



November 7, 2018

FINDING OF NO SIGNIFICANT IMPACT

TO ALL INTERESTED GOVERNMENTAL AGENCIES AND PUBLIC GROUPS

As required by state and federal rules for determining whether an Environmental Impact Statement is necessary, an environmental review has been performed on the proposed action below:

Project	Town of Medicine Lake Wastewater Improvements
Location	Medicine Lake, Montana
Project Number	C301257
Total Cost	\$2,733,547

The Town of Medicine Lake, through a preliminary engineering report (PER) written in 2016 and amended in 2018, identified the need to upgrade its wastewater treatment facility (WWTF). Medicine Lake's collection system was installed in the 1940s and its two-cell, facultative lagoon was constructed in the 1970s. The lift station and the lagoon were last upgraded in 1998. The WWTF batch discharges once or twice per year and is discharged to the Big Muddy Diversion Ditch under a Montana Pollutant Discharge Elimination System (MPDES) Domestic Sewage Treatment Lagoons - Batch Dischargers General Permit.

There are several deficiencies with the existing lagoon system that need to be addressed. One major issue is that the northern and eastern lagoon dikes are severely eroded, preventing vehicle travel on the dikes and threatening the stability of the dikes. Leakage tests have shown that the clay-lined lagoon cells are leaking severely, posing a threat to local surface water and groundwater. Effluent from the current WWTF is not disinfected and does not meet the *E. coli* limits in the MPDES permit. A moratorium on additional sewer services was set in June of 2012 due to heavy population growth in the area due to oil exploration and production, and the inability of the existing lagoon system to handle any additional wastewater flow. Another problem is that the lift station discharging to the lagoon is unreliable and beyond its useful life.

The proposed project consists of rehabilitation of the existing lift station and construction of a new facultative lagoon, with land application for effluent disposal. Sludge from the existing lagoon cells will be removed and land-applied on nearby farmland in accordance with Federal 40 CFR 503 sludge disposal regulations. The project is proposed for construction in 2019.

Federal and State grant/loan programs will fund the project. Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species, and historical sites are not expected to be adversely impacted because of the proposed project. Public participation during the planning process demonstrated support for the

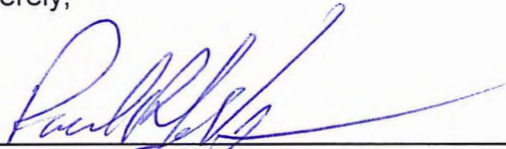
selected alternative. No significant long-term environmental impacts were identified. An environmental assessment (EA), which describes the project and analyzes the impacts in more detail, is available for public scrutiny on the DEQ web site <http://deq.mt.gov/Public/ea> and at the following locations:

Department of Environmental Quality
1520 East Sixth Avenue
Helena, MT 59620-0901
mmarsh@mt.gov

Town of Medicine Lake
201 Main Street
Medicine Lake, MT 59247

Comments on the EA may be submitted to the Department of Environmental Quality at the above address. After evaluating comments received, the department will revise the environmental assessment or determine if an environmental impact statement is necessary. If no substantive comments are received during the comment period, or if substantive comments are received and evaluated and the environmental impacts are still determined to be non-significant, the agency will make a final decision. No administrative action will be taken on the project for at least 30 calendar days after release of the Finding of No Significant Impact.

Sincerely,



Paul LaVigne, Section Supervisor
Water Pollution Control State Revolving Fund Program
Engineering Bureau, Water Quality Division
Montana Department of Environmental Quality

TOWN OF MEDICINE LAKE
WASTEWATER IMPROVEMENTS PROJECT
ENVIRONMENTAL ASSESSMENT

I. COVER SHEET

A. PROJECT IDENTIFICATION

Applicant: Town of Medicine Lake
Address: 201 Main Street, PO Box 5
Medicine Lake, MT 59247
Project Number: SRF Project # C301257

B. CONTACT PERSON

Name: Mayor Tim Hutslar
Address: 201 Main Street, PO Box 5
Medicine Lake, MT 59247
Telephone: (406) 789-2422

C. ABSTRACT

The Town of Medicine Lake, through a preliminary engineering report (PER) written in 2016 and amended in 2018, identified the need to upgrade its wastewater treatment facility (WWTF). Medicine Lake's collection system was installed in the 1940s and its two-cell, facultative lagoon was constructed in the 1970s. The lift station and the lagoon were last upgraded in 1998. The WWTF batch discharges once or twice per year and is discharged to the Big Muddy Diversion Ditch under a Montana Pollutant Discharge Elimination System (MPDES) Domestic Sewage Treatment Lagoons - Batch Dischargers General Permit.

There are several deficiencies with the existing lagoon system that need to be addressed. One major issue is that the northern and eastern lagoon dikes are severely eroded, preventing vehicle travel on the dikes and threatening the stability of the dikes. Leakage tests have shown that the clay-lined lagoon cells are leaking severely, posing a threat to local surface water and groundwater. Effluent from the current WWTF is not disinfected and does not meet the *E. coli* limits in the MPDES permit. A moratorium on additional sewer services was set in June of 2012 due to heavy growth in the area from oil exploration and production, and the inability of the existing lagoon system to handle any additional flow. Another problem is that the lift station discharging to the lagoon is unreliable and beyond its useful life.

The proposed project consists of rehabilitation of the existing lift station and construction of a new facultative lagoon, with land application for effluent disposal. Sludge from the existing lagoon cells will be removed and land-applied on nearby farmland in accordance with Federal 40 CFR 503 sludge disposal regulations. The project is proposed for construction in 2019.

The estimated total project cost (including administration, engineering, and construction) for the lift station and treatment plant improvements is \$2,733,547. The city will fund the project through a \$625,000 grant from the Treasure State Endowment Program (TSEP); a \$125,000 grant from the Department of Natural Resources and Conservation; a low-interest loan/grant funding package from the US Department of Agriculture Rural Development (RD) in the amount of \$1,971,100; and the remainder in local funds. The grant from RD is expected to be \$862,100 and the long-term loan (40 years) is expected to be \$1,109,000. The RD program requires interim financing until construction is complete. Therefore, for the short term (up to 3 years), the town will borrow up to \$1,109,000 at 1.25 % interest from the Water Pollution Control State Revolving Fund (WPGSRF)-loan-program-to-fund-the-project-during-construction.

Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species, and historical sites are not expected to be adversely impacted because of the proposed project. Additional environmental impacts related to land use, water quality, air quality, public health, energy, noise, growth, and sludge disposal were also assessed. No significant long-term environmental impacts were identified.

Under Montana law, (75-6-112, MCA), no person may construct, extend, or use a public sewage system until DEQ has reviewed and approved the plans and specifications for the project. Under the Montana Water Pollution Control State Revolving Fund Act, DEQ may loan money to municipalities for construction of public sewage systems.

The DEQ, Technical and Financial Assistance Bureau, has prepared this Environmental Assessment to satisfy the requirements of the Montana Environmental Policy Act (MEPA) and the National Environmental Policy Act (NEPA).

D. COMMENT PERIOD

Thirty (30) calendar days.

II. PURPOSE OF AND NEED FOR ACTION

Medicine Lake's original wastewater collection system was constructed in the 1940s and discharged directly into Big Muddy Creek. The existing wastewater treatment plant (WWTP) was completed in 1971 to serve the community and consists of a 4.5-acre, facultative, clay-lined, two-cell lagoon, with a central lift station immediately north of cell #1. Riprap was added to the lagoon banks and the lift station was replaced in 1998. There have been no other wastewater improvement projects since then. There is currently a moratorium on additional sewer services in place due to the inability of the existing lagoon to handle additional flow.

Medicine Lake discharges its lagoon effluent in batches once or twice a year to the Big Muddy Diversion Ditch under a Montana Pollutant Discharge Elimination System (MPDES) Domestic Sewage Treatment Lagoons - Batch Dischargers General Permit. Its discharge is limited to the period between October 1st and June 14th of each year. Outside of this period, numeric nutrient criteria apply to the WWTP's receiving body that would most likely not be met with the existing level of wastewater treatment. *E.coli* limits in the current MPDES permit (effective January 1, 2018) are very difficult to meet without disinfection. TSS limits in the permit have been exceeded at times. Other issues with the lagoon cells which are a threat to both groundwater and surface water quality in the area are excessive sludge depth, severe erosion of the banks, and excessive leakage. Furthermore, high groundwater near the existing lagoon site and location of the Big Muddy Diversion Ditch immediately west of the lagoon cells pose environmental concerns.

In addition to the problems at the lagoon, the lift station is also nearing the end of its useful life. Pumps are 20 years old and oversized and the control floats do not work properly. Pump control and monitoring is out-of-date. There is not an auto-dialer or generator to use in the event of an emergency.

The proposed Medicine Lake WWTP improvements will address long-standing lift station and WWTP deficiencies, as well as the difficulty in meeting MPDES permit requirements. The proposed Medicine Lake wastewater treatment plant project entails:

- Rehabilitation of the existing lift station.
- Construction of a facultative lagoon with spray irrigation.

III. ALTERNATIVES INCLUDING THE PROPOSED ACTION AND COSTS

The PER looked at various alternatives to correct lift station and wastewater treatment plant (WWTP) deficiencies.

A. LIFT STATION ALTERNATIVES

The three lift station alternatives considered were no action, rehabilitation of the existing lift station, and replacement of the existing lift station.

NO ACTION – Taking no action means that the inefficient, aging pumps would remain in service; the operational floats would remain undependable; and the lift station would continue not to have back-up power. The town would like to correct these deficiencies; therefore, this is not a viable alternative.

ALTERNATIVE LS-1 – REHABILITATE EXISTING LIFT STATION – Under this alternative, the existing wet well would be left in place and retrofitted with new pumps, control panel, level controls, SCADA system, backup up generator, and new float system. This alternative would save the cost of purchasing and installing a new wet well, in addition to resolving operational problems at the existing lift station.

ALTERNATIVE LS-2 – REPLACE EXISTING LIFT STATION – The existing lift station would be completely replaced with a new submersible pump lift station designed to comply with current standards. Flow metering and sampling taps would be added. A new lift station would resolve all operational problems of the existing lift station, and provide the town with a lift station meeting the 20-year design life of the project.

B. TREATMENT ALTERNATIVES

The No-Action and mechanical plant treatment alternatives were eliminated from further-consideration-during-the-preliminary-screening-process-in-the-2016-PER. The No-Action alternative was eliminated due to the need for Medicine Lake to comply with its MPDES permit and to correct significant lagoon deficiencies. Mechanical treatment plants were removed from further consideration due to operational complexity and higher costs. Seven alternative lagoon designs utilizing the existing lagoon site were considered in detail in the 2016 PER. The preferred alternative in the 2016 PER was rehabilitation of the existing facultative lagoon, construction of an adjacent storage cell, and spray irrigation for disposal. Discovery of high groundwater at the existing lagoon site in 2018 triggered an amendment of the PER since the costs associated with elevating the chosen lagoon alternative above the groundwater table were prohibitive.

Four new alternatives, numbered T-8 through T-11, were considered in the 2018 PER Amendment. These alternatives are all fully located on land directly east of the existing lagoon site, for which the town has entered into a buy/sell agreement. All four alternatives include the removal and disposal of sludge accumulated in the existing lagoon and the abandonment of the lagoon. The four wastewater treatment alternatives considered in detail in the PER Amendment are as follows:

- Alternative T-8 – Facultative Lagoon with Land Application
- Alternative T-9 – Aerated Lagoon with Direct Discharge
- Alternative T-10 – Aerated Lagoon with Land Application
- Alternative T-11 – Aerated Lagoon with LEMNA System and Direct Discharge

ALTERNATIVE T-8: FACULTATIVE LAGOON WITH LAND APPLICATION – This alternative consists of construction of a new facultative lagoon system, with a primary cell and a storage cell, followed by land application of the wastewater using an existing center pivot. The use of wastewater for irrigation will be supplemented with water from a well already located on the property.

ALTERNATIVE T-9: AERATED LAGOON WITH DIRECT DISCHARGE - This alternative proposes construction of a three-cell aerated lagoon, followed by ultraviolet (UV) disinfection. Discharge to the Big Muddy Diversion Ditch would

continue with either a continuous or batch discharge. An ammonia limit is expected after the next two permitting cycles, at which time the aerated treatment process would need to be improved to provide nitrification.

ALTERNATIVE T-10: AERATED LAGOON WITH LAND APPLICATION - This alternative consists of construction of two new primary aerated lagoon cells and one storage cell, with land application of the wastewater using the existing pivot. The use of wastewater for irrigation will be supplemented with water from a well already located on the property.

ALTERNATIVE T-11: AERATED LAGOON WITH LEMNA SYSTEM AND DIRECT DISCHARGE - This alternative consists of construction of two new aerated lagoon cells followed by a Lemna Polishing Reactor (LPR) to provide additional BOD removal and ammonia treatment. The LPR contains submerged, aerated, attached-growth media modules used to encourage nitrification for ammonia removal. UV disinfection would be added to meet *E. coli* limits and discharge to the Big Muddy Diversion Ditch would continue with either a continuous or batch discharge.

C. COST COMPARISON - PRESENT WORTH ANALYSIS

The present worth analysis is a means of comparing alternatives in present day dollars and can be used to determine the most cost-effective alternative. An alternative with low initial capital cost may not be the most cost-efficient project if high monthly operation and maintenance costs occur over the life of the alternative. A 1.2% interest factor over the 20-year planning period was used in the analysis. Table 1 provides a summary of the present worth analysis of the four feasible treatment alternatives.

TABLE 1 - ECONOMIC EVALUATION OF LIFT STATION ALTERNATIVES

Alternative	Total Capital Cost *	Present Worth of Annual O&M Cost Increase	Present Worth of Salvage Value	Net Present Worth
Alternative LS-1: Rehabilitate Existing Lift Station	\$146,500	\$28,300	\$30,200	\$144,600
Alternative LS-2: Replace Existing Lift Station	\$222,726	\$28,300	\$46,000	\$205,026

* Capital costs do not include engineering, administration, and construction costs.

TABLE 2 - ECONOMIC EVALUATION OF TREATMENT SYSTEM ALTERNATIVES

Alternative	Total Capital Cost *	Land Purchase Cost	Present Worth of Annual O&M Cost Increase/ (Decrease)	Present Worth of Salvage Value	Present Worth of O&M plus Capital
Alternative T-8: Facultative Lagoon with Land Application	\$1,722,160	\$176,500	(\$33,200)	\$222,900	\$1,642,560
Alternative T-9: Aerated Lagoon with Direct Discharge	\$1,538,500	\$3,350	\$301,100	\$199,100	\$1,643,850
Alternative T-10: Aerated Lagoon with Land Application	\$2,091,700	\$176,500	\$161,200	\$270,700	\$2,158,700
Alternative T-11: Aerated Lagoon with Lemna System and Direct Discharge	\$1,615,500	\$1,200	\$279,300	\$209,100	\$1,686,900

*Capital costs do not include engineering, administration, and construction costs.

D. BASIS OF SELECTION OF PREFERRED ALTERNATIVE

To assist in selection of a preferred wastewater treatment alternative, a qualitative ranking process was utilized. The two viable lift station alternatives and the four viable treatment alternatives were compared with respect to financial feasibility, technical feasibility, operation and maintenance considerations, public health and safety, environmental impacts, ability to meet future effluent limits, and public comment. Each alternative was given a score ranging from 0 to 10 for each criterion, with 0 having a negative impact and 10 representing the maximum benefit to the community. The criteria were also weighted in relation to each other, with the criteria most important to the district receiving higher weights. Weights were assigned as follows: Financial Feasibility – 10, Technical Feasibility – 5, Operation and Maintenance Considerations – 5 for treatment alternatives and 4 for lift station alternatives, Public Health and Safety – 7, Environmental Impacts – 5, Ability to Meet Future Effluent Limits – 5, and Public Comment – 5. The two viable lift station alternatives and the four viable treatment alternatives are scored for comparison in the matrix below:

TABLE 3 – LIFT STATION and WASTEWATER TREATMENT ALTERNATIVES RANKING

Criterion	Alternative LS-1		Alternative LS-2		Alternative T-8		Alternative T-9		Alternative T-10		Alternative T-11	
	Score	Points	Score	Points	Score	Score	Points	Points	Score	Points	Score	Points
Financial Feasibility	6.5	65	3.5	35	6.2	62	6.2	62	3.8	38	6	60
Technical Feasibility	5	25	5	25	6	30	7	35	6	30	7	35
Operations and Maintenance Considerations	7	28	8	32	9	45	4	20	5	25	3	15
Public Health and Safety	7	49	7	49	8	56	7	49	9	63	9	63
Environmental Impacts	7	35	7	35	8	40	6	30	9	45	7	35
Ability to Meet Future Effluent Limits	NA	NA	NA	NA	10	50	3	15	10	50	9	45
Public Comment	7	35	3	15	9	45	6	30	9	45	6	30
TOTAL SCORE		237		191		328		241		296		283

The decision matrix shows that the preferred lift station alternative is LS-1, rehabilitation of the existing lift station. This alternative scored 237 points, which is 19 percent higher than the alternative to replace the lift station. Cost and public comment are the primary factors influencing selection of LS-1 as the preferred alternative.

The preferred treatment alternative is T-8, which accumulated 328 points in the ranking process. This alternative consists of construction of a new facultative lagoon with land application for effluent disposal. This alternative scored 328 points, which is 10 percent more than the next closest alternative, T-10, which is an aerated lagoon followed by land application. The primary factors influencing the selection of Alternative T-8 are financial, operations and maintenance considerations, ability to meet future effluent limits, and public comment.

Sustainability and water and energy efficiency were considered in the evaluation of the lift station and treatment alternatives, even though these factors were not specifically considered in the alternatives ranking table. Rehabilitation of the existing lift station with brand new, correctly sized pumps and controls will improve water and energy efficiency. These new components and the addition of an emergency generator support sustainability of Medicine Lake's wastewater infrastructure. Abandoning the existing lagoons and constructing new lagoons

with land application of the treated effluent would eliminate the discharge of effluent to the Big Muddy Diversion Ditch. The beneficial reuse of treated effluent in the land application of a crop creates a more sustainable disposal alternative.

Table 4 - ESTIMATED PREFERRED ALTERNATIVE COSTS

Components	Estimated Costs
LS-1 Lift Station Rehabilitation	\$192,000
T-8 Facultative Lagoon with Land Application	\$1,722,160
Land Acquisition	\$176,500
Administrative/Financial Costs and Contingency	\$233,487
Engineering/Grant Administration	\$409,400
Total Project Cost	\$2,733,547

The estimated total project cost (including administration, engineering, and construction) for the lift station and treatment plant improvements is \$2,733,547. The city will fund the project through a \$625,000 grant from the Treasure State Endowment Program (TSEP); a \$125,000 grant from the Department of Natural Resources and Conservation; a low-interest loan/grant funding package from the US Department of Agriculture Rural Development (RD) in the amount of \$1,971,100; and the remainder in local funds. The grant from RD is expected to be \$862,100 and the long-term loan (40 years) is expected to be \$1,109,000. The RD program requires interim financing until construction is complete. Therefore, for the short term (up to 3 years), the town will borrow up to \$1,109,000 at 1.25 % interest from the Water Pollution Control State Revolving Fund (WPCSRF) loan program to fund the project during construction.

The average residential sewer rate in Medicine Lake is currently \$37.75 per month. This rate will increase by \$19.18 per month because of the proposed project, resulting in an average monthly residential sewer rate of \$56.93. This is an increase of 50 percent. The financial impact of this project on the system users is shown in Table 3. The proposed project will result in a monthly sewer cost per household that is 1.64% of the monthly median household income. Based on EPA guidance for project affordability, the increased sewer rate may pose an economic hardship on some households.

TABLE 3 - PROJECT AFFORDABILITY

Monthly sewer user cost	\$56.93
Monthly median household income (mMHI) ¹	\$3,479
User rate as a percentage of mMHI	1.64%

¹ Based on US Census Bureau 2010 data.

IV. AFFECTED ENVIRONMENT

A. PLANNING AREA AND MAPS

The Town of Medicine Lake is in the northeastern corner of Montana in Sheridan

County (see Figure 1). Medicine Lake is located along Montana Highway 16 and is approximately 34 air miles south of Canada. Medicine Lake is generally bounded to the west by the Big Muddy Creek diversion ditch and farmland to the north, east, and south; and encompasses approximately 256 acres. Medicine Lake’s wastewater treatment plant (WWTP) lies just outside the town’s limits at the southwest corner. The planning area has been extended outside the town to include the WWTP; area north of Highway 573 and area east of Montana Highway 16, where growth might occur; and the entire 156-acre parcel to the south, which will be purchased by the town for location of the new WWTP. Medicine Lake’s boundary and planning area are shown in Figure 2. The existing and proposed wastewater treatment facilities for the Town of Medicine Lake are shown in Figure 3. Possible sites for land application of sludge removed from the existing lagoon are shown in Figure 4.

B. POPULATION AND FLOW PROJECTIONS

The Town of Medicine Lake has seen atypical population growth in recent years due to the volatility of oil production throughout the region. There was a significant growth of 30% between the years 2010 and 2012. As a result, a moratorium was placed on new sewer services in 2012 and essentially halted growth within the town. Over the 20-year planning period of this project, it is assumed that the population of Medicine Lake will have growth greater than the projected growth for the county. Projections based on Department of Commerce data estimate a 10.0% increase for the county between 2010 and 2040, which is equivalent to 0.29% increase per year. The Preliminary Engineering Report (PER) uses a conservative estimate of 1% growth per year for Medicine Lake. The current population served by Medicine Lake’s WWTP is 270 people and the projected 2038 population is 330.

Both lift station hour meter data and public water supply meter readings were used to determine the town’s current wastewater flow. The lift station data indicated that the average daily flow is 26,355 gallons per day or 98 gallons per capita day (gpcd). The Town of Medicine Lake is connected to the Dry Prairie Rural Water Authority through a metered connection. Winter water use is 22,001 gpd, which is equivalent to 81 gpcd, and is considered a reasonable estimate of wastewater flow generated by the town. Using a conservative value of 100 gpcd wastewater generation with the design population of 330 results in a 2038 design flow of 33,000 gpd. Table 4 summarizes current and projected population and average daily flow data.

TABLE 4 – EXISTING AND PROJECTED POPULATION AND WASTEWATER FLOWS

Year	Population	Average Daily Flow
		(gal/day)
2018	270	26,355
2038	330	33,000

C. NATURAL FEATURES

The Town of Medicine Lake currently discharges its wastewater lagoon effluent

to the Big Muddy Diversion Ditch, located to the west. Dry and irrigated farmland and some grassland surround the town on its north, south, and east sides. Surrounding land and topography consist of low relief with low to moderate bluffs. The land generally slopes to the southwest towards Big Muddy Creek, with elevations between 1,981 and 1,955 feet.

Soil in the developed portions of the Town of Medicine Lake and the proposed new lagoon site with spray irrigation are Parshall fine sandy loams with slopes of 2 to 6 percent. The site of the existing lagoon and the area near the Big Muddy Diversion Ditch is Lohler silty clay which is subject to occasional flooding and high groundwater, and is generally unsuitable for siting a sewage lagoon.

Medicine Lake's climate is classified as semi-arid. Annual average precipitation is 13.25 inches, with most of this occurring between May and September. Average pan evaporation for the area is 39.3 inches per year.

V. ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT

A. DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS

1. Land Use/Prime Farmland – The new wastewater lagoon and spray irrigation site will be located east of the existing lagoon on property to be purchased by the district. The soils at the site are classified as Parshall fine sandy loam and are considered farmland of statewide importance. The new lagoon cells will require 4.2 acres of the prime farmland for their footprint. In accordance with the Farmland Protection Policy Act (FPPA), the town has completed and submitted the required USDA Farmland Conversion Impact Rating Form AD-1006 and is awaiting review. The treated wastewater effluent will be land-applied adjacent to the lagoon. The wastewater effluent will provide additional nutrients to the soil and will supplement well water currently used to irrigate the site.
2. Floodplains – The existing lagoon and lift station are in the Special Flood Hazard Area. The DNRC has indicated that since the lift station is in an area where there have not been any 100-year floodplains delineated and designated, a floodplain permit is not required. The proposed location of the new wastewater treatment plant (WWTP) is higher in elevation than the existing lagoon site and is entirely outside of the FEMA Zone AE floodplain.
3. Wetlands – There are freshwater emergent wetlands along and near the diversion ditch where the existing lagoon is located and discharges. Relocation of Medicine Lake's WWTP to the east onto higher ground will protect these wetlands.
4. Cultural Resources and Historical Sites – No impacts to cultural resources are anticipated. The existing lift station to be modified is less than 50 years old and is therefore not considered historic by the State Historic Preservation Office (SHPO). The new WWTP with spray irrigation will be located on land previously disturbed by agricultural activities. The Fort Peck Assiniboine and Sioux Tribes Cultural Resources Department,

as well as the State Historic Preservation Office, were solicited for their comments. No comments were received from the Fort Peck Assiniboine and Sioux Tribes Cultural Resources Department. SHPO responded and their comments are summarized in Section X: Agencies Consulted of this report.

5. Fish and Wildlife – Elimination of the discharge of undisinfected lagoon effluent into the Big Muddy Diversion Ditch is beneficial to fish, wildlife, and aquatic habitat. Some of the species of concern identified by the Montana Natural Heritage for Sheridan County are: three types of shrews and the Hoary Bat; the Smooth Greensnake and the Great Plains Toad; and many types of birds including sparrows, herons, terns, Golden Eagle, Franklin's Gull, American White Pelican, and Burrowing Owl. The Whooping Crane has been identified as the one endangered species in the area. Most of these species live within Medicine Lake wetland territory south of the project site. The entirety of the project is located outside sage grouse habitat. See Section X: Agencies Consulted of this report for a summary of wildlife agency comments.

6. Water Quality – The wastewater treatment plant currently discharges to the Big Muddy Diversion Ditch, which flows to Medicine Lake. The 2018 303(d) list states that the lake fully supports primary contact recreation, but is not fully supporting of aquatic life. The probable causes of impairment are cadmium, lead, and mercury. The probable sources for the impairment are unknown. Medicine Lake is classified as C-3, and is thereby suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply. The quality of these waters is naturally marginal for drinking, culinary, and food processing purposes, agriculture, and industrial water supply.

The proposed improvements to the wastewater treatment system eliminate the permitted lagoon discharge to the Big Muddy Diversion Ditch. The proposed project consists of relocating the lagoon to higher ground out of the floodplain and elevated groundwater, thereby providing better protection of water resources.

7. Air Quality – Short-term negative impacts on air quality are expected to occur during construction from heavy equipment in the form of dust and exhaust fumes. Proper construction practices will minimize this problem. Project specifications will require dust control. No long-term impacts to air quality will occur.
8. Public Health – Public health will not be negatively affected by the proposed project. Elimination of the discharge to the Big Muddy Diversion Ditch and relocation of the lagoon to higher ground with spray irrigation for disposal will reduce the potential to pollute surface water and groundwater. A buffer zone will be maintained from the end of the irrigation pivot to the fence to protect public health.
9. Energy – The consumption of energy resources directly associated with

construction of the recommended improvements is unavoidable, but will be a short-term commitment. There will be a long-term increase in energy consumption at the new WWTP due to the electrical costs associated with pumping effluent from the lagoon to the pivot, but it will be minimized as much as possible using energy-efficient pumps. The estimated annual energy cost for irrigation pumping is \$1,424.

10. Noise – Short-term impacts from excessive noise levels may occur during construction activities. The construction period will be limited to normal daytime hours to avoid early morning or late evening construction disturbances. Residences are located sufficiently far away from the lift station and lagoon construction site that noise impacts will be minimal. No significant long-term impacts from noise should occur.
11. Sludge Disposal – The proposed project includes disposal of the sludge that has accumulated in the existing lagoon cells. The sludge will either be land applied wet, after dredging, or dried first before land applying. It is intended that all sludge (biosolids) will be land-applied in accordance with Federal 40-CFR-503-sludge-disposal-regulations-in-a-one-time-application. The Part 503 regulations contain specific numeric limits and other requirements for heavy metals, pathogens, and vector attraction. The construction contractor must perform verification of sludge quantity, in-place sludge nutrient content, identification of a disposal site, and nutrient testing of soils at the application site. The final sludge disposal plan utilizing this information must be submitted to the DEQ for review and approval prior to the land application.

The estimated amount of sludge to be land-applied is 2,575 dry cubic yards of sludge, which equates to approximately 2,029 dry tons. Potential sludge disposal sites near Medicine Lake have been identified and are shown on Figure 4. The amount of acreage needed is dependent on the amount of TN in the sludge and the crop that will be planted on the acreage. It is estimated that 114 acres of land are needed. Figure 4 also shows USDA Natural Resources Conservation Service (NRCS) suitability ratings for sludge disposal: very limited, somewhat limited, not limited, and not rated or not available. Areas rated as not limited or somewhat limited will be explored first for land application. Landowner commitment will be part of the design phase of the WWTP project.

12. Environmental Justice – Environmental Justice Executive Order 12898: The proposed project will not result in disproportionately high or adverse human health or environmental effects on minority or low-income populations. All base sewer rates will be increased equally. No disproportionate effects among any portion of the community would be expected.
13. Wild and Scenic River Act – The proposed project will not impact any rivers designated as wild and scenic by Congress or the Secretary of the Interior.
14. Growth – The proposed wastewater improvements will be designed to serve the projected 2038 population of 330, an increase of one percent

per year over the current population. This growth prediction is based on the estimated growth for Sheridan County, with an added level of conservatism.

15. Cumulative Effects – The WWTP improvements will allow for a release of the moratorium on new sewer connections that was instituted in June of 2012. Additional capacity provided by the new WWTP may result in secondary and/or cumulative impacts due to growth of the community and expansion of the service area. Secondary impacts associated with housing, commercial development, solid waste, transportation, utilities, air quality, water utilization, and possible loss of agricultural and rural lands may occur. These secondary impacts are uncertain now, and therefore, cannot be directly addressed in the EA. However, these impacts will need to be managed and minimized as much as possible through proper community planning. There are several existing town, county and state regulations already in place (i.e., zoning regulations, comprehensive planning, subdivision laws, etc.) that control the density and development of property with regards to water supply, sewage disposal, solid waste disposal, transportation, and storm drainage.

B. UNAVOIDABLE ADVERSE IMPACTS

Short-term construction-related impacts (i.e., noise, dust, etc.) will occur, but should be minimized through proper construction management. Energy consumption during construction and as a long-term need for irrigation pumping cannot be avoided. The proposed project will result in conversion of 4.2 acres of prime farmland into a new lagoon site. As a balancing measure, however, relocation of the old, leaking lagoon from the edge of the Big Muddy Diversion Ditch allows for protection of surface water and groundwater and environmental improvement.

VI. PUBLIC PARTICIPATION

The Town of Medicine Lake held two public hearings, in March and April of 2016, where the wastewater improvements project and the proposed rate increase were discussed. Eighteen people attended the March meeting. The presentation by the town's engineers included an explanation of the existing lagoon deficiencies, treatment alternatives, and the proposed funding scenario. At the April meeting, attended by twelve people, the preferred alternative of rebuilding in the same lagoon spot with land application of effluent on adjacent irrigated farmland was presented. A projected rate increase of \$13.00 was discussed. In addition to the two public hearings, the project has been discussed at several Town Council meetings, which are held on a regular basis and are open to the public. According to the PER, no community members have raised concerns about the project.

Due to the discovery of high groundwater at the existing lagoon site during the spring of 2018, the preferred alternative selected in 2012 was no longer the most-cost-effective option. A new lagoon location was presented by the town's engineers at the June 2018 monthly Town Council meeting. Council members and the public asked questions about the changed alternative and a vote for the new lagoon location was held and approved by the council. At the July 9, 2018 Town Council meeting, an update on the lagoon

project was given, with discussion of the buy/sell agreement for the adjacent farmland needed for project siting and potential sites for sludge application.

VII. AGENCY ACTION, APPLICABLE REGULATIONS AND PERMITTING AUTHORITIES

All proposed improvements will be designed to meet state standards in accordance with Circular DEQ-2, and will be constructed using standard construction methods. Best management practices will be implemented to minimize or eliminate pollutants during construction. No additional permits will be required from the State Revolving Fund (SRF) section of DEQ for this project after the review of the submitted plans and specifications. However, coverage under the storm water general discharge permit and groundwater dewatering discharge permit, if necessary, must be obtained from the DEQ Water Protection Bureau prior to the beginning of construction. A 124 Permit from the Department of Fish, Wildlife and Parks, a 404 Permit from the U.S. Corps of Engineers, and a 318 Authorization from the Department of Environment Quality will be obtained for any work that occurs in a streambed or (jurisdictional) wetlands, should it become necessary.

VIII. RECOMMENDATION FOR FURTHER ENVIRONMENTAL ANALYSIS

EIS More Detailed EA No Further Analysis

Rationale for Recommendation: Through this EA, DEQ has verified that none of the adverse impacts of the proposed Town of Medicine Lake wastewater improvements project are significant. Therefore, an environmental impact statement is not required. The environmental review was conducted in accordance with the Administrative Rules of Montana (ARM) 17.4.607, 17.4.608, 17.4.609, and 17.4.610. The EA is the appropriate level of analysis because none of the adverse effects of the impacts are significant.

IX. REFERENCE DOCUMENTS

The following documents have been utilized in the environmental review of this project and are part of the project file:

1. Town of Medicine Lake Preliminary Engineering Report for Wastewater Improvements Project, May 2016, Prepared by WWC Engineering.
2. Preliminary Engineering Report Amendment for the Town of Medicine Lake Wastewater Improvements Project, July 2018; Prepared by WWC Engineering.

X. AGENCIES CONSULTED

As part of the Preliminary Engineering Report (PER) process, the following agencies were contacted regarding the proposed construction of this project:

1. The U.S. Fish and Wildlife Service (Service) did not respond to a 2016 request for comments. However, the Service did respond back in 2012 to a request for comments from the Town of Medicine Lake for a similar lagoon replacement

project and those comments are still considered valid. The Service acknowledged that wastewater system upgrade activities designed to improve the quality of, or reduce the quantity of, treated effluent reaching state water are generally beneficial to fish, wildlife, and aquatic habitat. They stated that it was unlikely that the wastewater improvement activities would result in any significant adverse effects to fish, wildlife, or habitat resources under the purview of the US Fish and Wildlife Service.

2. The Montana Historical Society's State Historic Preservation Office (SHPO) reviewed the proposed project. They commented that if there will be no disturbance to structures over fifty years of age, there is low likelihood cultural properties will be impacted. They felt that a recommendation for a cultural resource inventory was unwarranted at that time. However, should structures need to be altered or cultural materials be inadvertently discovered during the project, SHPO must be contacted and the site investigated.
3. The U.S. Department of the Army Corps of Engineers (USCOE) provided comments on the proposed project. They indicated that If any work is proposed below the ordinary high-water mark of stream channels, lakes, or wetlands adjacent to these waters, then a Section 404 permit would apply and authorization from USCOE would be needed. The USCOE recommended that the project area should be evaluated for the presence of wetlands or waters of the US.
4. The Montana Department of Fish, Wildlife and Parks (FWP) commented in August of 2018 that they did not have any comments, based on the town engineer's efforts to develop alternatives that comply with Montana Department of Environmental Quality standards.
5. The Montana Department of Natural Resources and Conservation (DNRC) Lewistown Regional Office was contacted in 2016 with respect to potential floodplain impacts from the proposed wastewater treatment plant project when it was to be in the same footprint as the existing lagoon. The DNRC noted that the proposed project is in an area where there have not been any 100-year floodplains delineated and designated. As such, a floodplain permit was not required. The current new lagoon siting is at a site higher and drier than the old site and is outside the potential flooding area.
6. The DNRC Montana Sage Grouse Habitat Conservation Program provided a letter dated April 20, 2016 indicating that the proposed project is located outside sage grouse habitat designated as core area, general habitat, or connectivity area for purposes of conservation.

EA Prepared by:

Michele Marsh
Michele Marsh, P.E.

10/31/18
Date

EA Reviewed by:

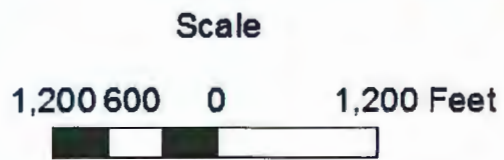
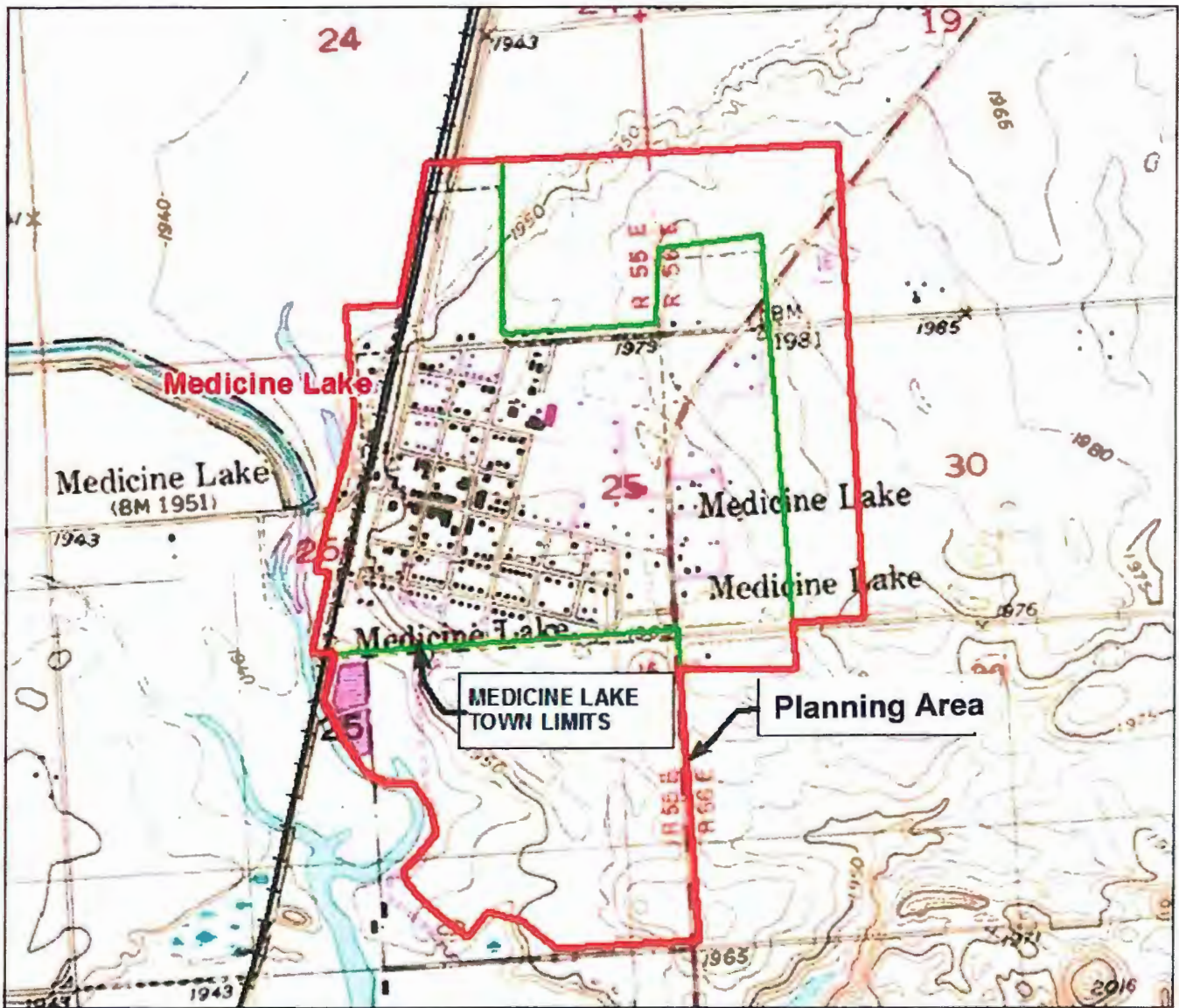
Mike Abrahamson
Mike Abrahamson, P.E.

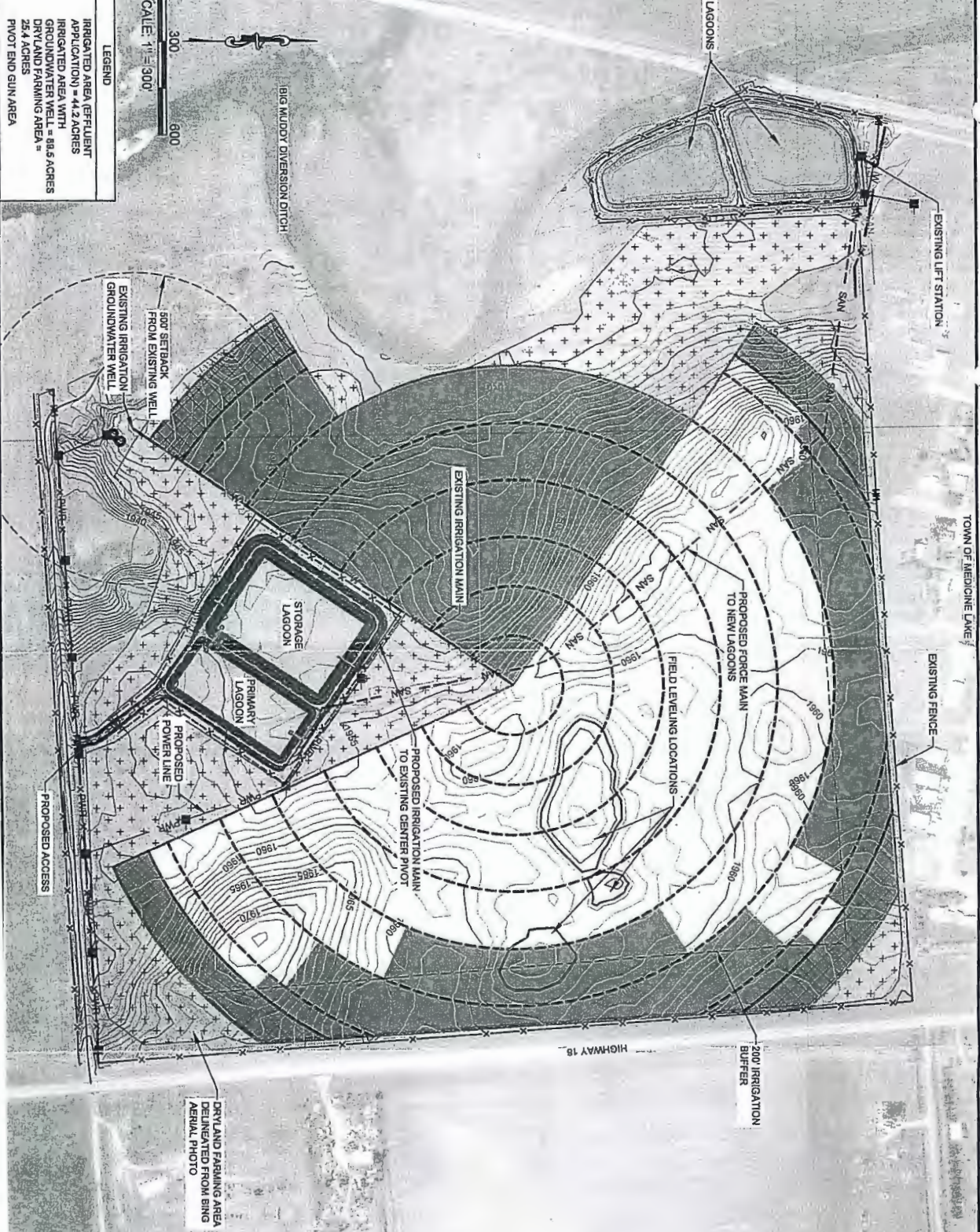
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**FIGURE 1
LOCATION MAP**

Figure 2. Town of Medicine Lake Limits, Planning Area, and Topography





IRRIGATED AREA (EFFLUENT APPLICATION) = 44.2 ACRES
 IRRIGATED AREA WITH GROUNDWATER WELL = 88.5 ACRES
 DRYLAND FARMING AREA = 25.4 ACRES
 PIVOT END GUN AREA

LEGEND

SCALE: 1" = 300'

300 600

BIG MUDDY DIVERSION DITCH

EXISTING IRRIGATION GROUNDWATER WELL

500 SETBACK FROM EXISTING WELL

STORAGE LAGOON

PROPOSED POWER LINE

PRIMARY LAGOON

EXISTING IRRIGATION MAIN

PROPOSED IRRIGATION MAIN TO EXISTING CENTER PIVOT

PROPOSED FORCE MAIN TO NEW LAGOONS

FIELD LEVELING LOCATIONS

EXISTING LIFT STATION

EXISTING FENCE

TOWN OF MEDICINE LAKE

HIGHWAY 18

200' IRRIGATION BUFFER

DRYLAND FARMING AREA DELINEATED FROM BING AERIAL PHOTO

NOT RATED OR NOT AVAILABLE
NOT LIMITED
SOMEWHAT LIMITED
VERY LIMITED
LEGEND

