4) Assessment of Treatment Options, Resulting Load Reductions, and Associated Costs

Identify the information that each point source in a watershed must provide regarding its treatment system as part of the AMP development. The information must include, at a minimum, documentation of current and potential treatment options, the estimated change to nutrient loads resulting from each option, total short- and long-term financial and environmental costs associated with each option, and a financial and technological feasibility analysis of all treatment options identified.

Rule Language: The AMP shall review existing nutrient treatment capabilities and include an analysis of at least two nutrient removal options, prioritizing phosphorus over nitrogen as appropriate. Nutrient removal options, resulting load reductions, impacts to beneficial uses, and associated costs will be assessed using the DEQ-approved watershed model and available nutrient source information.

Guidance or Circular Language:

The AMP shall review existing nutrient treatment capabilities and include an alternative analysis for nutrient removal options prioritizing phosphorus over nitrogen as appropriate. It shall present at least two alternative approaches for watershed nutrient load reduction. The AMP may consider other site- specific treatment plant upgrades, side stream treatment opportunities, alternative effluent management options (e.g., land application, disposal to ground, reclaimed water beneficial uses), watershed restoration, the viability of satellite treatment, influent nutrient source reduction (industrial sources, truck hauled wastes, septage, chemical addition, etc), nonpoint source reduction (best management practices (BMPs)), and other nutrient minimization opportunities.

The AMP may follow appropriate requirements as described in the Uniform Preliminary Engineering Report for Montana Public Facilities Projects (January 2013) and should include at a minimum:

a. Wastewater Characterization

- Current flowrates and growth trends.
- Current influent and effluent quality.
- Identify baseline watershed nutrient loadings including wastewater discharges and other watershed nutrient loadings

b. Treatment Technology Analysis and Nutrient Load Reduction

- Description of current treatment processes, including any modifications made for optimization or due to corrective actions.
- Description of site limitations, constraints, or other treatment implementation challenges that exist.

- Identification and screening of potential treatment technologies for meeting two different levels of treatment, minimum.
- Quantify energy demand, chemical addition, supplemental carbon requirements, additional biosolids production, etc.
- Where applicable, conduct analysis of nutrient reduction by other means (alternative effluent management, watershed restoration, influent nutrient source reduction, nonpoint source reduction, etc.).

c. Economic Evaluation

- Develop capital, operation, and maintenance costs and 20-year net present value for the most for each technology alternative evaluated.
- Provide economic metrics such as the average cost per pound of phosphorus and/or nitrogen removed, as well as the incremental cost of the next level of additional nutrient reduction.

d. Environmental Impact Evaluation

- Provide data on current and future energy demand, supplemental carbon addition requirements (e.g. methanol, acetate, Micro-C, etc), chemical addition requirements (e.g. alum, ferric, polymer, proprietary coagulants mixtures, etc.), additional biosolids production,and additional greenhouse gas emissions associated with both current and potential nutrient reduction improvements.
- Conduct adverse environmental impact analysis, including quantification of additional Greenhouse Gas (GHG) emissions. Provide estimated Tons of GHG per pound of phosphorus and/or nitrogen removed as well as the incremental GHG emissions with the next level of additional nutrient reduction. Identify the incremental increase in GHG emissions associated with the next level of treatment and the diminishing additional reduction in effluent phosphorus and/or nitrogen removed.

REFERENCES

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