ENGINEER'S REPORT

City of Lead
Commission Meeting
December 2, 2024

Deadwood Water Supply Line Replacement

- Low bid was Halme, Inc. at $505,722.25.
- Notice of Award and unexecuted contract has been presented to Halme, Inc.
- The CATEX has been published and has received no comments.

Facilities Plan Update

- Discussion about current Facilities Plan (attached) versus requirements for USDA RD and SD DANR funding (attached).
- Discussion on Water & Waste Disposal Predevelopment Planning Grants.

Prepared by: Zach Grapentine

DEADWOOD WATER SUPPLY LINE &
HIGHWAY 85 EXTENSION
PRELIMINARY ENGINEERING REPORT

JULY 2023

PREPARED BY:

INTERSTATE ENGINEERING, INC.
SPEARFISH, SOUTH DAKOTA 57783

I HEREBY CERTIFY that this Engineering Report was prepared by me or under my direct supervision and that I am a duly Registered Engineer under the laws of the State of South Dakota.

IE#: WC23-03-083.03

CITY OF LEAD
ENGINEERING REPORT

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SECTION 1

INTRODUCTION

Much of the City of Lead's sewer collection system is more than 75 years old. The system serves as both a sanitary sewer collection system and a storm sewer collection system. In February 1994, Lead took over the water distribution system from Homestake Mining Company. Most of that distribution system was 75 to 100 years old.

In the late 1980's the City began televising their system and have found much of it in very poor condition. They found misaligned pipe with joints separated, root intrusion, areas with broken pipe, pipe filled with sediment, and brick manholes that are in extremely poor condition. The water system consists of cast-iron pipes with lead joints. As the pipe has been exposed in past projects, it is found to be in very poor condition.

In the mid 1980's the city began rehabilitating its system. At the same time, when it was possible, they started attempting the separation of the storm water from the sanitary system. First, because of very limited funding, the projects were quite small. In 1989, Lead formulated a six (6) year rehabilitation plan. They completed a Facility Plan and received approval of that Plan from the South Dakota Department of Agriculture and Natural Resources ("SDDANR"). They began working on that Plan in 1990 using funding from SDDANR loans and local funds. Each year when they set up a project the city would coordinate with Homestake Mining Company, owners of the water distribution system, and get the water lines replaced in the affected areas.

The City of Lead has updated its Facility Plan starting in May 1997, October 2003, November 2006, February 2009, August 2013, September 2018, September 2021, and April 2023. This update to the Facility Plan discusses two (2) updated water project priorities. The projects in this Facility Plan will begin design in 2023 and consist of water line replacement and extension. Funding being requested through this Facility Plan is intended to cover costs for the projects.

SECTION 2

EFFLUENT LIMITATIONS

The City of Lead conveys its sanitary waste to the Lead-Deadwood Sanitary District wastewater treatment plant. The existing National Pollutant Discharge Elimination System (NPDES) that the Sanitary District has would still be applicable.

SECTION 3

ENVIRONMENTAL INFORMATION DOCUMENT

3.1 ENVIRONMENTAL SETTING

The projects all fall within Lead City streets and/or utility ROW. Specific projects are as follows:

Project Description		Year of Construction
Project 1	Highway 85 Water and Sewer Extension	2024
Project 2	Deadwood Water Supply Line Water Replacement	2024

These projects are shown on Figure 1 – 1b.

The water and sewer line extension on Highway 85 would be along the shoulder of the road. The water line replacement for the Deadwood Water Supply Line would be at the same location and alignment as the existing system.

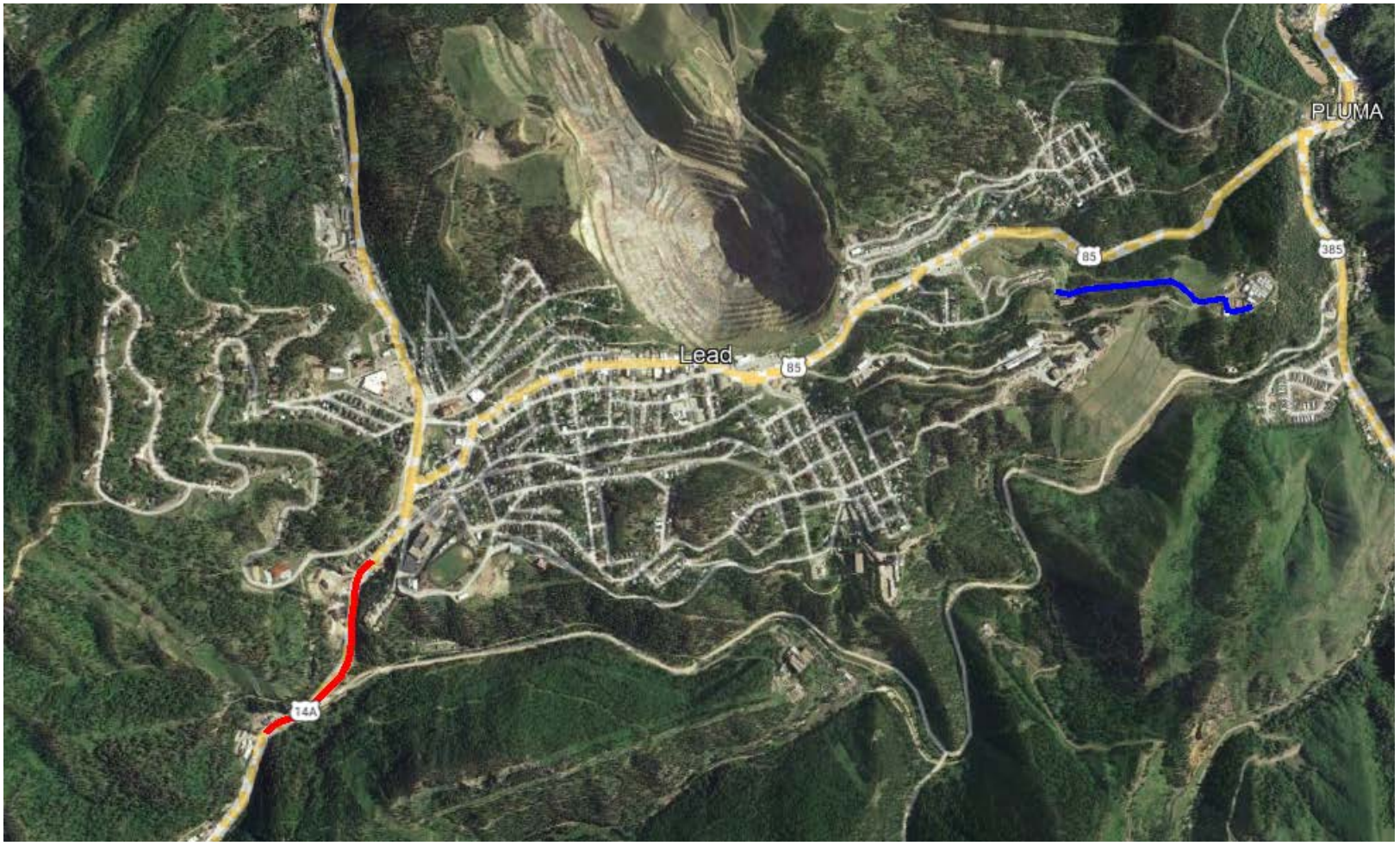

Figure 1 - Projects Overview

Figure 1a – Highway 85 Water Line and Sewer Line

Figure 1b – Deadwood Supply Water Line

The following projects have been completed since the 2006 revision:

Galena Street (Main Street to Julius Street)
- Storm Sewer, Sewer, Water, and Street — Completed 2007

Stone Street (Main Street to Julius Street)
- Storm Sewer, Sewer, Water, and Street — Completed 2007

Julius Street (Stone to Grand)
- Storm Sewer, Sewer, Water, and Street — Completed 2008

Siever Street (Main Street to Julius Street)
- Storm Sewer, Sewer, Water, and Street — Completed 2008

Grand Ave. (Julius Street to McQuillian)
- Water and Street — Completed 2008

Alert Street (Main Street to Julius Street)
- Storm Sewer, Sewer, Water, and Street — Completed 2009

Paul Street (Main Street to Julius Street)
- Storm Sewer, Sewer, Water, and Street — Completed 2009

Julius Street (Grand to Blatt)
- Storm Sewer, Sewer, Water, and Street — Completed 2009

Lower May, South Main Street, and Addie Street
(May Street from Addie to South Main)
(South Main from CC Curran to Baltimore)
(Addie Street from South Main to Lower May)
- Storm Sewer, Sewer, Water, and Street — Completed 2010

West Addie Street (Lower May Street to Grand Ave.)
- Storm Sewer, Sewer, Water, and Street — Completed 2011

Main Street (Blatt to Wells Fargo Bank Building)
- Sewer and Water
- Storm Sewer and Street by Department of Transportation — Completed 2016

Blue Street (Main Street to Railroad Avenue)

- Storm Sewer, Sewer, Water, and Street — Completed 2016

Water Meter Replacement Project — Completed 2017

Houston to Pavilion (from West Summit to Mill Street)

- Storm Sewer, Sewer, Water, and Street — Completed 2020

Miners Avenue

- Storm Sewer, Sewer, Water, and Street — Beginning 2023

Mill Street

- Storm Sewer, Sewer, Water, and Street — Beginning 2023

An environmental evaluation was solicited from the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the South Dakota Department of Game, Fish, and Parks, the USDA Soil Conservation Service, and the SDDANR. SDDANR forwarded the solicitation to the State Historical Preservation Organization, and they decided as to the effect the projects have on cultural resources.

The following is a climatological summary of the area. This area is in the Northern Black Hills. Average annual mean temperatures are at or below freezing for the months of December, January, February, and March. Average annual lake evaporation is approximately 40.5 inches of which 31.2 inches are in the May - October period. The annual average precipitation is 25.4 inches of which 9.4 inches falls in the winter period and 16.0 inches falls in the summer period.

3.2 IMPACT OF PROJECT ON ENVIRONMENT

The replacement of the old cast iron lead-joint water lines will ensure that safe quality water is being delivered to the residents of the city.

These projects will be constructed within existing water line ditches and along existing streets. Therefore, they will not encounter wetlands, recharge areas, wildlife habitat or disturb and endanger species. The geographical locations are such that no flood plains exist in the areas.

A minor increase in noise levels and dust levels shall occur during the time of construction. These, however, will not cause any long-term health hazards.

SECTION 4

CURRENT SITUATION

4.1 WATER QUALITY

The city is supplied with potable water from the old Homestake Mining Company collection system. Their water source is not from the immediate area and is not affected by this project. It comes from springs in the Hanna area located about six (6) to seven (7) miles southwest of Lead.

Currently this water is treated in a treatment plant owned and operated by the Lead-Deadwood Sanitary District. This plant was built in 1995 and is in the northwest part of Lead on Pavilion Street.

4.2 POPULATION

The total population of Lead based on the 2020 census is 2,982 people.

SECTION 5

FUTURE SITUATION

5.1 POPULATION PROJECTION

This area is nearly all developed and very little change would be expected in the next twenty (20) years.

5.2 SERVICE AREA

See Figure 1 for the proposed service area.

5.3 PROPOSED PROJECT

For the Highway 85 Water Extension project, the city is extending their 8” water main and 8” sewer main approximately 0.5 miles to the city limits which has recently been expanded. The water line extension will service two taps and will dead end with a hydrant and stub for future expansion. The sewer line extension will service a single service and will dead end with a manhole, lift station, and stub for future expansion. The alignment of the new line will be along the east side of the highway shoulder. For this project, coordination with the South Dakota Department of Transportation (“SDDOT”) will need to occur as this will be along a state highway.

For the Deadwood Water Supply Line Replacement project, the city is replacing an existing 6” waterline. The city has had to repair leaks on the line on average four (4) to five (5) times per year. In the year 2022, they had to repair the line ten (10) times. The major issue with this line is that it supplies the City of Deadwood with water at a maximum flow of 1,800 gallons per minute. The existing water line size is not capable of keeping up with that demand, which is because of the constant breaks. An initial recommendation is to replace approximately 0.5 miles of line with 14” water line along the same alignment of the existing line.

The water projects were both submitted for SD DANR review by the May 1st, 2023 deadline.

SECTION 6

FINANCIAL PLAN

6.1 CAPITAL COSTS

Section 6 provides an estimate of capital costs for each of the projects. The estimates identify the unit cost with the appropriate quantities. See Appendix A for an Engineer's Opinion of Probable Cost including construction, 30% contingency, engineering study, engineering design, construction engineering, legal , and administration.

6.2 PROJECT FUNDING

The intent is to fund the yearly Capital Construction Project through the State Revolving Fund. Revenue from water and sewer fees will be applied to the repayment plan. The total payoff for the existing loans will occur in 2036.

SECTION 7

PLAN SELECTION AND IMPLEMENTATION

7.1 RECOMMENDATION

Due to the condition and size of the water line that supplies the City of Deadwood, the water line should be replaced and upsized to better accommodate flow demands.

Based on the growth of the city, The extension of the City infrastructure to the south is ideal for future growth and to incorporate existing users into the city's water source.

7.2 IMPLEMENTATION SCHEDULE

The recommended implementation and construction schedule:

1. ***Submit Engineering Report to the State by the 1st of August 2023.***
2. ***Send out Environmental Agency Review Letters no later than 5th of September, 2023.***
3. ***Submit Application for CDBG Grant by 1st of August, 2023.***
4. ***Conduct Public Hearing for the Engineering Report and Preliminary Plans prior to the 31st of August, 2023.***

APPENDIX A

ENGINEER'S OPINION OF PROBABLE COST

ENGINEER'S OPINION OF PROBABLE COST (PRELIMINARY)
Deadwood Supply Water Line
Lead, South Dakota

WC23-03-083.03
April 28, 2023

Pay Item	Description	Quantity	Unit	Unit Cost	Amount
1	MOBILIZATION	1	LS	$22,800.00	$22,800.00
2	INCIDENTALS	1	LS	$9,100.00	$9,100.00
3	14" PVC WATER MAIN	1,640	LF	$200.00	$328,000.00
4	14" GATE VALVE (With Box & Foster Adapter)	3	EA	$5,900.00	$17,700.00
5	14" WATER MAIN FITTINGS	15	EA	$2,000.00	$30,000.00
6	14"X6" REDUCER	1	EA	$2,000.00	$2,000.00
7	FIRE HYDRANT W/ AUX VALVE BOX	2	EA	$7,000.00	$14,000.00
8	PRESSURE RELIEF VALVE	1	EA	$9,000.00	$9,000.00
9	METER PIT W/ METER	1	EA	$6,500.00	$6,500.00
10	CONNECT TO EXISTING WATER MAIN	2	EA	$5,000.00	$10,000.00
11	RECONNECT WATER SERVICE	1	EA	$500.00	$500.00
12	EXPLORATORY EXCAVATION	10	HR	$200.00	$2,000.00
13	GRAVEL SURFACING	984	TONS	$35.00	$34,440.00
14	EROSION CONTROL	1	LS	$22,800.00	$22,800.00
15	TRAFFIC CONTROLL	1	LS	$11,400.00	$11,400.00

Sub Total:	**$520,240.00**
30% CONTINGENCY:	$156,072.00
ENGINEERING STUDY & REPORT:	$6,000.00
ENGINEERING DESIGN:	$54,104.96
CONSTRUCTION ENGINEERING:	$67,631.20
LEGAL & ADMINISTRATION:	$3,381.56
GRAND TOTAL:	**$807,430**

Notes: Engineer's opinions of probable Construction Cost are to be made on the basis of Engineer's experience and qualifications and represent Engineer's estimate as an experienced and qualified professional generally familiar with the construction industry. However, because Engineer has no control over the cost of labor, materials, equipment, or services furnished by others, or over contractors' methods of determining prices, or over competitive bidding or market conditions, Engineer cannot and does not guarantee that proposals, bids, or actual Construction Cost will not vary from opinions of probable Construction Cost prepared by Engineer.

ENGINEER'S OPINION OF PROBABLE COST (PRELIMINARY)
Highway 85 Water Line Extension
Lead, South Dakota

WC23-03-083.03
JULY 25, 2023

Pay Item	Description	Quantity	Unit	Unit Cost	Amount
1	MOBILIZATION	1	LS	$100,000.00	$100,000.00
2	INCIDENTALS	1	LS	$22,300.00	$22,300.00
3	ASPHALT REMOVAL	2,916	SY	$12.00	$34,986.67
4	AGGRAGATE BASE COURSE	317	TON	$40.00	$12,682.67
5	ASPHALT PAVEMENT	328	TON	$150.00	$49,200.00
6	8" PVC WATER MAIN	1,640	LF	$140.00	$229,600.00
7	8" GATE VALVE (With Box & Foster Adapter)	3	EA	$4,000.00	$12,000.00
8	8" WATER MAIN FITTINGS	10	EA	$1,500.00	$15,000.00
9	8"X6" REDUCER	1	EA	$1,000.00	$1,000.00
10	FIRE HYDRANT W/ AUX VALVE BOX	1	EA	$7,000.00	$7,000.00
11	PRESSURE RELIEF VALVE	2	EA	$9,000.00	$18,000.00
12	2" WATER SERVICE	20	LF	$95.00	$1,900.00
13	2" TAPPING SADDLE	2	EA	$500.00	$1,000.00
14	2" CURB STOP W/ BOX	2	EA	$1,000.00	$2,000.00
15	CONNECT TO EXISTING WATER MAIN	1	EA	$5,000.00	$5,000.00
16	8" SANITARY SEWER MAIN	2,000	LF	$130.00	$260,000.00
17	4" SANITARY SEWER SERVICE	20	LF	$85.00	$1,700.00
18	4" SANITARY SEWER SERVICE CLEANOUT	2	EA	$900.00	$1,800.00
19	STANDARD MANHOLE, 48"	7	EA	$8,000.00	$56,000.00
20	LIFT STATION	1	LS	$350,000.00	$350,000.00
21	FORCE MAIN	2,000	LF	$75.00	$150,000.00
22	CONNECT TO EXISTING SEWER MAIN	1	EA	$5,000.00	$5,000.00
23	EROSION CONTROL	1	LS	$55,600.00	$55,600.00
24	TRAFFIC CONTROL	1	LS	$70,000.00	$70,000.00

Sub Total:	**$1,461,769.33**
30% CONTINGENCY:	$438,530.80
ENGINEERING STUDY & REPORT:	$6,000.00
ENGINEERING DESIGN:	$152,024.01
CONSTRUCTION ENGINEERING:	$190,030.01
LEGAL & ADMINISTRATION:	$9,501.50
GRAND TOTAL:	**$2,257,856**

Notes: Engineer's opinions of probable Construction Cost are to be made on the basis of Engineer's experience and qualifications and represent Engineer's estimate as an experienced and qualified professional generally familiar with the construction industry. However, because Engineer has no control over the cost of labor, materials, equipment, or services furnished by others, or over contractors' methods of determining prices, or over competitive bidding or market conditions, Engineer cannot and does not guarantee that proposals, bids, or actual Construction Cost will not vary from opinions of probable Construction Cost prepared by Engineer.

DETAILED OUTLINE OF A PRELIMINARY ENGINEERING REPORT

1) PROJECT PLANNING

Describe the area under consideration. Service may be provided by a combination of central, cluster, and/or centrally managed individual facilities. The description should include information on the following:

a) Location. Provide scale maps and photographs of the project planning area and any existing service areas. Include legal and natural boundaries and a topographical map of the service area.

b) Environmental Resources Present. Provide maps, photographs, and/or a narrative description of environmental resources present in the project planning area that affect design of the project. Environmental review information that has already been developed to meet requirements of NEPA or a state equivalent review process can be used here.

c) Population Trends. Provide U.S. Census or other population data (including references) for the service area for at least the past two decades if available. Population projections for the project planning area and concentrated growth areas should be provided for the project design period. Base projections on historical records with justification from recognized sources.

d) Community Engagement. Describe the utility's approach used (or proposed for use) to engage the community in the project planning process. The project planning process should help the community develop an understanding of the need for the project, the utility operational service levels required, funding and revenue strategies to meet these requirements, along with other considerations.

2) EXISTING FACILITIES

Describe each part (e.g. processing unit) of the existing facility and include the following information:

a) Location Map. Provide a map and a schematic process layout of all existing facilities. Identify facilities that are no longer in use or abandoned. Include photographs of existing facilities.

b) History. Indicate when major system components were constructed, renovated, expanded, or removed from service. Discuss any component failures and the cause for the failure. Provide a history of any applicable violations of regulatory requirements.

c) Condition of Existing Facilities. Describe present condition; suitability for continued use; adequacy of current facilities; and their conveyance, treatment, storage, and disposal capabilities. Describe the existing capacity of each component. Describe and reference compliance with applicable federal, state, and local laws. Include a brief analysis of overall current energy consumption. Reference an asset management plan if applicable.

d) Financial Status of any Existing Facilities. (Note: Some agencies require the owner to submit the most recent audit or financial statement as part of the application package.) Provide information regarding current rate schedules, annual O&M cost (with a breakout of current energy costs), other capital improvement programs, and tabulation of users by monthly usage categories for the most recent typical fiscal year. Give status of existing debts and required reserve accounts.

e) Water/Energy/Waste Audits. If applicable to the project, discuss any water, energy, and/or waste audits which have been conducted and the main outcomes.

3) NEED FOR PROJECT

Describe the needs in the following order of priority:

a) Health, Sanitation, and Security. Describe concerns and include relevant regulations and correspondence from/to federal and state regulatory agencies. Include copies of such correspondence as an attachment to the Report.

b) Aging Infrastructure. Describe the concerns and indicate those with the greatest impact. Describe water loss, inflow and infiltration, treatment or storage needs, management adequacy, inefficient designs, and other problems. Describe any safety concerns.

c) Reasonable Growth. Describe the reasonable growth capacity that is necessary to meet needs during the planning period. Facilities proposed to be constructed to meet future growth needs should generally be supported by additional revenues. Consideration should be given to designing for phased capacity increases. Provide number of new customers committed to this project.

4) ALTERNATIVES CONSIDERED

This section should contain a description of the alternatives that were considered in planning a solution to meet the identified needs. Documentation of alternatives considered is often a Report weakness. Alternative approaches to ownership and management, system design (including resource efficient or green alternatives), and sharing of services, including various forms of partnerships, should be considered. In addition, the following alternatives should be considered, if practicable: building new centralized facilities, optimizing the current facilities (no construction), developing centrally managed decentralized systems, including small cluster or individual systems, and developing an optimum combination of centralized and decentralized systems. Alternatives should be consistent with those considered in the NEPA, or state equivalent, environmental review. Technically infeasible alternatives that were considered should be mentioned briefly along with an explanation of why they are infeasible, but do not require full analysis. For each technically feasible alternative, the description should include the following information:

a) Description. Describe the facilities associated with every technically feasible alternative. Describe source, conveyance, treatment, storage and distribution

facilities for each alternative. A feasible system may include a combination of centralized and decentralized (on-site or cluster) facilities.

b) Design Criteria. State the design parameters used for evaluation purposes. These parameters should comply with federal, state, and agency design policies and regulatory requirements.

c) Map. Provide a schematic layout map to scale and a process diagram if applicable. If applicable, include future expansion of the facility.

d) Environmental Impacts. Provide information about how the specific alternative may impact the environment. Describe only those unique direct and indirect impacts on floodplains, wetlands, other important land resources, endangered species, historical and archaeological properties, etc., as they relate to each specific alternative evaluated. Include generation and management of residuals and wastes.

e) Land Requirements. Identify sites and easements required. Further specify whether these properties are currently owned, to be acquired, leased, or have access agreements.

f) Potential Construction Problems. Discuss concerns such as subsurface rock, high water table, limited access, existing resource or site impairment, or other conditions which may affect cost of construction or operation of facility.

g) Sustainability Considerations. Sustainable utility management practices include environmental, social, and economic benefits that aid in creating a resilient utility.

i) Water and Energy Efficiency. Discuss water reuse, water efficiency, water conservation, energy efficient design (i.e. reduction in electrical demand), and/or renewable generation of energy, and/or minimization of carbon footprint, if applicable to the alternative. Alternatively, discuss the water and energy usage for this option as compared to other alternatives.

ii) Green Infrastructure. Discuss aspects of project that preserve or mimic natural processes to manage stormwater, if applicable to the alternative. Address management of runoff volume and peak flows through infiltration, evapotranspiration, and/or harvest and use, if applicable.

iii) Other. Discuss any other aspects of sustainability (such as resiliency or operational simplicity) that are incorporated into the alternative, if applicable.

h) Cost Estimates. Provide cost estimates for each alternative, including a breakdown of the following costs associated with the project: construction, non-construction, and annual O&M costs. A construction contingency should be included as a non-construction cost. Cost estimates should be included with the descriptions of each technically feasible alternative. O&M costs should include a rough breakdown by O&M category (see example below) and not just a value for each alternative. Information from other sources, such as the recipient's accountant or other known technical service providers, can be incorporated to assist in the development of this section. The cost derived will be used in the life cycle cost analysis described in Section 5 a.

Example O&M Cost Estimate	
Personnel (i.e. Salary, Benefits, Payroll Tax, Insurance, Training)	
Administrative Costs (e.g. office supplies, printing, etc.)	
Water Purchase or Waste Treatment Costs	
Insurance	
Energy Cost (Fuel and/or Electrical)	
Process Chemical	
Monitoring & Testing	
Short Lived Asset Maintenance/Replacement*	
Professional Services	
Residuals Disposal	
Miscellaneous	
Total	

* See Appendix A for example list

5) SELECTION OF AN ALTERNATIVE

Selection of an alternative is the process by which data from the previous section, "Alternatives Considered" is analyzed in a systematic manner to identify a recommended alternative. The analysis should include consideration of both life cycle costs and non-monetary factors (i.e. triple bottom line analysis: financial, social, and environmental). If water reuse or conservation, energy efficient design, and/or renewable generation of energy components are included in the proposal provide an explanation of their cost effectiveness in this section.

a) Life Cycle Cost Analysis. A life cycle present worth cost analysis (an engineering economics technique to evaluate present and future costs for comparison of alternatives) should be completed to compare the technically feasible alternatives. Do not leave out alternatives because of anticipated costs; let the life cycle cost analysis show whether an alternative may have an acceptable cost. This analysis should meet the following requirements and should be repeated for each technically feasible alternative. Several analyses may be required if the project has different aspects, such as one analysis for different types of collection systems and another for different types of treatment.

1. The analysis should convert all costs to present day dollars;
2. The planning period to be used is recommended to be 20 years, but may be any period determined reasonable by the engineer and concurred on by the state or federal agency;
3. The discount rate to be used should be the "real" discount rate taken from Appendix C of OMB circular A-94 and found at (www.whitehouse.gov/omb/circulars/a094/a94_appx-c.html);
4. The total capital cost (construction plus non-construction costs) should be included;

5. Annual O&M costs should be converted to present day dollars using a uniform series present worth (USPW) calculation;
6. The salvage value of the constructed project should be estimated using the anticipated life expectancy of the constructed items using straight line depreciation calculated at the end of the planning period and converted to present day dollars;
7. The present worth of the salvage value should be subtracted from the present worth costs;
8. The net present value (NPV) is then calculated for each technically feasible alternative as the sum of the capital cost (C) plus the present worth of the uniform series of annual O&M (USPW (O&M)) costs minus the single payment present worth of the salvage value (SPPW(S)):

$$NPV = C + USPW\ (O\&M) - SPPW\ (S)$$

9. A table showing the capital cost, annual O&M cost, salvage value, present worth of each of these values, and the NPV should be developed for state or federal agency review. All factors (major and minor components), discount rates, and planning periods used should be shown within the table;
10. Short lived asset costs (See Appendix A for examples) should also be included in the life cycle cost analysis if determined appropriate by the consulting engineer or agency. Life cycles of short lived assets should be tailored to the facilities being constructed and be based on generally accepted design life. Different features in the system may have varied life cycles.

b) Non-Monetary Factors. Non-monetary factors, including social and environmental aspects (e.g. sustainability considerations, operator training requirements, permit issues, community objections, reduction of greenhouse gas emissions, wetland relocation) should also be considered in determining which alternative is recommended and may be factored into the calculations.

6) PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

The engineer should include a recommendation for which alternative(s) should be implemented. This section should contain a fully developed description of the proposed project based on the preliminary description under the evaluation of alternatives. Include a schematic for any treatment processes, a layout of the system, and a location map of the proposed facilities. At least the following information should be included as applicable to the specific project:

a) Preliminary Project Design.

i) Drinking Water:

Water Supply. Include requirements for quality and quantity. Describe recommended source, including site and allocation allowed.

Treatment. Describe process in detail (including whether adding, replacing, or rehabilitating a process) and identify location of plant and site of any process discharges. Identify capacity of treatment plant (i.e. Maximum Daily Demand).

Storage. Identify size, type and location.

Pumping Stations. Identify size, type, location and any special power requirements. For rehabilitation projects, include description of components upgraded.

Distribution Layout. Identify general location of new pipe, replacement, or rehabilitation: lengths, sizes and key components.

ii) Wastewater/Reuse:

Collection System/Reclaimed Water System Layout. Identify general location of new pipe, replacement or rehabilitation: lengths, sizes, and key components.

Pumping Stations. Identify size, type, site location, and any special power requirements. For rehabilitation projects, include description of components upgraded.

Storage. Identify size, type, location and frequency of operation.

Treatment. Describe process in detail (including whether adding, replacing, or rehabilitating a process) and identify location of any treatment units and site of any discharges (end use for reclaimed water). Identify capacity of treatment plant (i.e. Average Daily Flow).

iii) Solid Waste:

Collection. Describe process in detail and identify quantities of material (in both volume and weight), length of transport, location and type of transfer facilities, and any special handling requirements.

Storage. If any, describe capacity, type, and site location.

Processing. If any, describe capacity, type, and site location.

Disposal. Describe process in detail and identify permit requirements, quantities of material, recycling processes, location of plant, and site of any process discharges.

iv) Stormwater:

Collection System Layout. Identify general location of new pipe, replacement or rehabilitation: lengths, sizes, and key components.

Pumping Stations. Identify size, type, location, and any special power requirements.

Treatment. Describe treatment process in detail. Identify location of treatment facilities and process discharges. Capacity of treatment process should also be addressed.

Storage. Identify size, type, location and frequency of operation.

Disposal. Describe type of disposal facilities and location.

Green Infrastructure. Provide the following information for green infrastructure alternatives:

- Control Measures Selected. Identify types of control measures selected (e.g., vegetated areas, planter boxes, permeable pavement, rainwater cisterns).
- Layout: Identify placement of green infrastructure control measures, flow paths, and drainage area for each control measure.
- Sizing: Identify surface area and water storage volume for each green infrastructure control measure. Where applicable, soil infiltration rate, evapotranspiration rate, and use rate (for rainwater harvesting) should also be addressed.
- Overflow: Describe overflow structures and locations for conveyance of larger precipitation events.

b) Project Schedule. Identify proposed dates for submittal and anticipated approval of all required documents, land and easement acquisition, permit applications, advertisement for bids, loan closing, contract award, initiation of construction, substantial completion, final completion, and initiation of operation.

c) Permit Requirements. Identify any construction, discharge and capacity permits that will/may be required as a result of the project.

d) Sustainability Considerations (if applicable).

i) Water and Energy Efficiency. Describe aspects of the proposed project addressing water reuse, water efficiency, and water conservation, energy efficient design, and/or renewable generation of energy, if incorporated into the selected alternative.

ii) Green Infrastructure. Describe aspects of project that preserve or mimic natural processes to manage stormwater, if applicable to the selected alternative. Address management of runoff volume and peak flows through infiltration, evapotranspiration, and/or harvest and use, if applicable.

iii) Other. Describe other aspects of sustainability (such as resiliency or operational simplicity) that are incorporated into the selected alternative, if incorporated into the selected alternative.

e) Total Project Cost Estimate (Engineer's Opinion of Probable Cost). Provide an itemized estimate of the project cost based on the stated period of construction. Include construction, land and right-of-ways, legal, engineering, construction program management, funds administration, interest, equipment, construction contingency, refinancing, and other costs associated with the proposed project. The construction subtotal should be separated out from the non-construction costs. The non-construction subtotal should be included and added to the

construction subtotal to establish the total project cost. An appropriate construction contingency should be added as part of the non-construction subtotal. For projects containing both water and waste disposal systems, provide a separate cost estimate for each system as well as a grand total. If applicable, the cost estimate should be itemized to reflect cost sharing including apportionment between funding sources. The engineer may rely on the owner for estimates of cost for items other than construction, equipment, and engineering.

f) Annual Operating Budget. Provide itemized annual operating budget information. The owner has primary responsibility for the annual operating budget, however, there are other parties that may provide technical assistance. This information will be used to evaluate the financial capacity of the system. The engineer will incorporate information from the owner's accountant and other known technical service providers.

i) Income. Provide information about all sources of income for the system including a proposed rate schedule. Project income realistically for existing and proposed new users separately, based on existing user billings, water treatment contracts, and other sources of income. In the absence of historic data or other reliable information, for budget purposes, base water use on 100 gallons per capita per day. Water use per residential connection may then be calculated based on the most recent U.S. Census, American Community Survey, or other data for the state or county of the average household size. When large agricultural or commercial users are projected, the Report should identify those users and include facts to substantiate such projections and evaluate the impact of such users on the economic viability of the project.

ii) Annual O&M Costs. Provide an itemized list by expense category and project costs realistically. Provide projected costs for operating the system as improved. In the absence of other reliable data, base on actual costs of other existing facilities of similar size and complexity. Include facts in the Report to substantiate O&M cost estimates. Include personnel costs, administrative costs, water purchase or treatment costs, accounting and auditing fees, legal fees, interest, utilities, energy costs, insurance, annual repairs and maintenance, monitoring and testing, supplies, chemicals, residuals disposal, office supplies, printing, professional services, and miscellaneous as applicable. Any income from renewable energy generation which is sold back to the electric utility should also be included, if applicable. If applicable, note the operator grade needed.

iii) Debt Repayments. Describe existing and proposed financing with the estimated amount of annual debt repayments from all sources. All estimates of funding should be based on loans, not grants.

iv) Reserves. Describe the existing and proposed loan obligation reserve requirements for the following:

Debt Service Reserve – For specific debt service reserve requirements consult with individual funding sources. If General Obligation bonds are proposed to be used as loan security, this section may be omitted, but this should be clearly stated if it is the case.

Short-Lived Asset Reserve – A table of short lived assets should be included for the system (See Appendix A for examples). The table should include the asset, the expected year of replacement, and the anticipated cost of each. Prepare a recommended annual reserve deposit to fund replacement of short-lived assets, such as pumps, paint, and small equipment. Short-lived assets include those items not covered under O&M, however, this does not include facilities such as a water tank or treatment facility replacement that are usually funded with long-term capital financing.

7. CONCLUSIONS AND RECOMMENDATIONS

Provide any additional findings and recommendations that should be considered in development of the project. This may include recommendations for special studies, highlighting of the need for special coordination, a recommended plan of action to expedite project development, and any other necessary considerations.

Drinking Water Facilities Plan Document

The facilities plan describes the need for the project based on present conditions and future needs, evaluates the costs and adequacies of alternatives, identifies potential environmental impacts; and provides justification for the selected alternative.

The following summarizes the minimum information expected in the water facilities plan. The information is provided in two sections. The first section is that information required in all facilities plans. The second section provides more detail based on the project type.

INFORMATION REQUIRED FOR ALL FACILITIES PLANS

Project Executive Summary
Provide a detailed narrative describing the selected project alternative. Be specific, providing the feet or miles of pipe to be constructed, replaced or repaired; treatment process being utilized; capacity of storage tanks; cubic yards of sediment removal; feet of shoreline stabilization; and so forth. Identify the preferred method of construction or project completion, an itemized break-out of estimated costs, the area to be affected by the project, maps showing locations of services and extent of construction, anticipated operation and maintenance (O&M) cost changes resulting from the project, anticipated rate affects caused by any proposed borrowing or changes to O&M expenses.

Project Development
Discussion of existing conditions and need for proposed project;
Discussion of compliance issues; and
Map showing project area in relation to the community.

Environmental Considerations
The facilities plan is the basis for preparing the required environmental review. The public and several review agencies are involved in the preparation of the environmental review. Because the process is time-consuming, it is important to initiate the process prior to submitting the application.

The following agencies must be given the opportunity to comment on the proposed project. It is the responsibility of the project sponsor or its consultant to supply these agencies with a brief project description and map of the project area. The final facilities plan must include each agency's response.

United States Department of Interior
Fish and Wildlife Service
420 S. Garfield Avenue
Pierre, SD 57501-5408
Attn: Field Supervisor

South Dakota Dept. of Game, Fish and Parks
Division of Wildlife
523 E. Capitol Avenue
Pierre, SD 57501-3181
Attn: Interagency Coordinator

United States Department of Agriculture
Natural Resources Conservation Service
200 Fourth Street SW
Huron, SD 57350-2475
Attn: State Soil Scientist

U.S. Army Corps of Engineers, Omaha District
Planning Division
Attention: CENWO-PMA-C
1616 Capitol Ave.
Omaha, NE 68102-4901

Solicitations for comments regarding cultural resources effects must be submitted to the Department of Environment and Natural Resources where a determination will be made on the effect the project may have on cultural resources. This determination of effect will be forwarded to the State Historical Preservation Office, which will then have 30 days to provide comments.

Information to submit for cultural resources effects review:

- Completed Cultural Resources Effects Assessment Summary form (next page);
- Archaeological survey for any project, or a portion of a project, where construction will occur in an undisturbed area, which includes pasture and tilled crop land; and
- Database search of Historic Register if an archaeological survey was not required or if the report does not identify the presence or absence of historic properties within the project area. The database search is available at www.nr.nps.gov; and

In addition, the following shall be addressed in the environment section.

- Narrative discussion of environmental impacts;
- Approved mitigation plans for addressing any adverse effects identified by the review agencies.

SD DANR REQUIREMENTS

CULTURAL RESOURCES EFFECTS ASSESSMENT SUMMARY

Applicant _____ Project Contact _____
Address _____ Telephone Number _____

Legal Location of Project _____
City _____ County _____ Project No. _____

Project Description _____

For projects that involve new construction on vacant land please include information as to what previously occupied the site and whether that site has any known historic or archaeological significance.

Please describe below or attach information supporting the determination of effect.

A map showing the project location is required. Drawings or photographs may also be helpful.

Please indicate the effect the project will have on cultural resources based on the review performed:

_____ No Historic Properties Affected: There are no historic properties present or the undertaking will not affect any properties eligible for or listed in the National Register of Historic Preservation.

_____ No Adverse Effect: This property is listed in or eligible for the National Register of Historic Places. This project will have no adverse effect upon the historic significance of the property because the proposed undertaking meets the Secretary of the Interior's Standards for the Treatment of Historic Properties.

_____ Adverse Effect: This property is listed in or eligible for eligible for the National Register of Historic Places. This project will have an adverse effect upon the historic significance of the property. (Attach proposed mitigation measures that may minimize the adverse effect.)

Prepared by: _____ Date _____

DETERMINATION OF EFFECTS

I have reviewed the project description and the information provided concerning historical and cultural effects of this project. Based on that review, the Department of Environment and Natural Resources concurs with the applicant's determination of the effects that the construction of this project will have on historical or cultural resources. Additionally, if historical or cultural resources are discovered during project construction, the contractor is required to cease construction and notify the State Historical Preservation Officer.

Approved by: _____ Date _____
SD Department of Environment and Natural Resources

Alternative Development and Selection

- A narrative discussion of appropriate alternatives to include the no action alternative;
- Unit cost breakdowns and present worth or uniform annual cost evaluations for each feasible alternative;
- Narrative discussion justifying the alternative selected;
- Proposed financing of selected alternative and the impact to user fees;
- Discussion of further activities or requirements needed for project development, i.e. conditional use permits, soil borings or groundwater investigations, New Drinking Water System Certificate of Approval, Corps of Engineers 404 permits, and land/easement or water rights acquisition and schedule identifying project milestones.

Public Participation

The facilities planning process requires public participation. The applicant must hold a public hearing to discuss the project, the proposed financing and subsequent effects on the system users. A "Notice of Public Hearing" must be published in an appropriate legal newspaper at least 10 days prior to the hearing. A copy of the affidavit of publication must be submitted as part of the final Facilities Plan. Other notification methods may be used with prior approval by the department. A sample Notice can be found on the following page.

At minimum, the following items shall be addressed at the public hearing:

- The need for the project;
- All alternatives that were evaluated, including the cost of each;
- A description of the proposed project;
- The proposed financing for the project;
- The amount of SRF loan expected to be borrowed;
- The revenue source pledged for repayment;
- The interest rate and term of the loan; and
- The effect of the proposed financing on user rates.

Minutes must be kept at the public hearing and should include a summary of the comments received on the proposed project and a narrative discussion of steps taken to resolve issues identified in the public hearing. A copy of the minutes must be submitted as part of the final Facilities Plan.

NOTICE OF PUBLIC HEARING
for the
WATER PROJECT

The {city, town, district} is seeking $XXX,XXX of funding from the Board of Water and Natural Resources for {briefly describe project}. The funds could be either a grant from the state Consolidated Water Facilities Construction Program or a loan from the Drinking Water State Revolving Fund (SRF) Program. The Drinking Water SRF loan terms are ___% for ____ years, and the Board of Water and Natural Resources may forgive all or a portion of loan principal. The amount, source of funds, and terms will be determined by the Board of Water and Natural Resources when the application is presented at a scheduled board meeting. The purpose of the public hearing is to discuss the proposed project, the proposed financing, and the source of repayment for the loan. The public is invited to attend and comment on the project.

The public hearing will be held at {location} on {date} at {time}.

After a complete facility plan is received, the department will issue an environmental review to the applicant to publish in a local newspaper. The Board of Water and Natural Resources will not close a loan until after publication of the environmental review.

INFORMATION REQUIRED BASED ON PROJECT TYPE

Water Distribution Replacement

- A narrative description of the system to include age, present condition, problems occurring within the system; and known water loss;
- A map or maps of the project area that shows the following:
  - Existing and proposed pipe type and size;
  - Any historic properties identified within the project area; and
- Alternatives to consider: no-action, trenchless technology, and open trench construction.

New Water Distribution Lines

- Discussion of the capacity of the existing infrastructure and water supply source to accommodate the new demands;
- A map or maps of the project area that shows the following:
  - Proposed project route;
  - Wetlands;
  - Any historic properties identified within the project area; and
  - Floodplains;

- Discussion of the ability of the existing infrastructure to accommodate the new water demand;
- Discussion of the direct and indirect/cumulative impacts that will result from the project with emphasis on wetlands, historic properties, endangered species habitat, and floodplain development within the area of impact, and mitigation efforts to address any identified impacts; and
- Alternatives to consider: no-action.

Water Treatment

- Narrative describing the existing facility and a map of its location;
- All data, records, and technical information used for the basis of the design;
- Evidence of sufficient water rights to provide water for the design capacity; and
- Alternatives to consider: no-action, appropriate treatment technologies, and regionalization or consolidation of systems, which must include formal proposals or correspondence from regional water system(s) stating ability and willingness to provide service and details and costs associated with the regional water system's proposal.

Storage

- Narrative describing existing water storage facilities, including the age of each facility;
- Discussion of future plans of any water storage facility that may be considered a historic property (50 years old or older);
- Historical water use records for average and peak conditions;
- Projected average and peak water use;
- A map or maps of the project area that shows the following:
  - Location of proposed project;
  - Wetlands;
  - Any historic properties identified within the project area; and
  - Floodplains if the project involves a booster station;
- Alternatives to consider: no-action.

Water Supply

- Narrative identifying existing water source;
- Historical water use records for average and peak conditions;
- Projected average and peak water use;
- Discussion of how any potential contaminant source was taken into consideration during the site selection process, and if appropriate, how the risk posed by those potential contaminant sources to the new water source are to be mitigated (information regarding potential contaminant sources regulated by this department may be obtained from the DENR Ground Water Quality Program's Source Water Coordinator);
- Discussion of the existing treatment facility's capacity to treat additional

water;

- Discussion of the compatibility of the new source and the existing treatment system to meet Safe Drinking Water Act requirements;
- A map or maps of the project area that shows the following:
  - Project location;
  - Wetlands;
  - Any historic properties identified within the project area; and
  - Floodplains;
- Evidence of legal right to use and develop the water source; and
- Alternatives to consider: no-action and regionalization or consolidation of systems, which must include formal proposals or correspondence from regional water system(s) stating ability and willingness to provide service and details and costs associated with the regional water system's proposals.