

Lake Granbury WPP Alternatives Analysis

2- FRAMEWORK FOR ANALYSIS OF MANAGEMENT MEASURES

Stakeholder Meeting
June 23, 2009

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Today's Outline

- Item 1 – Review Alternative Management Measures } DONE
 - Objective: Identify appropriate management measures
 - General description of alternatives
- LUNCH
- Item 2 – Framework for Alternatives Analysis
 - Evaluation Criteria
 - Ranking system
- Item 3 - Site-specific example evaluating alternatives
 - Use evaluation criteria
 - Use a ranking system
 - Take steps to identify management measures
- Next steps

Evaluating Alternatives: Description of Criteria for Selecting Best Management Measures

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Alternatives Evaluation

□ Evaluation Criteria:

- Pollutant Reduction Potential
- Time to Implementation
- Annualized Cost, including O&M
 - Per residence
- Site-specific feasibility, considering constraints
- Funding opportunities

} Criteria that
can be used
by
Stakeholders
to **prioritize**
and select
best
management
measures

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Pollution Reduction

- Percent reduction of bacteria level
 - Evaluated using the Lake Granbury models
 - lake modeling tools
 - watershed modeling tools
 - Based upon researched literature values specific to each management measure

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Pollution Reduction

WPP Goal

≤ 53 MPN/100mL geometric mean concentration

- Potential Load Reduction
 - Watershed processes

versus

- Concentration Reduction
 - Lake processes

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Time to implementation

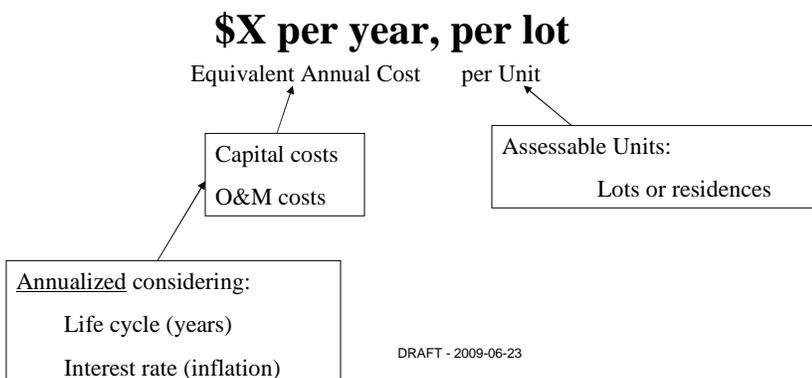
- How long before alternative is operational?
 - Evaluation and decision-making
 - Agreement to move forward with an alternative
 - Conceptual preliminary planning
 - Inter-local agreements
 - Seeking funding sources
 - Permitting, establishment of CCN boundaries
 - Engineering Design
 - Construction

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Annualized Cost Index

- Need a consistent basis to evaluate alternatives



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Annualized Cost Index

□ Cost Index

$$\text{INDEX} = \frac{[\text{alternative cost}]}{[\text{maximum cost}]}$$

- Purpose:
 - Illustrates **relative, comparative cost** between alternative management measures
- Cost is based upon Equivalent Annual Cost (EAC)
- Maximum cost for all alternatives = 1.0

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Annualized Cost Index

□ Capital Costs

- Construction Costs
- Land Costs
- Design & Administrative Costs
- Contingency

□ O&M Costs

- Finance costs are not considered at this stage

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Annualized Cost Index

- Capital and O&M costs derived from:
 - Conceptual layouts and designs
 - Materials estimates
 - Sources of cost information
 - RS Means – national cost averages, with area-specific adjustments
 - AMUD
 - City Of Granbury
 - Recent experience

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Annualized Cost Index

- Economic model must consider varying parameters
- Equivalent Annual Cost (EAC) Method
Cost per year of owning an asset over its entire lifespan

$$\text{EAC} = \text{Capital Cost} * \text{Annuity Factor} \\ + \text{Net Present Value of O\&M}$$

Where. Annuity Factor = $r * (1+r)^t / [(1+r)^t - 1]$

r = weighted cost of capital (interest rate)

t = lifespan in years of capital project

- Common method for comparing alternatives with different life cycles, different initial capital, and different O&M expenses
- Comparison of Present Value of series of capital and O&M expenses
- Single “indicator” to consider in comparing alternatives

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Site-specific Feasibility

- What constraints may affect the area and influence decision-making?
- These are items not easily quantified in other categories
 - Examples:
 - Compatibility with existing capital improvement plans
 - Compatibility with local ordinances
 - Stakeholder input
 - Resident input
 - Floodplain considerations
 - Discharge permitting

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Funding Opportunities

- Qualification for State and federal programs
 - Grant funding mechanisms
 - Low-interest loans
 - Debt issuance
- Cost recovery – assessment
 - Monthly fees

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Potential to develop a ranking system for Alternatives Evaluation

Stakeholder Input

Less Suitable \longrightarrow More Suitable

Quantitative		Rating Scale						
Factor Weight	Factor	0	1	2	3	4	5	Score
1	Watershed %Reduction	0%	1-20%	21-40%	41-60%	61-80%	80-100%	3
1	Time to Implement	>15 years	10-15 years	5-10 years	2-5 years	1-2 years	<1 year	4
1	Annual Cost Index	0.65-1.0	0.35-0.64	0.27-0.34	0.19-0.26	0.07-0.18	<0.06	2
Total Score								9

Qualitative		Not Feasible Alternative	Severe Constraints	Significant Constraints	Some Constraints	Few constraints	Negligible constraints
	Feasibility (Constraints/ Considerations)						
	Funding	None available	Limited Funding	Partial Funding	Some Funding	Significant Funding Available	Full Funding

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Potential to develop a ranking system for Alternatives Evaluation – with weighting

Stakeholder Input

Less Suitable \longrightarrow More Suitable

Quantitative		Rating Scale						
Factor Weight	Factor	0	1	2	3	4	5	Score
5	Watershed %Reduction	0%	1-20%	21-40%	41-60%	61-80%	80-100%	15
2	Time to Implement	>15 years	10-15 years	5-10 years	2-5 years	1-2 years	<1 year	8
4	Annual Cost Index	0.65-1.0	0.35-0.64	0.27-0.34	0.19-0.26	0.07-0.18	<0.06	8
Total Score								31

Qualitative		Not Feasible Alternative	Severe Constraints	Significant Constraints	Some Constraints	Few constraints	Negligible constraints
	Feasibility (Constraints/ Considerations)						
	Funding	None available	Limited Funding	Partial Funding	Some Funding	Significant Funding Available	Full Funding

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Questions?

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