1041 PERMIT APPLICATION SUBMITTAL
FOR
TOWN OF RAMAH WASTEWATER SYSTEM
SEWER LIFT STATION
&
WASTEWATER TREATMENT PLANT

JULY 2022

EE JOB NO.: 0043.0001

ELEMENT ENGINEERING LLC
DILIGENT • INNOVATIVE • RESPONSIVE

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EXHIBITS

RESPONSE TO CHAPTER 4, ARTICLE 2, OF THE COUNTY GUIDELINES

The following sections are in response to Chapter 4, Article 2, Paragraph 4.201 of the County Guidelines as the Project relates to Domestic Sewage Treatment within unincorporated El Paso County as outlined in Paragraph 4.201 of the guidelines.

SECTION 4.201 (1) AGENCY REVIEW

4.201 (1): *Preliminary review and comment on the proposal by the appropriate agency of the Colorado Department of Natural Resources and the Colorado Department of Public Health and Environment within sixty (60) days of the date of submittal of the proposal for review.*

The site application (30% plans) for the lift station was submitted to CDPHE for review in January 2022 and was amended in February 2022. In order for CDPHE to finalize the review of the site application, the 1041 permit needs to be approved and all agencies including El Paso County, the Pike's Peak Area Council of Local Governments, and the El Paso County Department of Health and Environment need to sign off.

SECTION 4.201 (2) SCOPE OF PROPOSAL

4.201 (2a): *Provide detailed plans of the proposal, including proposed system capacity and service area plans mapped at a scale acceptable to the Department.*

Detailed plans and information about the system capacity and service area can be found in the Site Application in Exhibit I.

4.201 (2b): *Provide a description of all existing or approved proposed domestic water or sewage treatment systems within the Project area.*

The closest domestic sewage system is the town of Ramah's existing wastewater system which is proposed to be replaced with the evaporative pond facility as part of this project. Currently, treatment is provided by the town's single existing influent septic tank and wastewater lagoon.

4.201 (2c): *Describe the design capacity of each domestic water or sewage treatment system facility proposed and the distribution or collection network proposed in the Project area.*

The lift station is designed to convey the wastewater flows from entire collection system of the town of Ramah to the proposed evaporative ponds facility through approximately 4,600 feet of 4-inch sewer force main. The lift station is designed to convey an average day flow of 11,203 gpd and a peak hour flow of 60,000 gpd. The design is discussed in detail in the Site Application in Exhibit I.

4.201 (2d): *Describe the excess capacity of each treatment system and distribution or collection network in the affected community or Project area.*

There are currently 72 active sewer services within the town service area serving an estimated 132 residents. The existing average daily flow of the service area is estimated to be about 11,200 gpd. Over the 20-year planning period for the project, the average daily flow of the service area is projected to increase to approximately 12,855 gpd with a projected population of the service area of 151 residents. The lift station is designed to convey flows for the both existing and 20-year planning period flows of the service

area. The lift station is not designed for excess capacity since it is designed to convey the projected flow of the service area over the 20-year planning period. A complete discussion of the design can be found in the Site Application in Exhibit I.

4.201 (2e): *Provide an inventory of total commitments already made for current water or sewage services.*

The town of Ramah service area includes the entire limits of the incorporated area of the town. No other communities or entities have commitments to the town wastewater system.

4.201 (2f): *Describe the operational efficiency of each existing system in the Project area, including the age, state of repair and level of treatment.*

The existing treatment of the town's wastewater system includes influent septic treatment and additional treatment through its wastewater lagoon. The existing septic tank is believed to be in good working order. The existing wastewater treatment lagoon is considered to be in poor condition as it is undersized to meet the town's daily average flow functioning as it is now as an evaporative pond. No records exist of the existing lagoon nor is it permitted under county site application approval or permitting by CDPHE. It is also believed to be unlined and allowing significant leakage such that it would not meet existing CDPHE regulations for allowable seepage. The collection system is in good condition and town staff has had no major issues with leaks or breaks in the pipes. As a result of this project, the existing wastewater lagoon and influent septic tank will be decommissioned with the lagoon biosolids being removed and the septic tank is to be drained and then crushed and abandoned in place.

4.201 (2g): *Describe the existing water utilization, including the historic yield from rights and use by category such as agricultural, municipal and industrial supply obligations to other systems.*

There are no other systems to which the town of Ramah's wastewater system has water utilization obligations to.

SECTION 4.201 (3) DEMONSTRATION OF NEED

4.201 (3a): *Provide population trends for the Project area, including present population, population growth and growth rates, documenting the sources used.*

The population of the Town of Ramah has fluctuated between 98 to 132 people over the previous 29 years of reported data from the US Census Bureau. Since 2001 the town has seen a relatively constant increase in population averaging 0.69% annual increase. Assuming an average growth rate of 0.69%, the existing population is estimated at 132 as of 2021. An average max month flow of 85 gpd per capita was assumed for the service area per standard design conditions. Utilizing this usage rate and the existing population estimate of 132, an existing average daily flow of 11,203 gpd was determined. Using the projected population estimates, the 20-year average day flow was calculated to be approximately 12,855 gpd. In order to be conservative, the evaporative pond facility will be designed for 15,000 gpd and the influent lift station will be designed for 60,000 gpd.

4.201 (3b): *Specify the predominant types of developments to be served by the proposed new water and/or sewage systems or extensions thereof.*

The service area that will be served by the lift station and evaporative ponds facility is the town of Ramah. The service area in Ramah is comprised of predominantly residential service users with only a couple of commercial users including the town post office and several churches. There are no proposed future developments that will be served by the lift station and evaporative ponds facility.

4.201 (3c): *Specify at what percentage of the design capacity the current system is now operating:*

(i) Water treatment system.

Not Applicable

(ii) Wastewater treatment system.

As the town's existing wastewater treatment system and lagoon is not metered and therefore no existing flow data exists for the current system preventing design capacity estimates. Since the existing wastewater lagoon is not adequately sized as an evaporative pond, it is suspected that the existing wastewater treatment system is operating above its design capacity

4.201 (3d): *Specify whether present facilities can be upgraded to accommodate adequately the ten-year projected increase needed in treatment and/or hydraulic capacity.*

The existing town wastewater treatment facility is currently undersized and improperly constructed to adequately accommodate the existing flow as well as the 10-year and 20-year projected flows of the service area. The existing wastewater lagoon facility cannot be upgraded to accommodate the existing and future flows because it is located and in the 100-year flood zone and it is more cost efficient to construct new wastewater lagoons at a separate location because of the biosolids removal process that would be required to reuse and expand that existing lagoon. The proposed new evaporative ponds facility and lift station is designed to accommodate the existing and projected future flows of the service area.

SECTION 4.201 (4) WATER USAGE

4.201 (4): *Description of the water to be used by the Project and, to the extent identified by the Director in consultation with the applicant, alternatives, including: the source, amount, the quality of such water; the applicant's right to use the water, including adjudicated decrees or determinations and any substitute water supply plans, and applications for decrees or determinations; proposed points of diversion and changes in the points of diversion; the existing uses of the water; adequate proof that adequate water resources have been or can and will be committed to and retained for the Project, and that applicant can and will supply the Project with water of adequate quality, quantity, and dependability; and approval by the respective Designated Ground Water Management District if applicable. If an augmentation or replacement plan for the Project has been decreed or determined or an application for such plan has been filed in the court or with the Ground Water Commission, the applicant must submit a copy of that plan or application.*

The proposed lift station and evaporative ponds will not require the use of any water. The proposed project will utilize only domestic wastewater from the town of Ramah as part of the proposed treatment process.

SECTION 4.201 (5) LOSS OF AGRICULTURAL PRODUCTIVITY

4.201 (5a): *Information on any agricultural water rights in the region converted to provide water for the Project, now or in the future.*

No agricultural water rights will be converted to provide water for the project now or in the future.

4.201 (5b): *Information on the amount of irrigated agricultural lands taken out of production, and a description of revegetation plans.*

The evaporative ponds facility is proposed to be constructed on a 39-acre parcel of previously used agricultural land the town recently purchased for the construction of the evaporative ponds. The land is not anticipated to be used for agriculture once the construction of the evaporative ponds is completed. During construction, erosion and sedimentation control measures will be deployed for stabilization of the site and protection of the existing vegetation. Following construction, disturbed areas of vegetation will be restored to provide protective cover of the site using native grasses. All Best Management Practices for erosion and sediment control will be strictly followed.

4.201 (5c): *Economic consequences of any loss of irrigated agriculture, including loss of tax base, in the region.*

Economic consequences of the loss of land are minimal with the proposed project. The land that the project will be constructed on was acquired by the town from a private owner. The price of the land purchase was reasonably determined based on any minimal loss of income the selling of the land may have caused. The tax implications are also minimal and deemed acceptable by the town, as the town is the entity undertaking the project, including land acquisition.

4.201 (5d): *Information as to loss of wildlife habitat, loss of topsoil, or noxious weed invasion, as a result of the transfer of water rights and subsequent dry-up of lands.*

No loss of wildlife habitat, loss of topsoil or weed invasion are anticipated as a result of the proposed project as it will be confined to existing developed town right of way and formerly used agricultural land. No transfer of water rights or subsequent dry-up of lands are anticipated from the project.

4.201 (5e): *Information on impacts to agricultural head gates and water delivery systems.*

There are no anticipated impacts to agricultural head gates and water delivery systems.

SECTION 4.201 (6) FINANCIAL IMPACT

The financial impact analysis of site selection and construction of major new water and sewage treatment facilities and/or major extension of existing domestic water and sewage treatment systems shall include but need not be limited to the following items:

c4.201 (6a): *A review and summary of any existing engineering and/or financial feasibility studies, assessed taxable property valuations and all other matters of financial aid and resources in determining the feasibility of the proposed new facility, including:*

(i) Service area and/or boundaries.

The service area can be seen in the Site Application in Exhibit I. The project will be publicly funded via State of Colorado State Revolving Funds program. The residents of the town of Ramah will pay for the project in the long term with gradually increased service user rates.

(ii) *Applicable methods of transmitting, storing, treating and delivering water and collecting, transmitting, treating and discharging sewage, including effluent and/or sludge disposal.*

The proposed lift station will convey wastewater to the proposed Evaporative Ponds Wastewater facility.

(iii) *Estimated construction costs and period of construction of each new or extension facility componen*t.

It is anticipated that construction will start in the spring of 2023. Construction is expected to take approximately 6 to 7 months.

(iv) *Assessed valuation of the property to be included within the service area boundaries.*

The land that the project will be constructed on was acquired by the town from a private owner. The price of the land purchase was reasonably determined based on any minimal loss of income the selling of the land may have caused as well as the consideration of the market value of the property.

(v) *Revenues and operating expenses of the proposed new or extension facility, including but not limited to historical and estimated property taxation, service charges and rates, assessments, connection and tap fees, standby charges and all other anticipated revenues of the proposed new facility.*

The town of Ramah operates a separate sewer fund for the operation, maintenance, and expansion costs of its wastewater system. Town wastewater service users are charged for service on a monthly user rate.
An alternatives analysis, including financial considerations (capital construction costs and ongoing operation and maintenance costs), was completed as part of the planning of this project in the form of a Project Needs Assessment. This document considered all feasible alternatives to bring the town's wastewater system into existing and future compliance with state and federal regulations. This analysis showed that the alternative with the lowest 20-year life-cycle cost was the construction of a new evaporative pond system (proposed project).

(vi) *Amount and security of the proposed debt and method and estimated cost of debt service.*

The project will be publicly funded though State of Colorado State Revolving Funds program.

(vii) *Provide the details of any substantial contract or agreement for revenues or for services to be paid, furnished or used by or with any person, association, corporation or governmental body.*

The town of Ramah operates a separate sewer fund for the operation, maintenance, and expansion costs of its wastewater system. Town wastewater service users are charged for service on a monthly user rate. Rates are reviewed annually to determine necessary increases to cover the expenses associated with

operating and maintaining the wastewater system. The proposed facility construction will be funded through a combination of grants and loans. Loan payments will be covered by increases to monthly user rates. Tap fee income was not included in the financial analysis as growth in the area is not significant, therefore this source of income is not considered reliable.

RESPONSE TO CHAPTER 6, ARTICLE 2, OF THE COUNTY GUIDELINES

The following sections are in response to Chapter 6, Article 2, Paragraph 6.201 of the County Guidelines as the Project relates to activity and development within the floodplain natural hazard area in unincorporated El Paso County as outlined in Paragraph 6.201 of the guidelines.

SECTION 6.201 (1) APPLICATION REQUIREMENTS

6.201 (1): *A complete application form.*

6.201 (2): *A plan certified by a professional engineer, registered in the state of Colorado, locating the proposed development with respect to the following:*

6.201 2a): *The boundaries of the designated or regulated floodplain natural hazard area.*

> The boundaries of the regulated floodplain can be seen in the Site Application in Exhibit I or Exhibit Q.

6.201 (2b): *Descriptions of any construction activity which would affect the hydraulic capacity of the floodplain.*

The proposed project includes work inside the 100-year flood zone for the decommissioning and demolition of the existing wastewater treatment lagoon. No alterations to the floodplain are anticipated from the lagoon decommissioning as the restoration plan is to include the removal of all existing biosolids from the lagoon and the area of the lagoon is to be restored to match the existing grade around it so that the topography of the floodplain is restored to is natural condition to the best extent possible. All Best Management Practices for erosion and sediment control will be strictly followed. No impacts to the hydraulic capacity of the surrounding floodplain are anticipated as a result of the existing wastewater lagoon decommissioning.

6.201 (2c): *Section 404 of the Federal Clean Water Act permit, if applicable.*

6.201 (3): *The following maps or drawings:*

6.201 (3a): *A map showing the stream and channel, the designated floodplain natural hazard area surrounding the channel, the area to be occupied or affected, in terms of altered stormwater runoff flows, by the proposed development and all available flood elevation studies, water surface elevations and base flood elevations.*

See attached in Exhibit I for the Site Application figures, maps and 60% Plans for all existing and proposed elevations, structures and construction activity as it relates to surrounding stream channels and floodplains. No alterations to the surrounding stream channels, floodplains or stormwater runoff flows are anticipated as a result of the proposed project.

6.201 (3b): *A map with surface view showing elevations or contours of the ground, pertinent structures, fill or storage elevations, size location and spatial arrangement of all proposed and existing structures on the site, location and elevation of streets, water supply systems, sanitary facilities and soil types.*

See attached in Exhibit I for the Site Application and 60% Plans for all existing and proposed elevations, structures, etc.

6.201 (3c): *Drawings showing the profile of the bottom of the channel at the thalweg and the water surface profiles described in such Paragraph a., above. The elevations of fill and structures must be shown. The applicant shall submit the elevation (in relation to mean sea level) of the lowest flood, including the basement, of the structure and, where the lowest flood is below grade on one (1) or more sides, the elevation of the flood immediately above.*

See attached in Exhibit I for the Site Application and 60 % Conceptual Plans for all existing and proposed elevations, structures and etc.

6.201 (4): *The applicant shall submit evidence that the applicant has made adequate coordination with upstream, downstream, or adjacent persons or communities and organizations that might be adversely affected by any development, fill, encroachment or alteration or relocation of a watercourse, including but not limited to, the Fountain Creek Watershed, Flood Control, and Greenway District.*

No alterations to a watercourse are anticipated as a result of the proposed project. The proposed project does include work inside the 100-year flood zone for the decommissioning and demolition of the existing wastewater treatment lagoon. No alterations to the floodplain are anticipated from the lagoon decommissioning as the restoration plan is to include the removal of all existing biosolids from the lagoon and the area of the lagoon is to be restored to match the existing grade around it so that the topography of the floodplain is restored to is natural condition to the best extent possible. All Best Management Practices for erosion and sediment control will be strictly followed. No impacts to the hydraulic capacity of the surrounding floodplain are anticipated as a result of the existing wastewater lagoon decommissioning.

SECTION 6.202 (1) MAP REQUIREMENTS

6.202 (1): *Verification shall be provided identifying the source of the topography and the date it was provided.*

Topographic survey was conducted by Interstate Survey Group out of Arvada, CO. The topographic survey was based on the Colorado State Plane Coordinate System, NAD83 grid and Vertical datum will be NAVD88. The survey was completed in January 2022.

6.202 (2): *All maps required to be submitted with a permit application shall be of a scale sufficiently detailed to allow the Development Services Director and/or the Permit authority to determine whether the proposed development and the topographic features of the land meet the requirements of these regulations. In no event shall the scale of these maps be less than one (1) inch equaling one hundred (100) feet.*

See attached in Exhibit I for the Site Application and 60% Plans.

6.202 (3): *All required maps shall show exiting topographic contours at no greater than two (2) intervals.*

See attached in Exhibit I for the Site Application and 60% Plans.

6.202 (4): *All maps prepared by private contractors or consultants shall meet the following standards of accuracy: Ninety (90) percent of the contour lines must be within one-half (1/2) contour interval and the remaining contour lines must be within one (1) contour interval.*

See attached in Exhibit I for the Site Application and 60% Plans.

6.202 (5): *All maps submitted by an applicant seeking a permit to develop a specific site shall show existing (dash line) and finished (solid line) elevation contours of the site at an interval of no greater than one (1) foot within a designated flood hazard area.*

See attached in Exhibit I for the Site Application and 60% Plans.