, see Appendix E2: Cost and Water Savings Calculations for Efficiency Measures

Appendix G

Section 9-10 City of Ouray Code Water and Sewer Use Rate

A. No water or sewer main, or facilities of the City may be extended without the approval of the City.

B. The City may, at its own expense, extend its water or sewer mains as deemed feasible or necessary. The City may provide for such extensions in accordance with its Subdivision Regulations, by contract with any person desiring such extensions, or by improvement district. Any such contract shall be on terms approved by the City and may provide for the size of the mains or lines to be extended, the apportionment of the costs of the extensions, reimbursement provisions for subsequent connections onto such extension, or such other provisions as City Council deems in the public interest.

C. All such mains, lines, easements, and facilities connected to the City system shall be conveyed and dedicated to the City, free and clear of all liens and encumbrances.

9-9 Right of Entry

A. Whenever necessary to make an inspection or investigation to perform any duty, or to enforce any of the provisions of this Chapter, any authorized City representative may enter upon any building or premises served by City water or sewer at any reasonable time for such purposes. If the building is occupied, he shall present proper credentials and request entry. If such building is unoccupied, he shall make reasonable efforts to locate the owners or persons in possession of the premises and request entry. If entry is refused, he shall have recourse to all remedies provided by law to secure entry, including issuance of an inspection warrant by the Municipal Court.

B. The right of entry shall apply but not be limited to the following functions: to determine the location and conditions of all hydrants, pipes, fixtures, plumbing, and meters, to read meters, to make repairs, to perform dye and smoke tests, and to investigate violations of this Chapter.

9-10 Water and Sewer Use Rates

A. Water and sewer use rates will be calculated on the basis of a single family dwelling. An equivalency factor (EQR) will be applied to the base rate to scale fees to normal usage for the particular structure or business.

B. Rate Structure

TYPE OF FACILITY	PER UNIT/SPACE	SERVICE FEE	ADDITIONAL EQR
Single Family Dwelling	1.00	$36.00 per property	
Multiple Family Dwelling Townhouse	1.00	$36.00 per unit	.25 per public washing machine

Condominium			
Apartment Building	1.00 per apartment	$36.00 per property	.25 per public washing machine
Permanent Trailers Mobile Home Park	1.00 per space	$36.00 per property	
Overnight Mobile Home Park RV Park Campground	1.00 per Manager's Unit; .22 per space with sewer hookup; .11 per all other spaces	$36.00 per property	.25 per public washing machine; 1.00 per public dump station
Hotels, Motels, Bed and Breakfasts	1.00 per Manager's Unit; .16 per bed; .02 per kitchen facility	$36.00 per property	.05 per 1,000 gallons for swimming pools, hot tubs, etc; .25 per public washing machine .03 per bed
Hospitals Nursing Homes	.20 per bed	$36.00 per property	
Churches	1.00 per parsonage .01 per seat	$36.00 per property	.70 per social area or kitchen facility
Private Clubs	.01 per seat	$36.00 per property	.70 per social area or kitchen facility 1.00 per bar
Schools	.06 per student	$36.00 per property	
Offices Day Workers Medical Center	.30 per 1,000 sq. ft	$36.00 per property	
Small Shops	.30 per space	$36.00 per property	
Factories Plants Livery Barns	.50 per 1,000 sq. ft	$36.00 per property	
Movie Theaters Arenas	.50 per 1,000 sq. ft	$36.00 per property	
Grocery Store Market	.30 per 1,000 sq. ft	$36.00 per property	
Service Station	.50 per pump	$36.00 per property	
Car Wash	1.20 per wash bay	$36.00 per property	
Laundry (Public)	.25 per machine	$36.00 per property	
Laundry Business	1.00 per machine	$36.00 per property	
Taverns/ Bar	2.00 per 1st 20 seats .60 per additional 10 seats	$36.00 per property	
Food Service	2.00 per 1st 20 seats .60 per additional 10 seats	$36.00 per property	
Deli, Ice Cream Parlor	1.00 per 1st 20 seats .30 per additional 10	$36.00 per property	

	seats		
Beauty/Barber Shop	1.00 per property	$36.00 per property	
Private Swimming Pool	.05 per 1,000 gallon if on City Water or Sewer System		
Ouray County Historical Society Museum	1.00 per museum unit	$36.00 per property	
Daycare	.02 per child capacity	$36.00 per property	
Emergency Response Facility	1.00 per facility	$36.00 per property	

C. Water and Sewer Rates

1. Water Base Rate is $16.59 per month per EQR

2. Water Debt Repayment Surcharge is $7.00 per month per EQR, prorated for the first 1.0 EQR, plus $3.50 for additional EQR's. For a master billing account, each lot with a single-family residence or each RV space shall be charged $7.00 per month per unit. Section 9-10-D-2 shall not apply to the Water Debt Repayment Surcharge calculation with respect to doubling the rate for users outside of the City limits.

3. Sewer Base Rate $25.94 per month per EQR.

4. Service Fee is set out in Subsection B.

5. A discount of $36.00 shall be allowed if charges for entire year are paid in advance by February 15th.

D. Special Charges

1. If any user is discharging toxic or other pollutants in concentrations higher than that of a residential user which causes increased treatment or system costs, a surcharge may be imposed based upon the excess concentrations.

2. All water user rates for users outside of the City limits shall be classified according to the above contained and set forth classifications, but the rates therefore shall be twice the rates applicable to users inside the City limits.

3. In all special cases where the water and sewer user does not come within any of the above set forth classifications and does not use a water meter due to unusual circumstances, or to unusual or intermittent requirements of the use of water and sewer, City Council may establish a special rate therefore, but no such special water and sewer rate contract shall be entered into for a period longer than one (1) year at a time and the rate or

rates for such special usage of sewer and sewer under any special contract shall be based as nearly as may be practical upon general water and sewer rate structure herein provided.

4. In cases where there is a transfer of City utility account customers due to the conveyance of property served by the City's water and sewer system, there shall be a $25.00 Utility Account Transfer Charge billed to the new property owner as a new customer of the utility account. This charge shall be incurred and billed at the time of such transfer, with payment due within thirty (30) days of billing.

E. Additional Provisions

All customers shall be required to properly complete and submit to the City, information, declarations, and surveys upon the City's request, as appropriate to facilitate the administration of this Chapter and the EQR system.

9-11 Restriction of Water Use

A. City Council, by a majority vote, may limit the use of City water to specific times, days, and uses as appropriate. Water use contrary to such limits is unlawful.

B. Action to limit the use of water shall comply with the local disaster emergency provisions of Chapter 2 of this Code.

C. No watering hose larger than 3/4" diameter and no watering nozzle larger than 1/4" diameter may be used.

D. All watering and continuous water flows shall be terminated during fire alarms.

E. Unlawful Acts

The following shall be considered unlawful and are declared a nuisance:

1. It shall be unlawful for any person to sell or give water away to be used on premises other than those for which service is authorized. The City may authorize temporary use at construction sites or in emergencies.

2. It shall be unlawful to open or close any fire hydrant, stop, or curb valve, or to turn on, or turn off, the water service to any property without lawful authority to do so.

3. It shall be unlawful to cause or allow any pollutant to be introduced in the City water system or to cross connect it with any irrigation water system or other system.

4. It shall be unlawful to waste water.

9-12 Use of Fire Hydrants

Appendix H

City of Ouray Resolution No. 7 - 2012

A RESOLUTION OF THE CITY COUNCIL
OF THE CITY OF OURAY, COLORADO
(RESOLUTION NO. 7, 2012)

A Resolution of the City of Ouray implementing water conservation standards for 2012.

WHEREAS, the City of Ouray received notice from the Colorado Division of Water Resources ("Division") that the City's water rights were called on May 3, 2012; and

WHEREAS, the City submitted an Emergency Substitute Water Supply Plan to the Division in response to the water call on June 13, 2012 in order to allow the City to still draw the allocated water right amounts; and

WHEREAS, the Division has notified the City that the Emergency Substitute Water Supply Plan must include that the City demonstrate efforts by the citizens of the community to conserve water; and

WHEREAS, pursuant to Section 9-14 of the City of Ouray Municipal Code, the City Council has authority to limit the use of City water to specific times, days and uses as appropriate;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF OURAY, COLORADO, as follows:

THE CITY COUNCIL ASKS CITIZENS WHOSE PROPERTY IS EAST OF THE CENTERLINE OF MAIN STREET TO LIMIT YARD IRRIGATION TO ONLY TUESDAYS, THURSDAYS,AND SATURDAYS. THE CITY COUNCIL ASKS CITIZENS WHOSE PROPERTY IS WEST OF THE CENTERLINE OF MAIN STREET TO LIMIT YARD IRRIGATION TO WEDNESDAYS, FRIDAYS, AND SUNDAYS. THE CITY COUNCIL ASKS THAT ALL CITIZENS NOT CONDUCT YARD IRRIGATION ON MONDAYS NOR BETWEEN THE HOURS OF 10:00 AM AND 4:00 PM. WATERING BY A HANDHELD HOSE IS EXEMPTED FROM THESE WATER CONSERVATION STANDARDS.

THE CITY OF OURAY WILL ONLY CONDUCT DUST CONTROL OPERATIONS THREE DAYS A WEEK AS NEEDED. LIKEWISE, THE CITY OF OURAY WILL LIMIT IRRIGATION OPERATIONS IN **ALL CITY PARKS TO ONE DAY A WEEK.**

THIS RESOLUTION SHALL BE EFFECTIVE UPON ADOPTION.

ADOPTED this 6th day of August, 2012, by the Ouray City Council.

CITY OF OURAY, COLORADO

By_____
Robert E. Risch, Mayor

ATTEST:

_____
Kathy Elmont, City Clerk

X:\Clerk\Coundf1Resolutions\20! 2'1res1207.doc

Appendix I

Meter Information

MODEL X143IP

Intermediate Power Generator

Product Description

The X143IP Intermediate Power Generator is a self-contained power generation system designed to be mounted on a Cla-Val Automatic Control Valve.

The X143IP uses the pressure drop across the valve to produce up to 14 watts of power to run electronic equipment located at the valve site.

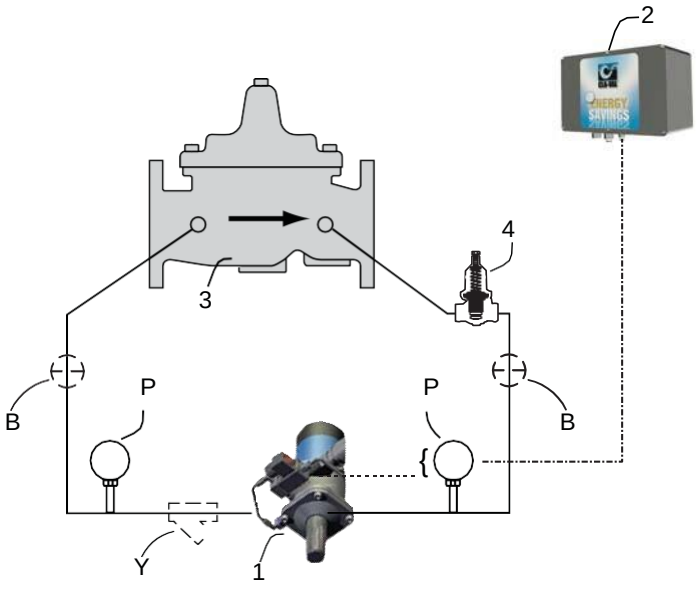


Product Features

- Designed to be installed within the pilot system of a Cla-Val Automatic Control Valve
- Factory installed or field retrofittable to an existing valve
- Up to 14 watts continuous draw
- Up to 42 watts non-continuous draw
- 12 psi differential pressure minimum at 15 gpm
- 12 Volt Battery with 12 and/or 24 VDC Output
- Automatic shutdown of the X143IP when battery is fully charged helps to maximize both battery and generator life span
- Applications include powering electronic valve controls, data loggers, position controls and communications equipment

CE

patent pending



Typical Schematic Diagram

Supplied Equipment

1 Power Generator Unit
2 Electronics & Battery Housing
3 Cla-Val Automatic Control Valve
Y Y-Strainer

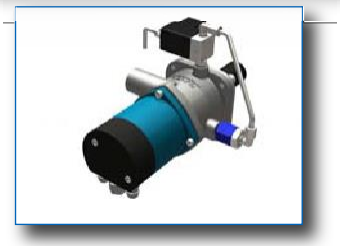
Optional Equipment

P Gauges
B Isolation Valves
4 Pressure Reducing Valve

Note: Maximum inlet pressure is 150 psi.
Please consult factory if pressure is above 150 psi.

Power Generator Specifications

- 12V DC or 24V DC output
- 12 PSI minimum differential pressure required
- Up to 14 watts generator power output
- 3/4-inch female connection
- Upper recharging threshold: 13.5 VDC
- Lower recharging threshold: 12 VDC



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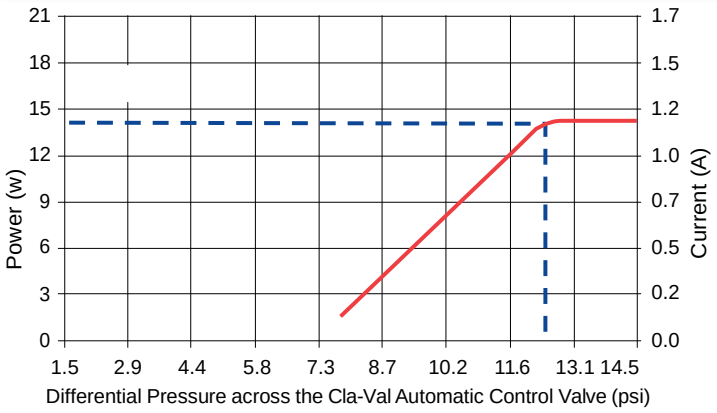
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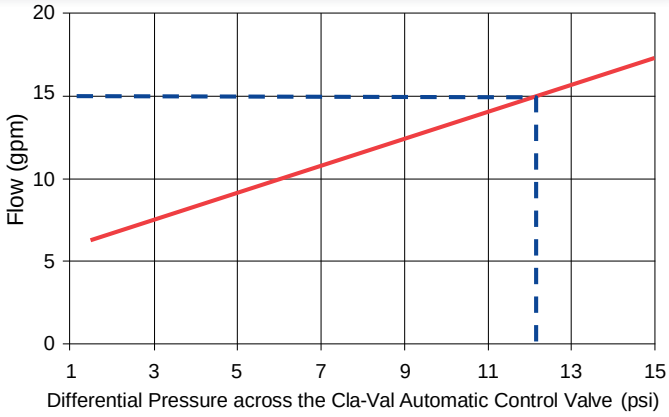
visit www.cla-val.com to learn more about this and other Electronic Products

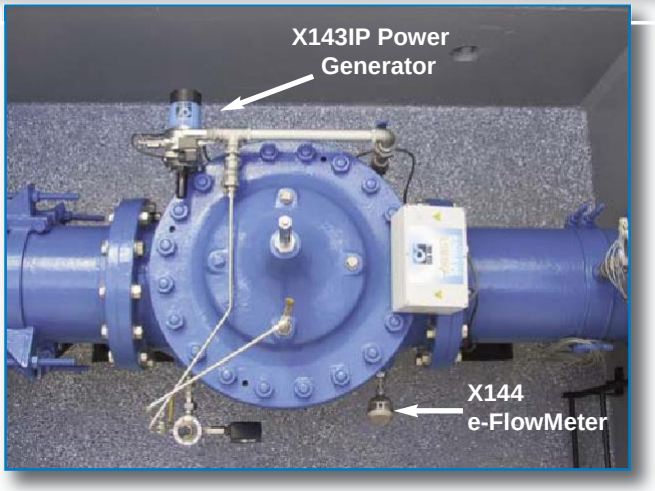
Power Output

Voltage Output	Maximum Continuous (24h/24)	Maximum Non-Continuous
12 volts	1.2 A (14 W)	3.5 A (42 W)
24 volts	0.6 A (14 W)	1.7 A (42 W)

Power and Flow Charts







Typical Installation: Pressure Reducing Valve Station X143IP providing power to operate electronic valve controls, data logger, pressure transducers and the Cla-Val X144 e-FlowMeter™

Easy retrofit: The X143IP Power Generator is installed as part of the pilot system of an existing Cla-Val Automatic Control valve to provide power without compromising valve performance and without tying into to the grid

CLA-VAL

PO Box 1325 Newport Beach CA 92659-0325

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Fax: 44-1892-543-423
E-mail: info@cla-val.co.uk

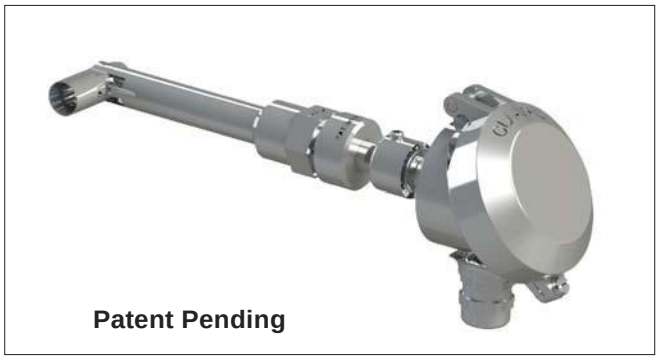
CLA-VAL FRANCE
Porte du Grand Lyon 1
ZAC du Champ du Périer
France - 01700 Neyron
Phone: 33-4-72-25-92-93
Fax: 33-4-72-25-04-17
E-mail: cla-val@cla-val.fr

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306 Port Hills Road (Level Two)
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NewZealand
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Fax: 64-39644786
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MODEL X 144

e-FlowMeter



Patent Pending



Installation view of the X144 e-FlowMeter

Note: Consult Factory for Angle Pattern Applications

- **The e-FlowMeter can be retrofitted to an existing Cla-Val Automatic Control Valve or factory assembled on a new valve**
- **Alleviates the need for an in-line meter and the associated installation costs**
- **IP 68 Submersible**
- **Provides flow data with accuracy +/- 2% of Full Scale**
- **Mounts on either inlet body tapping of the Cla-Val Control Valve**
- **Stainless Steel Construction**
- **4-20mA Loop Powered**
- **Plug-and-Play Metering**
- **No Moving Parts**
- **Independent laboratory tested:**
  - **Utah State University,**
  - **Imperial College - London**

Imperial College London

The Cla-Val Model X144 e-FlowMeter is a vortex shedding insertion flow meter designed to be retrofitted into a Cla-Val Automatic Control Valve to provide accurate flow measurement data without the need to install a separate meter.

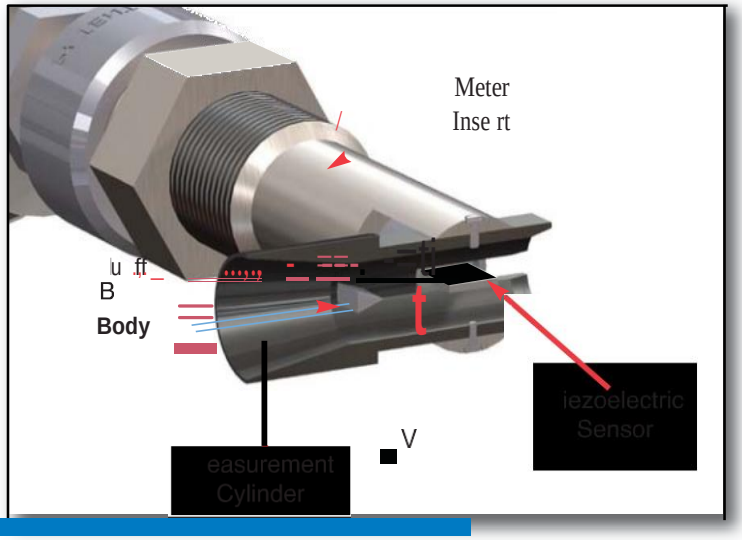
Configured for installation in the inlet tapping of a Gia-Val Automatic Control Valve , the X144 can be used in valves directly downstream of a flow disturbance such as elbows, valves or a reducer. (See page 2 for installation guidelines)

The X144 e-FlowMeter employs an innovative swivel mechanism which allows the meter to be inserted into tappings as small as 1/2-inch. For applications involving installation in close proximity to pump discharge, please consult factory with details.

Frequency Measurement

The X144 e-FlowMeter uses the vortex shedding method to measure flow. The meter is inserted into the inlet tapping of the valve and the measurement cylinder is oriented parallel to the direction of flow. The flow enters the measurement cylinder where it encounters the bluff body, generating vortices, which in turn, deflects off the piezoelectric sensor.

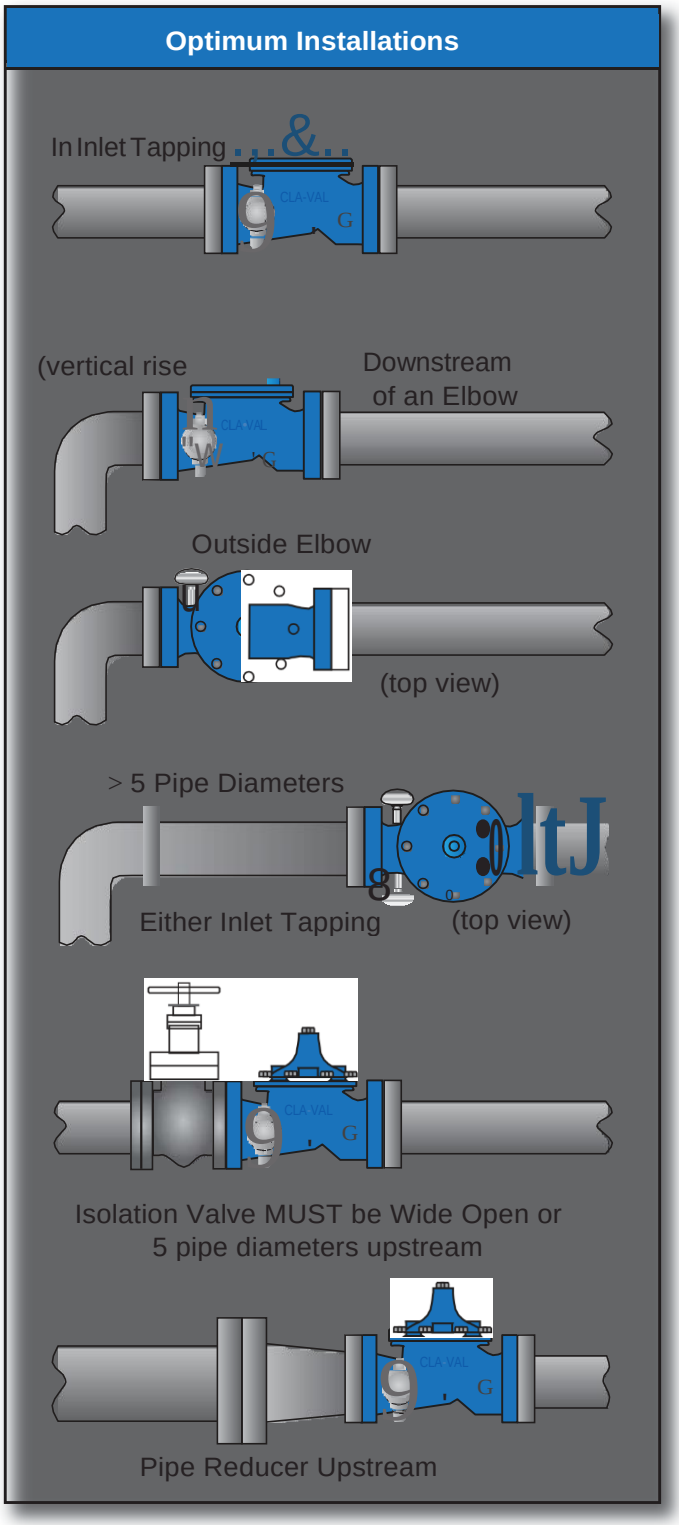
The sensor counts the vortices and communicates the data to the meter's integral circuit board. The flow data signal is converted to 4-20mA, or transistor (NPN) pulse, depending on the desired application.



Installation Guidelines and Typical Applications

Installation Locations

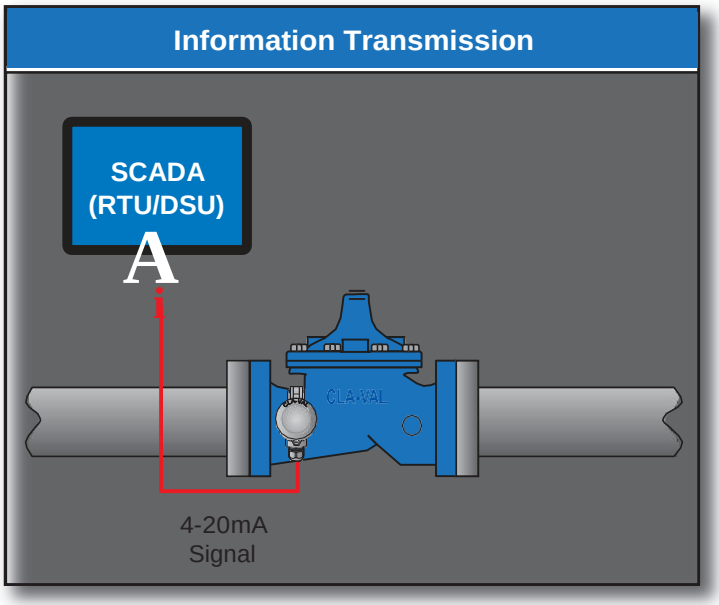
For optimum performance , it is recommended that the valve in which the X144 e-FlowMeter is installed be located as shown below.



Note : Consult factory for other installation configurations

Information Transmission

The X144 e-FlowMeter measures and transmits flow information via a 4-20mA signal to SCADA equipment.

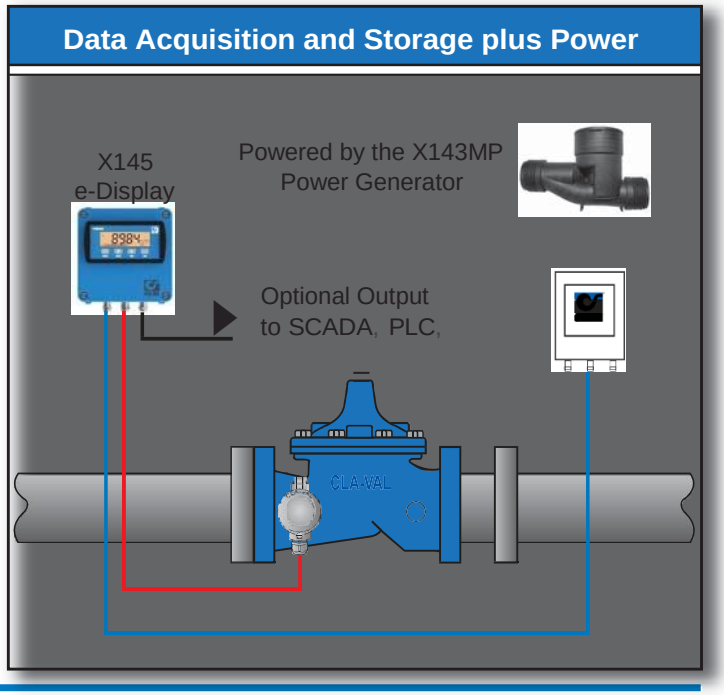


Data Acquisition and Storage using Cla-Val Power Generator

- The X144 e-FlowMeterconnects to most commercially available loggers with the choice of 4-20mA or pulse output.

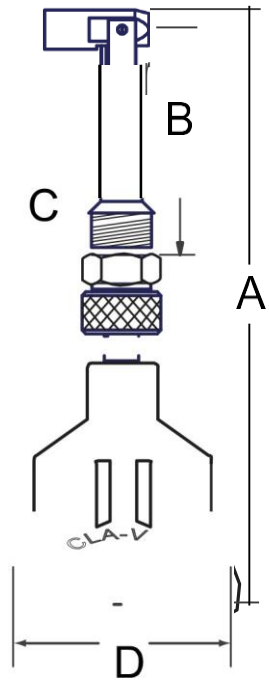
  e-flowMeter, providing access to real-timedata
- Both thee-Display and the e-FlowMeter can be powered by the Cla-Val X143MP Micro-Turbine Power Generator

To learn more about the X143MP Power Generator, visit www.cla-val.com/electronic-products



X144 Dimensions

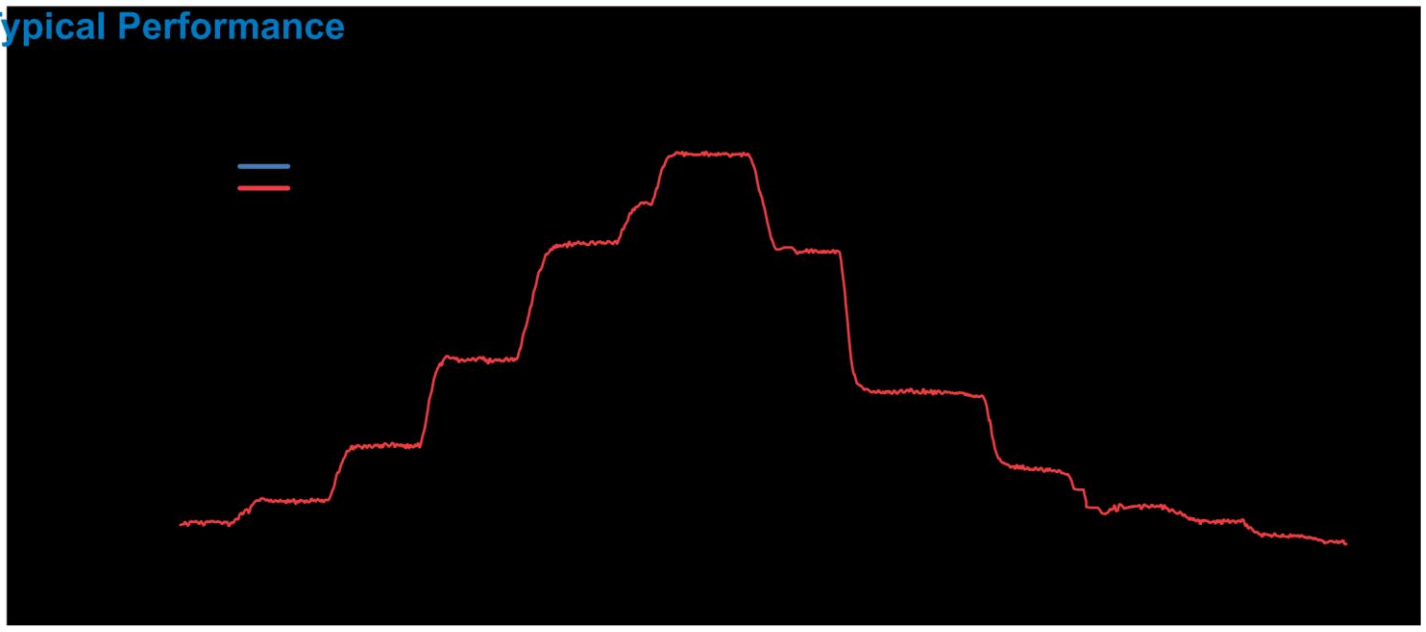
		1	2	3	4
F ll Port Valve Sizes		2 , 2-1/2, 3	4 6	8 10	1 , 14, 16, 18, 20, 24, 30**
R duced Port Valve Sizes		4	6 8	1 , 12	1 , 16, 18, 20, 24**
O erall Length (in inches)	A	8 85	9 45	1 .18	1 .91
I sertion Length (in inches)	B	2 3	2 8	6 8	1 .6
P pe Thread (NPT)	C	1 2"	3 4"	1	1
O erall Width (in inches)	D	3 25	3 25	3 25	3 25



*2X144 e-FlowMeter may be installed on new valves only
** Consult factory for larger applications

X144 e-FlowMeter Operational Flow Range= from 0.3 ft/s to 20 ft/s

Typical Performance



Options

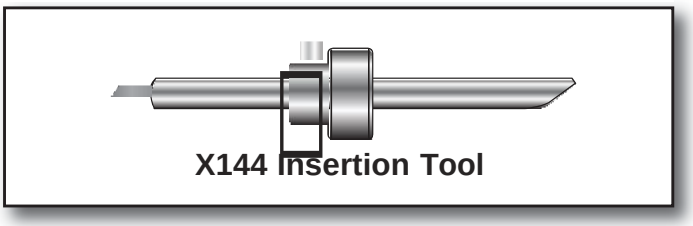
- emote Mounted Display - X145 e-Display
- Field Optimization using e-FlowMeter Customer Software
- Pulsed output proportional to flow rate for low power consumption

X145 e-Display

Product Details

Insertion Tool and Locking Ring

- Required for installation
- Tool allows the proper installation and alignment of the bluff body to be parallel to upstream flow.



X144 Insertion Tool

Power Requirement

- 12/24 VDC, 0.7 Watts minimum.

X144 e-Flow Meter Sizing

- The X144 threads directly into the inlet tapping of a Cla-Val Control Valve. The size of the e-FlowMeter is dependent on the specific valve size for which it has been calibrated - no additional fittings are required. **See dimension chart on previous page.**

Cabling

- The unit is supplied with 20 feet of shielded cable.

X144 e-FlowMeter Analog Range (4-20mA Scaling): Factory Settings

Port Style	Line Size inches (mm)	**2" (50) (100-49 Body)	2-1/2" (65)	3" (80)	4" (100)	6" (150)	8" (200)	10" (250)	12" (300)	14" (350)	16" (400)	18" (450)	20" (500)	24" (600)	30" (750)
Full Port Valves 4mA=0 (GPM-l/s)	20mA Range (GPM)	260	375	575	1000	2250	3900	6000	8750	10500	14000	17500	22000	31000	52000
	20mA Range (l/s)	16.4	23.7	36.3	63.1	140	245	380	550	660	880	1100	1390	1950	3280
Full Port Pulse Weight*	Gal/Pulse	5	6.5	9.5	17	38	65	100	150	175	235	290	365	515	865
	l/Pulse	19	25	36	65	145	245	380	565	660	890	1100	1380	1950	3275
Reduced Port Valves 4mA=0 (GPM-l/s)	20mA Range (GPM)	not available			675	1600	2900	4500	5650	7750	9350	Consult Factory			
	20mA Range (l/s)				42.5	100	180	285	355	490	590				
Reduced Port Valves Pulse Weight*	Gal/Pulse				11.5	26	48	75	95	130	155				
	l/Pulse				44	99	180	285	360	495	585				

* **Note:** * Pulse Width = 250ms **2" X144 e-FlowMeter may be installed on new valves only

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Lausanne, Switzerland
Phone: 41-21-643-15-55
Fax: 41-21-643-15-50

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Represented By:

CLA-VAL™

— MODEL — **X145**

Cla-Val e-Display



Model X145

- **Displays: Flow Rate, Total, Pressure, Position and mA**
- **IP-67 Submersible**
- **SCADA compatible**
- **Customizable units**
- **Backlight optional**
- **Integral wall-mount hardware included**

The Cla-Val Model X145 “e-Display” displays rate up to five digits and totals up to eight digits. The e-Display can be programmed to automatically or manually toggle between rate and totalizing functions. Standard features include an optional backlit display with bargraph, on-screen custom engineering units, max/min display and alarm and pulse outputs.

Designed to be wall-mounted, the X145 e-Display is easy to set- up and is ideal for installation with the Cla-Val X144 e-FlowMeter.

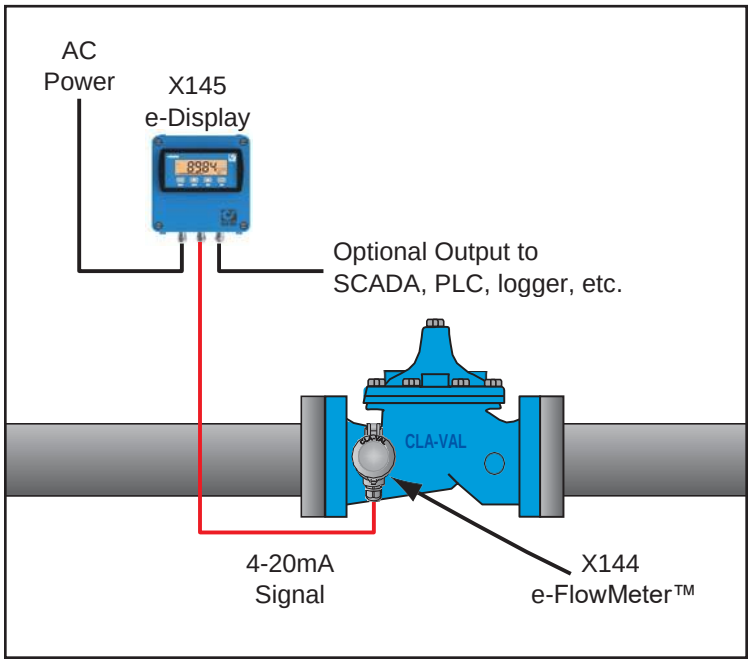
Advanced Features

- **Pulse output available for SCADA, PLC and logging applications**
- **Configurable for low-flow cut-off**
- **Noise filter**
- **Optional password protection**
- **Math functions (Linear, Square Root, Programmable Exponent)**



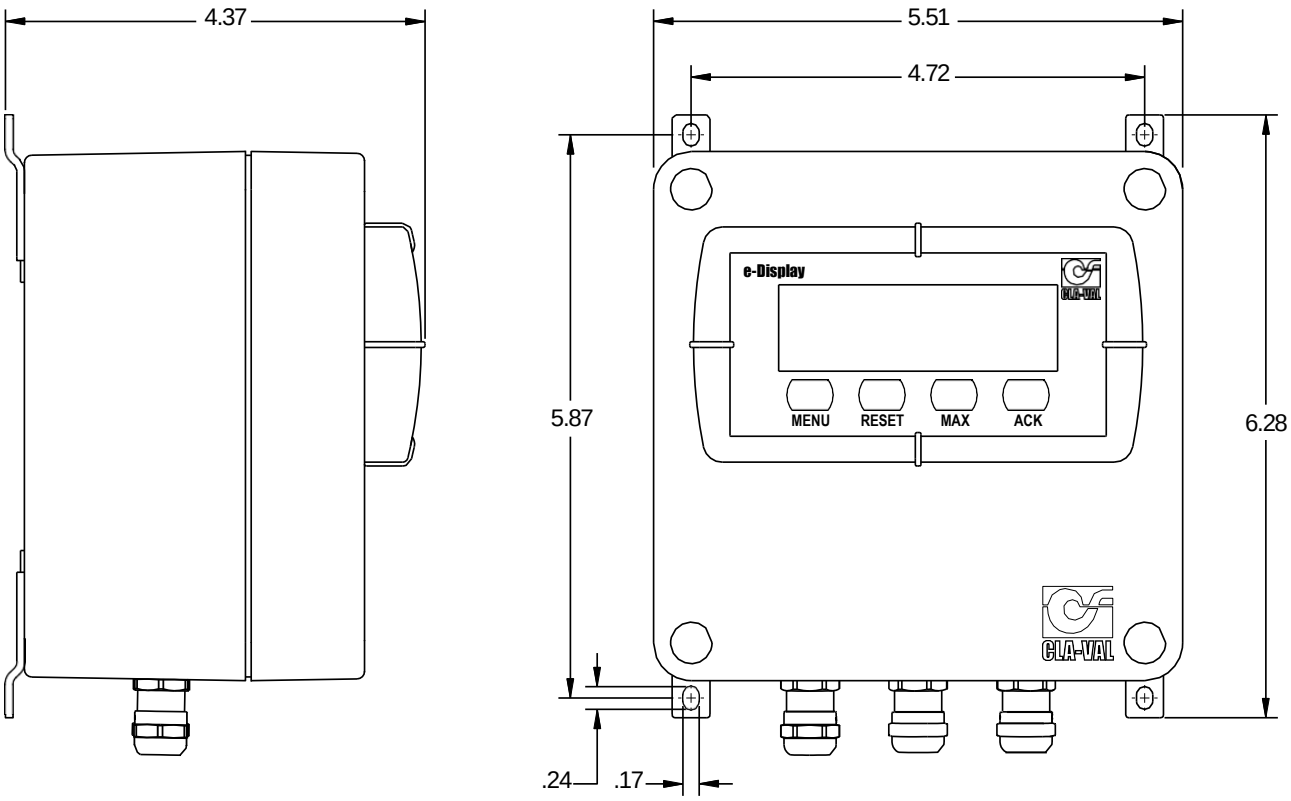
The Cla-Val Model X144 e-FlowMeter™ is a vortex shedding insertion flow meter designed to be retrofitted into a Cla-Val Automatic Control Valve to provide accurate flow measurement data without the need to install a separate meter.

Typical Installation



To learn more about Cla-Val Electronic Products, visit www.cla-val.com

Dimensions



Technical Data

Power Input:	**AC: 110 - 240V 50/60Hz DC: 8 -24VDC**
Display:	**Configurable**
Operating Temp. Range:	**-15° F to +150° F (-25° C to +65° C)**
Protection:	**IP67**
Configuration:	**Factory Configured - Field Adjustable**



E-X145

CLA-VAL
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CLA-VAL EUROPE
Chemin dés Mesanges 1
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Lausanne, Switzerland
Phone: 41-21-643-15-55
Fax: 41-21-643-15-50

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Represented By:

Appendix J

Leak Survey Proposal- UTS, Inc.

UTILITY Technical Services, Inc.

PO Box 3613, Englewood, CO 80155
Phone: 303-773-2808 Fax: 303-799-3436

WATER SYSTEM LEAK SURVEY PROPOSAL
FOR THE
Town of OURAY, COLORADO
For
Wright Water Engineers

Ryan Huggins
Water Resource Consultant
Wright Water Engineers
Durango, CO

Februray 14, 2014

Per our phone conversation this morning, the cost of a water main leak survey for the Town of Ouray, Colorado water system would be $3500-4500 which cover up to 60,000 lineal feet of pipeline. Expenses are not included. Expenses added would be mileage to and from Ouray @ .55 per mile, lodging and meals. The survey would be completed in 3-4 days. Terms are net 30 days. These prices could change if conditions stated were to change.

If awarded, UTILITY TECHNICAL SERVICES, INC. proposes that the survey take place before summer irrigation systems are turned on. This will allow the survey to proceed without usage interference. This leak survey proposal is valid for ninety (90) days after receipt. A certificate of insurance can be provided upon your request.

Please note that this does require accurate mapping/drawings of the portion of the system being survived and the help of one knowledgeable water employee.

We hope that this proposal meets with your approval. Please feel free to call or email with any questions.

Attached is our proposed leak survey equipment and procedure

Dave Anderson

Thank you for your inquiry to **UTILITY TECHNICAL SERVICES, INC**. As a qualified contractor for your water system leak survey, we would like to offer the following for your consideration.

UTILITY TECHNICAL SERVICES, INC. specializes in helping municipal and private water districts locate unaccountable water losses throughout their systems. Established in 1985, this Colorado owned and operated firm has helped hundreds of communities throughout the western region of the United States in solving their water problems with excellent results.

As an active member of the Colorado Rural Water Association, the Wyoming Rural Water Association, the Wyoming Water Quality & Pollution Control Association, and the Rocky Mountain AWWA for the past twenty years, **UTILITY TECHNICAL SERVICES, INC**. understands the current problems facing the water industry.

The two major factors concerning unaccountable water loss are 1) leakage and 2) inaccurate metering. **UTILITY TECHNICAL SERVICES, INC**. addresses these two problems by providing complete water system leak surveys, leak locates, and comprehensive leak reports. UTILITY TECHNICAL SERVICES, INC. also offers a yearly leak detection survey contract. This yearly contract includes a no charge follow-up call on problem areas when our technician is in the area, less any expense charges incurred while there. Please let us know if you would like more information regarding our yearly contract

Proposed Methodology

The leak survey begins at one end of the system (or portion of the system) to be surveyed, and proceeds section by section until that portion is completed. The sensors are placed at intervals determined in part by the pipe size, material, as well as availability of access and pressure. Larger pipe diameters, non-metallic pipe, and low pressures require closer contact points. Generally, the set-up length desired on a water distribution system is one city block. Commercial set-ups vary depending on external noise loads. On metallic pipelines, magnetic sensors are placed on gate valves, fire hydrants, or service line connections.

The key to our method is that all spans of pipeline are scanned for leak noise through the full frequency range and not just at convenient contact points. This is crucial, since we have seen leaks that are not detectable by any other method. If pipeline access is relatively easy, as in main line valves or fire hydrants at each intersection, the survey can proceed quite rapidly. Minimum survey quantity is two miles per day, but with proper preparation, along with knowledgeable assistance, four to five miles are possible. The equipment will also detect multiple leaks on a single set-up. If necessary, leaks can be detected and pinpointed at much greater distances, over 2,000 lineal feet in some cases.

Weather conditions generally do not affect the survey, however, snow cover and frozen valve boxes will hamper the progress of pinpointing leaks.

Leaks can be pinpointed later, after the entire system is surveyed, or at the time of the survey. If pinpointing is carried out during the survey, the utility department can start excavating and making repairs early. Pinpointing later reduces the chances of chasing down consumption noises.

Equipment

The equipment used is the SubSurface LC-2500 leak noise correlator. This includes the correlator (micro-processor) itself, radio transmitters, which amplify and send the noise (vibration) signals to the correlator, accelerometers, which are used for metallic pipe contact. Accelerometers pick up the noise from the pipe wall. The correlator includes multiple noise frequency filters, with a total of 20 ranges that can be combined in a number of arrangements. This allows the technician to scan many overlapping frequency range location, and size estimation. The correlator computes and gives the results on an LCD screen, whereby the operator can make his determining decision.

The Subsurface LD-18 Professional Water Leak Detector is also used. This instrument includes an amplifier with meter display, filter controls, ground microphone and hand switch. The large meter display of sound loudness, allows the user to pinpoint the exact leak location. This instrument is used to verify the correlator results.

Procedure

The leak survey begins at one end of the system (or portion of the system) to be surveyed and proceeds section by section until completed. The sensors are placed at intervals determined in part by the pipe size and material, as well as the availability of access and pressure. Generally, the set-up length desired on a water distribution system is one city block, or approximately 350 feet. Before we arrive, the city should locate and clean valve boxes as needed, as well as provide a detailed map that includes pipe size, type, and location to avoid delays in the survey. We require that the district furnish one knowledgeable person with a vehicle to assist in the survey. This person will:

1. help the technician in placement of sensors on the pipeline;
2. offer helpful information on pipe size, type, or layout, if different than mapping;
3. act on behalf of the district concerning public relations;
4. open or close PRVs, related valves, fire hydrants, or customer service valves;
5. aid in directing traffic, if required, in order to insure the safety of all.

Results

Records of all Set-Ups, measurements, and leak locations are kept in a Daily Report. The Leak Location Form is provided to the district for each leak found. The district provided map is also clearly marked with leak noise locations, which are in turn keyed to the individual leak record sheets. Leak noises are classified from slight to heavy based on the frequency with which they best respond. This information is utilized by the client to set priorities for repairs as well as to estimate the quantity of water loss. An average survey will produce one leak per mile of pipeline with the average leak size at 5 to 6 gpm. Results will vary depending on pipe age, system pressure, bedding materials, and total percentage of unaccounted for water. Using one truck with equipment, a survey will take in four to five miles a day under normal working conditions. Individual leak locates average about thirty minutes each, if there is no interference.

Technician

In the distribution field since 1973, **David Anderson** has a background that puts him in touch with the needs of the water industry. Firstly, Dave was in sales for two of the leading suppliers of waterworks equipment in the Midwest and Western United States, and secondly, he was a manufacturing representative for MUELLER CO. Dave has also contributed papers to the AWWA, which were published in the national handbook “Introduction to Water Distribution Systems”.

He has helped conduct leak detection seminars for the AWWA, Washington State Department of Social and Health Service, Colorado Rural Water, Wyoming Rural Water, South Dakota Rural Water, New Mexico Rural Water and for the National Rural Water Association. Dave has also received factory meter training.

REFERENCES

1.	Town of Castle Rock Mr. John Chrestensen Water Superintendent Phone: 303.814.6408	25 – 50 miles, surveys annually since 1990
2.	Town of Gunnison Mr. Joe Doherty Water Superintendent Phone: 970.641.8330 Email: joe@cityofgunnison.co.gov	surveys annually since 1986
3.	Town of Breckenridge Mr. Gary Roberts Water Superintendent Phone: 970.485.0156 Email: gary@townofbreckenridge.com	approx. 25 miles, surveys annually since 1989
4.	Town of Laramie Mr. Cal VanZee Water Superintendent Phone: 307.721.5206 Fax: 307.742.7174 Email: cvanzee@ci.laramie.wy.us	approx. 25 miles, surveys annually since 1993

Appendix K

City of Ouray Resolution

No. _____

DENVER
2490 W. 26th Avenue Suite 100A
Denver, Colorado 80211
Phone: 303.480.1700
Fax: 303.480.1020

GLENWOOD SPRINGS
818 Colorado Avenue
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Glenwood Springs, Colorado 81602
Phone: 970.945.7755
Fax: 970.945.9210

DURANGO
1666 N. Main Avenue Suite C
Durango, Colorado 81301
Phone: 970.259.7411
Fax: 970.259.8758

www.wrightwater.com



Wright Water Engineers, Inc.

ELEMENT ENGINEERING LLC

DRAFT FOR PUBLIC REVIEW
AT PUBLIC MEETING

CITY OF OURAY

WATER TREATMENT IMPROVEMENTS
ENVIRONMENTAL ASSESSMENT

APRIL 2022

WATER TREATMENT IMPROVEMENTS – ENVIRONMENTAL ASSESSMENT
FOR
CITY OF OURAY

DRAFT FOR PUBLIC REVIEW AT PUBLIC MEETING

APRIL 2022

EE JOB NO.: 0111.0001

ELEMENT ENGINEERING LLC
DILIGENT • INNOVATIVE • RESPONSIVE

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1 SUMMARY

1.1 PROJECT IDENTIFICATION

Applicant: City of Ouray
Address: PO Box 468, Ouray, CO 81427
Project No.: 142031D-Q

1.2 CONTACT PERSON

Name: Silas Clarke
Position: City Administrator
PO Box 468
Ouray, Colorado 81427

1.3 ABSTRACT

The City of Ouray own and operate a community water system under Public Water System Identification Number CO-0146588. The existing system consists of a raw water supply from Weehawken Spring, two (2) 500,000-gallon raw water storage tanks, gas chlorine disinfection, and distribution including ten (10) pressure reducing valves. The city needs to address their water system because their source water was recently re-classified as groundwater under the direct influence of surface water (GWUDI). Public water systems with water sources classified as GWUDI are required to comply with the Surface Water Treatment Rule, which necessitates additional treatment as compared to a groundwater source, including a filtration system and more stringent disinfection requirements. A new water treatment facility (WTF) must be constructed for the city to continue serving their public service area with potable water as well as to comply with state and federal regulations.

The proposed project involves the construction of a new WTF for the city, including three (3x) 1-million gallon per day (MGD) ultra-filtration (UF) treatment skids and liquid sodium hypochlorite injection for disinfection. All treatment components and associated controls will be located within a new treatment process building. Furthermore, a 1-million gallon at-grade clear well storage tank will be constructed at the proposed WTF to provide adequate contact time and to ensure uninterrupted delivery of potable water to the system's users. Lastly, an additional surface water source (Weehawken Creek) will be permitted as part of the project to allow the city to utilize the source at their discretion; however, infrastructure to bring raw water from Weehawken Creek to the proposed WTF building is not proposed as part of the project but may be completed later if deemed appropriate by the city.

The estimated total cost of the project is $10,579,712 with an assumed total loan amount of $10,313,057.

1.4 COMMENT PERIOD

In conformance with the requirements of the National Environmental Policy Act and the Colorado Environmental Review Process, a Finding of No Significant Impact (FONSI) will be subject to a 30-day public review period. The FONSI will be distributed to interested persons and agencies for their review. The FONSI will be available for public review at the Colorado Department of Public Health and Environment. Any comments received will be given due consideration. Comments should be addressed to:

Matt Alms, Project Manager
Water Quality Control Division
Colorado Department of Public Health and Environment
WQCD-OA-B2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

2 PURPOSE AND NEED FOR ACTION

On March 2, 2021, the City of Ouray (city) was issued a Final Evaluation of Surface Water Influence on Sources letter by CDPHE that stated that the city's raw water source, the Weehawken Spring, will be classified as groundwater under the direct influence of surface water (GWUDI). As documented in the letter, systems with sources classified as GWUDI are required to comply with the Surface Water Treatment Rules (SWTR). This letter from CDPHE is in Attachment A.

The proposed project will improve water quality and bring the city into compliance with state regulations for surface water treatment. To improve the city's drinking water quality and bring the system into compliance, the proposed project includes the following components:

1. Construction of a new water treatment facility (WTF)
2. Three (3) 1-MGD (700 gallon per minute) ultra-filtration treatment skids
3. One (1) liquid sodium hypochlorite injection system for disinfection
4. One (1) 1-million-gallon finished water storage tank
5. Permitting of a new surface water supply source – Weehawken Creek

The need to meet SWTR compliance requires the city to expand and increase its level of treatment for its existing GWUDI source (Weehawken Spring No. 1) and proposed new surface water source, Weehawken Creek. The city's existing GWUDI source is treated at the small facility it owns and operates on Camp Bird Road. This facility is on a small, confined site situated on a steep hillside and the facility is a small single room building. The facility does not have space or treatment capacity to meet the SWTR compliance as it was designed to only provide chlorine gas disinfection for the Weehawken Spring No. 1 supply.

To meet the SWTR compliance reviews, a new facility needs to be constructed to provide the advanced treatment with ultra-filtration and liquid sodium hypochlorite disinfection. The proposed new facility location is to be located on Camp Bird Road, approximately 1500 feet southeast of the existing facility. The proposed site provides adequate space required for the facility to contain the ultra-filtration treatment skids and liquid sodium hypochlorite disinfection system. The new facility and site will be built to provide room for additional treatment systems and expansion for future growth in the service area.

Existing population according to the 2020 US Census is 899, a decrease of 1.3% since 2010. Although the city has experienced a population decline over the last decade, it is assumed that non-residential growth and water usage will follow a modest growth rate of 0.5% based on conservative planning and the tourism and recreation boom the city has experienced. Based on the 0.5% growth rate, the population of the service area is expected to increase to approximately 1,003 over a 20-year planning period. The existing average day demand of the service area is approximately 625,000 gpd (0.63 MGD). The future average daily flow of the service area over a 20-year planning period is projected to be 690,000 (0.69 MGD) with a maximum daily demand of 1,053,000 gpd (1.05 MGD). The proposed facility is to be designed for each filtration skid

to have the capacity for the existing average day demand of 1.0 MGD and a combined total of 3.0 MGD to provide capacity for the anticipated future growth and redundancy.

For additional redundancy, the new facility will be able to receive and treat raw water from the existing GWUDI source on Camp Bird Road via the existing water mains that run down Camp Bird Road and into the service area. The new facility will also be built to accept and treat flows from the proposed new source of Weehawken Creek. The new facility will be sized for both existing and long-term future flows as well as treat and receive both sources allowing the city to operate the system with source redundancy and resiliency.

3 PROJECT SUMMARY

The City of Ouray's Water Treatment Plant Improvements project includes the construction of a new ultra-filtration water treatment facility with all associated equipment and a new 1-million-gallon storage tank at a new site approximately 1,500 feet southeast of the existing treatment facility for the Weehawken Spring source (GWUDI). The new facility will utilize the existing finished water distribution mains that will serve as both the raw water supply from the existing spring and the finished water main to the distribution system. As part of this piping, a section of new water main will be installed to connect the facility to the existing transmission mains on Camp Bird Road. A new supply source is also proposed to be permitted as part of the improvements. The future supply source will be Weehawken Creek and act as a supplement source to the existing Weehawken Spring source. The new source is only proposed for permitting and development will be done later as a separate project. In total, the following processes are proposed to be constructed:

1. Construction of a new Water Treatment Facility
2. Construction of retaining walls for the new treatment facility and parking
3. Replacement of existing gas chlorination system with liquid sodium hypochlorite
4. Approximately 600 linear feet of new finished and raw water main
5. Screen filter pre-treatment (part of the treatment skids)
6. Three (3) 1-MGD (700 gallon per minute) ultra-filtration treatment skids
7. One (1) additional ultra-filtration treatment skid for backwash recovery
8. One (1) chemical injection system for liquid sodium hypochlorite disinfection
9. Backwash pumps and controls
10. New analyzers and new finished water flowmeter
11. 1-million-gallon water storage tank/clear well
12. Permitting of a new surface water supply source – Weehawken Creek

The proposed improvements will be constructed on separate city property from the site the existing groundwater treatment facility is located on. The proposed project will significantly increase operations and maintenance (O&M) costs for the city as it will substantially increase the complexity of the city's water treatment plant. Increases to O&M costs include chemical usage, utilities, and general maintenance costs.

Several alternatives were analyzed to determine the most cost-effective and appropriate means of providing adequate treatment and capacity for the City of Ouray's public water system. The alternatives included Alternative 1 – No Action, Alternative 2 – Consolidation, and Alternative 3 – New Water Treatment Plant with Ultrafiltration (UF) Treatment. In addition to the treatment process options, the proposed project will also include the permitting of a new raw water source and the construction of a 1-million-gallon

finished water storage tank. The city does not currently have a any finished water storage and wishes to include it as part of this project to allow for continued water service to its users during periods when the treatment plant is inoperable or during periods when the demand exceeds the production capacity of the treatment facility. All viable alternatives include the cost of the design and construction of a 1-million-gallon storage tank as well as the permitting of the raw water source.

Alternative 1 – No Action was not considered a viable alternative. The existing system requires additional treatment as the existing raw water source (Weehawken Spring) has been deemed a Groundwater Under Direct Influence (GWUDI). The existing system cannot treat water in accordance with the Surface Water Treatment Rules (SWTR) set by CDPHE. A consolidation alternative is not considered viable. The Town of Ridgeway is the closest municipality and is located approximately twelve (12) miles to the north of the City of Ouray. At a distance of twelve (12) miles, it is financially prohibitive due to the cost of piping and booster stations. Therefore, consolidation is not a feasible alternative.

The third alternative – New Water Treatment Plant with Ultrafiltration (UF) Treatment is the selected alternative for the proposed project. This alternative would include the complete replacement of the Ouray WTF's existing gas chlorination system with the construction of three (3x) 1-MGD (700 gpm) ultrafiltration (UF) membrane skids. UF technology is designed to remove particulate matter such as turbidity and microorganisms, which are the primary contaminants of concern when evaluating the replacement of the city's existing gas chlorination treatment system. The UF system meets the requirements of the Surface Water Treatment Rule (SWTR) and is the preferred treatment technology of the city.

There are several advantages and disadvantages of the proposed UF treatment system facility. The disadvantages include the capital expenses required to construct the facility which includes the city taking out a loan to complete the project. The UF treatment system requires a chemically enhanced backwash system at regular cycles. This will involve a chemical waste handling and disposal system as part of the proposed treatment facility. All waste will be properly neutralized before disposal and will meet CDPHE discharge requirements. Additionally, the filter unit has a finite lifespan, after which the unit filter must be replaced. The recovery of the unit filter will gradually decrease over its recommended lifespan regardless of the number of backwash cycles so unit filter replacement considerations must be made as part of the O&M planning and budgeting of the facility.

The UF treatment system does offer many advantages as well for the proposed facility. The system is fully capable of meeting and exceeding the water quality standards that it will subjugated to under the SWTR. The system, with one filtration skid operating, will be capable of meeting current service area demands through the year. The system has been documented to show great performance at particle and pathogen removal in surface water treatment applications. Additionally, the system has a high recovery rate, even with the gradual decline consideration over its operating life. Given the high degree of treatment performance, the system has a modest operating cost with respect to membrane filters. Furthermore, the UF systems are designed to be highly automated resulting in less operator interface time and are proven to effectively provide treatment with a smaller building footprint as compared to conventional filtration systems. The proposed UF system would include three separate UF treatment skids. The proposed facility to contain the UF treatment system will have a 60'x100' footprint as well as a 1,000,000 finished water storage tank. Above all, this selected alterative utilizing UF technology is the preferred treatment system of the city. A layout of the proposed water treatment facility is depicted below in Figure 1.

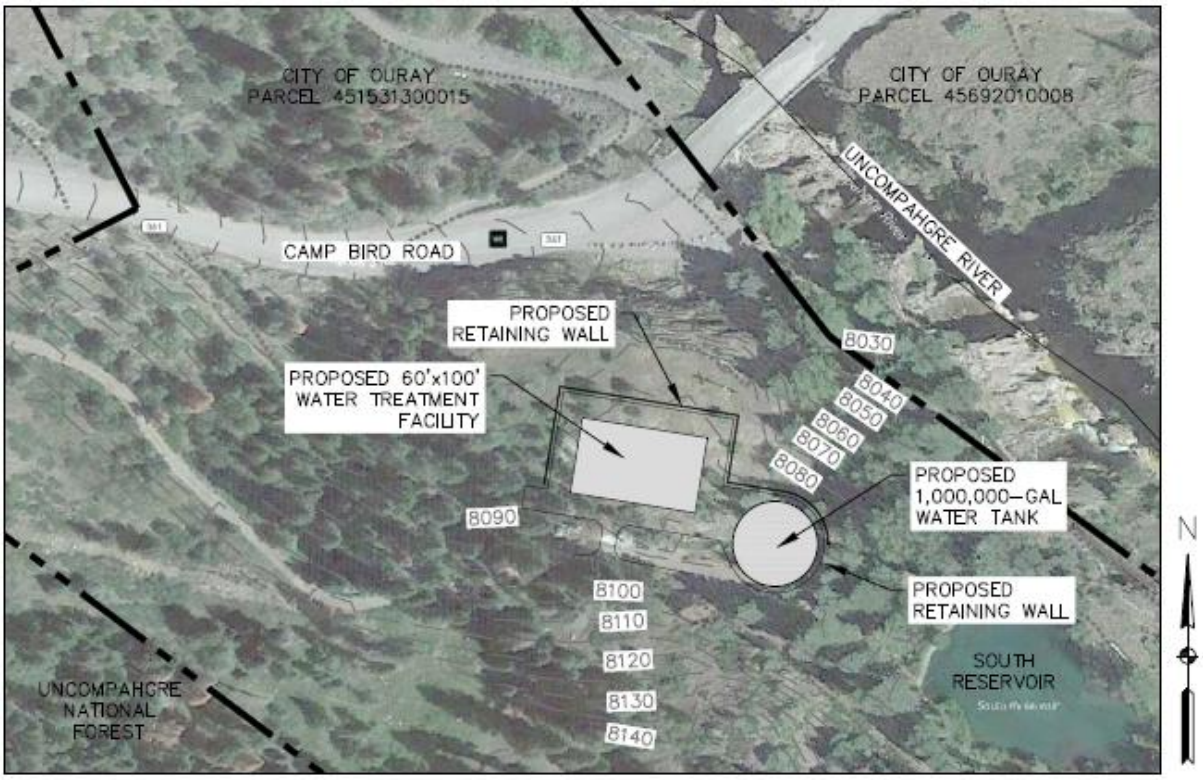


Figure 1 - Proposed Ouray WTP

The estimated total cost of the proposed project is approximately $10,579,712 with an assumed loan total amount of $10,313,057. The loan is proposed to be financed through the state of Colorado's State Revolving Fund (SRF) program. The proposed project financing assumes a 30-year loan at a 2.5% interest rate. The remaining portion of the project cost, approximately $266,655, is to be covered from the city's contribution through their Water Enterprise Fund.

The proposed repayment plan assumes a 30-year term on the SRF loan at a 2.5% interest rate. The $10,579,712 loan equates to a $492,734 annual loan repayment from the city. As mentioned, the new water treatment facility is expected to increase annual O&M costs as the facility will provide advanced water treatment. These new O&M costs are projected to increase the city's budget by approximately $101,500.

The city charges water fees based on Equivalent Residential Units (EQR). The proposed project financing assumes that the loan repayment and increased O&M costs will be supported by an increase in the monthly water EQR rate. The city may elect to fund the project instead through a combination of water rate increased as well as other sources of revenue which is documented in the city's Project Needs Assessment (PNA) submitted on December 6, 2021. Currently, the project assumes the loan repayment to be financed entirely through monthly water EQR rate increases. The city has an existing number of 1,397 EQRs with an existing water EQR monthly rate $32.05. To finance the loan repayment, the monthly EQR rate is projected to increase by $35.45 totaling to a new monthly EQR rate of $67.50. Detailed construction costs, non-construction costs, changes to operations & maintenance costs, a potential debt repayment schedule, and changes to user fees can be found in Table 1, Table 2, Table 3, Table 4 respectively. Note that the debt repayment schedule includes grants that the city will be applying for to help with the cost of construction

and construction management.

Table 1 - Construction & Non-Construction Costs

Table 1

CONSTRUCTION ITEMS					
ITEM	**DESCRIPTION**	**QTY**	**UNIT**	**UNIT PRICE**	**SUBTOTAL**
1	Construction (See Attached Details from 30% Design GMP - CMAR)	1	LS	$ 9,888,057	$ 9,888,057
				Subtotal Construction Items	**$ 9,888,057**
Electrical, Instrumentation, and Controls					Included
Seeding/Erosion Control/Site Restoration					Included
Mobilization/Demobilization/Bonds/Insurance					Included
				Subtotal Construction Cost	**$ 9,888,057**
Contingency					Included
Contractor OH&P and General Conditions					Included
				Total Construction Cost	**$ 9,888,057**
NON-CONSTRUCTION ITEMS					
Project Needs Assessment & Environmental Assessment					$ 15,000
Design, Permitting, and Bidding					$ 209,500
Survey					$ 18,355
Geotech					$ 23,800
Construction Management and Oversite					$ 375,000
Legal Services					$ 50,000
				Total Non-Construction Project Cost	**$ 691,655**
				Total Project Cost	**$10,579,712**

Table 2 - Proposed Operation & Maintenance Costs

OPERATIONS & MAINTENANCE ITEMS	ADDITIONAL O&M COST
Utilities	$ 32,000
Chemicals	$ 50,000
Equipment Maintenance and Repairs	$ 10,000
Water Sampling and Analysis	$ 9,500
Total Annual Operations and Maintenance Costs	**$ 101,500**

Table 3 - Debt Repayment Schedule

Total Project Cost	City Contribution	Total SRF Loan1	Annual Loan Payment	Change to Annual O&M Cost	Total Project Annual Cost
$ 10,579,712	$ 266,655	$ 10,313,057	$ 492,734	$ 101,500	$ 594,234

[1]Assumes 30 year loan term and 2.5% interest. Loan amount = Total Project Cost - City Contribution

Table 4 - Monthly User Rate Increases to Support Project

Existing EQRs	Existing Water EQR Monthly Rate	Proposed Increase to Monthly EQR Rate	Proposed Monthly Water EQR Rate
1,397	$ 32.05	*$ 35.45*	$ 67.50

4 AFFECTED ENVIRONMENT

4.1 DESCRIPTION OF PLANNING AREA

The City of Ouray is located in Ouray County, Colorado. The city is situated in a steep mountain canyon along US Highway 550 "Million Dollar Highway" with a reputation as one of the most iconic mountain communities in Colorado. The Town of Ridgway is located approximately 12 miles to the north, and the Town of Silverton is approximately 18 miles south of Ouray. The city provides potable water service to approximately 780 connection taps contained within sections 24 and 25 of Township 44N, Range 8W and Sections 30 and 31 of Township 44N, Range 7W of the New Mexico Prime Meridian. The service area is comprised of approximately 16% of non-residential services and 84% of residential services.

The existing Ouray WTP is located on Camp Bird Road, just a few hundred feet south of the service area limits. The existing facility is situated between Canyon Creek and the Uncompahgre River. The proposed site for the new facility is situated near a cliff edge and approximately 200 feet from the Uncompahgre River. The proposed site sits approximately 40-60 feet above the river. The existing effective FEMA FIRM map shows the limits of the existing flood zone for the Uncompahgre River. There is no modernized effective data to determine the flood hazard for the area. The preliminary FEMA FIRM map was issued 2/17/2022 and shows the limits of the Uncompahgre River floodplain but with no base flood elevations yet determined. Most of the wetlands in the Ouray Area are Riverine Wetlands comprising of Uncompahgre River, Canyon Creek and Portland Creek. Other wetlands include Freshwater Pond and Freshwater Emergent Wetland. None of these wetlands are in the immediate area of the proposed project site. Project maps depicting the city's service area, existing facilities, wetlands inventory, topographic features and environmental features are included with this report in Appendix B for reference.

The existing water treatment facility gas chlorinates raw water from the Weehawken Spring which consists of three springs captured in perforated concrete vaults and piped downhill via two 6-inch and one 8-inch pipe to a sealed concrete vault located near the bridge over Cascade Creek. The water in the sealed vault flows through an underground 10-inch pipeline down the Cascade Creek drainage where it then enters the two existing 0.5 MG raw water storage tanks. Potential contamination sources for the existing spring source and the proposed Weehawken Creek source include deciduous forest, evergreen forest, and mixed forest. No known non-natural contamination sources are known within 500-feet of the proposed water treatment plant or 100-feet of the proposed storage tank. The existing and proposed water resources in the area utilized by the city for its water supply are considered to be of good quality with limited contamination sources.

4.2 POPULATION AND WATER DEMAND PROJECTIONS

Historic population data for the City of Ouray was obtained from the Colorado Department of Local Affairs. Population estimates are produced annually by the State Demography Office and updated every 10 years with results from the US Census Bureau census data. Historic population for the City of Ouray over the past 10 years (2010 – 2020) is summarized below in Table 5.

Table 5 - Ouray US Census Population (2010 - 2020)

Year	Population	Annual Growth Rate
2010	1003	--
2011	970	-3.3%
2012	974	0.4%
2013	966	-0.8%
2014	947	-2.0%
2015	928	-2.0%
2016	958	3.2%
2017	937	-2.2%
2018	902	-3.7%
2019	923	-1.3%
2020	899	-1.0%
Average		**-1.3%**

Note: Population data obtained from Colorado Department of Local Affairs. Population estimated produced annually by the State Demography Office.

The average annual growth rate from 2010 to 2020 is (-1.3%). This yearly decrease can be used to estimate the current population in 2021, as well as to project the 20-year planning period population. The historic data shows the city's population to be declining. To be conservative, this report assumes an annual population increase of 0.5%. Note that it is assumed that the non-residential growth and related water usage will mirror this 0.5% annual growth rate. The 20-year projected population is presented in Table 6.

Table 6 - Ouray 20-year Projected Population

Year	Population
2020	899
2021	903
2022	908
2023	913
2024	917
2025	922
2026	926
2027	931
2028	936
2029	940
2030	945
2031	950
2032	954
2033	959
2034	964
2035	969
2036	974
2037	979
2038	983
2039	988
2040	993
2041	998
2042	1,003

Note: Projected population based on assumed annual growth rate of 0.5%.

To determine a design flow rate, water data from May 2018 through April 2021 was compiled as summarized below in Table 7. The average daily demand from 2018 to 2021 in the city's service area was approximately 0.625 MGD and the maximum day demand was 0.953 MGD.

Table 7 - Ouray Existing Treated Water Usage

	Gallons per Month	Gallons per Day
Average Demand	19,077,638	625,901
Max Demand	29,547,906	953,158
Summer Average (June, July, Aug)	27,308,668	890,397
Winter Average (Nov, Dec, Jan, Feb)	13,930,168	463,470

Water usage per capita estimates were developed over 2018 – 2021 as presented in Table 8, which utilized the observed annual average day demands from each year according to the treated water usage data and population projections from the observed growth rate from the State Demography Office data previously discussed. According to this analysis, the city's service area uses on average 671 gallons per day per capita.

Table 8 - Ouray Demands Per Capita

Year	Population	Treated Effluent Per Capita Per Day
2018	902	816.6
2019	923	682.3
2020	899	667.8
2021	903	519.8
Avg	**907**	**671.6**
Note: Treated Effluent Assumes Flow into the (2) existing 0.5 MG storage tanks		

Utilizing the calculated per capita average day demand and the 20-year projected population, the town's future average day demand was projected as summarized in Table 9. Note that this per capita flow includes all commercial demands, therefore the projected 20-year flow assumes that increases in commercial demands mirror increases in residential flows.

Table 9 - Ouray 20-year Planning Period Projected Average Day Demand

	Gallons per Month	Gallons per Day
Average Demand	21,078,798	691,555
Max Demand	32,647,351	1,053,140
Summer Average (June, July, Aug)	30,173,226	983,796
Winter Average (Nov, Dec, Jan, Feb)	15,391,381	512,086

5 ENVIRONMENTAL IMPACTS

5.1 DIRECT AND SECONDARY IMPACTS

Construction of a new ultra-filtration water treatment facility may have direct impacts from construction and secondary and cumulative impacts from future development within the service area. Secondary

impacts are those induced or stimulated by, or because of, the proposed action. These can include cumulative, social, and land use impacts, among others. Cumulative impacts are the collective incremental impacts of the proposed action regardless of the entity undertaking the action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period. From the characteristics of the proposed project and descriptive elements of the environmental setting, probable impacts are direct and/or secondary. Some of the more specific impacts are as follows:

5.1.1 Surface Water and Groundwater Quality and Quantity

The proposed Ouray WTP will be located approximately 200 feet from the Uncompahgre River, approximately 2 miles from the existing Weehawken Springs supply source (GWUDI), and approximately 2 miles from Weehawken Creek. The proposed WTP will continue to use and treat water from the Weehawken Springs supply source and will be subject to the SWTR regulations.

Construction of a membrane filtration water treatment facility is not anticipated to have a direct impact on water quality because the primary function of the facility will be to treat the Weehawken Spring water which is a ground water source under the influence of surface water (GWUDI). No surface waters are anticipated to be withdrawn or discharged to as part of facility operations. Furthermore, there are no changes to land use as part of this project that would result in secondary impacts. Erosion control measures will be used during construction to minimize sediment runoff resulting from construction activities.

Potential secondary impacts may include changes in nonpoint source pollution as a result of the cumulative of changing land uses, from rural to suburban, and accompanying increases in population. Urban and suburban runoff typically contains higher concentrations of nutrients, (e.g. nitrogen & phosphorous) oxygen consuming wastes, pathogens, pesticides, heavy metals, and oil compared with runoff from rural areas. As areas develop, local waterbodies are likely to receive higher levels of nonpoint source pollution. As such, major land use changes from rural to suburban or urban are not anticipated within the service area as the steep geographic conditions limit the spread of the City boundaries and the spread of development. Any increases in population would be limited to within the existing service area boundaries. As mentioned in Section 4, population increases in the service area expected to be moderate at a maximum of 0.5% annually.

5.1.2 Wetlands

As seen on the US Fish & Wildlife Services Wetlands map in Appendix B, two (2) types of wetlands existing within the project planning area: freshwater pond and riverine. The freshwater pond wetlands are part of the South Reservoir, and the riverine wetlands is in the Uncompahgre River. The South Reservoir is located within the city property parcel for the proposed WTP, and the Uncompahgre River is outside of all city property boundaries. The riverine and freshwater wetlands are not anticipated to be directly impacted as a result of the construction or completion of the proposed project. There are no documented wetland losses in the planning area.

Secondary and cumulative impacts to wetlands may be similar to those for water quality. Increased delivery of non-point source pollution including temporary increases in sediment loads from construction sites can impact wetlands. Erosion control measures will be used during construction to minimize sediment runoff resulting from construction activities. A description of the proposed project was submitted to the US Army

Corps of Engineers (USACE) for comment on February 24th, 2022. As of March 2022, a response from USACE has not been received.

5.1.3 Floodplains

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Prelim panel 08091C034E, the proposed WTP is located within in unshaded Zone X, areas on higher ground and away from local flooding sources and have a reduced flood risk when compared to the Moderate and High Flood Risk categories. Thus, the proposed project will be located outside of the floodplain. FEMA FIRM panels are attached in Appendix B.

A description of the proposed project was submitted to the US Army Corps of Engineers (USACE) for comment February 24th, 2022. As of March 2022, a response from USACE has not been received.

5.1.4 Land Use

No changes are expected with respect to land use designations. The proposed WTP will be located on a separate property from the existing ground water treatment facility. No zoning changes will be necessary as all work will take place on the existing city owned property. The existing property for the proposed WTP is located outside of the city limits on Camp Bird Road. According to the Ouray County Official Zoning map, the area is designated as Alpine Zone as shown in Appendix B.

A description of the proposed project was submitted to the National Resources Conservation Service (NRCS) for comment and review. A response letter was received on March 24th, 2022, stating that the proposed project does not occur on an area of prime farmland as defined by the FPPA and that the project will not be subject to the Farmland Protection Policy Act (FPPA) and recommends use of accepted erosion control practices during construction of the project. This correspondence is included in Appendix D.

5.1.5 Terrestrial and Aquatic Plants and Wildlife

An Information or Planning and Consultation (IPaC) Report was compiled that catalogues all of the listed and proposed threatened and endangered species, and critical habitats found in the planning area. This report can be found in Appendix C. The IPaC report found three (3) endangered species, three (3) threatened species, and one (1) candidate species in the planning area. However, no critical habitats were found within the planning area. Because there are no critical habitats at the existing wastewater facility location, the proposed project is not expected to affect these threatened and endangered species. Potential secondary impacts include roadkill to mobilization and increased roadway usage during construction. A loss of wildlife habitat is not expected to occur.

A description of the proposed project was submitted to both the US Fish and Wildlife (USFWS) and Colorado Parks and Wildlife (CPW) Headquarters for comment in February 24, 2022. As of March 2022, a response has not been received from neither USFWS nor CPW.

5.1.6 Cultural, Historical, and Archaeological Resources

Original American settlement in Ouray County was largely driven by mining industries, and there are both active and historical mines in close proximity to the City of Ouray. A Site File Search through History Colorado's Office of Archaeology and Historic Preservation was requested for all listed sites within 1 mile

which returned 328 sites and 23 surveys within the designated area. The results of this search request are attached in Appendix D.

The State Historic Preservation Office (SHPO) upon Section 104 of the State Register Act review of the proposed project, determined that the proposed action would have no adverse effect to properties of state historic significance. This response letter dated March 21st, 2022, is included in Appendix D.

No direct or secondary impacts are expected as a result of this project. However, the potential still exists for direct impacts to occur to undiscovered resources during construction activities. In the event that previously unidentified cultural resources and or human remains are discovered during construction, all relevant authorities will be contacted about any such discoveries. All construction will halt until authorities have determined that proper investigation and documentation of any new discoveries have been completed.

5.1.7 Air Quality

The planning area for this project is within an attainment area for air quality standards. The nonconformance rules applies for the project. No changes to air quality are expected as result of this project. Secondary air quality impacts may result from increased emissions from vehicle usage, heating systems, lawn care and cooking appliances, commercial and industrial facilities, and electric generating systems.

A description of the proposed project was submitted to CDPHE Air Pollution Control Office for comment on March 16th, 2022. As of March 2022, a response has not been received.

5.1.8 Environmental Justice

According to the most recent US Census Bureau data, the racial population demographics of the City of Ouray are as follows: 85.4% white alone, 8.3% Hispanic, and 3.6% of two or more races. The lack of relative diversity in the service area makes it very unlikely for impacts to disproportionately affect minority populations. Additionally, the construction of the new WTP is a benefit to all members of the service area equally.

5.2 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts of this project that may not be fully mitigated include:

- Short-term increases in noise and ambient air particulate levels and increased traffic in the immediate vicinity of construction activities?
- Increased pollution in stormwater runoff from construction sites and impervious surfaces throughout the planning area
- Commitment of resources including capital, manpower, and materials
- Loss of potential wildlife habitat due to development
- Increased traffic associated with residential and commercial development served by the project

5.3 MITIGATION OF ADVERSE IMPACTS

The City of Ouray and Ouray County are part of the Region 10 League for Economic Assistance and Planning. Ouray and Ouray County are included in the regional economic development plan, however; no such regional environmental or water resources plan exists for the Region 10 League as of March 2022. None the less, there are still steps the city and county of Ouray can take to help mitigate any potential environment impacts from the proposed project and future projects. These steps include the following:

- Regional watershed plan
- Urban growth boundary or other growth management tools
- Stormwater management plan
- Habitat and or open space preservation and protection
- Wetland polices and or ordinances
- Floodplain policies/ordinances
- Erosion control and re-vegetation requirements

6 PUBLIC PARTICIPATION

A public meeting was held at the town hall on April 4th, 2022. During this meeting, an overview of the proposed project was discussed. The meeting minutes from the public meeting are attached in Appendix E.

7 REFERENCE DOCUMENTS

The reference documents used in the compilation of this Environmental Assessment can be found in the appendices. Each document and its corresponding appendix location can be found in the section where the reference document was utilized and or discussed.

8 AGENCIES CONTACTED

A letter including a brief description of the proposed project and planning area along with a map of the planning area has been sent to each of the agencies listed in Table 10. Each agency was allowed 30 days to respond to the letter. Upon receipt by Element Engineering, all responses will be forwarded to Matt Alms with CDPHE. Copies of the agency letters can be found in Appendix D.

Table 10 - Agency Correspondence

Environmental Organizations	Date Letter Sent	Response Due Date	Date Reply Recieved	Response
National Park Service	2/24/2022	3/26/2022	N/A	Comment period expired without a reply.
Colorado Air Pollution (CDPHE)	3/16/2022	4/15/2022		
Colorado Division of Water Resources (State Engineer's Office)	3/16/2022	4/15/2022		
US Fish and Wildlife Service	2/24/2022	3/26/2022	N/A	Comment period expired without a reply.
US Army Corps of Engineers (Floodplains and Wetlands)	2/24/2022	3/26/2022	N/A	Comment period expired without a reply.
Natural Resource Conservation Service (NRCS)	3/16/2022	4/15/2022	3/24/2022	Project not subject to FPPA. NRCS encourages the use of accepted erosion control practices during construction.
History Colorado	2/24/2022	3/26/2022	3/21/2022	No properties of historical significance listed on state register are included in project area. If human remains are discovered during ground disturbing activities, requirements under CRS 24-80 part 13
Colorado Parks and Wildlife Southwest Region	2/24/2022	3/26/2022	N/A	Comment period expired without a reply.

APPENDIX A

FINAL EVALUATION OF SURFACE WATER INFLUENCE TO SOURCES DATED MARCH 2, 2021

COLORADO
Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

March 2, 2021

JOE COLEMAN
OURAY CITY OF - PWSID CO0146588
PO BOX 468
OURAY CO 81427

Final Evaluation of Surface Water Influence to Sources

Dear JOE COLEMAN:

The Water Quality Control Division (Division) has completed an evaluation of the OURAY CITY OF (the "Supplier") Spring No. 1 Weehawken (WL002) in accordance with Drinking Water Program Policy 3, *Evaluation of Ground Water Sources to Determine Direct Influence of Surface Water*. The result of this analysis is that the source will be classified as groundwater under the direct influence of surface water (GWUDI).

This evaluation of the source as GWUDI was conducted by the Division utilizing data collected by the system from April 2020 through October 2020. The specific information for each water source evaluated for the system is presented in Table 1.

Table 1: Result of Final GWUDI Evaluation

WSF Number	Water System Facility (WSF) Name	Previous Classification	Current Classification	Primary Justification
WL002	Spring No. 1 Weehawken	Groundwater	GWUDI	Multiple moderate and high risk MPA results and multiple total coliform positive results

Due to the fact that insufficient data was present to make a final GWUDI determination, the Division required the data presented in Table 2 to be collected.

Table 2: Minimal Monitoring Requirements

Parameter	Location	Frequency	Sampling Dates
Conductivity and Temperature	WL002	2X per 7-day week	April 2020 through October 2020
Raw Water Total coliform *(w/ E. coli)*	WL002	1X month	April 2020 through October 2020
Microscopic Particulate Analysis (MPA)	WL002	3X as specified	1st in Apr/May 2020, 2nd in June/July 2020, 3rd in Aug/Sept 2020
Aerobic Spores	Not Required	Not Required	Not Required

Results of Evaluation

The Division analyzed the data collected as well as took into account the history of the well, the well construction methods and the proximity to surface water in order to make a final determination of GWUDI. Table 3 summarizes the data collected by the system and analyzed by the Division. Figures 1 and further show the results of the data collection for temperature and conductivity.

Table 3: Summary of Data Evaluation

Parameter	Result	Conclusion
Temperature and Conductivity	The data does not show significant variations of temperature and conductivity over short periods of time.	The temperature and conductivity data indicates a low risk of surface water influence on WL002.
Total coliform *(w/ E. coli)*	Four of seven result showed the presence of total coliform. All results were absent for *E. coli.*	The total coliform and *E. coli* results indicate a moderate risk of surface water influence on WL002.
MPA	8/28/18 Score 12, Moderate Risk 8/5/19 Score 13, Moderate Risk 5/19/20 Score 30, High Risk 7/27/20 Score 20, High Risk 10/27/20 Score 6, Low Risk 10/28/20 (at source) Score 0, Low Risk	The MPA results indicate a high risk of surface water influence on WL002.

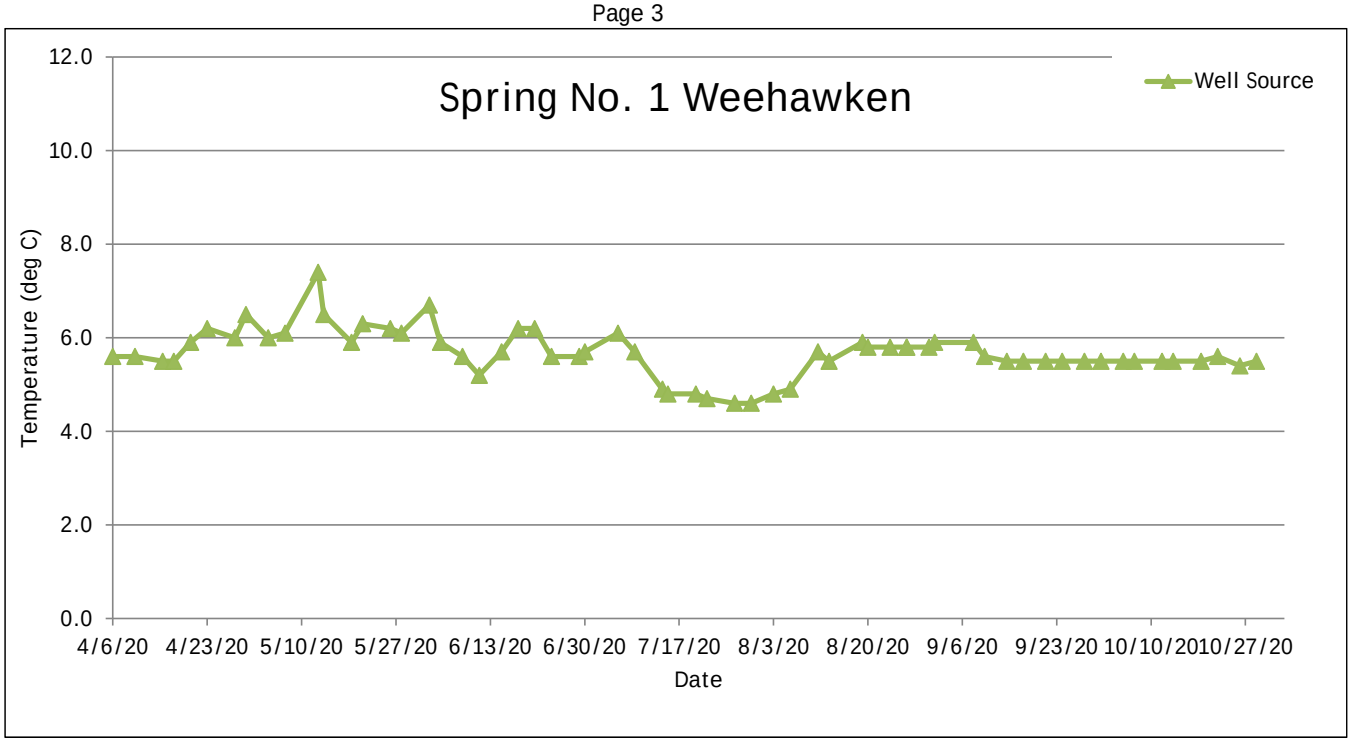


Figure 1: Temperature monitoring on Spring No. 1 Weehawken

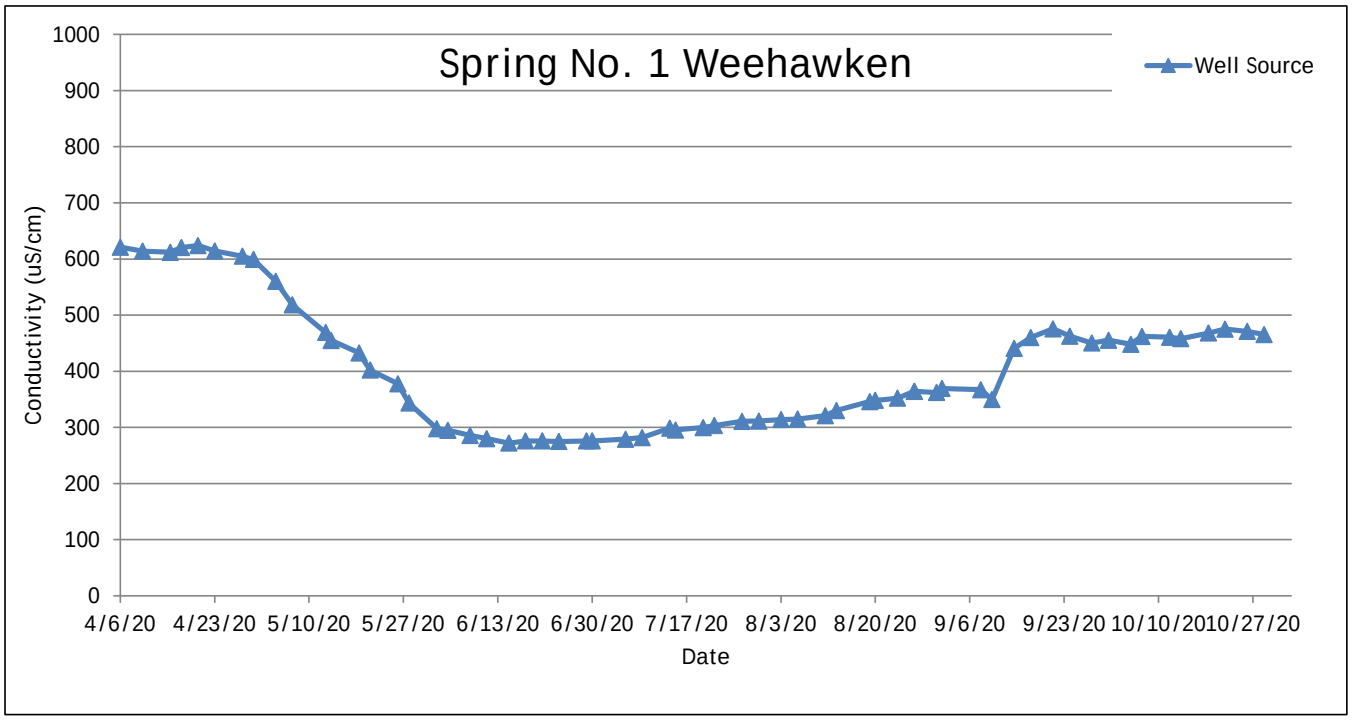


Figure 2: Conductivity monitoring on Spring No. 1 Weehawken

Evaluation Conclusions

Based upon the data collected by the Supplier and evaluated by the Division, the Division finds that the Supplier's water source (Spring No. 1 Weehawken) will be regulated by the Division as a GWUDI sources. This classification determination is effective as of the date of this letter; it is considered to be final unless evidence is submitted to the Division that conditions with Spring No. 1 Weehawken have changed to warrant further investigation with regard to the influence of surface water to the well. Systems with sources classified as GWUDI are required to comply with the Surface Water Treatment Rules (SWTR) outlined in 5 CCR 1002-11, §§8-10. Information regarding the SWTR requirements that are applicable to the system will be provided in a separate letter.

If there are any questions regarding the contents of this letter and/or requirements for the Supplier, please contact Bryan Pickle by phone at 303-692-3527 or by email at bryan.pickle@state.co.us.

ec:
JOE COLEMAN - COLEMANJ@CITYOFOURAY.COM; AC
DANNY WILBUR - WILBURD@CITYOFOURAY.COM; OPERATOR
DR. ELISABETH LAWACZECK - ELAWACZECK@OURAYCOUNTYCO.GOV; OURAY COUNTY ENVIRONMENTAL HEALTH DEPT

File: CO0146588, OURAY COUNTY, COMMUNITY - GWUDI

COLORADO
Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

March 2, 2021

JOE COLEMAN
OURAY CITY OF - PWSID CO0146588
PO BOX 468
OURAY CO 81427

Requirements Notice
Reclassification to Ground Water Under the Direct Influence of Surface Water (GWUDI)

Dear JOE COLEMAN:

The Colorado Department of Public Health and Environment ("Department") notified OURAY CITY OF ("Supplier") that SPRING NO 1 WEEHAWKEN (002) has been reclassified to ground water under the direct influence of surface water (GWUDI). Listed below are the specific regulatory requirements associated with the reclassification.

Treatment
Section 11.8(1)(b)(iv) of the Colorado Primary Drinking Water Regulations 5 CCR 1002-11 ("Regulation 11") requires any ground water source determined to be GWUDI to provide adequate surface water treatment for the source within eighteen (18) months of receiving notification from the Department. Adequate surface water treatment is considered to be a treatment system that is designed and operated to:

1. Achieve at least 99.99 percent (4-log) inactivation and/or removal of viruses and at least 99.9 percent (3-log) inactivation and/or removal of Giardia lamblia cysts. The inactivation of viruses and Giardia lamblia is primarily accomplished by disinfection with chlorine.
2. Achieve at least 99 percent (2-log) removal of Cryptosporidium. Cryptosporidium cyst removal is achieved by filtration.
3. Additionally, the outcome of a source water risk assessment required by the Long Term 2 Enhanced Surface Water Treatment Rule may require additional treatment that is capable of removing/inactivating up to 99.9997 percent (5.5-log) of Cryptosporidium.

Section 11.8 of Regulation 11 requires additional daily turbidity and chlorine residual monitoring. The Supplier should consider the costs and benefits of adding/upgrading treatment to all water sources and the potential for other and future sources to be classified as GWUDI. The Supplier must install adequate surface water treatment by October 1, 2022. Alternatively, the Supplier may discontinue use by physically disconnecting GWUDI sources.

Waterworks Plan and Specification Approval
Section 11.4(1) of Regulation 11 requires plans and specifications associated with the construction or modifications of any waterworks to be submitted to the Department for review and approval. This includes, but is not limited to:

1. Commencing construction of any new waterworks.
2. Making improvements to or modifying any existing treatment.
3. Initiating the use of a new source.

Approval, for any changes, must be obtained prior to installation/operation. For community water systems, all plans and specifications must be prepared by a Professional Engineer registered in the State of Colorado. If the Supplier chooses to install filtration, note that water quality monitoring will be required to justify the design of the filtration system. Attachment A outlines the water quality that must be collected. The Department recommends the Supplier begin water quality monitoring as soon as possible to collect sufficient data to justify any design.

A copy of the design criteria and information regarding plan reviews, including all forms and guidance, can be obtained from the Department's website at wqcdcompliance.com/eng. If you have technical questions regarding plans and specifications submittal and review or questions about the approval process, please contact the Engineering Section at 303-692-6298.

Interim Measures

In accordance with Section 11.8(3)(a)(ii) of Regulation 11, the Supplier is required to implement interim measures until full surface water treatment is installed and operational. In order to protect public health and to comply with Regulation 11, all reclassified sources are evaluated by the Department to determine the degree of interim measures that are appropriate until adequate treatment is approved and installed. Until adequate surface water treatment is approved, installed and operational, the following interim measures are required for all reclassified GWUDI systems:

1. Immediately, the Supplier must operate continuous chemical disinfection treatment prior to each entry point to the distribution system.
2. The Supplier must begin maintaining 2.0 mg/L disinfection residual at all entry points served by SPRING NO 1 WEEHAWKEN (002) by June 1, 2021. On June 1, 2021, the Supplier must begin daily monitoring of the entry point. The first monthly operating report (MOR) must be submitted by July 10, 2021 and monthly thereafter. Please visit wqcdcompliance.com/mors for reporting forms and additional reporting instructions.

A minimum entry point chemical disinfectant residual level of 2.0 mg/L must be maintained at all times unless a Department approved alternative minimum residual level is requested and obtained. Technical questions regarding alternative level approval should be directed to the Engineering Section. If the Supplier would like to request a reduction of the required disinfectant residual, the Supplier must contact the Department by April 1, 2021.

The disinfection residual must be measured, recorded and reported in accordance with the requirements in Sections 11.8(3)(c) and 11.8(3)(f) of Regulation 11, respectively. If additional interim measures are required in the future, the Department will notify the Supplier in writing.

Monitoring Schedule

As a result of the source water reclassification the Supplier's monitoring requirements may have changed. Please visit wqcdcompliance.com/schedules to access the Supplier's monitoring schedule and regularly check the website as schedules are updated on a weekly basis. If you have any problems accessing the schedule, or if you do not have computer access, please call 303-692-3556.
If there are any questions regarding the contents of this letter and/or requirements for the Supplier, please contact your compliance specialist:

Ben Keilly
720-507-7761
ben.keilly@state.co.us

ec:
JOE COLEMAN - COLEMANJ@CITYOFOURAY.COM; AC

CLIFF JARAMILLO - JARAMILLOC@CITYOFOURAY.COM; OPERATOR
DR. ELISABETH LAWACZECK - ELAWACZECK@OURAYCOUNTYCO.GOV; OURAY COUNTY ENVIRONMENTAL HEALTH DEPT

File: CO0146588, OURAY COUNTY, COMMUNITY – GROUNDWATER UNDER THE DIRECT INFLUENCE OF SURFACE WATER (GWUDI)

Attachment A: Water Quality Data Monitoring

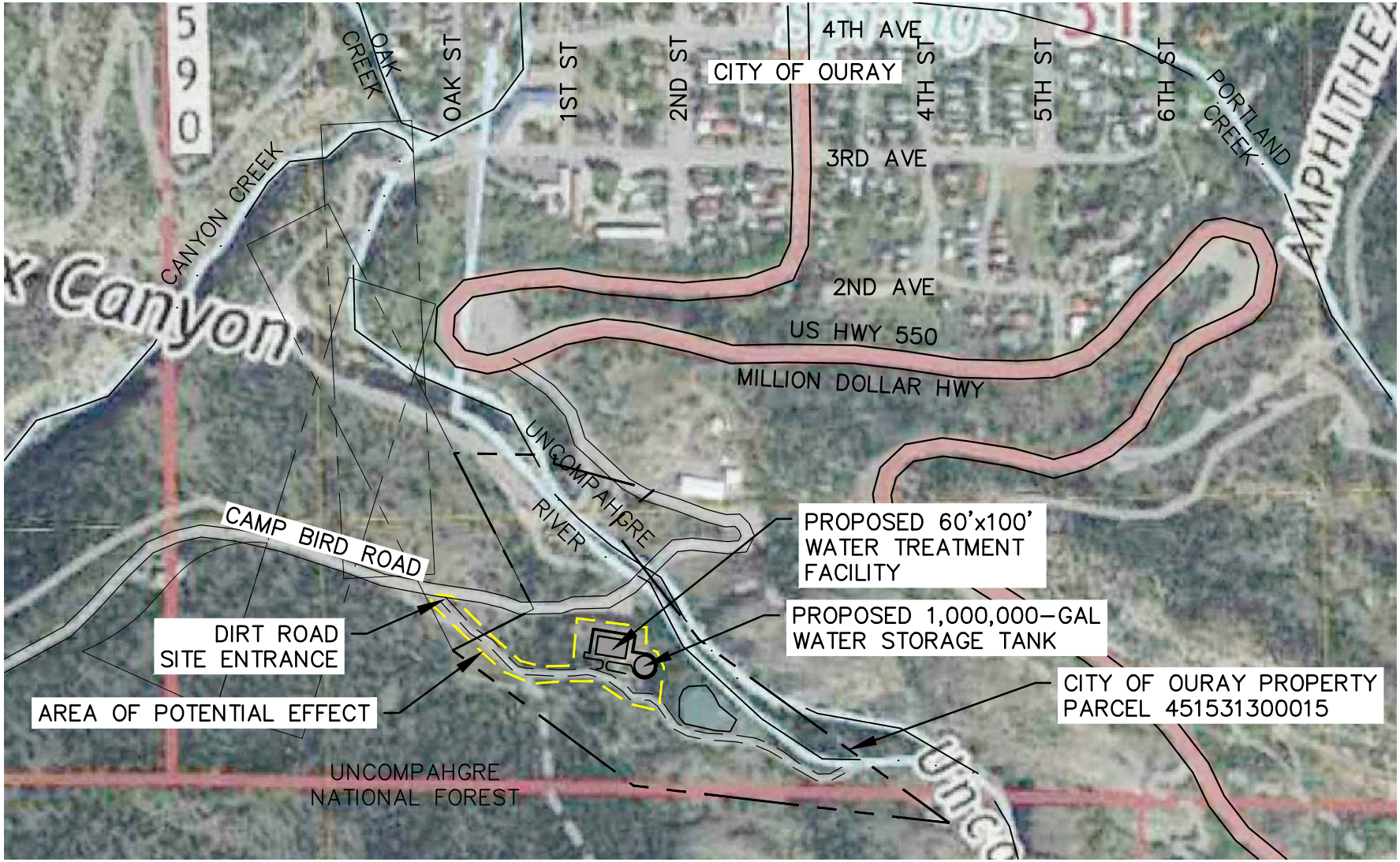
As a result of the reclassification to GWUDI, the Supplier may choose to install filtration on the source. If filtration is chosen, the Supplier must collect sufficient water quality data to justify selection of a given filtration technology in accordance with Section 1.2.3 of the State of Colorado Design Criteria for Potable Water Systems (Policy 5, DCPWS).

Section 1.2.3 discusses that if Bag or Cartridge filtration is chosen, then in addition to water quality specified in Section 1.2.3, additional data must be collected in accordance with Section 4.3.9.5 of the DCPWS to ensure that the filtration will comply with Regulation 11. The options available to justify the selection of bag or cartridge filtration include: turbidity results, pilot/demonstration studies, or a particulate removal study. A summary of the options is below (for additional information consult the DCPWS):

- Turbidity (Section 4.3.9.5a of the DCPWS): Weekly raw water turbidity samples from March through June (one year preferred) to ensure turbidity stays below 1.49 NTU at all times. The Supplier should consider purchasing a turbidimeter so that samples can easily be analyzed on-site (for example: Hach 2100Q).
- Pilot/Demonstration Study (Section 4.3.9.5b): Install a filter onsite during the month of most challenging conditions and demonstrate the filter achieves less than 1.49 NTU turbidity as well as will work economically (doesn't require too frequent filter change out).
- Particulate Removal Study (Section 4.3.9.5c): Using a turbidimeter and the procedure outlined in Appendix L of the DCPWS, the Supplier can demonstrate that the proposed filtration is capable of removing the turbidity in the water. Weekly sampling must occur for two months.

APPENDIX B

PROJECT MAPS AND FIGURES



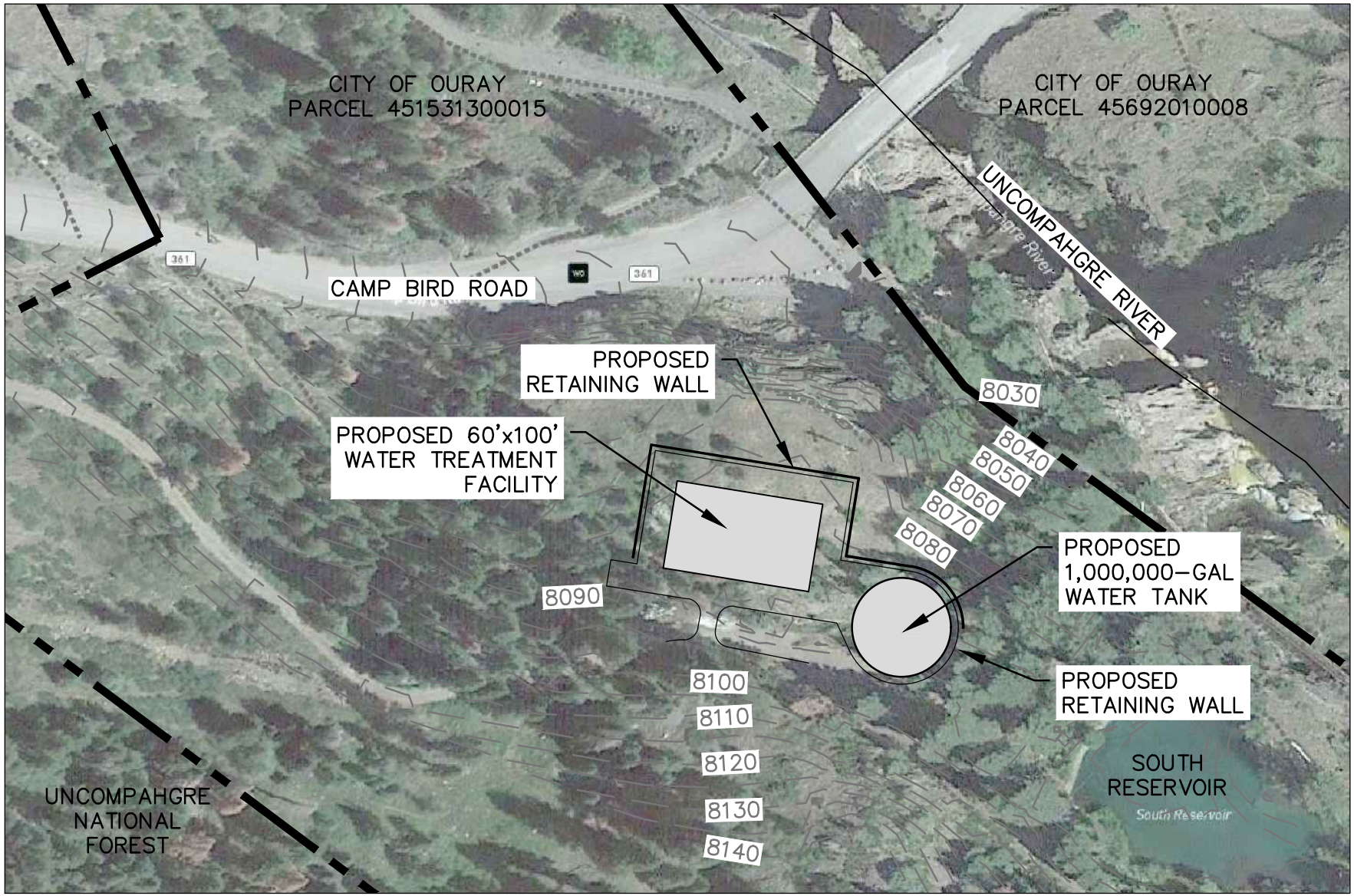
PROPOSED OURAY WTF LOCATION MAP

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
WWW.ELEMENTENGINEERING.NET

DATE
FEBRUARY 2022

JOB NUMBER
111.0001

SCALE
1" = 500'



PROPOSED OURAY WTF

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
WWW.ELEMENTENGINEERING.NET

DATE
FEBRUARY 2022

JOB NUMBER
111.0001

SCALE
1" = 100'

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

OURAY QUADRANGLE
COLORADO - OURAY COUNTY
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 13N
This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

SCALE 1:24 000
METERS
FEET
MILES

CONTOUR INTERVAL 40 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.16

ROAD CLASSIFICATION

2019

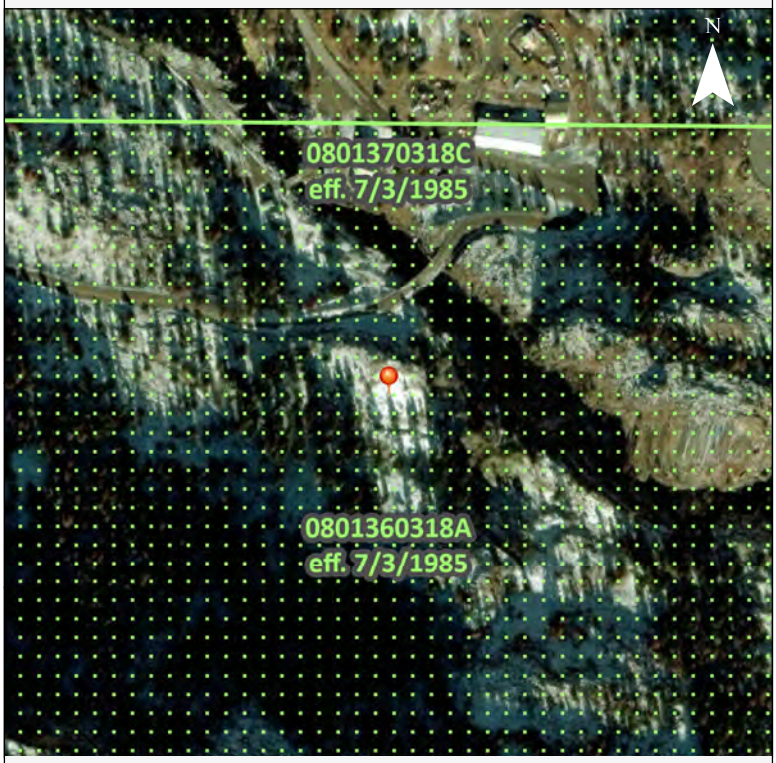
OURAY, CO

Comparison of Flood Hazard

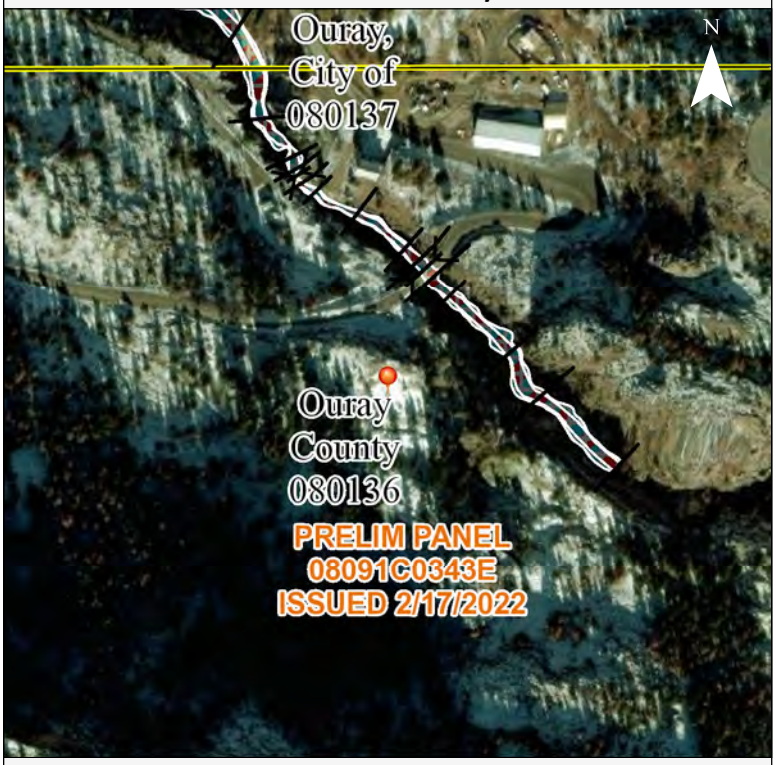
Effective & Preliminary Flood Hazards

FEMA

Effective



Preliminary



Effective

POI Longitude/Latitude	-107.6736, 38.0151
Effective FIRM Panel	0801360318A
Effective Date	7/3/1985

There is no modernized effective data to determine the flood hazard for the selected location; please refer to the static legacy FIRM which can be accessed by selecting the following link:

http://msc.fema.gov/portal/viewProduct?productID=0801360318A

Preliminary

POI Longitude/Latitude	-107.6736, 38.0151
Preliminary FIRM Panel	08091C0343E
Preliminary Issue Date	2/17/2022
Flood Zone	X
Estimated Static BFE*	Not Available
Estimated Flood Depth	Not Available
Vertical Datum	Not Available

* A **Base Flood Elevation** is the expected elevation of flood water during the 1% annual chance storm event. Structures below the estimated water surface elevation may experience flooding during a base flood event.

Hazard Level	Flood Hazard Zone
High Flood Hazard	**AE, A, AH, AO, VE and V Zones.** Properties in these flood zones have a 1% chance of flooding each year. This represents a 26% chance of flooding over the life of a 30-year mortgage.
Moderate Flood Hazard	**Shaded Zone X.** Properties in the moderate flood risk areas also have a chance of flooding from storm events that have a less than 1% chance of occuring each year. Moderate flood risk indicates an area that may be provided flood risk reduction due to a flood control system or an area that is prone to flooding during a 0.2% annual chance storm event. These areas may have been indicated as areas of shallow flooding by your community.
	Unshaded Zone X. Properties on higher ground and away from local flooding sources have a reduced flood risk when compared to the Moderate and High Flood Risk categories. Structures in these areas may be affected by larger storm events, in excess of the 0.2% annual chance storm event.
Low Flood Hazard	**Insurance Note:** High Risk Areas are called 'Special Flood Hazard Areas' and flood insurance is mandatory for federally backed mortgage holders. Properties in Moderate and Low Flood Risk areas may purchase flood insurance at a lower-cost rate, known as Preferred Risk Policies. See your local insurance agent or visit https://www.fema.gov/national-flood-insurance-program for more information.

Disclaimer: This report is for informational purposes only and is not authorized for official use. The positional accuracy may be compromised in some areas. Please contact your local floodplain administrator for more information or go to msc.fema.gov to view an official copy of the Flood Insurance Rate Maps.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2/18/2022 9:39:13 AM

U.S. Fish and Wildlife Service
National Wetlands Inventory

Ouray



October 22, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

APPENDIX C

U.S. FISH & WILDLIFE SERVICE IPAC RESOURCE LIST

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Ouray County, Colorado



Local office

Western Colorado Ecological Services Field Office

(970) 628-7180
(970) 245-6933

445 West Gunnison Avenue, Suite 240
Grand Junction, CO 81501-5711

http://GrandJunctionES@fws.gov
http://www.fws.gov/mountain-prairie/es/Colorado/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NOT FOR CONSULTATION

NAME	STATUS
Canada Lynx Lynx canadensis There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3652	Threatened

Birds

NAME	STATUS
Mexican Spotted Owl Strix occidentalis lucida Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8196	Threatened
Yellow-billed Cuckoo Coccyzus americanus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Bonytail Gila elegans Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/1377	Endangered
Colorado Pikeminnow (=squawfish) Ptychocheilus lucius There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3531	Endangered
Humpback Chub Gila cypha Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3930	Threatened
Razorback Sucker Xyrauchen texanus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/530	Endangered

NOT FOR CONSULTATION

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the

NOT FOR CONSULTATION

Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Black Swift Cypseloides niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Brown-capped Rosy-finch Leucosticte australis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 15 to Sep 15
Cassin's Finch Carpodacus cassinii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Evening Grosbeak Coccothraustes vespertinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31

NOT FOR CONSULTATION

Virginia's Warbler Vermivora virginiae — Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9441

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

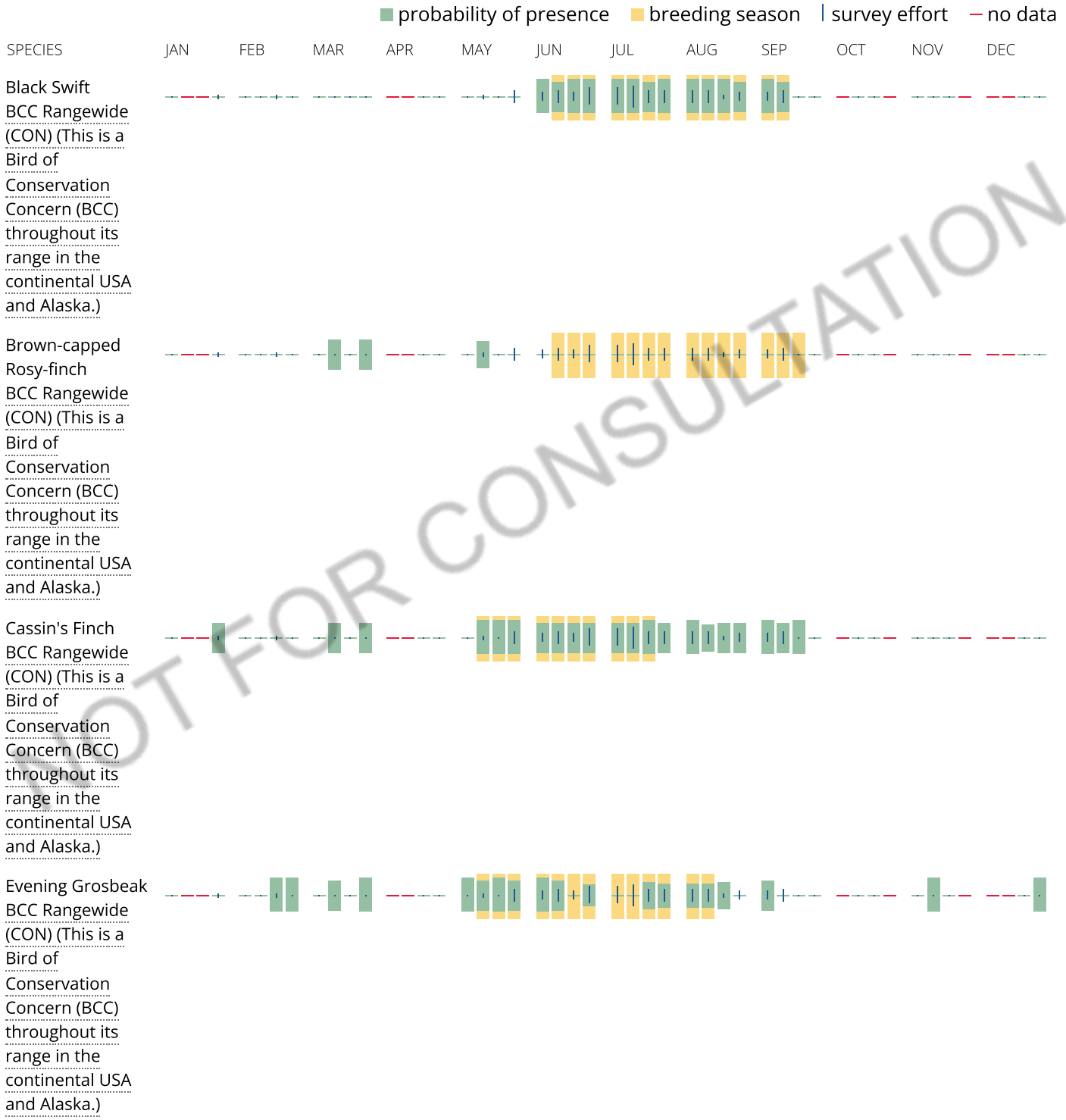
NOT FOR CONSULTATION

No Data (–)

A week is marked as having no data if there were no survey events for that week.

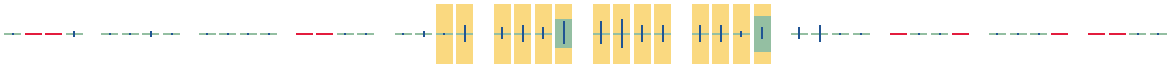
Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

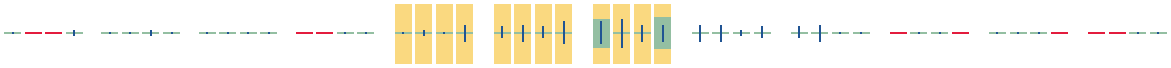


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Olive-sided Flycatcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Virginia's Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



NOT FOR CONSULTATION

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring

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in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

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The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

NATIONAL PARK SERVICE CORRESPONDENCE

February 24, 2022

Sue Masica
Wild and Scenic Rivers
National Park Service
Intermountain Regional Office
Attn: Environmental Quality
12795 West Alameda Parkway
Lakewood, CO 80228

Subject **City of Ouray Water Treatment Plant Improvements**
Element Job No: 0111.0001

Dear Ms. Masica:

Element Engineering, LLC (Element) and the City of Ouray (city) are in the process of performing an environmental review pursuant to the National Environmental Policy Act to assess the environmental impacts of wastewater improvements in Ouray County, Colorado. This letter is submitted to conduct an interdisciplinary review of the proposed project. The project shall be funded through Colorado Department of Public Health and Environment (CDPHE) with state dollars through CDPHE's State Revolving Fund program.

The City of Ouray own and operate a community water system under Public Water System Identification Number CO-0146588. The existing system consists of a raw water supply from Weehawken Spring, two (2) 500,000-gallon raw water storage tanks, gas chlorine disinfection, and distribution including ten (10) pressure reducing valves. The city needs to address their water system because their source water was recently re-classified as groundwater under the direct influence of surface water (GWUDI). Public water systems with water sources classified as GWUDI are required to comply with the Surface Water Treatment Rule, which necessitates additional treatment as compared to a groundwater source, including a filtration system and more stringent disinfection requirements. A new water treatment facility (WTF) must be constructed for the city to continue serving their public service area with potable water as well as to comply with state and federal regulations.

The proposed project involves the construction of a new WTF for the city, including three (3x) 1-million gallon per day (MGD) ultra-filtration treatment skids and liquid sodium hypochlorite injection for disinfection. All treatment components and associated controls will be located within a new treatment process building. Furthermore, a 1-million gallon at-grade clear well storage tank will be constructed at the proposed WTF to provide adequate contact time and to ensure uninterrupted delivery of potable water to the system's users. Lastly, an additional surface water source (Weehawken Creek) will be permitted as part of the project to allow the city to utilize the source at their discretion; however, infrastructure to bring raw water from Weehawken Creek to the proposed WTF building is not proposed as part of the project but may be completed later if deemed appropriate by the city.

Enclosed are a US Geological Survey topographical map, US Fish and Wildlife Service Wetlands map, and Proposed Improvement Exhibits that depict the project's area of potential effect for all construction activities.

The proposed WTF will be constructed on land currently owned by the city, which is adjacent to the Uncompahgre National Forest to the southwest.

Element and the City of Ouray request that your office review the proposed project for any conflicts or issues that are apparent through the National Park Service. Please provide any recommendations you may have to mitigate or avoid these impacts.

We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 720-484-0504 or by email at matth@elementengineering.net. Please respond to this letter by mail to the address in the footer of this letter or by email at matth@elementengineering.net

Sincerely,

Matthew A. Hess, EIT
Design Engineer

Attachments

US Geographical Survey Topographical Map
US Fish & Wildlife Service Wetlands Map
Proposed Improvements Exhibits

COLORADO AIR POLLUTION CONTROL DIVISION (CDPHE) CORRESPONDENCE

March 16, 2022

Garrison Kaufman
Colorado Department of Public Health and Environment
Air Pollution Control Division
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Subject **City of Ouray Water Treatment Plant Improvements**
Element Job No: 0111.0001

Dear Mr. Kaufman:

Element Engineering, LLC (Element) and the City of Ouray (city) are in the process of performing an environmental review pursuant to the National Environmental Policy Act to assess the environmental impacts of wastewater improvements in Ouray County, Colorado. This letter is submitted to conduct an interdisciplinary review of the proposed project. The project shall be funded through Colorado Department of Public Health and Environment (CDPHE) with state dollars through CDPHE's State Revolving Fund program.

The City of Ouray own and operate a community water system under Public Water System Identification Number CO-0146588. The existing system consists of a raw water supply from Weehawken Spring, two (2) 500,000-gallon raw water storage tanks, gas chlorine disinfection, and distribution including ten (10) pressure reducing valves. The city needs to address their water system because their source water was recently re-classified as groundwater under the direct influence of surface water (GWUDI). Public water systems with water sources classified as GWUDI are required to comply with the Surface Water Treatment Rule, which necessitates additional treatment as compared to a groundwater source, including a filtration system and more stringent disinfection requirements. A new water treatment facility (WTF) must be constructed for the city to continue serving their public service area with potable water as well as to comply with state and federal regulations.

The proposed project involves the construction of a new WTF for the city, including three (3x) 1-million gallon per day (MGD) ultra-filtration treatment skids and liquid sodium hypochlorite injection for disinfection. All treatment components and associated controls will be located within a new treatment process building. Furthermore, a 1-million gallon at-grade clear well storage tank will be constructed at the proposed WTF to provide adequate contact time and to ensure uninterrupted delivery of potable water to the system's users. Lastly, an additional surface water source (Weehawken Creek) will be permitted as part of the project to allow the city to utilize the source at their discretion; however, infrastructure to bring raw water from Weehawken Creek to the proposed WTF building is not proposed as part of the project but may be completed later if deemed appropriate by the city.

Enclosed are a US Geological Survey topographical map, US Fish and Wildlife Service Wetlands map and Proposed Improvement Exhibits that depict the project's area of potential effect for all construction activities. The proposed WTF will be constructed on land currently owned by the city.

Element and the City of Ouray request that your office review the proposed project for any potential conflicts or issues that are apparent through CDPHE concerning air pollution issues. The proposed project is not expected to negatively impact air quality in the area.

We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 720-484-0504 or by email at matth@elementengineering.net. Please respond to this letter by mail to the address in the footer of this letter or by email at matth@elementengineering.net

Sincerely,

Matthew A. Hess, EIT
Design Engineer

Attachments

US Geographical Survey Topographical Map

US Fish & Wildlife Service Wetlands Map

Proposed Improvements Exhibits

COLORADO DIVISION OF WATER RESOURCES CORRESPONDENCE

March 16, 2022

Kevin Rein
Department of Natural Resources
Colorado Division of Water Resources
1313 Sherman St, Suite 821
Denver, Colorado 80203

Subject **City of Ouray Water Treatment Plant Improvements**
Element Job No: 0111.0001

Dear Mr. Rein:

Element Engineering, LLC (Element) and the City of Ouray (city) are in the process of performing an environmental review pursuant to the National Environmental Policy Act to assess the environmental impacts of wastewater improvements in Ouray County, Colorado. This letter is submitted to conduct an interdisciplinary review of the proposed project. The project shall be funded through Colorado Department of Public Health and Environment (CDPHE) with state dollars through CDPHE's State Revolving Fund program.

The City of Ouray own and operate a community water system under Public Water System Identification Number CO-0146588. The existing system consists of a raw water supply from Weehawken Spring, two (2) 500,000-gallon raw water storage tanks, gas chlorine disinfection, and distribution including ten (10) pressure reducing valves. The city needs to address their water system because their source water was recently re-classified as groundwater under the direct influence of surface water (GWUDI). Public water systems with water sources classified as GWUDI are required to comply with the Surface Water Treatment Rule, which necessitates additional treatment as compared to a groundwater source, including a filtration system and more stringent disinfection requirements. A new water treatment facility (WTF) must be constructed for the city to continue serving their public service area with potable water as well as to comply with state and federal regulations.

The proposed project involves the construction of a new WTF for the city, including three (3x) 1-million gallon per day (MGD) ultra-filtration treatment skids and liquid sodium hypochlorite injection for disinfection. All treatment components and associated controls will be located within a new treatment process building. Furthermore, a 1-million gallon at-grade clear well storage tank will be constructed at the proposed WTF to provide adequate contact time and to ensure uninterrupted delivery of potable water to the system's users. Lastly, an additional surface water source (Weehawken Creek) will be permitted as part of the project to allow the city to utilize the source at their discretion; however, infrastructure to bring raw water from Weehawken Creek to the proposed WTF building is not proposed as part of the project but may be completed later if deemed appropriate by the city.

Enclosed are a US Geological Survey topographical map, US Fish and Wildlife Service Wetlands map, Proposed Improvement Exhibits that depict the project's area of potential effect for all construction activities. The proposed WTF will be constructed on land currently owned by the city.

Element and the City of Ouray request that your office review the proposed project for any conflicts or issues that are apparent through the Department of Natural Resources Division of Water Resources. The proposed project will not require additional water rights to be secured.

We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 720-484-0504 or by email at matth@elementengineering.net. Please respond to this letter by mail to the address in the footer of this letter or by email at matth@elementengineering.net

Sincerely,

Matthew A. Hess, EIT
Design Engineer

Attachments

US Geographical Survey Topographical Map
US Fish & Wildlife Service Wetlands Map
Proposed Improvements Exhibits

US FISH AND WILDLIFE SERVICE CORRESPONDENCE

February 24, 2022

Drew DeBerry
US Fish & Wildlife Service
Colorado Field Office
P.O. Box 25486, DFC
Denver, Colorado 80225-0486

Subject **City of Ouray Water Treatment Plant Improvements**
Element Job No: 0111.0001

Dear Mr. DeBerry:

Element Engineering, LLC (Element) and the City of Ouray (city) are in the process of performing an environmental review pursuant to the National Environmental Policy Act to assess the environmental impacts of wastewater improvements in Ouray County, Colorado. This letter is submitted to conduct an interdisciplinary review of the proposed project. The project shall be funded through Colorado Department of Public Health and Environment (CDPHE) with state dollars through CDPHE's State Revolving Fund program.

The City of Ouray own and operate a community water system under Public Water System Identification Number CO-0146588. The existing system consists of a raw water supply from Weehawken Spring, two (2) 500,000-gallon raw water storage tanks, gas chlorine disinfection, and distribution including ten (10) pressure reducing valves. The city needs to address their water system because their source water was recently re-classified as groundwater under the direct influence of surface water (GWUDI). Public water systems with water sources classified as GWUDI are required to comply with the Surface Water Treatment Rule, which necessitates additional treatment as compared to a groundwater source, including a filtration system and more stringent disinfection requirements. A new water treatment facility (WTF) must be constructed for the city to continue serving their public service area with potable water as well as to comply with state and federal regulations.

The proposed project involves the construction of a new WTF for the city, including three (3) 1-million gallon per day (MGD) ultra-filtration treatment skids and liquid sodium hypochlorite injection for disinfection. All treatment components and associated controls will be located within a new treatment process building. Furthermore, a 1-million gallon at-grade clear well storage tank will be constructed at the proposed WTF to provide adequate contact time and to ensure uninterrupted delivery of potable water to the system's users. Lastly, an additional surface water source (Weehawken Creek) will be permitted as part of the project to allow the city to utilize the source at their discretion; however, infrastructure to bring raw water from Weehawken Creek to the proposed WTF building is not proposed as part of the project but may be completed later if deemed appropriate by the city.

Element conducted a desktop review of the project area for suitable habitat for federally listed threatened and endangered species protected under the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) (ESA). The IPaC report found three (3) endangered species, four (4) threatened species, and one (1) candidate species in the planning area. However, no critical habitats were found within the planning area. Because there

are no critical habitats at the proposed water facility location, the proposed project is not expected to affect these threatened and endangered species. The determination for all species for this project will be: Not Likely to Adversely Affect the Species.

Element and the City of Ouray request that your office review the proposed project for any State and Federally listed threatened and endangered species and any other important State natural resources that may occur in the project area. Please provide any recommendations you may have to mitigate or avoid these impacts.

Enclosed are a US Fish and Wildlife Service Wetlands map, Proposed Improvement Exhibits that depict the project's area of potential effect for all construction activities, and the results of the IPaC desktop review. The proposed WTF will be constructed on land currently owned by the city.

We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 720-484-0504 or by email at matth@elementengineering.net. Please respond to this letter by mail to the address in the footer of this letter or by email at matth@elementengineering.net

Sincerely,

Matthew A. Hess, EIT
Design Engineer

Attachments

US Fish & Wildlife Service Wetlands Map
Proposed Improvement Exhibits
Information for Planning and Consulting (IPaC) Endangered Species Report

US ARMY CORPS OF ENGINEERS (FLOODPLAINS AND WETLANDS)

February 24, 2022

US Army Corps of Engineers
Grand Junction Regulatory Office
Albuquerque District, NW Colorado Branch
400 Rood Avenue, Room 224
Grand Junction, CO 81501-5793

Subject **City of Ouray Water Treatment Plant Improvements**
Element Job No: 0111.0001

Dear US Army Corps of Engineers:

Element Engineering, LLC (Element) and the City of Ouray (city) are in the process of performing an environmental review pursuant to the National Environmental Policy Act to assess the environmental impacts of wastewater improvements in Ouray County, Colorado. This letter is submitted to conduct an interdisciplinary review of the proposed project. The project shall be funded through Colorado Department of Public Health and Environment (CDPHE) with state dollars through CDPHE's State Revolving Fund program.

The City of Ouray own and operate a community water system under Public Water System Identification Number CO-0146588. The existing system consists of a raw water supply from Weehawken Spring, two (2) 500,000-gallon raw water storage tanks, gas chlorine disinfection, and distribution including ten (10) pressure reducing valves. The city needs to address their water system because their source water was recently re-classified as groundwater under the direct influence of surface water (GWUDI). Public water systems with water sources classified as GWUDI are required to comply with the Surface Water Treatment Rule, which necessitates additional treatment as compared to a groundwater source, including a filtration system and more stringent disinfection requirements. A new water treatment facility (WTF) must be constructed for the city to continue serving their public service area with potable water as well as to comply with state and federal regulations.

The proposed project involves the construction of a new WTF for the city, including three (3x) 1-million gallon per day (MGD) ultra-filtration treatment skids and liquid sodium hypochlorite injection for disinfection. All treatment components and associated controls will be located within a new treatment process building. Furthermore, a 1-million gallon at-grade clear well storage tank will be constructed at the proposed WTF to provide adequate contact time and to ensure uninterrupted delivery of potable water to the system's users. Lastly, an additional surface water source (Weehawken Creek) will be permitted as part of the project to allow the city to utilize the source at their discretion; however, infrastructure to bring raw water from Weehawken Creek to the proposed WTF building is not proposed as part of the project but may be completed later if deemed appropriate by the city.

Enclosed are a US Geological Survey topographical map, US Fish and Wildlife Service Wetlands map, and Proposed Improvement Exhibits that depict the project's area of potential effect for all construction activities. The proposed WTF will be constructed on land currently owned by the city as shown on the attached exhibits,

above the Uncompahgre River and near an existing water body named “South Reservoir”. Waters of the U.S. are not expected to be affected.

Element and the City of Ouray request that your office review the proposed project to identify potential impacts to Waters of the United States and any recommendations you may have to minimize or avoid these effects.

We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 720-484-0504 or by email at matth@elementengineering.net. Please respond to this letter by mail to the address in the footer of this letter or by email at matth@elementengineering.net

Sincerely,

Matthew A. Hess, EIT
Design Engineer

Attachments

US Geographical Survey Topographical Map
US Fish & Wildlife Service Wetlands Map
Proposed Improvements Exhibits

NATURAL RESOURCE CONSERVATION SERVICE (NRCS) CORRESPONDENCE

March 16, 2022

Clint Evans
Denver Federal Center
Building 56, Room 2604
P.O. Box 25426
Denver, CO 80225-0426

Subject **City of Ouray Water Treatment Plant Improvements**
Element Job No: 0111.0001

Dear Mr. Evans:

Element Engineering, LLC (Element) and the City of Ouray (city) are in the process of performing an environmental review pursuant to the National Environmental Policy Act to assess the environmental impacts of wastewater improvements in Ouray County, Colorado. This letter is submitted to conduct an interdisciplinary review of the proposed project. The project shall be funded through Colorado Department of Public Health and Environment (CDPHE) with state dollars through CDPHE's State Revolving Fund program.

The City of Ouray own and operate a community water system under Public Water System Identification Number CO-0146588. The existing system consists of a raw water supply from Weehawken Spring, two (2) 500,000-gallon raw water storage tanks, gas chlorine disinfection, and distribution including ten (10) pressure reducing valves. The city needs to address their water system because their source water was recently re-classified as groundwater under the direct influence of surface water (GWUDI). Public water systems with water sources classified as GWUDI are required to comply with the Surface Water Treatment Rule, which necessitates additional treatment as compared to a groundwater source, including a filtration system and more stringent disinfection requirements. A new water treatment facility (WTF) must be constructed for the city to continue serving their public service area with potable water as well as to comply with state and federal regulations.

The proposed project involves the construction of a new WTF for the city, including three (3x) 1-million gallon per day (MGD) ultra-filtration treatment skids and liquid sodium hypochlorite injection for disinfection. All treatment components and associated controls will be located within a new treatment process building. Furthermore, a 1-million gallon at-grade clear well storage tank will be constructed at the proposed WTF to provide adequate contact time and to ensure uninterrupted delivery of potable water to the system's users. Lastly, an additional surface water source (Weehawken Creek) will be permitted as part of the project to allow the city to utilize the source at their discretion; however, infrastructure to bring raw water from Weehawken Creek to the proposed WTF building is not proposed as part of the project but may be completed later if deemed appropriate by the city.

Enclosed are a US Geological Survey topographical map, US Fish and Wildlife Service Wetlands map, Proposed Improvement Exhibits that depict the project's area of potential effect for all construction activities. The proposed WTF will be constructed on land currently owned by the city.

Element and the City of Ouray request that your office review the proposed project for potential effects on important farmland and prime rangeland and any recommendations you may have to minimize or avoid these effects. We also seek your assessment of the compatibility of the proposed project with State and local government or any private programs and policies to protect important range and farmland.

We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 720-484-0504 or by email at matth@elementengineering.net. Please respond to this letter by mail to the address in the footer of this letter or by email at matth@elementengineering.net

Sincerely,

Matthew A. Hess, EIT
Design Engineer

Attachments

US Geographical Survey Topographical Map
US Fish & Wildlife Service Wetlands Map
Proposed Improvements Exhibits

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
Denver Federal Center
Building 56, Room 2604
P.O. Box 25426
Denver, CO 80225

SUBJECT: Farmland Protection Policy Act March 24th, 2022

Matthew A. Hess, EIT
Design Engineer
Element Engineering, LLC
12687 West Cedar Drive, Suite 300
Lakewood, CO 80228

RE: City of Ouray Water Treatment Plant Improvements
Element Job No. 0111.0001

Dear Matthew,

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to non-agricultural use. It assures that to the extent possible federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland.

For the purpose of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to the FPPA requirements does not have to be currently used for cropland. Projects are subject to the FPPA requirements if they may irreversibly convert farmland to non-agriculture use and are completed by a federal agency or with assistance from a federal agency.

This project as submitted does not occur on an area of prime farmland as defined by the FPPA. The proposed project is not subject to the FPPA. NRCS encourages the use of accepted erosion control practices during the construction and installation of these projects.

If you have any further questions, please call (720) 544-2855.

Thank you,

T. Riley Dayberry
Asst. State Soil Scientist
thomas.dayberry@usda.gov

cc:
Eugene Backhaus - State Resource Conservationist, NRCS, Denver CO
Bronson Smart – State Conservationist, NRCS, Denver CO, Acting
William Shoup - State Soil Scientist, NRCS, Denver CO

HISTORY COLORADO CORRESPONDENCE

February 24, 2022

Steve Turner
Colorado Historical Society
1300 Broadway
Denver, CO 80203-2137

Subject **City of Ouray Water Treatment Plant Improvements**
Element Job No: 0111.0001

Dear Mr. Turner:

Element Engineering, LLC (Element) and the City of Ouray (city) are in the process of performing an environmental review pursuant to the National Environmental Policy Act to assess the environmental impacts of wastewater improvements in Ouray County, Colorado. This letter is submitted to conduct an interdisciplinary review of the proposed project. The project shall be funded through Colorado Department of Public Health and Environment (CDPHE) with state dollars through CDPHE's State Revolving Fund program. This project is being reviewed under the State Register Act.

The City of Ouray own and operate a community water system under Public Water System Identification Number CO-0146588. The existing system consists of a raw water supply from Weehawken Spring, two (2) 500,000-gallon raw water storage tanks, gas chlorine disinfection, and distribution including ten (10) pressure reducing valves. The city needs to address their water system because their source water was recently re-classified as groundwater under the direct influence of surface water (GWUDI). Public water systems with water sources classified as GWUDI are required to comply with the Surface Water Treatment Rule, which necessitates additional treatment as compared to a groundwater source, including a filtration system and more stringent disinfection requirements. A new water treatment facility (WTF) must be constructed for the city to continue serving their public service area with potable water as well as to comply with state and federal regulations.

The proposed project involves the construction of a new WTF for the city, including three (3x) 1-million gallon per day (MGD) ultra-filtration treatment skids and liquid sodium hypochlorite injection for disinfection. All treatment components and associated controls will be located within a new treatment process building. Furthermore, a 1-million gallon at-grade clear well storage tank will be constructed at the proposed WTF to provide adequate contact time and to ensure uninterrupted delivery of potable water to the system's users. Lastly, an additional surface water source (Weehawken Creek) will be permitted as part of the project to allow the city to utilize the source at their discretion; however, infrastructure to bring raw water from Weehawken Creek to the proposed WTF building is not proposed as part of the project but may be completed later if deemed appropriate by the city.

Enclosed are proposed improvement exhibits which depict the project's area of potential effect (APE) for all construction activities. The proposed WTF will be constructed on land currently unused and owned by the city. A site file search for all eligible or listed sites and historic districts along with any surveys, within 1-mile of the proposed project area, has been requested through History Colorado. Enclosed is the response letter stating

that 378 sites and 23 surveys were located within one mile of the designated area as well as additional GIS site information obtained from History Colorado's file search.

Element and the City of Ouray request that your office review the enclosed maps and site file search results for any potential conflicts or issues that are apparent through the Colorado Historical Society concerning historic properties. Note that this project is being reviewed under the State Register Act. The proposed project is not expected to impact any historic properties.

We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 720-484-0504 or by email at matth@elementengineering.net. Please respond to this letter by mail to the address in the footer of this letter or by email at matth@elementengineering.net

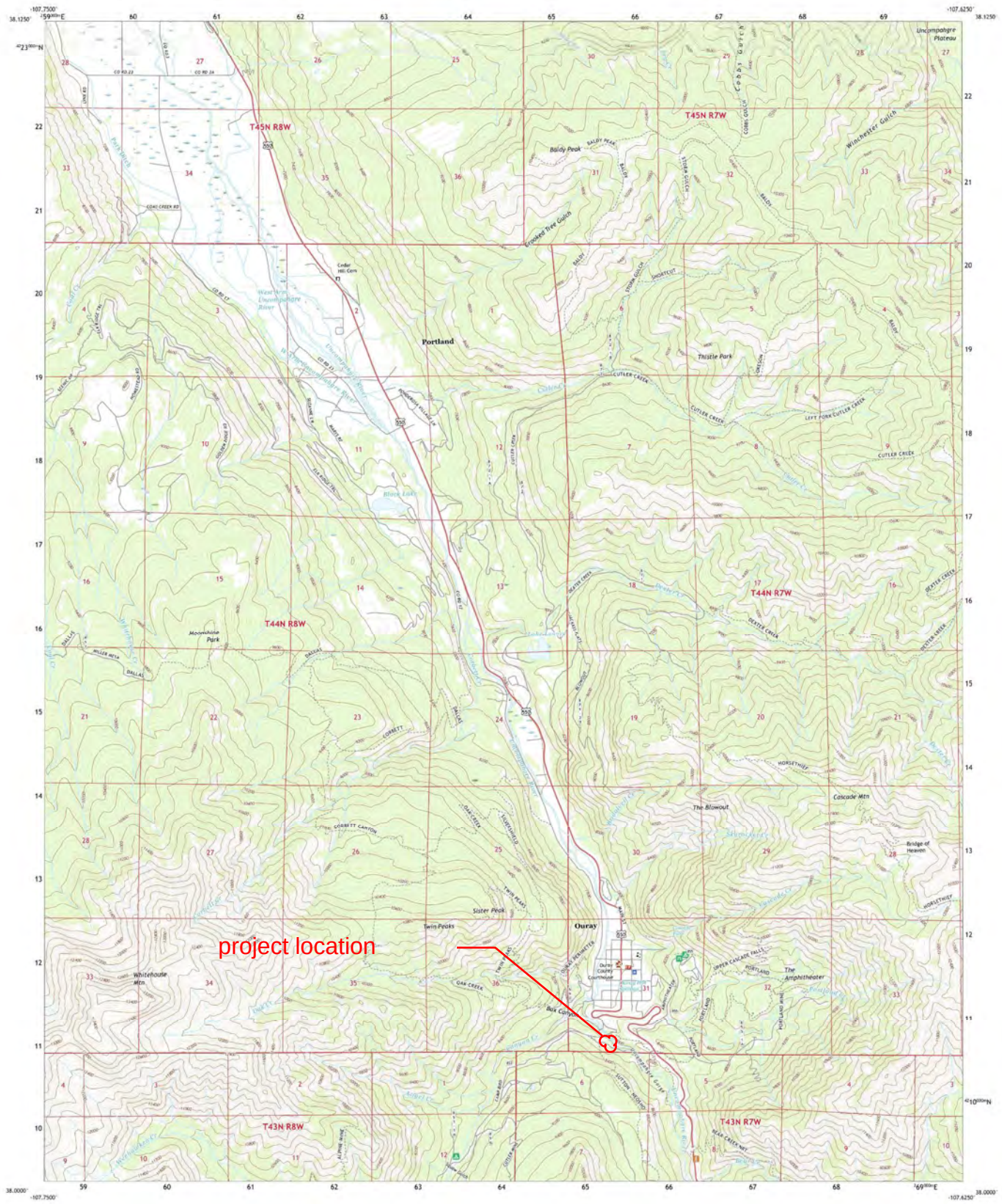
Sincerely,



Matthew A. Hess, EIT
Design Engineer

Attachments

USGS Map
Proposed Improvement Exhibits
History Colorado Site File Search Result Letter & GIS Results



USGS U.S. DEPARTMENT OF THE INTERIOR U.S. GEOLOGICAL SURVEY

The National Map US Topo

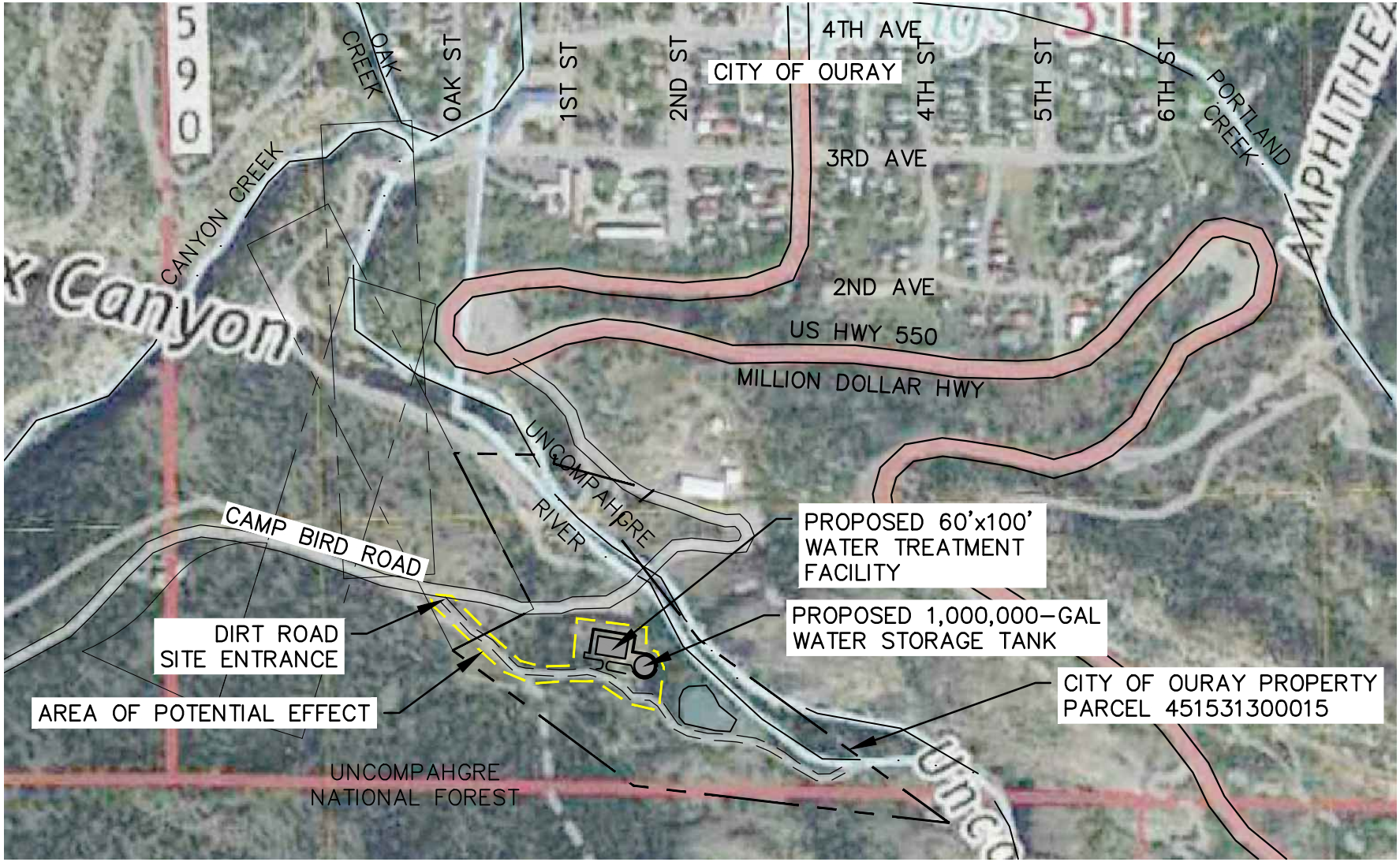
OURAY QUADRANGLE
COLORADO - OURAY COUNTY
7.5-MINUTE SERIES

Produced by the United States Geological Survey

SCALE 1:24 000

ROAD CLASSIFICATION

OURAY, CO
2019



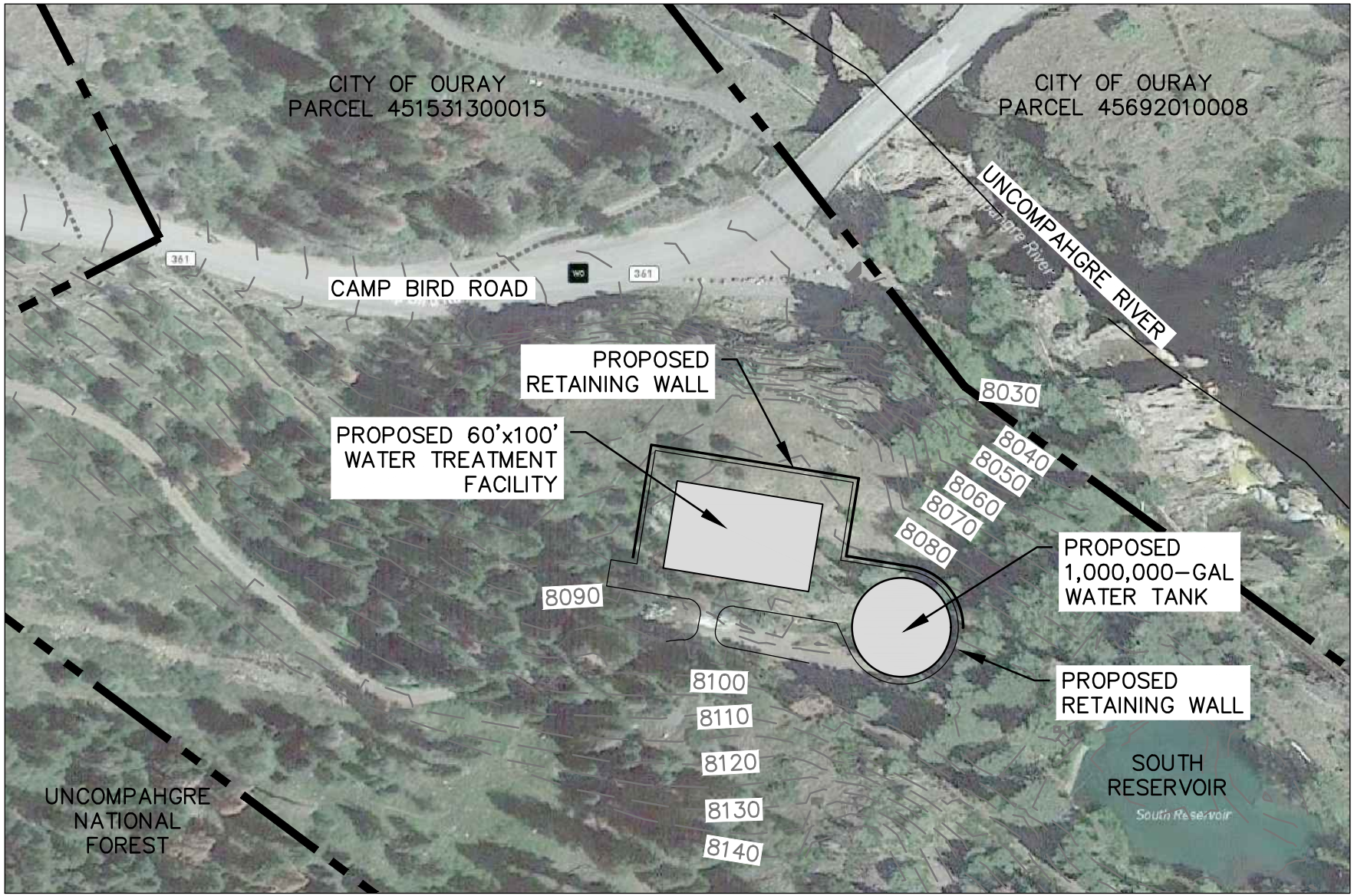
PROPOSED OURAY WTF LOCATION MAP

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
WWW.ELEMENTENGINEERING.NET

DATE
FEBRUARY 2022

JOB NUMBER
111.0001

SCALE
1" = 500'



PROPOSED OURAY WTF

ELEMENT ENGINEERING LLC
12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
720.749.4165
WWW.ELEMENTENGINEERING.NET

DATE
FEBRUARY 2022

JOB NUMBER
111.0001

SCALE
1" = 100'

OFFICE *of* ARCHAEOLOGY
and HISTORIC PRESERVATION

Service and Price List

File Searches

A file search is conducted when OAHP staff is asked to supply information concerning cultural resources or cultural resource surveys in a specific location. File search requests can be e-mailed to hc_filesearch@state.co.us.

Results are provided in an excel spreadsheet containing 34 data fields that are sorted by site number. Also provided are corresponding GIS shapefiles (if available), and accompanying read-me document. Exact locations of archaeological and paleontological sites are only provided to professionals who qualify under the *Dissemination of Cultural Resource Information: Policy and Procedures*.

A basic file search is one based on locational criteria (map, UTM, PLSS, etc.), customized searches are based on criteria other than locational attributes. GIS clips (without accompanying spreadsheet) and information in other file formats may be provided on a case by case basis. If you have any questions or would like to get more information concerning file searches, please contact OAHP via email at hc_filesearch@state.co.us.

Reproductions

Reproductions of OAHP site forms and reports are available upon request. Locations of archaeological and paleontological sites are only provided to professionals who qualify under the *Dissemination of Cultural Resource Information: Policy and Procedures*.

Reproductions are sent electronically as PDFs. Some items, including those over 11" x 17", are reproduced only on a case by case basis. Items that are not available for reproduction can be viewed in-house. If you have questions about requesting reproductions or would like to make an appointment to view records in-house, please contact OAHP at hc_filesearch@state.co.us.

Fees

Requests from students, private landowners, or individuals conducting personal research may be eligible for fee reductions or waivers. Under normal circumstances, file search results and reproductions will be sent out within seven business days of the request being received by OAHP. Larger requests may require more time to complete. Requests requiring a faster turnaround time will be assessed a **$100.00** rush fee and will be done as time allows. Invoices will be sent as a PDF with the results of the file search or reproduction request.

File Search

- $30.00/section
- *Contact OAHP with requests over 50 square miles to receive a custom quote.*

Digital Reproductions*

- *Site Forms*
  - Flat fee per site form $5.00

- *Site Documents/Reports*
  - 1-3 scans $20.00
  - 4-6 scans $50.00
  - 7-9 scans $75.00
  - 10+ scans ..... $100.00 + $10.00 per scan after 10 scans

* A $15.00 surcharge per site form/document/report will be applied *if one or more of the following criteria are met*: requires digitization over 150 pages; includes digitization of oversize images (11" x 17" and larger); requires removal of binding; or housed in off-site location.

OFFICE *of* ARCHAEOLOGY
and HISTORIC PRESERVATION

File Access Request

A completed and signed copy of this form is necessary to access both electronic and hardcopy OAHP cultural resource records. Requests for information can be submitted by e-mail (hc_filesearch@state.co.us). If you have questions or concerns, please e-mail or call us at 303-866-5216 or 303-866-3395.

Some cultural resource information is confidential and may not be released to unauthorized individuals or organizations. Confidential information includes, but is not limited to, locational information for all archaeological and paleontological sites, and locational information on owner-restricted property listings. Individuals who are not granted release of confidential information will be referred to the landholding agency on record.

Requestor's Name: Matthew Hess, EIT

Organization: Element Engineering, LLC

Address, City, State, Zip: 12687 W. Cedar Dr., Suite 300, Lakewood, CO 80228

Telephone, E-mail: 720-484-0504, matth@elementengineering.net

Project Name/Number (for reference purposes): City of Ouray Water Treatment Plant Improvements (0111.0001)

Reason for request (please check all that apply):

[ ] Section 106 Related, lead government agency: _____

[ ] I am a member of planning staff devoted to the day to day management of a CLG Preservation Commission, specify CLG: _____

[ ] I am a private landowner.

[ ] I am a student or researcher seeking information for non-profit/personal research.

[X] Other, specify: Please review under State Register Act - Funded by State Funds

Remarks/Special Requests/Billing Information (if different from above):

Element is in the process of performing an environmental review pursuant to the National Environmental Policy Act to assess the environmental impacts of water treatment improvements in Ouray, CO. The project shall be funded through CDPHE and is being reviewed under the State Register Act. We request assistance identifying historic properties in the area.

Request Tracking *- To be completed by OAHP staff*

Received by:_____ Date:_____ Date Completed: _____

Requested: In-house____Mail_____Phone_____Fax_____E-mail_____Other:_____

File Search ID:_____ Locations of restricted resources provided? Yes____No_____

Fees

File Search $_____ Reproductions $_____ Custom Search $_____

Rush Job $_____ Other (specify) $_____

Total Cost $_____ Invoice Number: _____

Requests for Forms, Documents or Maps:

List all documents, maps, site forms, images, etc. using OAHP ID numbers when possible. Attach additional pages if needed.

Purpose: ☐ View Records In-house ☐ Reproductions (specify): Digital ☒ Hard Copy ☐

Record ID	Comments	Record ID	Comments

Request for Database Search:

	County	Township	Range	Sections					
1.	Ouray	44N	7W	31					
2.									
3.									
4.									

UTM Reference (Please specify datum; NAD83 is preferred)

A. 13S ; 265324.22 mE 4211034.37 mN

B. 13S ; 265724.83 mE 4211080.06 mN

C. 13S ; 265808.07 mE 4210618.49 mN

D. 13S ; 265384.69 mE 4210524.47 mN

Custom Search Criteria:

NAD 83 datum used for UTM reference. We are requesting information on all eligible or listed sites and historic districts within one (1) mile, along with any surveys that were completed within the same area.

User Agreement: OAHP Cultural Resource Records

All individuals requesting access to cultural resource or paleontological records housed at the Office of Archaeology and Historical Preservation (OAHP) must complete and sign the following agreement prior to access. These records include but are not limited to site forms, documents, maps, images, and GIS information. This user agreement will outline the nature and extent of the records that will be provided.

Access to all or part of many cultural resource records is restricted. The criterion under which individuals may obtain access to cultural resource information is provided in OAHP's *Dissemination of Information: Policy and Procedures, 1991 (revised 2012)*. As outlined in that policy, access to archaeological information by non-archaeologists is on a case-by-case basis and generally includes only select information.

I request access to the documents, site forms, images, maps, or GIS information listed on this form. I have read and agreed to the following conditions:

1. Some of the information provided is confidential and may not be released to unauthorized individuals or organizations. Confidential information includes, but is not limited to, locational information for all archaeological and paleontological sites and locational information on owner-restricted property listings. Individuals who are not granted release of confidential information will be referred to the landholding agency on record.

2. There are no guarantees as to the information's accuracy or completeness and it may change frequently.

3. The information provided concerns cultural and paleontological resources that are under the jurisdiction, ownership, or control of other entities, such as state and federal agencies, private individuals, and tribal governments. These properties may be afforded additional levels of legislative protection related to the restrictions on cultural resource information. The information will be used in compliance with applicable municipal, county, state, tribal or federal laws and regulations.

4. Information provided in a digital format is to remain in the sole possession of the undersigned. If digital information is requested for use on a shared system, a signed statement detailing access and security on that system will be provided to OAHP prior to release of the information. OAHP staff will review the statement to determine the nature and extent of information to be provided.

5. OAHP documentary and photo collections are available to researchers for personal and scholarly use. Material from these collections may not be published or reproduced without permission, except that photocopies may be obtained under the fair use exception of the US copyright code. In most cases, OAHP does not hold the copyright to images and documentation. Researchers wishing to publish or publicly display images or other documentation assume responsibility for questions of copyright that may arise.

6. Access to records does not constitute permission to enter onto or conduct investigations on any of the land for which records are provided. It is the users responsibility to obtain permission from the appropriate municipal, county, state, federal, or tribal officials, or private property owners, before instituting any investigations on, or related to, their lands. Copies of the products of such research should be sent to appropriate officials or landowners, and all permit terms and conditions must be honored. Both the State and the landowner may pursue causes of action against the user in the event the information is misused**.**

7. The absence of information concerning resources in a particular area does not necessarily indicate that none exists. The absence of information concerning resources in a particular location may be due to a lack of survey investigations in that area or incomplete information.

8. I understand that obtaining information on previously recorded cultural and paleontological resources does not constitute review under Section 106 of the National Historic Preservation Act or the State Register of Historic Properties Act.

2/16/2022

_____ _____

Signature of User Date

HISTORY COLORADO
Office of Archaeology and Historic Preservation
1200 Broadway, Denver, Colorado 80203

Matthew Hess
Element Engineering, LLC
12687 West Cedar Drive, Ste.300
Lakewood, CO 80228

February 23, 2022

Re: City of Ouray Water Treatment Plant Improvements (0111.0001)
File Search No. 24501

At your request, the Office of Archaeology and Historic Preservation has conducted a search of the Colorado Inventory of Cultural Resources within 1 mile of the area shown in the provided shapefiles, located in the following area:

PM	T	R	S
NM	43N	7W	5-8
NM	43N	8W	1, 12
NM	44N	7W	30-32
NM	44N	8W	25, 36

378 sites and 23 surveys were located in the designated area(s).

If information on any district, site, building, structure, or object in the project area was found, detailed information follows the summary. If no properties were found, but surveys are known to have been conducted in the project area, survey information follows the summary. We do not have complete information on surveys conducted in Colorado, and our site files cannot be considered complete because most of the state has not been surveyed for cultural resources. There is the possibility that as yet unidentified cultural resources exist within the proposed impact area.

Our letter should not be interpreted as formal consultation under Section 106 of the National Historic Preservation Act (36 CFR 800) or the Colorado Register of Historic Places (CRS 24-80.1). In the event that there is federal or state agency involvement, please note that it is the responsibility of the agencies to meet the requirements of these regulations.

We look forward to consulting with you regarding the effect of the proposed project on significant cultural resources in accordance with the Advisory Council on Historic Preservation regulations titled "Protection of Historic Properties" or the Colorado Register of Historic Places, as applicable (http://www.historycolorado.org/oahp/consultation-guidance).

If you have any questions, please contact the Office of Archaeology and Historic Preservation at (303) 866-3392. Thank you for your interest in Colorado's cultural heritage.

Dawn DiPrince
State Historic Preservation Officer

*Information regarding significant archaeological resources is excluded from the Freedom of Information Act. Therefore, legal locations of these resources must not be included in documents for public distribution.

24501_s_sy

History Colorado

Mathew A. Hess, EIT
Design Engineer
Element Engineering, LLC.
12687 West Cedar Drive, Suite 300
Lakewood, Colorado 80228

Re: City of Ouray Water Treatment Plant Improvements – Element Job No. 0111.0001 (HC#81090)

Dear Mr. Hess:

We received your correspondence February 24, 2022 initiating consultation with our office on the subject action pursuant to the Colorado State Register Act – Colorado Revised Statute (CRS) 24-80.1 et. seq.

Based on our review of the information provided, we note that the proposed construction of a new water treatment facility is located on land owned by the city of Ouray. We also understand that the construction of this new facility will be funded using state dollars through the Colorado Department of Public Health and Environment (CDPHE) Revolving Fund program.

A search of our database indicates that no properties of historical significance included or nominated for inclusion in the state register have been recorded within the proposed project area. Please note, as most of Colorado has not been inventoried for cultural resources, our files contain incomplete information. Consequently, there is the possibility that as yet unidentified cultural resources exist within the proposed project area. If human remains are discovered during ground disturbing activities, the requirements under CRS 24-80 part 13 apply and must be followed. Should the current subject action change, please contact our office for continued consultation under CRS 24-80.1.

Please note that our comments should not be interpreted as concurrence under the National Historic Preservation Act or any other environmental law or regulation. In the event that there is federal agency involvement, please note that it is the responsibility of the federal agency to meet the requirements of Section 106 as set forth in 36 CFR Part 800 titled "Protection of Historic Properties". This includes not only reasonable and good faith identification efforts of any historic properties located within the area of potential effects, but determining whether the undertaking will have an effect upon such properties. The State Historic Preservation Office, Native American tribes, representatives of local governments, and applicants for federal permits are entitled to consultative roles in this process.

We thank you for the opportunity to comment. If we may be of further assistance, please contact Holly McKee-Huth, Cultural Resource Information/Section 106 Compliance at (303) 866-4670/holly.mckee@state.co.us.

Sincerely,

Dawn DiPrince
State Historic Preservation Officer

COLORADO PARKS AND WILDLIFE SOUTHWEST REGION CORRESPONDENCE

February 24, 2022

Colorado Parks and Wildlife
Southwest Region – Montrose Office
Attention: Regional Manager
2300 South Townsend Avenue
Montrose, CO 81401

Subject **City of Ouray Water Treatment Plant Improvements**
Element Job No: 0111.0001

Dear Regional Manager:

Element Engineering, LLC (Element) and the City of Ouray (city) are in the process of performing an environmental review pursuant to the National Environmental Policy Act to assess the environmental impacts of wastewater improvements in Ouray County, Colorado. This letter is submitted to conduct an interdisciplinary review of the proposed project. The project shall be funded through Colorado Department of Public Health and Environment (CDPHE) with state dollars through CDPHE's State Revolving Fund program.

The City of Ouray own and operate a community water system under Public Water System Identification Number CO-0146588. The existing system consists of a raw water supply from Weehawken Spring, two (2) 500,000-gallon raw water storage tanks, gas chlorine disinfection, and distribution including ten (10) pressure reducing valves. The city needs to address their water system because their source water was recently re-classified as groundwater under the direct influence of surface water (GWUDI). Public water systems with water sources classified as GWUDI are required to comply with the Surface Water Treatment Rule, which necessitates additional treatment as compared to a groundwater source, including a filtration system and more stringent disinfection requirements. A new water treatment facility (WTF) must be constructed for the city to continue serving their public service area with potable water as well as to comply with state and federal regulations.

The proposed project involves the construction of a new WTF for the city, including three (3x) 1-million gallon per day (MGD) ultra-filtration treatment skids and liquid sodium hypochlorite injection for disinfection. All treatment components and associated controls will be located within a new treatment process building. Furthermore, a 1-million gallon at-grade clear well storage tank will be constructed at the proposed WTF to provide adequate contact time and to ensure uninterrupted delivery of potable water to the system's users. Lastly, an additional surface water source (Weehawken Creek) will be permitted as part of the project to allow the city to utilize the source at their discretion; however, infrastructure to bring raw water from Weehawken Creek to the proposed WTF building is not proposed as part of the project but may be completed later if deemed appropriate by the city.

Element and the City of Ouray request that your office review the proposed project for any potentially adverse effects of wildlife. The proposed project is not expected to have negative impacts on wildlife.

Enclosed are a US Geological Survey topographical map, US Fish and Wildlife Service Wetlands map, and Proposed Improvement Exhibits that depict the project's area of potential effect for all construction activities. The proposed WTF will be constructed on land currently owned by the city.

We would appreciate a response within 30 days. If you need any further information or wish to discuss the project, please contact me at 720-484-0504 or by email at matth@elementengineering.net. Please respond to this letter by mail to the address in the footer of this letter or by email at matth@elementengineering.net

Sincerely,

Matthew A. Hess, EIT
Design Engineer

Attachments

US Geographical Survey Topographical Map
US Fish & Wildlife Service Wetlands Map
Proposed Improvements Exhibits

APPENDIX E

CITY OF OURAY PUBLIC MEETING MINUTES

NOTICE OF PUBLIC INFORMATION AND HEARING REGARDING THE PROPOSED WATER TREATMENT PLANT

Date:	Monday, April 4th, 2022 (During regularly scheduled City Council meeting)
Time:	6:00 PM
Location:	City of Ouray Community Center – Massard Room 320 6th Ave., Ouray CO -or- Virtual Zoom Conference Call/Video *https://zoom.us/j/9349389230* *Meeting ID*: 934 938 9230 *Passcode: 491878* *Dial in*: *408-638-0968*
Topic:	City of Ouray Water Treatment Plant Improvement Project

During the regularly scheduled City Council meeting on April 4, 2022, information will be presented to inform citizens and solicit public input, written or oral, regarding the City of Ouray's Water Treatment Plant Improvement Project. The project consists of the construction of a new water treatment plant, including three ultra-filtration membrane skids, a new one-million gallon finished water storage tank, a new treatment building, disinfection and membrane cleaning chemical feed systems, various site improvements, yard piping, and grading to accommodate the treatment plant. The city intends on applying for a loan through the Colorado Department of Public Health and Environment (CDPHE) State Revolving Fund (SRF) program for project funding.

A Project Needs Assessment (PNA) was compiled to detail the proposed project. The PNA includes a detailed analysis of project alternatives, costs, and user rate increases associated with the project. Copies of the PNA are available for public review at City Hall (320 6th Avenue, Ouray, CO 81427) or on the following webpage:
https://www.cityofouray.com/city_offices/city_council/meeting_agendas_and_minutes.php

During the meeting the Draft Environmental Assessment will also be discussed and presented. Once the draft is completed, it will be included on the webpage above and available at City Hall for review.

The point of contact for the City of Ouray is Joe Coleman, Public Works Director, (970) 325-7074, colemanj@cityofouray.com.

POSTED 2/28/22
MMD

P.O. Box 468
320 Sixth Avenue
Ouray, Colorado 81427

970.325.7211
Fax 970.325.7212
www.cityofouray.com

City Administrator
Report for April 4, 2022 City Council
March 19 – April 1, 2022:

Federal Direct Spending Requests:
U.S. Congress has renewed their ability to provide direct funding for projects through legislation to local governments and non-profit entities. The applications are due this Friday, April 8 to Senator Hickenlooper's office. We can only make requests for "shovel-ready" projects that have not currently been funded or will not be funded prior to October 2022. With that in mind, the Mayor and I have discussed creating a proposal for the redundant drinking water line from Weehawken Spring and Weehawken Creek. We have also discussed the Water Treatment Plant, along with potential housing opportunities.

Visitors Center:
Visitor Center construction of a small office and buildout for a cash register is on track to be completed by the middle of this month. Reopening is still planned for April 15, 2022. Mary Gretz, Visitors Center Customer Service Associate, will be back in Ouray permanently during the last week of April and will resume work at the Visitors Center as a part-time employee beginning in May. Hours of the Visitors Center will be extended per the City budget prior to Memorial Day. (Hours were extended to at least six hours per day during all of the Ice Park event weekends and based on traffic during January, February and March).

Nixon Easement/Geothermal Line Replacement Project:
Per the City Council discussion at the last meeting, Mayor Funk and I identified a Black Hills Natural Gas per therm cost of $1.08 (we removed the customer service charges and other flat rate fees) and a SMPA per therm cost of $3.95. We offered to utilize the natural gas per therm cost as the base rate for the property at 302 Oak Street and to create an annual CPI increase. Upon being presented these rates, Mr. Nixon requested a payment for the easement in lieu of being provided access to the City's geothermal water. I hope to have the easement agreement on the April 18, 2022 City Council agenda.

I am currently renegotiating the change order per your vote at the last Council meeting, with Williams construction.

TAC/Branding Exercise:
The City received two proposals from branding consultants for our project. Five firms were solicited based on the recommendation of the Colorado Office of Economic Development and International Trade (OEDIT). TAC is meeting tomorrow evening to elect the officer positions and go through the proposals.

Water Treatment Plant:
Moltz is working on the cost estimate of the 60% engineered design. A meeting is scheduled for the week of April 18, 2022 to review in detail.

Wastewater Treatment Plant Funding:
The last update from the Colorado Water Resources & Power Development Authority is the bond sale date is April 25, 2022, with a proposed closing date of May 10, 2022.

Trailside Restrooms:
Two variance requests have been submitted to Ouray County for the trailside restroom project per their requirements. One to allow holding tanks, instead of a septic tank with a leach field, and the second to build inside the 25' setback. The holding tank variance requires a determination by the Board of Health and the setback variance requires a determination by the Board of Adjustments.

Master Parks Plan Request for Proposals (RFP):
I have begun writing the RFP, however it has been delayed due to working to identify a Branding Consultant and the creation of the Direct Spending Requests.

Tourism & Destination Marketing Director:
The position remains open until April 8, 2022 at 4:00 pm. As of Thursday, March 31, there were 20 submitted applications.

City of Ouray Police Department

March 2022

For the month of March 2022 OUPD ran approximately 535 calls for service as of noon 3/31/22. This is 137 more than last month's calls for service. By comparison we ran 363 calls for service in March of 2021.

This month's calls included:

- **278 Patrol checks (includes safety patrols, directed patrols and security checks)**
- **55 Parking complaints**
- **3 Motorist assists**
- **1 Traffic stop**
- **6 VIN inspections**
- **2 Bar checks**
- **2 Noise complains**
- **1 Theft report**

Recent Events:

We assisted Ouray County Emergency Management with the triannual Colorado Emergency Preparedness Assessment. An exercise by the state to determine the readiness and needs of individual counties to provide emergency management functions. Participants included police, fire, rescue and administration at the county and municipal levels.

Upcoming Events:

The Ouray Police Department has begun enhanced enforcement of illegally parked vehicles on city property. We do this every year as the snow melts and reveals vehicles that have been left unattended for long periods of time. The most frequent infraction is expired registrations, but we also take enforcement action against vehicles that are left on public streets in inoperable condition (Ouray Municipal Code 10-2 Z1.b.)

Fire Department Report for March, 2022

04/01/22

2 training opportunities in the County for the month of March

Skid unit (pump, hose and tank) arrived and being installed in the side-by-side for wildland fire

Live Structure Fire Training 0n 4/9 in Ridgway. RFD, OFD, EMS, and Loghill

Planning fireworks on 4th of July

Nothing else to report for March

Calls for March

3.2 – Hwy 550 Accident

3.10 – Fire Alarm on 5th Ave

3.22 – Fire alarm 6th Ave and Main

3.27 – Gas leak on Oak Street

Public Works March 2022 Update

Water

- Water Usage Numbers for **February:**
  - Influent (Water from spring) – 24,176,842 Gallons
  - Effluent (Water to town) – 14,765,320 Gallons
  - Ice Park – 2,959,476 Gallons
  - Mineral Farms – 275,400 Gallons
- During the regularly scheduled City Council meeting this evening, April 4, 2022 information will be presented to inform citizens and solicit public input, written or oral, regarding the City of Ouray's Water Treatment Plant Improvement Project. The project consists of the construction of a new water treatment plant, including three ultra-filtration membrane skids, a new one-million gallon finished water storage tank, a new treatment building, disinfection and membrane cleaning chemical feed systems, various site improvements, yard piping, and grading to accommodate the treatment plant. The city intends on applying for a loan through the Colorado Department of Public Health and Environment (CDPHE) State Revolving Fund (SRF) program for project funding.
- Received 60% design plans from Element Engineering for the new Water Treatment Facility. Our next step will be to have a meeting with City Staff, Element Engineering and Moltz construction to go over design plans, get input on value engineering and get at GMP (Guaranteed Maximum Price) at the 60% level.
- Continued to monitor and sample chlorine residuals at the two entry points of the distribution system. The City has been in compliance and meeting all CDPHE requirements.

Sewer

- Meeting with JVA Engineering and Moltz construction to review 75% design plans. This was a very productive meeting with continued value engineering. The team is moving forward to complete 90% design plans by the end of May.
- Contractor cleaned and camera approximately 12,000 feet of City Sanitary Sewer Main.
- Continued to clean head works two to three times daily.
- Continued to skim lagoons of debris as needed.
- Continued collecting samples twice a week for CDPHE to test for SARS-CoV-2 RNA in the municipal wastewater stream. This data is compared to other surveillance data to give a more complete picture of COVID-19 in Colorado communities.

Streets

- Grade roads and cut ice throughout town as needed.
- Snow removal from parking spaces on HWY 550 multiple times in the month of March.
- Snow plowing and snow removal operations as needed.
- Worked on drainage and added road base to Oak St in several problem areas.
- Graded pool parking lot and added material where needed.
- Demolished old Float House in Pool parking lot and hauled off to landfill.

City Resources Department

April 4 2022

- Lee's Ski Hill has been featured on several electronic media sites this winter as well as numerous social media platforms. *Snowboarder's Journal* visited the ski hill in March with several boarders and photographers. A shout-out goes to Shane Carrick for the popular terrain features at the ski hill this season.
- An electrical issue developed in the emergency stop circuit at the Ski Hill causing the equipment to fail to restart. This was repaired by City Resource staff in the morning prior to opening the next day.
- Due to melting snow, operation of the rope tow at Lee's Ski Hill ceased for the season at the end of the day on Sunday March 27.
- Box Canon Falls is scheduled to open Friday April 29, 2022. This opening date is tentative and could change due to weather and trail conditions.
- Hazard trees removal at the Box Canon Falls park will resume in April. This project was begun last fall but was halted in the winter. The project will be completed prior to opening of the park.
- Fencing on the High Bridge Trail is being improved this spring. Fence improvements on the Trail to the Falls is also being done this spring.
- The card reader on the front door to the Fitness Center has been repaired. All gym users will be required to use the main door. Access through the side door is being restricted.
- The Hot Springs Pool will be closed April 18 to 22, Monday through Friday. During this week repairs are planned for the Box Canon geothermal water line. Additional tasks during this week include pool repairs, gutter tile repairs, acid cleaning of the geothermal pools, pump replacement, facility cleaning, and facility repairs.
- Beginning April 26, after the pool shut-down, the Hot Springs Pool will be open seven days per week. Hours of operation are still impacted by employee shortages. Applicants and employees identify housing costs, fuel costs, and transportation as their largest concerns. Several Hot Springs Pool employees commute from Montrose and Delta areas.
- Seasonal employees from last summer have been contacted with at least half of last year's seasonal employees coming back to work at the Hot Springs Pool again this summer.
- Hot Springs staff participated in a job fair in Montrose in March. Staff is planning to attend additional job fairs in the region in the month of April.
- Lifeguard certification classes occur monthly, more often if needed.
- In-service training for lifeguards and other Hot Springs Pool staff takes place every month.
- Public swim lessons will be offered in April. Additional swim lessons will be offered during the summer.
- An in-water Easter egg hunt will take place at the Hot Springs Pool on Saturday April 16.
- The Hot Springs Special Olympic swim team has begun practices.
- Hot Springs Pool staff met with engineers and other City staff to review options for improving the flow from the OX2 well.
- The ice rink liner will be removed for summer storage after the ice has melted at the rink.
- Holiday decorations and lights have been removed from the lamp posts on Main Street.
- A faulty pressure valve has been replaced on the Community Center heating system. An issue with one of the circulation pumps for the Community Center has been identified. A replacement pump has been ordered.
- Interviews for seasonal parks positions are taking place this week.
- Electrical heaters are being installed in the restrooms at Fellin Park. Once this work is completed the porta-potties will be removed.

- Have had an initial meeting with a representative from Mountain Air Music to discuss care of the park, use of the Hot Springs Pool parking lot, stage placement, crowd control, etc.
- The City facilities crew is constructing a new office upstairs in the Visitor Center.

DR 8400 (07/24/19)
COLORADO DEPARTMENT OF REVENUE
Liquor Enforcement Division

Submit to Local Licensing Authority

TWIN PEAKS LODGE & HOT SPRINGS
PO BOX 955
Ouray CO 81427-0955

Fees Due	
Renewal Fee	550.00
Storage Permit $100 X _____	$
Sidewalk Service Area $75.00	$
Additional Optional Premise Hotel & Restaurant $100 X _____	$
Related Facility - Campus Liquor Complex $160.00 per facility	$
Amount Due/Paid	$

Make check payable to: Colorado Department of Revenue. The State may convert your check to a one-time electronic banking transaction. Your bank account may be debited as early as the same day received by the State. If converted, your check will not be returned. If your check is rejected due to insufficient or uncollected funds, the Department may collect the payment amount directly from your banking account electronically.

Retail Liquor or Fermented Malt Beverage License Renewal Application

Please verify & update all information below **Return to city or county licensing authority by due date**

Licensee Name	Doing Business As Name (DBA)			
ALPENGLOW PROPERTIES OURAY INC	TWIN PEAKS LODGE & HOT SPRINGS			
Liquor License #	**License Type**	**Sales Tax License #**	**Expiration Date**	**Due Date**
28-36861-0002	Hotel & Restaurant	28368610002	06/02/2022	04/18/2022
Business Address				**Phone Number**
125 THIRD AVENUE Ouray CO 81427				9703254427
Mailing Address			**Email**	
PO BOX 955 Ouray CO 81427-0955				
Operating Manager	**Date of Birth**	**Home Address**		**Phone Number**
Ryan Hein				

1. Do you have legal possession of the premises at the street address above? ☐ Yes ☒ No
   Are the premises owned or rented? ☒ Owned ☐ Rented* *If rented, expiration date of lease_____

2. Are you renewing a storage permit, additional optional premises, sidewalk service area, or related facility? If yes, please see the table in upper right hand corner and include all fees due. ☐ Yes ☒ No

3a. Since the date of filing of the last application, has the applicant, including its manager, partners, officer, directors, stockholders, members (LLC), managing members (LLC), or any other person with a 10% or greater financial interest in the applicant, been found in final order of a tax agency to be delinquent in the payment of any state or local taxes, penalties, or interest related to a business? ☐ Yes ☒ No

3b. Since the date of filing of the last application, has the applicant, including its manager, partners, officer, directors, stockholders, members (LLC), managing members (LLC), or any other person with a 10% or greater financial interest in the applicant failed to pay any fees or surcharges imposed pursuant to section 44-3-503, C.R.S.? ☐ Yes ☒ No

4. Since the date of filing of the last application, has there been any change in financial interest (new notes, loans, owners, etc.) or organizational structure (addition or deletion of officers, directors, managing members or general partners)? If yes, explain in detail and attach a listing of all liquor businesses in which these new lenders, owners (other than licensed financial institutions), officers, directors, managing members, or general partners are materially interested. ☐ Yes ☒ No

5. Since the date of filing of the last application, has the applicant or any of its agents, owners, managers, partners or lenders (other than licensed financial institutions) been convicted of a crime? If yes, attach a detailed explanation. ☐ Yes ☒ No

6. Since the date of filing of the last application, has the applicant or any of its agents, owners, managers, partners or lenders (other than licensed financial institutions) been denied an alcohol beverage license, had an alcohol beverage license suspended or revoked, or had interest in any entity that had an alcohol beverage license denied, suspended or revoked? If yes, attach a detailed explanation. ☐ Yes ☒ No

7. Does the applicant or any of its agents, owners, managers, partners or lenders (other than licensed financial institutions) have a direct or indirect interest in any other Colorado liquor license, including loans to or from any licensee or interest in a loan to any licensee? If yes, attach a detailed explanation. ☐ Yes ☒ No

BUTLER | SNOW

March 23, 2022

City of Ouray
320 Sixth Avenue
Ouray, Colorado 81427

Attn: Silas Clarke
City Administrator

RE: Proposed Loan Agreement from the Colorado Water Resources and Power Development Authority to the City of Ouray, Colorado

Dear Silas:

We are pleased to confirm our engagement as bond counsel to the City of Ouray, Colorado (the "City"). We appreciate your confidence in us and will do our best to continue to merit it. This letter sets forth the role we propose to serve and the responsibilities we propose to assume as bond counsel to the City in connection with the proposed Loan Agreement (the "Loan Agreement") between the Colorado Water Resources and Power Development Authority (the "Authority") and the City.

Personnel. Kim Crawford will be principally responsible for the work performed by Butler Snow LLP on your behalf and he will report to and take direction from you, as City Administrator. Where appropriate, certain tasks may be performed by other attorneys or paralegals. At all times, however, Kim will coordinate, review, and approve all work completed for the City.

Scope of Responsibilities. Bond counsel is engaged as a recognized independent expert whose primary responsibility is to render an objective legal opinion with respect to the authorization and issuance of obligations such as the Loan Agreement. In our capacity as bond counsel, we will: examine applicable law; prepare or review authorizing and operative documents; consult with the parties to the transaction prior to the closing on the Loan Agreement; review certified proceedings of the City; and undertake such additional duties as we deem necessary to render the opinion. Subject to the completion of proceedings to our satisfaction, we will render our opinion relating to the validity of the Loan Agreement and the enforceability of the security for the Loan Agreement.

In rendering our opinion, we will rely upon the City's certified proceedings and other certifications of public officials and other persons furnished to us without undertaking to verify the same by independent investigation. Our opinion on the Loan Agreement will be executed and delivered by us in written form on the date the Loan Agreement is executed and delivered (the "Closing") and will be based on facts and law

1801 California Street
Suite 5100
Denver, CO 80202

KIMBERLEY K. CRAWFORD
720.330.2354
kim.crawford@butlersnow.com

T 720.330.2300
F 720.330.2301
www.butlersnow.com

existing as of its date. Upon delivery of the opinion, our responsibilities as bond counsel will be concluded with respect to this financing.

Our services as bond counsel are limited to those contracted for explicitly herein; the City's execution of this letter constitutes as acknowledgement of those limitations. Specifically, but without implied limitation, our responsibilities do not include any representation by Butler Snow LLP in connection with any IRS audit, SEC enforcement action, or any litigation involving the City or the Loan Agreement, or any other matter.

Attorney-Client Relationship. In performing our services as bond counsel, the City will be our client and an attorney-client relationship will exist between us. We will represent the interests of the City rather than its City Council, its individual members, or the City's employees. We assume that other parties to the transaction will retain such counsel as they deem necessary and appropriate to represent their interests in this transaction.

Conflicts of Interest Our firm sometimes represents, in other unrelated transactions, certain of the financial institutions that may be involved in this transaction, such as underwriters, credit enhancers, and banks that act as paying agents or trustees. We do not believe that any of these representations will materially limit or adversely affect our ability to represent the City in connection with the Loan Agreement, even though such representations may be characterized as adverse under the Colorado Rules of Professional Conduct (the "Rules"). In any event, during the term of our engagement hereunder, we will not accept a representation of any of these parties in any matter in which the City is an adverse party. However, pursuant to the Rules, we do ask that you consent to our representation of such parties in transactions that do not directly or indirectly involve the City. Your execution of this letter will signify the City's prospective consent to such adverse representations in matters unrelated to the Loan Agreement while we are serving as bond counsel hereunder.

Fee Arrangement. Based upon our current understanding of the terms, structure, size and schedule of the financing, the responsibilities we will undertake pursuant to this letter, the time we anticipate devoting to the financing, and the skill and experience required to complete the services properly, we estimate that our fee as bond counsel will be $15,000. Such fee may vary: (i) if the principal amount of Loan actually issued differs significantly from what is anticipated, (ii) if material changes in the structure of the financing occur, or (iii) if unusual or unforeseen circumstances arise which require a significant increase in our time or our responsibilities. If, at any time, we believe that circumstances require an adjustment of our original fee estimate, we will consult with you.

We understand and agree that our contingent fees will be paid at Closing out of Loan proceeds. If the financing is not consummated, we understand and agree that we will not be paid.

Document Retention. At or within a reasonable period after Closing, we will review the file to determine what materials should be retained as a record of our representation and those that are no longer needed. We will provide you with a copy of the customary transcript of documents after Closing and will return any original documents obtained from you (if a copy is not included in the transcript). Our document retention policy is attached hereto.

Termination of Engagement. Upon delivery of our approving opinion, our responsibilities as bond counsel will terminate with respect to the Loan Agreement, and our representation of the City and the attorney-client relationship created by this engagement letter will be concluded. Should the City seek the advice of bond counsel on a post-closing matter or seek other, additional legal services, we would be happy to discuss the nature and extent of our separate engagement at that time.

Approval. If the foregoing terms of this engagement are acceptable to you, please so indicate by returning a copy of this letter signed by the officer so authorized, keeping a copy for your files.

We are pleased to have the opportunity to serve as your bond counsel and special counsel and look forward to a mutually satisfactory and beneficial relationship. If at any time you have questions concerning our work or our fees, we hope that you will contact us immediately.

BUTLER SNOW LLP

By: _____

Accepted and Approved:

CITY OF OURAY, COLORADO

By: _____

Title: _____

Date: _____

KKC/jw
Enclosure

NOTICE TO CLIENTS OF BUTLER SNOW'S RECORD RETENTION & DESTRUCTION POLICY FOR CLIENT FILES

Butler Snow maintains its client files electronically. Ordinarily, we do not keep separate paper files. We will scan documents you or others send to us related to your matter to our electronic file for that matter and will ordinarily retain only the electronic version while your matter is pending. **Unless you instruct us otherwise, once such documents have been scanned to our electronic file, we will destroy all paper documents provided to us.** If you send us original documents that need to be maintained as originals while the matter is pending, we ordinarily will scan those to our client file and return the originals to you for safekeeping. Alternatively, you may request that we maintain such originals while the matter is pending. If we agree to do that, we will make appropriate arrangements to maintain those original documents while the matter is pending.

At all times, records and documents in our possession relating to your representation are subject to Butler Snow's Record Retention and Destruction Policy for Client Files. Compliance with this policy is necessary to fulfill the firm's legal and ethical duties and obligations, and to ensure that information and data relating to you and the legal services we provide are maintained in strict confidence at all times during and after the engagement. All client matter files are subject to these policies and procedures.

At your request, at any time during the representation, you may access or receive copies of any records or documents in our possession relating to the legal services being provided to you, excluding certain firm business or accounting records. We reserve the right to retain originals or copies of any such records of documents as needed during the course of the representation.

Unless you instruct us otherwise, once our work on this matter is completed, we will designate your file as a closed file on our system and will apply our document retention policy then in effect to the materials in your closed files. At that time, we ordinarily will return to you any original documents we have maintained in accordance with the preceding paragraph while the matter was pending. Otherwise, we will retain the closed file materials for our benefit and subject to our own policies and procedures concerning file retention and destruction. Accordingly, if you desire copies of any documents (including correspondence, e-mails, pleadings, contracts, agreements, etc.) related to this matter or generated while it was pending, you should request such copies at the time our work on this matter is completed.

You will be notified and given the opportunity to identify and request copies of such items you would like to have sent to you or someone else designated by you. You will have 30 days from the date our notification is sent to you to advise us of any items you would like to receive. You will be billed for the expense of assimilating, copying and transmitting such

records. We reserve the right to retain copies of any such items as we deem appropriate or necessary for our use. Any non-public information, records or documents retained by Butler Snow and its employees will be kept confidential in accordance with applicable rules of professional responsibility.

Any file records and documents or other items not requested within 30 days will become subject to the terms of Butler Snow's Record Retention and Destruction Policy for Client Files and will be subject to final disposition by Butler Snow at its sole discretion. Pursuant to the terms of Butler Snow's Record Retention and Destruction Policy for Client Files, all unnecessary or extraneous items, records or documents may be removed from the file and destroyed. The remainder of the file will be prepared for closing and placed in storage or archived. It will be retained for the period of time established by the policy for files related to this practice area, after which it will be completely destroyed. This includes all records and documents, regardless of format.

While we will use our best efforts to maintain confidentiality and security over all file records and documents placed in storage or archived, to the extent allowed by applicable law, Butler Snow specifically disclaims any responsibility for claimed damages or liability arising from damage or destruction to such records and documents, whether caused by accident; natural disasters such as flood, fire, or wind damage; terrorist attacks; equipment failures; breaches of Butler Snow's network security; or the negligence of third-party providers engaged by our firm to store and retrieve records.

RESOLUTION NO. 08, (SERIES 2022)

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF OURAY, COLORADO ESTABLISHING JUNETEENTH AS A HOLIDAY IN THE CITY OF OURAY AND AS A PAID HOLIDAY FOR CITY EMPLOYEES

WHEREAS, in 1863, President Abraham Lincoln issued the Emancipation Proclamation declaring all slaves free. However, this freedom was not made known to many enslaved African Americans until two years after its passage. Juneteenth recognizes that on June 19, 1865, the last enslaved people in Galveston, Texas were informed that slavery had been abolished; and

WHEREAS, when the former slaves heard of this news, they began to celebrate with feasting, song, and dance. The following year, on June 19, the first official Juneteenth celebrations took place in Texas. Within a few years, African Americans in other states were celebrating the day, making it an annual tradition; and

WHEREAS, celebrations have continued across the United States recognizing the end of slavery and the triumphs, culture and achievements of African Americans across the United States and throughout the world; and

WHEREAS, the day was recognized as a United States federal holiday on June 17, 2021 when the Juneteenth National Independence Day Act was signed into law; and

WHEREAS, the Colorado State Senate approved Senate Bill 139 on March 23, 2022, on a 32 to 1 vote, recognizing Juneteenth as a state holiday and sending it to the State House of Representatives for consideration; and

WHEREAS, the Ouray City Council desires to establish Juneteenth as an officially recognized holiday in the City of Ouray.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF OURAY, COLORADO that June 19th of each year, starting in 2022, shall be an official City Holiday recognizing Juneteenth and that it shall be a paid holiday for City employees, treated as other paid holidays.

ADOPTED this 4th day of April, 2022, by the Ouray City Council.

CITY OF OURAY, COLORADO

_____

Ethan Funk, Mayor

ATTEST:

_____

Melissa M. Drake, City Clerk

RESOLUTION NO. 09, 2022

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF OURAY, COLORADO, ADOPTING A PUBLIC HEARING PROCEDURE

WHEREAS, the Ouray City Council believes that a standard procedure should be followed for all public hearings, and

WHEREAS, the Council discussed draft procedures at a Work Session on March 21, 2022 and made changes to that draft; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF OURAY, COLORADO, that the Public Hearing Procedure, attached hereto, is hereby adopted.

ADOPTED this 4th day of April, 2022, by the Ouray City Council.

CITY OF OURAY, COLORADO

_____
Ethan Funk, Mayor

Attest:

_____
Melissa M. Drake, City Clerk

CITY COUNCIL

PUBLIC HEARING PROCEDURE

1. The Mayor shall introduce the agenda item and is responsible for administering oaths and affirmations; receiving evidence; regulating the course of the hearing; setting the time and place for continued hearings after applicant agrees; limiting the number of witnesses; issuing appropriate orders that control the subsequent course of the proceeding; and controlling the decorum and conduct of the proceeding.

2. Disruptive behavior, hearsay, and personal attacks will not be tolerated and refusal to comply with these guidelines will result in a warning and subsequent removal from the meeting for non- compliance after the warning.

3. The Mayor shall ask each member of the governing body to disclose any conflicts requiring recusal, any personal or private interests not requiring recusal, or the specific substance of any ex-parte communications made by them.

4. The Mayor shall announce all written public comment made by City residents or business owners or designated representatives received by the Friday prior to the hearing date are part of the public record and were included in the packet.

5. Rules for Hearing (to be read by the Mayor)

   A. All questions and comments by applicant, staff, or the public shall be directed to the governing body.

   B. No applicant, staff member, or the public will be subject to cross-examination except by the governing body.

   C. The allotted time provided to speakers is three (3) minutes unless extended by the Mayor. Up to one (1) additional minute may be allowed to resolve technical problems with the speaker's audio/visual setup but speakers should test their own equipment prior to the meeting. Any unused time may not be given to another. Cumulative testimony may be limited or eliminated by the Mayor in his or her discretion.

   D. If you are asked a question by the governing body, please respond to the question and refrain from adding additional comment beyond the answer to the question.

6. Hearing sequence

   A. Staff presentation.

B. Applicant presentation.

C. Questions from governing body to applicant and/or staff.

D. Public comment.

E. Questions from governing body to applicant and/or staff after public comment.

F. Rebuttal from staff.

G. Rebuttal from applicant.

H. Governing body deliberations (motion, second, discussion).

7. After a decision is made at the hearing, a written decision shall issue with findings of fact and conclusions of law, setting forth the grounds of the decision, based on the evidence presented at the hearing within five (5) business days unless otherwise defined within the City Code. The written decision shall be mailed (regular) to the last address furnished to the city by the Applicant. The decision shall be effective as to such Applicant on the date mailed or on such other date as is stated in the decision.

8. Unless otherwise provided by town charter, ordinance, or code or other law, the decision of the board is final subject only to judicial review pursuant to Colorado Rules of Civil Procedure 106(a)(4).

RESOLUTION NO. 10, 2022

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF OURAY, COLORADO, APPROVING THE OURAY TRAIL GROUP'S PERIMETER TRAIL MASTER PLAN FOR SUBMISSION TO THE U.S. FOREST SERVICE

WHEREAS, the Ouray Trail Group is a non-profit corporation of dedicated volunteers that was founded in 1986 for the purpose of promoting safe and enjoyable hiking in the San Juan Mountains while preserving their beauty and natural resources; and,

WHEREAS, the Ouray Trail Group has been responsible for the creation of Ouray's Perimeter Trail, which is a unique six-mile hiking experience that features remarkably varied terrain, unmatched scenery, four waterfalls, five bridges, and up-close geology; and,

WHEREAS, the Ouray Trail Group makes continuous efforts to improve the Perimeter Trail walkability, access and scenery through trail realignment projects; and,

WHEREAS, some of the desired realignment projects directly impact U.S. Forest Service owned property and therefore a Perimeter Trail Master Plan has been requested by the US. Forest Service to help facilitate review of the entire trail with proposed changes; and,

WHEREAS, the U.S. Forest Service has requested the City of Ouray to review and approve of the Ouray Trail Group's Perimeter Trail Master Plan prior to submission; and,

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF OURAY, COLORADO, that the Ouray Trail Group's Perimeter Trail Master Plan has been reviewed, as attached hereto, and is hereby approved.

ADOPTED this 4th day of April, 2022, by the Ouray City Council.

CITY OF OURAY, COLORADO

_____
Ethan Funk, Mayor

Attest:

_____
Melissa M. Drake, City Clerk

Perimeter Trail
Master Plan

Ouray, Colorado

April 4, 2022

Principal Stakeholders

Ouray Trail Group
U.S. Forest Service
City of Ouray

Collaborators and Partners

Ouray County
Private Landowners

Signatures

Ouray Trail Group: Steve Boyle, President	Date
Ul.S. Forest Service: Dana Gardunio, Ouray District Ranger	Date
City of Ouray: Ethan Funk, Mayor	Date

List of Figures

Figure 1. Perimeter Trail and Land Ownership

List of Appendices

Appendix A. Ouray Perimeter Trail Preliminary Assessment Report
Appendix B. U.S. Forest Service Design Parameters

Part 1 Introduction

The Perimeter Trail (PT) is a 5.4-mile loop trail that encircles the City of Ouray on lands owned and managed by multiple jurisdictions. The trail has become the most popular hiking trail in the vicinity of Ouray, with an estimated 84,000 user-days in 2021 and steadily increasing user numbers each year. In a region with many public trails that provide challenging hiking in rugged mountain terrain, the PT provides unique opportunities for short or long hikes of easy to moderate difficulty, suitable for less-experienced hikers, families with children, or hikers with less time. The PT has multiple access points from Ouray and connects several City Parks. The PT generates considerable economic activity for the tourist-based economy of Ouray and the county. The PT also provides excellent opportunities for outdoor education through interpretive displays and organized events.

The purposes of this plan are to:

- Foster communication and collaboration between the stakeholders.
- Define the public purpose and goals of the PT.
- Describe land ownership and define existing trail conditions and infrastructure.
- Define desired conditions and uses of the PT and identify needs for improvements.
- Define stakeholder roles in planning, maintenance, improvements, and funding.

Part 2 Purpose and Goals of the PT

- Provide a safe and enjoyable hiking trail of varying difficulty that surrounds the City of Ouray, accessible from several points to allow short to long hiking experiences in natural landscapes.
- Provide and enhance connections for the public between city parks, the Ouray Visitors Center, and between the city and nearby public lands.
- Improve the quality of life for residents and the hiking experience of visitors.
- Provide public education and interpretation of natural, scenic, and historic resources that can be viewed along the trail.
- Be consistent with other recreation plans and direction of stakeholders:
    - City of Ouray Parks, Recreation, and Trails Community Plan
    - Forest Service: Forest Plan and Travel Management Plan
    - Ouray County

Part 3 History of the PT

OTG conceived of the trail in the early 2000s, to provide a recreational trail encircling the City of Ouray that could lead hikers to scenic panoramas of the visually striking valley, canyons, and mountain slopes of the area. OTG has led the planning and development of the PT since

inception in 2006. Long-time OTG member and leader Bob Risch conceived of the trail in the 2000s, inspired in part by game trails used by elk to move between the Amphitheater and the valley floor north of Ouray. In 2007 the first section from the Ouray Visitor's Center to Cascade Falls was constructed, mostly on National Forest land with challenging slopes and cliffs. The Forest Service requested and OTG agreed that this section be built by a Forest Service contract crew, due to hazards of work in the steep terrain. In the next few years OTG extended the trail from Cascade Falls to the Portland Road using parts of existing trails including the Baby Bathtubs Trail that OTG had constructed earlier, remnant mining trails, and new construction. OTG next built new trail from Portland Road through an area of National Forest locally known as the Potato Patch, over a scenic high point of the trail, and down to US Highway 550. From there the PT was originally routed on the Ice Park Trail east of the Ice Park to County Road 361; the Ice Park Trail is one of many historic mining trails OTG has restored to modern use. Later OTG acquired permission from landowner Eric Jacobsen and routed the PT on limited-access roads to the south, across the Uncompahgre River on a new footbridge built by Mr. Jacobsen and upgraded by OTG, and onto the reservoir private access road west of the Ice Park, north to County Road 361. From there the PT was routed through the City of Ouray's Box Cañon Park on existing trails across the scenic High Bridge over Canyon Creek, through a rock tunnel originally constructed for a City waterline, and down a steep section following the old waterline to Pinecrest Drive.

In the 2010s OTG considered alternatives to extend the PT north of Pinecrest Drive, across rugged terrain on the National Forest in the Oak Creek drainage. Engineer Chris Haaland found a workable route, and in 2015 OTG received Forest Service approval for new trail construction. The route connects the existing Oak Creek and Old Twin Peaks Trails and required trail construction on steep slopes and an engineered bridge over Oak Creek on National Forest land. OTG successfully raised $60,000 from local donations and grants, and worked closely with Forest Service engineers and recreation staff to complete this part of the PT.

At that time the PT continued down the Old Twin Peaks Trail to the Queen Street trailhead, but OTG and the Forest Service had agreed in 2016 to new trail construction that would extend the PT from the Old Twin Peaks Trail north to Oak Street across from the 4J Campground. This section crosses about ¼ mile of National Forest, then 2 private mining claims, one of which OTG purchased to gain access for the PT. Construction was delayed for several years while OTG negotiated with the owners of the other parcel. In summer 2020 OTG completed a boundary adjustment that secured access for the trail, and in August OTG worked with Forest Service engineers and planners to design and mark the trail. In September 2020 OTG volunteers built the trail section to Forest Service Class 3 standards, the first time that a class 3 standard was definitively applied to PT construction.

A goal has always been to build the PT on the mountainside west of Ouray to cross Oak Street at the City Shop, but the owner of the intervening Brown Lode parcel declined to provide access for many years. In summer 2021 OTG was able to purchase the 8-acre Brown Lode with $30,000 raised from donors and is now pursuing a right of way easement with a willing landowner to the north and Forest Service approval to construct new trail on 2 sections of

National Forest totaling less than 100 feet. When the private right of way and federal authorizations are secured, OTG plans to construct 0.3 miles of new trail to extend the PT to Oak Street at the City shop.

The steep section of the PT just north of Box Canon Park below the waterline tunnel, known as the Ramp, had deteriorated since it was constructed in the early 1900s. After it was incorporated into the PT, OTG has periodically constructed and repaired steps and railings on this section of trail, but by 2019 earlier work had deteriorated from heavy use and rockfall. OTG fundraised $6,000 and engineer Chris Haaland designed an improved wood staircase and railing system for the site. In fall 2019 and winter 2020 OTG volunteers removed failing steps and railings and constructed the engineered wood staircase and railings.

Since inception OTG designed and installed distinctive Perimeter Trail signs on the route. OTG funded and constructed a kiosk in the City's Cascade Falls Park with PT information and an OTG donation box, and smaller metal panels showing a PT map at the PT Visitor's Center trailhead and Oak Street trailhead across from the 4J Campground. OTG has created PT maps and brochures for distribution at the Ouray Visitors Center and Ouray businesses.

Part 4 Land Ownership

Figure 1 shows the PT, comprising 5.4 miles. Extent of the PT by land ownership is:

Forest Service	2.3 miles (42%)
City of Ouray	1.9 miles (36%)
Private	0.8 miles (15%)
Ouray County	0.4 miles (3%)

The PT on Ouray County land includes a parcel along Portland Creek and a short section through the City Shop parking area.

The PT on private land includes the Virginia Lode parcel purchased by OTG specifically to enable the PT. The PT also crosses parcels owned by Eric Jacobsen; the City of Ouray will include an agreement with Mr. Jacobsen for the PT right of way in its agreements for operation of the Ice Park.

Part 5 Current Conditions and Features

Trail and Corridor Conditions

The City of Ouray hired a contractor in 2018 to assess the PT. Their report, *Ouray Perimeter Trail Preliminary Assessment Report* (attached as Appendix A) described trail and corridor conditions in summer 2018 as follows. The PT section from the Old Twin Peaks Trail to Oak

Street was not constructed at that time, and the repairs recommended to the Ramp below the waterline tunnel were addressed by OTG in 2019-2020.

Ouray Visitor Center to Cascade Creek - half to full-bench tread, 16-24" widths follow exposed cliffs and/or traverse very steep rocky cross-slopes; steep timbered steps require maintenance.

Cascade Creek to 5th Avenue Trail - half- to full-bench tread, 16-24" widths, on steep cross-slopes.

5th Avenue Trail to Portland Creek - narrow trail; 12-24" tread; hard to follow along creek.

Portland Creek to US-550 - trail crosses "Potato Patch" meadow, then traverses solid exposed bedrock; erosion induced trail braiding prevalent east of US-550 needs maintenance, steps and/or reroute.

US-550 to Camp Bird Road - initially trail follows gravel access road; then becomes 16-24" trail on steep descent to river; maintenance and/or step installation recommended; west of river, route follows Ice Park ATV/UTV access route for pipe; 36 to 48" trail widths; good signage.

Camp Bird Road to Canyon Creek - trail follows historic bench cut; 24 to 36" tread widths; great trail conditions; good signage.

Canyon Creek to Oak Creek Trailhead - beyond tunnel, steep dangerous timbered stairs along cable-route north of tunnel; this area requires immediate maintenance/upgrade (Note-has been rebuilt by OTG).

Oak Creek Trailhead to Queen Street - 16-24" tread widths; short steep sections <25% grades; some exposure; otherwise follows base of cliff band; new trail needs some touch-up finish work.

Trailheads and Access Points

The following points provide access with vehicle parking noted.

Principal Trailheads

There are 2 trailheads:

1. **Ouray Visitors Center**. The principal PT trailhead; across US Highway 550 from the Visitors Center and marked with a small PT sign and a metal case displaying a PT map. Parking for several vehicles exists at the Visitors Center.

2. **Oak Street**. Across from the entrance to the 4J Campground, this trail entrance is marked with a metal sign containing a PT map, but no public parking is available.

Access from Roads

US Highway 550 crossing south of Ouray, no parking.
Cascade Falls Park, at the east end of 8th Avenue, short walk on a wide trail from parking area for many vehicles.
Amphitheater Road at the Baby Bathtubs trailhead, parking for several vehicles.

Portland Road, where PT is coincident with road for several hundred feet, 4-wheel drive or short walk from Amphitheater Road, parking for a few vehicles on County land north of road.
County Road 361, parking for a few vehicles on road shoulder on steep grade.
Pinecrest Drive, 4-wheel drive or short walk from Queen Street, parking for 2 or 3 vehicles at the bottom of Pinecrest Drive, and for two 4-wheel drive vehicles at the top of Pinecrest Drive at the Oak Creek trailhead.

Access From Ouray on Intersecting Trails

Upper Cascade Falls Trail, a Forest Service system trail, the lower part near Ouray is often called the 5th Ave Trail. The trailhead is at the east end of 5th Avenue, marked with a Forest Service trailhead sign. The 2018 Assessment stated: "braided fall-line tread near base; existing stairs need maintenance - go-arounds being created; otherwise, stairs structurally sound."
Ice Park Trail, a Forest Service system trail that was restored and upgraded by OTG before construction of the PT. The Assessment stated: "rugged 18-24" tread; includes steep 20% grades on bedrock."
High Bridge Trail, Box Canon Park. This City of Ouray trail leads from the Box Canon Park visitors center to the PT just south of the High Bridge over Canyon Creek. The trail has engineered steel staircases in the lower half; the upper half is steep and rugged with many boulders, deep erosion gullies, and braiding.
Old Twin Peaks Trail, a Forest Service system trail. The trailhead is on the upper end of Queen Street just before a locked gate on the road and is marked with a wood trail sign.

Coincident Roads

The PT is coincident with Pinecrest Drive for about 0.2 miles and with Portland Road for about 0.1 miles. Both roads are 4-wheel drive rocky roads open to the public.

Coincident Trails

The PT is coincident with the following Forest Service system trails: the Lower Cascade Falls Trail for 0.1 miles south of Cascade Falls Park, the Oak Creek Trail for 0.1 miles north of Pinecrest Drive, and the Old Twin Peaks Trail for 0.3 miles north of the Oak Creek Bridge.

Signage

The PT is marked with signs made and installed by OTG. The metal signs depict a trail map with arrow stickers to indicate direction. The signs are mounted on metal or wood posts or on trees.

Structures

Bridges

- Cascade Creek, wood planks with wood railings on each side. This bridge was constructed by the City and later improved by OTG.
- Portland Creek, wood planks with wood railings on each side.
- Uncompahgre River, wood planks with wood railings on each side. It was built by Mr. Jacobsen, and OTG later installed the railings.

- Canyon Creek (High Bridge), metal grate with metal and wire railings on each side, built and maintained by City of Ouray.
- Oak Creek, metal grate with metal railings on each side, designed and funded by OTG, approved by Forest Service, built by contractors overseen by OTG.
- Gully just west of the Oak Street trailhead, bridge wood planks with wood railing on 1 side, built by OTG.

Overlooks

- Cascade Falls Overlook, unsigned informal user-created route along ledge near Cascade Falls, on City of Ouray land.
- High Point Overlook, unsigned informal user-created trail that leads a short distance to high point on rocks, in Potato Patch area on Forest Service land.
- Henn's Overlook, wide place in trail above cliff overlooking City on private land north of Oak Creek Bridge, marked with small sign. Named for Roger Henn, an early OTG member and benefactor.

Box Canon Tunnel and Ramp

Just north of the Canyon Creek High Bridge, the PT passes through a rock tunnel constructed in the early 1900s for a waterline. The tunnel is about 100 feet long, about 4 feet wide and 5 to 6 feet tall. OTG installed and maintains small battery-powered lights in the ceiling that turn on by motion sensors.

North of the tunnel the trail descends steeply along a cliff face, following the original waterline route. In 2019-2020 OTG built an engineered wood staircase with outside railing attached to the stairs, and an inside cable railing attached to the rock face.

Style Over Pipe

Where the PT crosses the Ouray Hydro Plant water pipe just west of the Uncompahgre River footbridge, a style exists with wood steps for hikers to get over the 3-ft diameter metal pipe. The style was built by landowner Eric Jacobsen.

Register Boxes and Use Levels

OTG maintains 41 trail register boxes in the region following Forest Service standards to assess relative use and assist search and rescue operations. The following boxes are maintained along the PT:

- Visitors Center trailhead
- Cascade Falls
- Baby Bathtubs trailhead on Amphitheater Road
- PT intersection with Oak Street near the 4J Campground

- Oak Creek trailhead near the PT upper intersection with Pinecrest Drive

OTG also maintains the following registers on trails commonly used to access the PT:

- Portland trailhead
- Upper Cascade (5th Avenue) trailhead
- Old Twin Peaks trailhead

These registers off of the PT, as with some of the boxes along the PT, include some sign-ins by users not accessing the PT or using short sections of the PT to reach other trails. Taking this into account, OTG estimates that in 2021 at least 28,000 sign-ins are attributable to PT use. Using the Forest Service standard 3x multiplier to adjust for users who don't sign in, OTG estimates 84,000 PT user-days in 2021. Use is mostly in summer and early fall with peaks in July and August, but steadily increasing winter use by snowshoers and hikers often using traction devices. Recorded use has been steadily increasing by about 10% per year for several years.

Restrooms

Public restrooms exist along the PT at:

- Ouray Visitors Center, inside the building, only when the Visitors Center is open.
- A portable toilet at Cascade Falls Park maintained by the City, with plans to construct a vault toilet.
- A pit toilet at the Ouray Ice Park, not always open.
- An indoor restroom at the Box Canon Park visitor's center, ½ mile from the PT, only available to persons who pay the park entrance fee.

Maintenance

OTG volunteers have maintained the PT since inception. The PT is among OTG's highest priority trails. OTG typically begins Ouray area trail maintenance work each year with the PT because of its lower elevations and high user demand. OTG typically deploys several work parties each year to the PT and repairs tread and steps, removes down trees and encroaching brush, and repairs signage. Local high school student groups often participate in an organized work day on the PT.

Part 6 Desired Conditions

The stakeholders agree that the following conditions are desired.

Trail Tread and Corridor

- Trail Type: Standard/Terra, dirt surface.
- Trail Class: Following the federal government National Trail Class system, the PT will be Class 3 (Developed). Rugged terrain in some areas may preclude attaining these standards in some areas of the PT but where possible a Class 3 standard will be the

goal. A Class 4 (highly developed) standard may be considered for short reaches in heavy use areas such as in Cascade Park and Box Canon Park. Refer to Appendix B for Trail Class Standards.

- Tread surface: generally 24", at least 18". Protrusions or obstacles such as roots or rocks are not substantial.
- Grade: target grade 3-12%, occasionally up to 25%.
- Corridor: trees and branches will be kept clear in corridor4-5' wide, 7-8' high.

Allowed Uses

The managed and allowed use will be non-motorized, hiker/pedestrian only. Permitted uses include use of snowshoes, skis, and shoe traction devices in winter.

Dogs are allowed.

Signs

At the Visitors Center trailhead and the Oak Street trailhead (to be moved to the City shop area if right of way approvals are obtained), develop and construct a sign panel approximately 4' high and 5' wide that identifies the PT trailhead and provides a map showing the PT and other useful information such as roads, connecting trails, landmarks, You Are Here locator, a scale bar, north arrow, and legend. The signs should also provide explanatory information about the stakeholders and provide information for safe and sustainable use of the public lands. The signs will use professional design standards including ADA (Americans With Disabilities Act)-compliant fonts.

Maintain signs at all trail and road junctions to indicate the PT and the intersecting trails and roads as needed. Indicate direction and distance to destinations as needed. Standard Forest Service wood or plastic signs as commonly used in the adjacent National Forest will be used to identify trail junctions and the names and direction of other trails and destinations. A distinctive PT marker sign will be developed by OTG and approved by the stakeholders that can be placed on junction signposts to identify the PT, or placed along the PT where needed as reassurance markers to help users find and stay on the PT. The PT marker sign will incorporate standard practices for recreational trail signage including readability, and consistency with other recreational signage systems in the area maintained by the City of Ouray and the Forest service.

Access and Facilities

Maintain all of the current access points. The Forest Service, City of Ouray, and OTG will reach agreement on the names and locations of all access trails and use consistent names when developing signs and maps. Develop other access points in the future if a need is identified.

Improve the Oak Street trailhead, which currently has no public parking and very little room for the planned enhanced sign. The preferred alternative is to move the trailhead to the west side of Oak Street across from the City shop. If right of way authorizations are obtained for the

proposed 0.3-mile PT extension, OTG will construct the trail extension and the City will work with OTG and the Forest Service to develop a dedicated public parking area and trailhead signage. The existing trailhead will become an access point and the existing trail from Oak Street to the PT will be renamed and maintained as an access trail. If right of way authorizations for the PT extension cannot be obtained, the existing trailhead will be improved by the City and OTG to the extent possible.

Improve the Visitors Center trailhead. The City will enlarge the existing parking east of Highway 550 by expanding it to the south to include the current trail surface. OTG will work with the City to relocate the trailhead to the east end of this new parking area, and the stakeholders will work together to develop and install new trailhead signage.

At other trailheads and access points, maintain adequate and safe parking as problems and needs arise.

Provide adequate public restroom facilities along the PT for public safety and to help prevent resource damage and littering. The City of Ouray plans to construct a vault toilet near the PT in Cascade Park in 2022.

Provide information boards and benches at various locations to inform the public and provide users a more enjoyable hiking experience. Information may include local geology, biology, cultural history, and practices for traveling lightly and minimizing resource damage. Add more information at the Cascade Falls Park kiosk such as interpretation about the Falls, City parks information, and Leave No Trace practices.

Trail Registers

Continue to provide and manage trail registers to gather information on trail use. OTG will evaluate the current number and location of registers and may move some registers to improve their usefulness for estimating PT use.

Considerations on Uses

Commercial and organized events on the PT such as foot races may be allowed by the affected land management agencies if the uses are consistent with the PT standards and purposes identified in this plan, and with the regulations and policies of the agency.

Land management agencies may close parts of the PT for certain periods for public safety or to protect other resources. Currently the Forest Service implements a winter closure of the PT on Forest Service land from Portland Road to US Highway 550, to protect wintering bighorn sheep. The land management agency is responsible to sign and enforce any closures. Signage should make clear to users the purpose and duration of the closure and encourage compliance through public education.

Part 7 Needed Actions and Timeline

Actions are listed below, in order of priority and with the time schedule indicated.

1. Trail Maintenance

Schedule: 2022 and Ongoing

Action: OTG will continue to take the lead in maintaining the PT to the standards of this plan. Additional help from the stakeholders is welcome and encouraged.

Action: A number of hazard trees exist along the PT on all land jurisdictions. OTG, the Forest Service, and the City of Ouray will discuss and agree in 2022 whether hazard trees should be assessed and removed. Forest Service will take the lead in assessing and removing standing dead trees.

2. Verify Ownership and Easements

Schedule: 2022

Action: Verify land ownership in any areas where uncertainty exists. Ensure that legal easements exist on private land for the PT and any access trails or structures identified in this plan.

OTG will take the lead in identifying areas of concern, and will work with the Forest Service, City of Ouray, and landowners as needed to verify boundaries and secure legal easements if needed. In 2021 the City verified during a land survey that the access trail to the PT that leads east from 5th Avenue is entirely on City-owned land.

3. PT Extension to City Shop and Trailhead Improvements

Schedule: 2022-2023

Action: As described above in part 6 of this plan, OTG and the City of Ouray seek to extend the PT 0.3 miles north to a new trailhead location on Oak Street across from the City Shop. OTG will continue to seek right of way authorizations via easement from an intervening landowner, and authorization from the Forest Service to cross 2 small, isolated parcels of National Forest totaling less than 100 feet of new trail. Forest Service will pursue administrative review and provide a decision for new trail construction on National Forest. City of Ouray will grant access for a short section of new trail construction on City land near Oak Street and will dedicate and develop a public parking area along Oak Street. OTG will continue to plan the trail route with a professional trail consultant and trail engineer, seek funding, and will construct the trail if all right of way authorizations are secured.

The City will also improve public parking at the Visitors Center trailhead by expanding the parking area to the south, and OTG will work with the City to relocate the trailhead to the east end of the parking area and develop signage.

4. **Resolve Access Trail and Trailhead Names and Locations**

Schedule: 2022

Action: Some trailhead signs in the Amphitheater Campground and in the Ice Park area are not consistent with existing trail intersection signs, or with the Forest Service Visitor Map or the OTG hiking map. OTG will work with the Forest Service and the City of Ouray to reach agreement on trail and trailhead names and locations, so that signage along the PT is consistent.

5. **Trailhead Signs**

Schedule: 2022-2023

Action: OTG will take the lead to develop sign designs for stakeholder comment and approval, following the goals identified in Part 6 of this plan. After design approval by the stakeholders, OTG with help from the City will fund, order, and install the trailhead signs.

6. **Trail Signs**

Schedule: 2022-2023

Action: OTG, Forest Service, and the City will meet and agree on sign standards. The purpose is to clearly mark all trail and road intersections and place other reassurance markers on the PT as needed. OTG will walk the PT and determine where signs are needed. OTG will create and install signs.

7. **Trail Register Evaluation and Relocation**

Schedule: 2022

Action: OTG will evaluate register number and location and with the agreement of the stakeholders OTG will move registers as needed to improve estimates of PT use.

8. **Education Sign Panels**

Schedule: 2023

Action: The purpose is to take advantage of the popularity of the PT to educate the public about the historic, geologic, and biological resources in the area. Forest Service, City of Ouray, and OTG will meet and establish guidelines and standards, and location of educational materials. Materials can be placed on the existing kiosk at Cascade Falls Park, on or adjacent to planned PT trailhead signboards, and possibly on other information panels placed at various locations along the PT. After design and information is agreed to, OTG will take the lead in funding and installing the education materials, with logistic and funding support if available from the City of Ouray.

9. Bench and Overlook

Schedule: 2023

Action: OTG has received donated funds with a specified purpose to create a memorial for a deceased volunteer and donor. OTG wishes to create a small Ouray Overlook with a memorial bench on the PT, OTG will select a location, create a design and plan, seek authorization from the appropriate land management agency if needed, and install the bench and memorial plaque.

10. Trail Improvements

Schedule: 2022-2026

Action: Portions of the PT need to be improved to meet the Class 3 standards of this plan. Upgrades to some areas identified in the 2018 PT Assessment and by OTG observations will be undertaken by OTG as time and resources allow. Some areas of concern are south of the Cascade Falls bridge, the Potato Patch area west to US Highway 550, and from Henn's Overlook north to the Old Twin Peaks Trail junction. OTG will secure agency authorizations as needed, and provide funds and labor.

11. Structures and Access

Schedule: 2022-2025

Action: The City of Ouray and Forest Service will evaluate restrooms and parking at trailheads and access points for adequacy, in light of steadily increasing public use of the PT. Public restroom facilities will be upgraded or added as needed for public safety and sanitation. Parking will be upgraded or added as needed for public safety. City of Ouray and Forest Service will plan, fund, and implement projects.

11.Trail Realignment at Pinecrest Drive and Portland Road

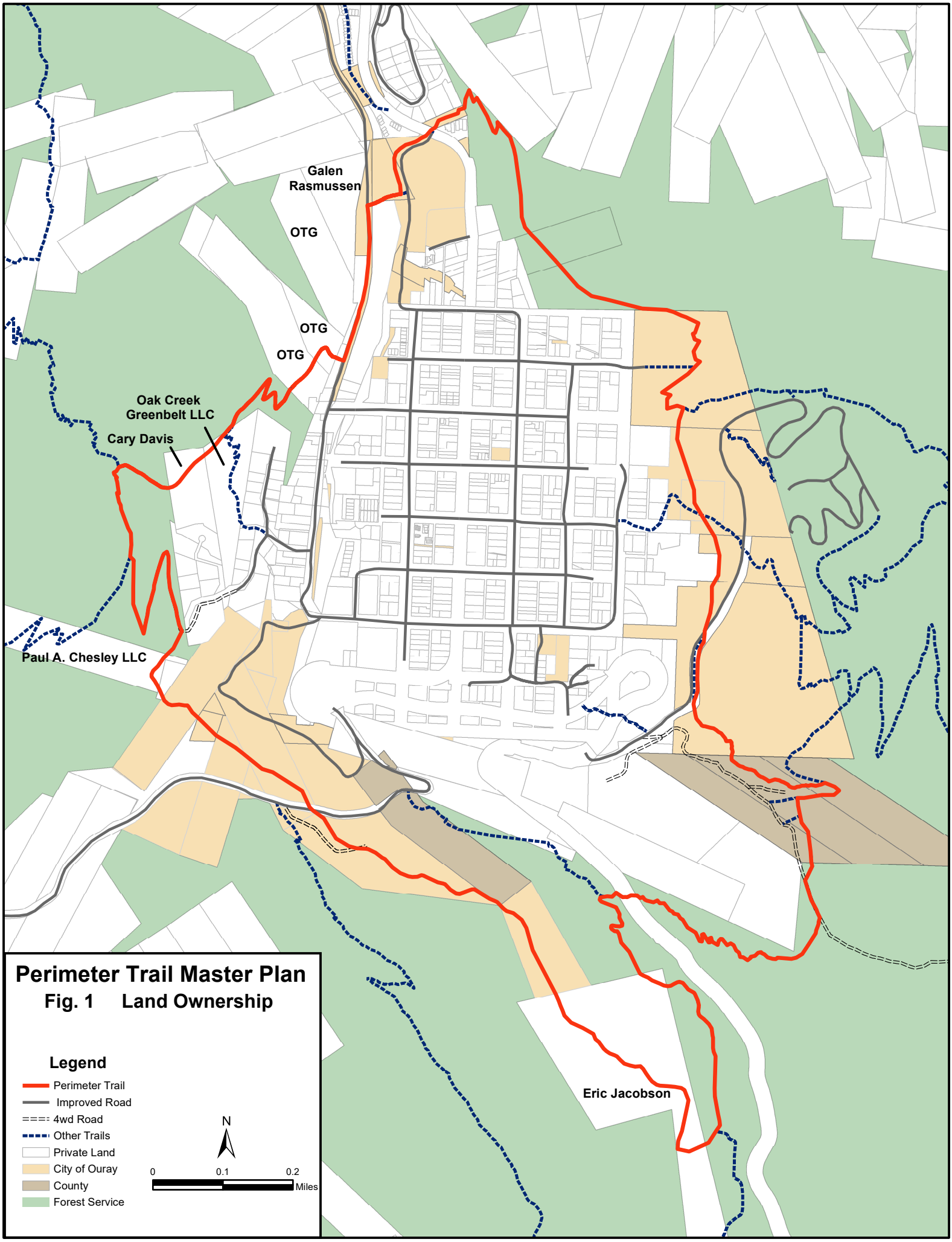
Schedule: 2024-2026

Action: OTG and the City of Ouray agree that the portions of the PT coincident with fur-wheel drive roads open to public use (Pinecrest Drive and Portland Road) do not meet the purpose and standards of the PT stated in this plan. In 2021 The Forest Service evaluated a proposal from OTG to construct short reroutes of the PT on National Forest, and the Forest Service determined that the reroutes were not desirable or feasible. OTG and the City will continue to work with Forest Service to seek other options for moving the PT off of publicly accessible roads.

Part 8 Monitoring and Adaptive Management

OTG will continue to monitor the trail informally, keep the corridor clear, and repair tread and drainage issues. A more formal professional Trail Assessment may be conducted from time to time if needed.

This plan will be jointly reviewed by OTG, City of Ouray, and Forest Service periodically, revised as needed, and new action items proposed and approved.


Galen Rasmussen
OTG
OTG
OTG
Oak Creek Greenbelt LLC
Cary Davis
Paul A. Chesley LLC
Eric Jacobson
Perimeter Trail Master Plan
Fig. 1 Land Ownership
Legend
Perimeter Trail
Improved Road
4wd Road
Other Trails
Private Land
City of Ouray
County
Forest Service
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Miles

Appendix A. Ouray Perimeter Trail Preliminary Assessment Report



2018 Ouray Perimeter Trail & Connectors
Preliminary Assessment Report

Prepared by: David Barnett

SINGLETRACK TRAILS

About Singletrack Trails

SERVICES:

- Project Management
- Trail Planning
- Trail Construction
- Trail Assessment
- Conceptual Design
- Inventory Mapping
- Volunteer and Youth Corps Coordination
- Trail System Branding and Marketing
- Maps & Signage

We Believe in the Synthesis of Connection

That is the ethos of everything Singletrack Trails does. A good trail experience engages the user, providing a fun and soul satisfying connection with the outdoors. And good trail experiences make for more vibrant communities that value recreation and the health benefits of playing outside.

Driven by the desire to protect natural resources while providing better experiences for folks recreating outdoors, Singletrack Trails has been involved with the design and construction of more than 350 miles of sustainable, shared-use trails across the United States. An active member of the Professional TrailBuilders Association, we are a leader in the Rocky Mountain Region for shared-use trail planning, design, construction and the development of bicycle skills training parks.

Based in Colorado, our company credits its success to productive partnerships developed with federal land management agencies including the Bureau of Land Management (BLM), the U.S. Forest Service and state, county and local governments. We also have several beneficial partnerships with private property owners and resorts. Through these partnerships, we have received numerous industry accolades and referrals, maintaining a high level of client retention.

Singletrack Trails employs a dedicated team of builders and specialists with decades of cumulative experience. Because of the love for trails and the outdoors, our staff understands how to build memorable trail experiences. As a result, our staff creates what they would want to experience themselves; a reflection of their dedication to recreation and their love for the outdoors.



Active members of

Professional TrailBuilders Association

Ouray Perimeter Trail
Preliminary Assessment Report

SINGLETRACK TRAILS

SCOPE OVERVIEW

The scope of the project was to GPS the Perimeter Trails and trail connectors to the City of Ouray, as well as to provide a summary overview of existing trail and corridor conditions.

CORRIDOR SUMMARIES

Perimeter Trail

Ouray Visitor Center to Cascade Creek - half to full-bench tread, 16-24" widths follow exposed cliffs and/or traverse very steep rocky cross-slopes; steep timbered steps require maintenance

Cascade Creek to 5th Avenue Trail - half- to full-bench tread, 16-24" widths, on steep cross-slopes

5th Avenue Trail to Portland Creek - narrow trail; 12-24" tread; hard to follow along creek

Portland Creek to US-550 - trail crosses "Potato Patch" meadow, then traverses solid exposed bedrock; erosion induced trail braiding prevalent east of US-550 needs maintenance, steps and/or reroute

US-550 to Camp Bird Road - initially trail follows gravel access road; then becomes 16-24" trail on steep descent to river; maintenance and/or step installation recommended; west of river, route follows Ice Park ATV/UTV access route for pipe; 36 to 48" trail widths; good signage

Camp Bird Road to Canyon Creek - trail follows historic bench cut; 24 to 36" tread widths; great trail conditions; good signage

Canyon Creek to Oak Creek Trailhead - beyond tunnel, steep dangerous timbered stairs along cable-route north of tunnel; this area requires immediate maintenance/upgrade

Oak Creek Trailhead to Queen Street - 16-24" tread widths; short steep sections <25% grades; some exposure; otherwise follows base of cliff band; new trail needs some touch-up finish work

Ice Park Trail Connector

US-550 to Ice Park Trailhead - rugged 18-24" tread; includes steep 20% grades on bedrock

5th Avenue Trail Connector

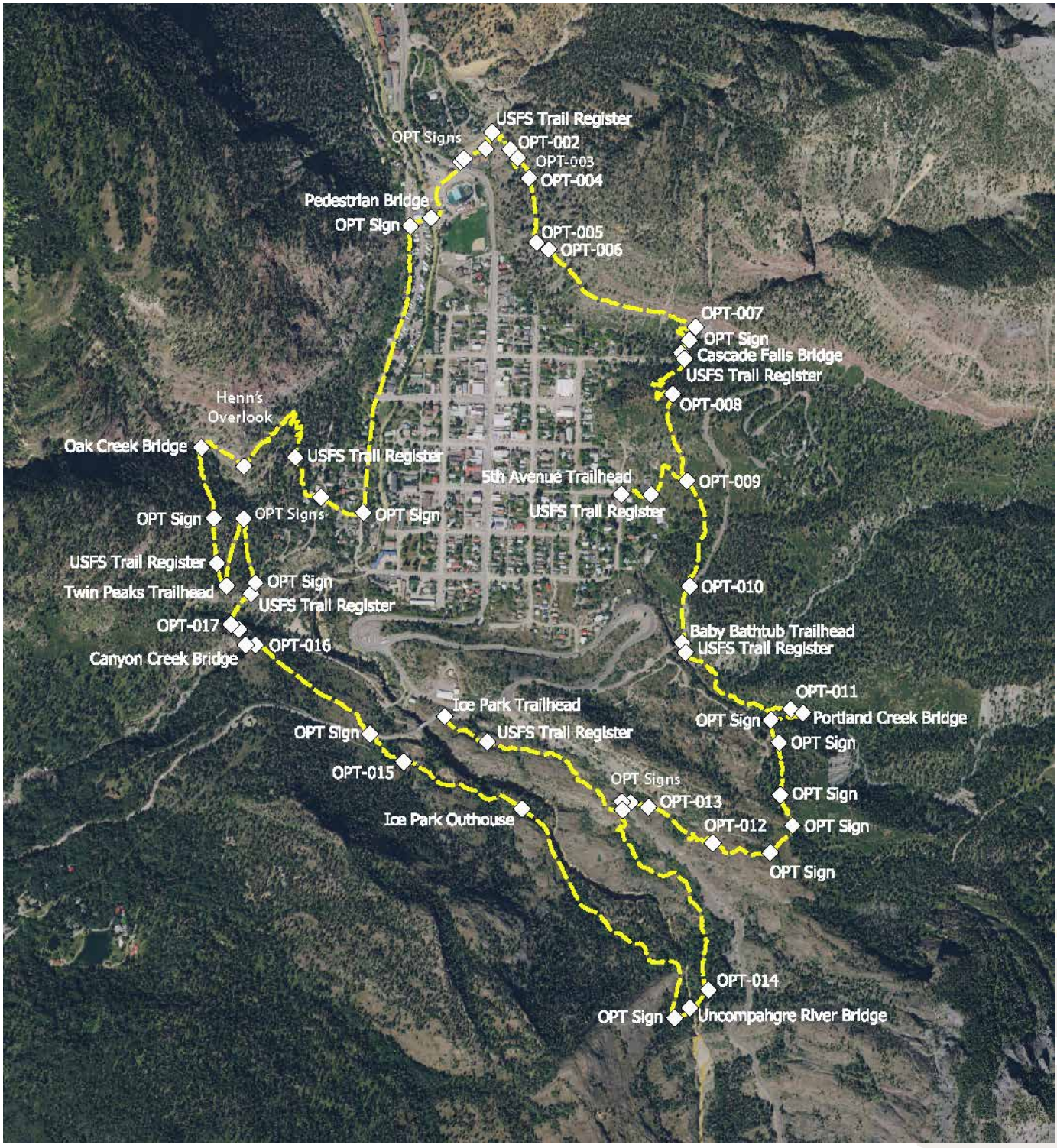
5th Avenue to Ouray Perimeter Trail - braided fall-line tread near base; existing stairs need maintenance - go-arounds being created; otherwise stairs structurally sound

Ouray Perimeter Trail

Preliminary Assessment Report

Overview Map

SINGLETRACK TRAILS



FIELD OBSERVATIONS



OPT-001 Timber stairs; couple steps need to be re-anchored; tread half-bench retaining 4x4" timbers ineffective

OPT-002 Timbered switchbacks; switchbacks need maintenance; current use of tread geosynthetics ineffective: material used to separate base rock fill and tread fines is exposed, open to be damaged by trail users, and may cause users to slip, trip and fall. Reburial or removal of exposed geotextile is a high level maintenance need that should be corrects as soon as possible.

OPT-003 Switchbacks; steep grade (up to 30%); huge rock steps; tread 16-24"; drainage appears to be functioning okay.

OPT-004 Level trail at base of cliff, mine platform overhead



Trail characterization note (OPT-001 to OPT-007): Half to full-bench tread, 16-24" widths along exposed cliffs and/or very steep rocky cross-slopes



OPT-005 Steep trail grade (up to 25%) in both directions; tread 16-24”

OPT-006 Stairs constructed from railroad ties; needs basic maintenance, detritus clearing

OPT-007 Cascade falls overlook and timbered switchbacks; steep stairs; half bench timber support functional

Trail characterization note (OPT-007 to OPT-008): Half-bench to full-bench tread, 16-24” widths, on steep cross-slope






OPT-007


Cascade Creek Bridge

OPT-008 Trail intersection - connector trail to Amphitheater Campground area; signage somewhat confusing

Trail characterization note (OPT-008 to OPT-010): Full-bench tread, 16-24" widths, on moderate cross-slope

OPT-009 Trail intersection - connector trail to 5th Avenue; good signage

OPT-010 Trail intersection - Amphitheater Campground Road; good signage

Trail characterization note (OPT-010 to OPT-011): narrow trail; 12-24" tread; hard to follow; needs additional signage to keep users on track

OPT-011 Trail intersection - connector to Portland Trail #238





Along Portland Creek



Baby Bathtubs Trailhead



OPT - 5th Ave Connector Intersection



Portland Creek Bridge



Potato Patch



OPT-012 Close proximity to high point along Perimeter Trail east of Hwy 550; tread fill on hard Precambrian outcrop; deeply incised trail tread with thick berms; needs grade reversals and/or water bars installed.

OPT-013 Fall-line trail; erosion induced trail braiding prevalent; short re-route suggestion: build in switchbacks here to to prevent additional erosion trenching and user created trail braids

Trail characterization note (Hwy 550 to OPT-014): gravel access road for full-size vehicles that connects highway to Uncompahgre River dam; in places road is steep with loose coarse gravel material

OPT-014 Perimeter Trail leaves gravel road; heads for pedestrian river bridge

Trail characterization note (OPT-014 to Uncompahgre River): steep, rough trail; maintenance and/or step installation recommended; (pipe crossing to OPT-015): trail route follows ice park ATV/UTV access route; 36 to 48" trail widths; added reassurance route signage would be helpful along this stretch


Near OPT-012






Uncompahgre River Bridge

OPT-015 Perimeter Trail leaves Ice Park ATV/UTV access route; good signage

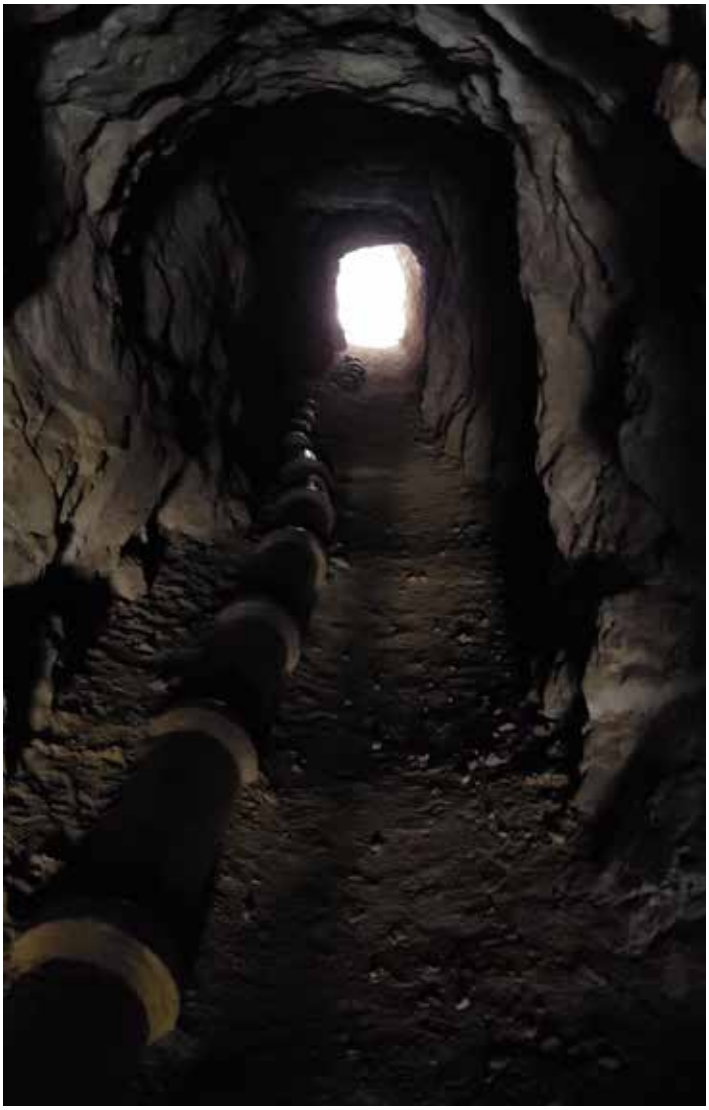
Trail characterization note (Camp Bird Road to OPT-016): trail follows great historic bench cut for former water ditch or pipe route; 24 to 36" tread widths; great trail conditions




Pipe Crossing

OPT-016 Trail intersection with Box Canyon High Bridge Trail; bridge & tunnel to north

Trail character note (Canyon Creek Bridge to Pinecrest Drive): steep, very dangerous timbered stairs; cable-route; north of tunnel; this section should be placed very high on maintenance/upgrade list; if stairway above leading to Box Canon sign not to be utilized, those stair components might be used to re-build the dangerous timbered stairs / cable-route on northern end of tunnel; trail route along Pinecrest Drive is not exciting whatsoever





Same location as cover photo


Tunnel - North End


Cable Section & Tunnel

Trail character - Twin Peaks & Oak Creek Trailhead to Queen Street: 16-24” tread widths; includes short steep sections <25% grades; some exposure that could be mitigated by removing off-camber trail tread


Oak Creek Bridge

David Barnett

Business Development & GIS Manager



EDUCATION & CERTIFICATIONS:

Professional GIS Certificate - Metropolitan State University, Denver, Colorado
Bachelor of Science, Geology - Fort Lewis College, Durango, Colorado
Professional Geologist CPG-11924 - American Institute of Professional Geologists
sUAS Remote Pilot - Federal Aviation Administration

PROFESSIONAL EXPERIENCE:

Singletrack Trails, Inc, 2017 - Present
Business Development and GIS Manager

Recreational project planning, design and development, including: business workflow and procedural analysis, market analysis, client development, field mapping, UAV aerial mapping, GIS analysis and conceptual project design.

MtnCarto, 2001 - Present
GIS Analyst and Geologist

Provide adaptive geospatial micro-service integrations and business solutions to include geographic information science data analysis, map application development, terrain modeling and technical illustration.

Project Geologist, 1991 - 2000
Great Basin and Northern Rocky Mtn Cordillera Regions

RECENT PROJECT EXPERIENCE:

Red Hill SRMA Trail Design - Carbondale, Colorado

- Created GIS database and terrain model for trail design
- Field flagged trail corridors with GPS data collector
- Supported public outreach events

Great Western Trail Design - Millcreek Canyon, Utah

- Created conceptual design using GIS terrain model
- Field verified conditions, made terrain characterizations
- Authored and submitted design report for USFS NEPA process

Silver Cliff Underground Mine Development - Colorado

- Provided UAV drone supported aerial photography services to create georeferenced aerial photo mosaic and 2-foot topographic data

PRESENTATIONS:

Western Slope GIS User Group - 2018 Summer Quarterly Meeting
"GIS for Recreation Development: Terrain Model Integrations"

2018 Colorado Open Space Alliance Annual Convention
"GIS Terrain Modeling for Open Space Projects"

SUMMARY:

Over 25 years applied experience within information technology, geographic information science and geology, contributing to successful projects through results driven process improvement, change management, implementation of modern technologies, strong communication skills, professional customer support and ongoing career development.

PROFESSIONAL AFFILIATIONS:

American Institute of Professional Geologists (AIPG)

Geological Society of Nevada

Grand Junction Geological Society

GIS Colorado







CONTACT INFORMATION

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Professional TrailBuilders Association

Appendix B. U.S. Forest Service Design Parameters

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use HIKER/PEDESTRIAN		**Trail Class 1**	**Trail Class 2**	**Trail Class 3[2]**	**Trail Class 4[2]**	**Trail Class 5[2]**
Design Tread Width	**Wilderness** (Single Lane)	0" – 12"	6" – 18"	12" – 24" Exception: may be 36" – 48" at steep side slopes	18" – 24" Exception: may be 36" – 48" at steep side slopes	Not applicable
	Non-Wilderness (Single Lane)	0" – 12"	6" – 18"	18" – 36"	24" – 60"	36" – 72"
	Non-Wilderness (Double Lane)	36"	36"	36" – 60"	48" – 72"	72" – 120"
	Structures (Minimum Width)	18"	18"	18"	36"	36"
Design Surface[3]	**Type**	Native, ungraded May be continuously rough	Native, limited grading May be continuously rough	Native with some onsite borrow or imported material where needed for stabilization, occasional grading Intermittently rough	Native with improved sections of borrow or imported material, routine grading Minor roughness	Likely imported material, routine grading Uniform, firm, and stable
	Protrusions	≤ 24" Likely common and continuous	≤ 6" May be common and continuous	≤ 3" May be common, not continuous	≤ 3 " Uncommon, not continuous	No protrusions
	Obstacles (Maximum Height)	24"	14"	10"	8"	No obstacles
Design Grade[3]	**Target Grade**	5% – 25%	5% – 18%	3% – 12%	2% – 10%	2% – 5%
	Short Pitch Maximum	40%	35%	25%	15%	5% FSTAG: 5% – 12%[2]
	Maximum Pitch Density	20% – 40% of trail	20% – 30% of trail	10% – 20% of trail	5% – 20% of trail	0% – 5% of trail

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Designed Use HIKER/PEDESTRIAN		Trail Class 1	Trail Class 2	Trail Class 3 [2]	Trail Class 4 [2]	Trail Class 5 [2]
Design Cross Slope	**Target Cross Slope**	Natural side slope	5% – 20%	5% – 10%	3% – 7%	2% – 3% (or crowned)
	Maximum Cross Slope	Natural side slope	25%	15%	10%	3%
Design Clearing	**Height**	6’	6’ – 7’	7’ – 8’	8’ – 10’	8’ – 10’
	Width	≥ 24” Some vegetation may encroach into clearing area	24” – 48” Some light vegetation may encroach into clearing area	36” – 60”	48” – 72”	60” – 72”
	Shoulder Clearance	3” – 6”	6” – 12”	12” – 18”	12” – 18”	12” – 24”
Design Turn	**Radius**	No minimum	2’ – 3’	3’ – 6’	4’ – 8’	6’ – 8’

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum) see FSH 2309.18, section 05.

[2] Trail Classes 3, 4, and 5, in particular, have the potential to provide accessible passage. If assessing or designing trails for accessibility, refer to the Forest Service Trail Accessibility Guidelines (FSTAG) for more specific technical provisions and tolerances (FSM 2350).

[3] The determination of trail-specific design grades, design surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Future Agenda Items/Work Sessions

Fee Schedule

Workforce & Attainable Housing

Charter Modifications

(Non-Land Use) Code Revisions

Oak Street Capital Improvement Plan

Changing PARC Terms

Temporary Encroachment on Sidewalks (and liquor in public parks)

Excise Tax Use for Housing Programs (ie. Home Trust)

Main Street Program

Bachelor Switch Water Users' Agreement

Perimeter Trail Master Plan

Spending ARPA Money on Water Treatment Plant

IRU Agreement with Region 10

Snow and Ice Removal on Sidewalks (September 5th?)

Nose-to-nose School Bus Parking on 4th Street

Geothermal Easement on Nixon Property

Forest Service Special Use Permit for Weehawken Pipeline

Branding