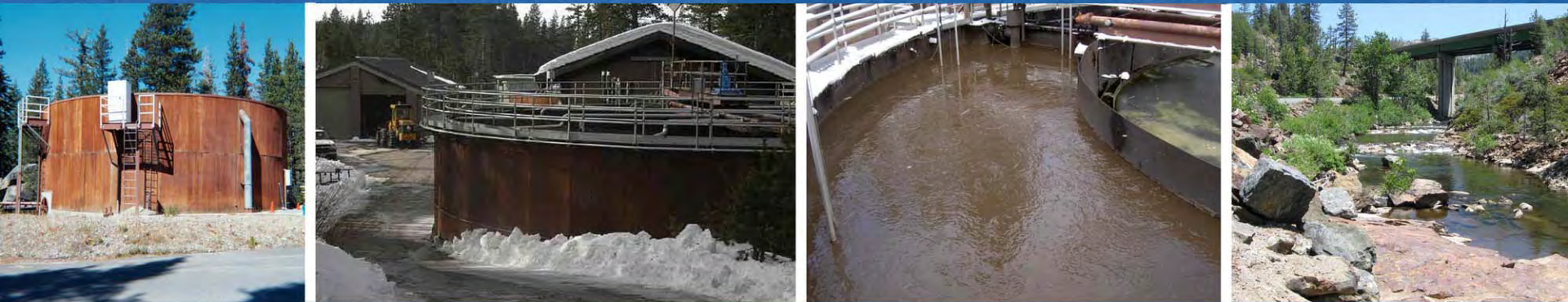


DONNER SUMMIT Public Utility District



Wastewater Facilities Plan

Presentation to
Joint Wastewater Facilities Committee

June 21, 2010

ECOLOGIC
ENGINEERS • CONSULTANTS

DSPUD Wastewater Management Key Issues

- ❖ Existing plant does not consistently meet permit requirements for discharge to South Yuba River
 - ◆ Ammonia
 - ◆ Nitrate
 - ◆ Others
- ❖ Desire to provide service for additional connections in DSPUD and SLCWD

Purpose of Facilities Plan

- ❖ Investigate alternatives for attaining wastewater management objectives
- ❖ Identify Apparent Best Project based on:
 - ◆ Capital Cost
 - ◆ Annual Cost
 - ◆ Non-Economic Factors

Facilities Planning in Context

❖ Previous studies

- ◆ Permitting investigations (2008/2009)
- ◆ Preliminary investigations of wastewater management options (June 2009)

❖ Facilities Plan (Final July 2010)

❖ Financing (Ongoing)

❖ Environmental Studies (2010)

❖ Preliminary Design (2011)

❖ Design (2011/2012)

❖ Construction (2012/2013)

❖ Compliance with Permit (April 2014)

Basis of Facilities Plan

	Existing	Projected*
DSPUD EDUs	818	1,150
SLCWD EDUs	817	897
Average Annual Flow, Mgal/d	0.23	0.28
Maximum Weekly Flow, Mgal/d	0.61	0.74
Maximum Weekly BOD Load, lb/d	780	1,035
Permit Capacity, Mgal/d ADWF	0.52	0.52

*Subject to review in Preliminary Design

Project Components Investigated

- ❖ Flow Equalization/Headworks
- ❖ Biological Treatment
- ❖ Disinfection
- ❖ Filtration
- ❖ Emergency Storage
- ❖ Biostimulation Storage
- ❖ Effluent Irrigation Facilities
- ❖ Biosolids Handling

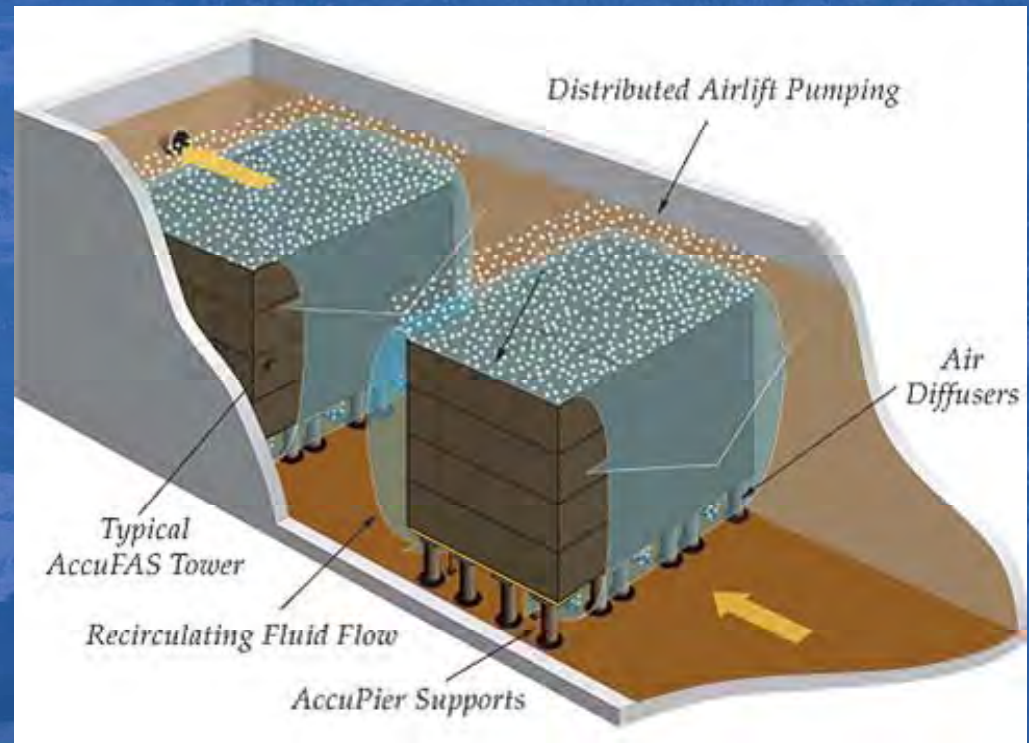
Flow Equalization Headworks

- ❖ Increase from 200,000 to 750,000 gallons
- ❖ New screens if select MBR

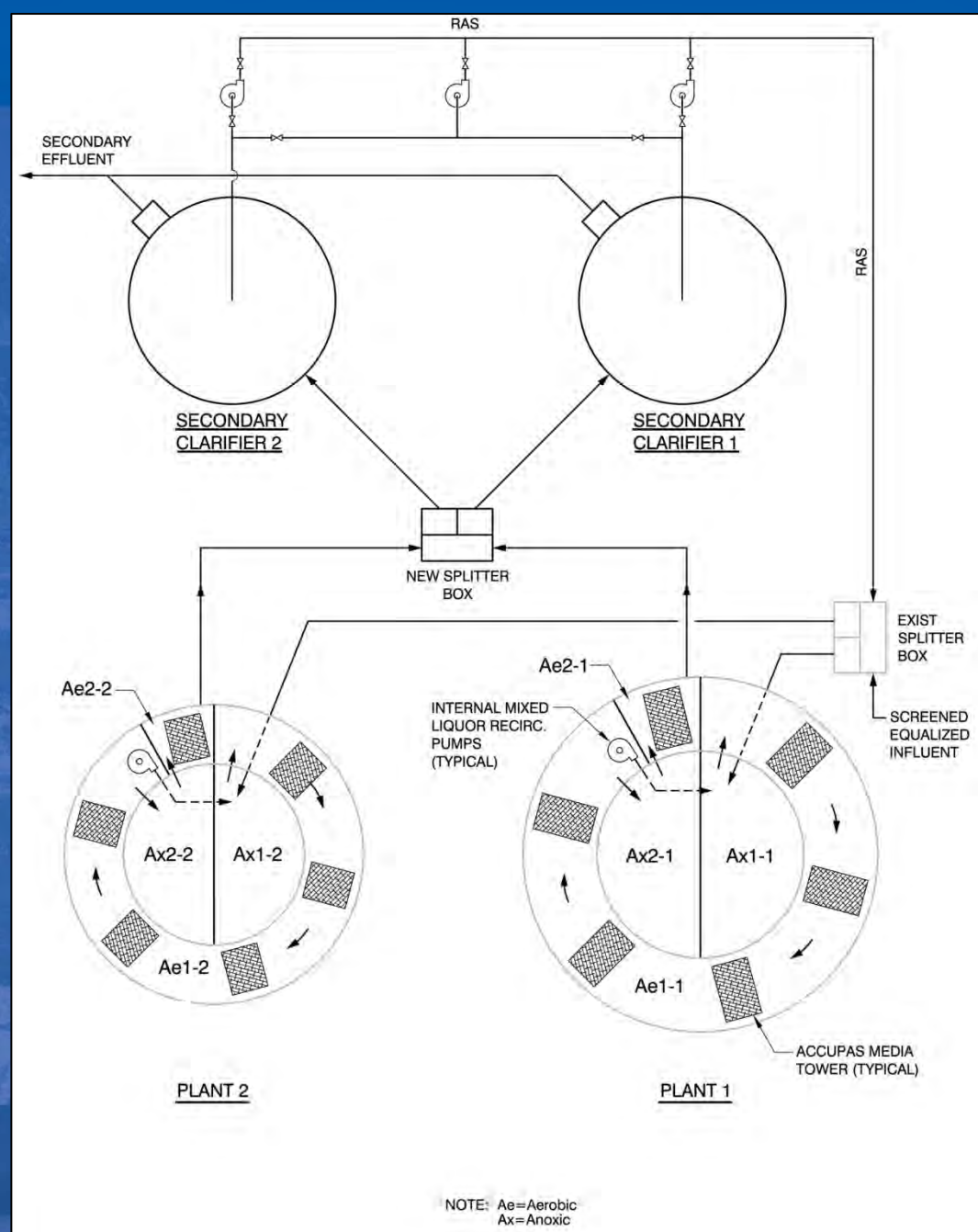
Biological Treatment Alternatives

- ❖ Upgrade Existing IFAS
- ❖ New IFAS
- ❖ Submerged Attached Growth
- ❖ Membrane Bioreactor (MBR)

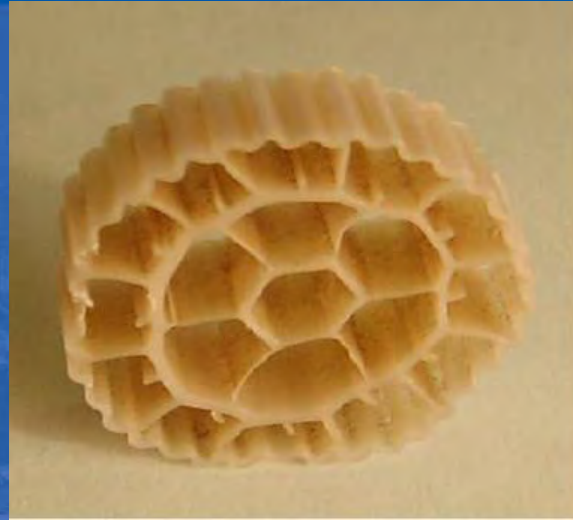
Upgrade Existing IFAS (ACCUFAS)



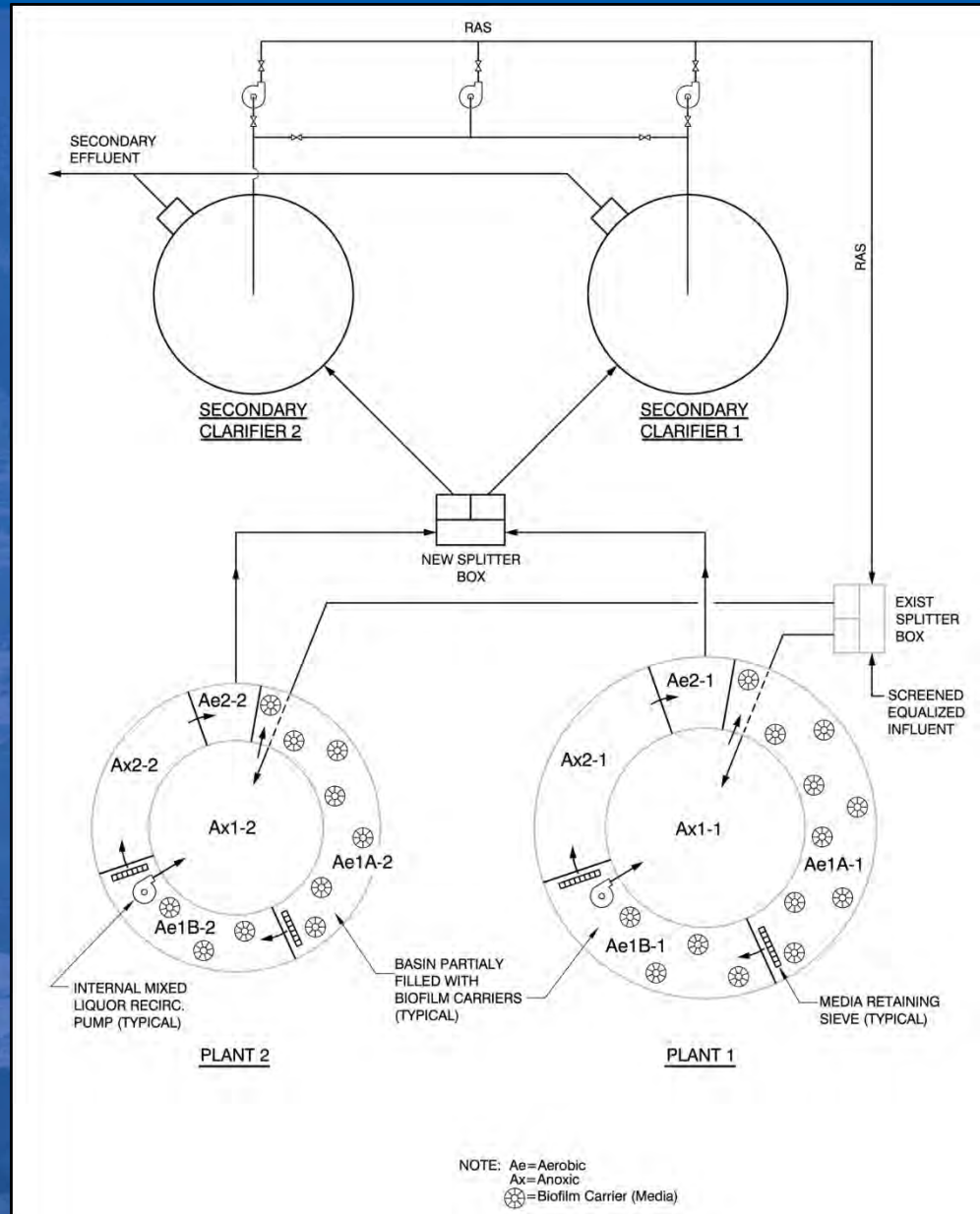
ACCUFAS Flow Diagram



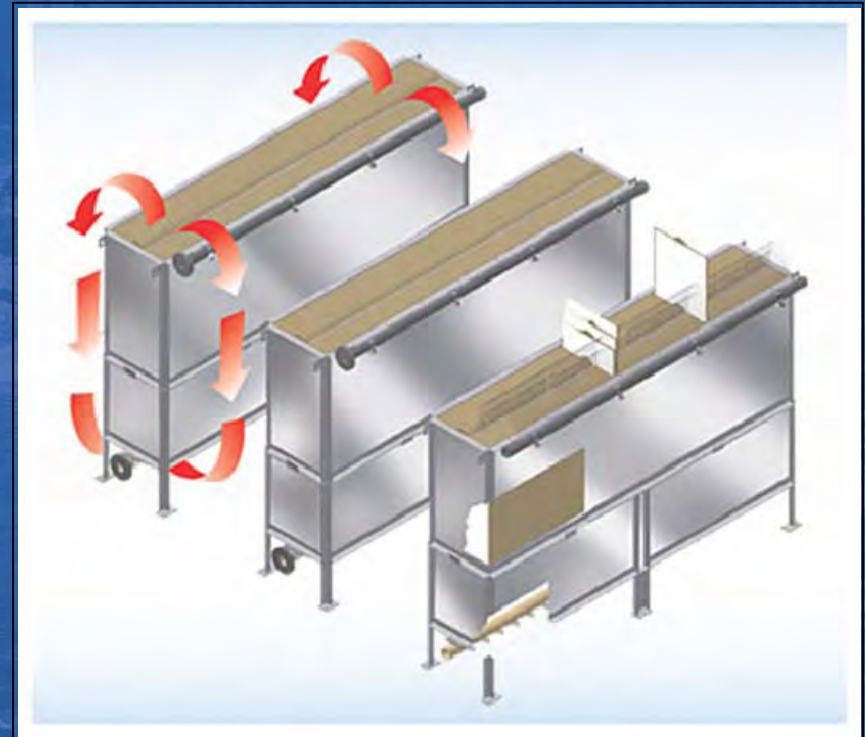
New IFAS



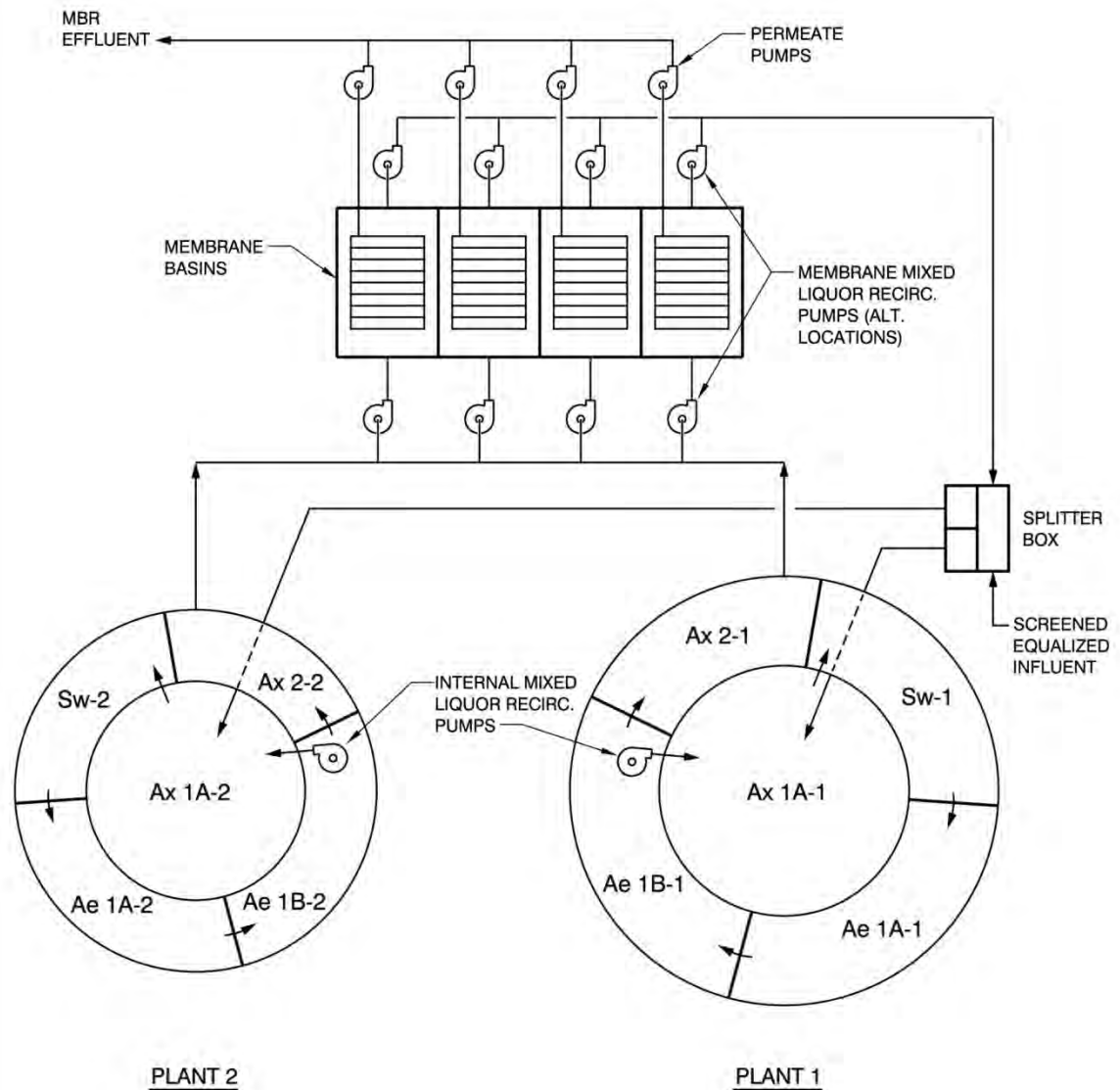
New IFAS Flow Diagram



Membrane Bioreactor



MBR Flow Diagram



NOTE: Ae=Aerobic
Ax=Anoxic
Sw=Swing Zone, Either Anoxic or Aerobic

Submerged Attached Growth



Biological Treatment Ancillary Facilities

❖ Heat Transfer and Temperature Management

- ◆ Objective: 7°C
- ◆ Cover tanks: \$4.6 Million
- ◆ Heat wastewater when needed
 - \$1.9 Million
 - \$22,000/year

❖ Chemical Feed Facilities

- ◆ Ammonia
- ◆ Alkalinity
- ◆ Carbon source (methanol or alternative)

Filtration

❖ With Non-MBR Biological

- ◆ Retain existing filtration system
- ◆ Add backwash supply tank

❖ With MBR

- ◆ Filters not needed

Disinfection Alternatives

❖ Continue with Chlorine

❖ Ultraviolet (UV)

- ◆ Non-MBR
- ◆ MBR
 - Open channel
 - Closed vessel

❖ Ozone

- ◆ Non-MBR: Ozone with UV
- ◆ MBR: Ozone alone

Emergency Storage

- ❖ Retain existing 1.5 Mgal tank

Biostimulation Storage

- ❖ **Objective:** Store effluent in spring when there is risk of algae growth in river
- ❖ **Volume:** Up to 11 Mgal
- ❖ **Cost:** \$3.9 Million
- ❖ **Risk of biostimulation unknown**
 - ◆ Occurred in 2008
 - ◆ No events documented prior to 2008
 - ◆ Did not occur in 2009
 - ◆ 2010?

Effluent Irrigation

- ❖ Existing Effective Area: 34 acres
- ❖ Area Required
 - ◆ Without Biostimulation Storage: 31.5 acres
 - ◆ With Biostimulation Storage: 53 acres

Biosolids Dewatering and Disposal

❖ Alternatives Studied

- ◆ Continue with Drying Beds
- ◆ Belt Press
- ◆ Centrifuge
- ◆ Screw Press

❖ Recommended

- ◆ Continue with Drying Beds

Overall Alternative Cost Analysis

Biological Treatment Alternative: Disinfection Alternative:	Cost for Indicated Combination of Alternatives (a), \$							
	Upgrade Existing IFAS		New IFAS		MBR		Submerged Attached Growth	
	Chlorine	UV	Chlorine	UV	Chlorine	UV	Chlorine	UV
Capital Cost								
Equalization Storage / Headworks (b)	2,250,000	2,250,000	2,250,000	2,250,000	3,730,000	3,730,000	2,250,000	2,250,000
Biological Treatment	6,230,000	6,230,000	7,355,000	7,355,000	10,140,000	10,140,000	16,590,000	16,590,000
Filtration (c)	201,000	201,000	201,000	201,000	0	0	700,000	700,000
Disinfection (d)	1,199,000	2,628,000	1,199,000	2,628,000	1,199,000	1,753,000	1,199,000	2,628,000
Solids Handling (e)	523,000	523,000	523,000	523,000	523,000	523,000	523,000	523,000
Reconfigure Existing Space for Shop/Office	0	50,000	0	50,000	90,000	140,000	0	50,000
New Shop/Office Space	615,000	450,000	615,000	450,000	165,000	0	615,000	450,000
Total	11,018,000	12,332,000	12,143,000	13,457,000	15,847,000	16,286,000	21,877,000	23,191,000
Annual Cost								
Equalization Storage / Headworks (b)	47,000	47,000	47,000	47,000	48,000	48,000	47,000	47,000
Biological Treatment	227,000	227,000	233,000	233,000	251,000	251,000	293,000	293,000
Filtration (c)	11,950	11,950	11,950	11,950	0	0	14,340	14,340
Disinfection (d)	20,400	35,740	20,400	35,740	20,400	37,140	20,400	35,740
Solids Handling (e)	43,400	43,400	43,400	43,400	44,600	44,600	60,600	60,600
Total	349,750	365,090	355,750	371,090	364,000	380,740	435,340	450,680
Present Worth Cost								
Present Worth of Annual Costs (f)	5,204,000	5,433,000	5,294,000	5,522,000	5,416,000	5,665,000	6,478,000	6,706,000
Total Present Worth	16,222,000	17,765,000	17,437,000	18,979,000	21,263,000	21,951,000	28,355,000	29,897,000

(a) First quarter 2010 cost level, ENR 20-Cities CCI = 8700.

(b) Based on Equalization Concept 1.

(c) New coagulation and flocculation assumed to be required ahead of the filters for the submerged attached growth option.

(d) Chlorine cost based on free chlorine, not chloramination. Costs include studies and facilities needed to obtain dilution credits for disinfection byproducts.
UV disinfection for MBR based on closed vessel system.

(e) Based on continued use of existing solids storage tank and sludge drying beds.

(f) 20 years at inflation-adjusted discount rate of 3 percent. Present Worth Factor = 14.88.

Alternative Ratings and Ranking

Criterion	Weighting Factor	Ratings For Indicated Alternative Combination (a)							
		Upgrade Existing IFAS		New IFAS		MBR		Subm. Attached Growth	
		Chlorine	UV	Chlorine	UV	Chlorine	UV	Chlorine	UV
Capital Cost	25	10.0	8.9	9.1	8.1	6.8	6.6	5.0	4.7
Annual Cost	10	10.0	9.6	9.8	9.4	9.6	9.2	8.0	7.8
Confidence In Design and Technology	25	4	4	8	8	10	10	7	7
Robustness and Reliability	5	8	8	8	8	10	10	8	8
Misc. Compliance Improvements, Existing	5	6	7	6	7	9	10	6	7
Adaptability to Future Permits	5	6	8	6	8	10	8	6	8
Ease of Future Expansion	5	9	9	9	9	10	10	9	9
Plant Footprint	5	8	8	8	8	10	10	8	8
Construction Impacts in River (d)	3	5	10	5	10	5	10	5	10
Power Use	3	9	8	9	8	8	7	10	9
Chemical Use	3	9	10	9	10	9	10	8	9
Residuals Produced	3	10	10	10	10	10	10	8	8
Hazardous Gas Exposure Risk	3	3	10	3	10	3	10	3	10
Overall Weighted Score (b)	100	7.43	7.63	8.19	8.41	8.66	8.88	6.67	7.09
Rank (c)		6	5	4	3	2	1	8	7

(a) The highest rated alternative is assigned a score of 10. Other alternatives are scored lower, according to the relative concern compared to the highest rated alternative.

(b) Summation of individual ratings multiplied by the corresponding weighting factors.

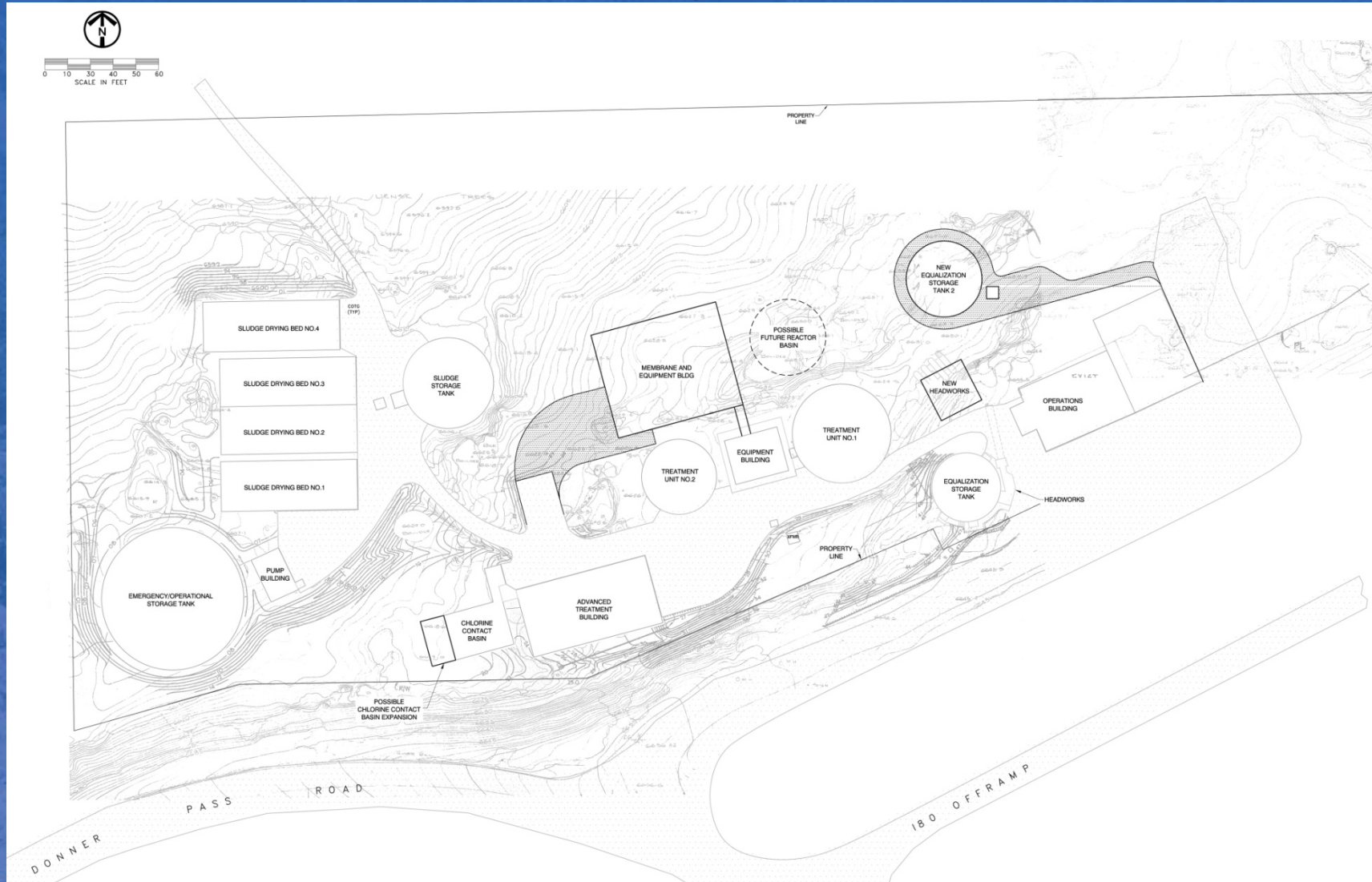
(c) The alternative with the highest overall weighted score is ranked "1". Other alternatives are ranked "2" through "8", according to overall score.

(d) Construction in the river would be associated with continuing chlorine disinfection, based on installing a diffuser to obtain dilution credits for disinfection byproducts.

Apparent Best Project - Recommended by Joint Committee

Project Component	Escalated Capital Cost, \$ Million	
	With UV	With Chloram.
Equalization/Headworks	4.1	4.1
MBR and Related	10.8	10.8
Supplemental Heat System	2.0	2.0
Chemical Feed Systems	1.1	1.1
UV Disinfection	1.9	---
Chloramination	---	1.0
Misc. Improvements	1.6	1.7
Total	21.5	20.7

Proposed Plant Layout (Conceptual)



Key Environmental Issues

- ❖ **Upgrades to existing plant must comply with the following state and federal regulations:**
 - ◆ California Environmental Quality Act (CEQA) – projects with discretionary permits in California
 - ◆ National Environmental Policy Act (NEPA) – federally funded projects and projects requiring a special use permit from a federal agency
 - ◆ Local, state, and federal regulations for specific resources (ex. Federal Endangered Species Act, Nevada County General Plan)

Environmental Overview

- ❖ **Donner Summit Public Utilities District will be lead agency for CEQA compliance for the proposed upgrades to the existing WWTP**
- ❖ **Existing WWTP operates on U.S. Forest Service land and under a Special Use Permit**
 - ◆ NEPA Compliance Required
 - ◆ New Special Use Permit with Upgrades Included
 - ◆ U.S. Forest Service Specific Resources of Concern
 - ◆ U.S. Forest Service NEPA Compliance Lead Agency

Environmental Baseline Studies

❖ Previous Studies

- ◆ Preliminary Environmental Analysis – Chapter 16 of the Facilities Plan
- ◆ Cultural Resource Assessments (1976, 1983)

❖ Project Specific Studies

- ◆ Habitat Assessment
- ◆ Biological Resource Surveys/Assessments for Special-status plant and animal Species
- ◆ Cultural Resource Assessment – Section 106 Compliance Reporting for Archeological and Historical Resources

CEQA and NEPA Compliance

- ❖ **Proposed Compliance Document for CEQA and NEPA:**
 - ◆ Initial Study (IS) will be developed and District and U.S. Forest Service to conduct public meetings
 - ◆ Based on IS and public input, District and U.S. Forest Service to determine level of joint CEQA/NEPA document (MND/EA or EIR/EIS)
 - ◆ District = CEQA lead agency and U.S. Forest Service = NEPA lead agency
 - ◆ Circulate CEQA/NEPA review as one document to state and federal agencies

CEQA and NEPA Evaluations

- ❖ Aesthetics
- ❖ Air Quality
- ❖ Biological Resources (Aquatic and Upland)
- ❖ Cultural/Historical Resources
- ❖ Geology/Soils
- ❖ Hazards and Hazardous Materials
- ❖ Hydrology/Water Quality
- ❖ Land Use/Planning
- ❖ Noise
- ❖ Recreation
- ❖ Utilities/Service Systems
- ❖ Additional evaluations could also be included

Additional Environmental Compliance

- ❖ **USDA and/or SRF funding applications with environmental checklists**
- ❖ **Potential environmental permitting:**
 - ◆ California Dept. of Fish and Game (Section 1602) Streambed Alteration Agreement
 - ◆ Sections 404 and 401 of Clean Water Act for impacts to waters of the U.S., including wetlands
 - ◆ Section 7 Endangered Species Act with U.S. Fish and Wildlife Service
 - ◆ Section 106 State Historic Preservation Office (SHPO) compliance

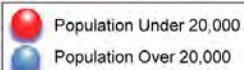
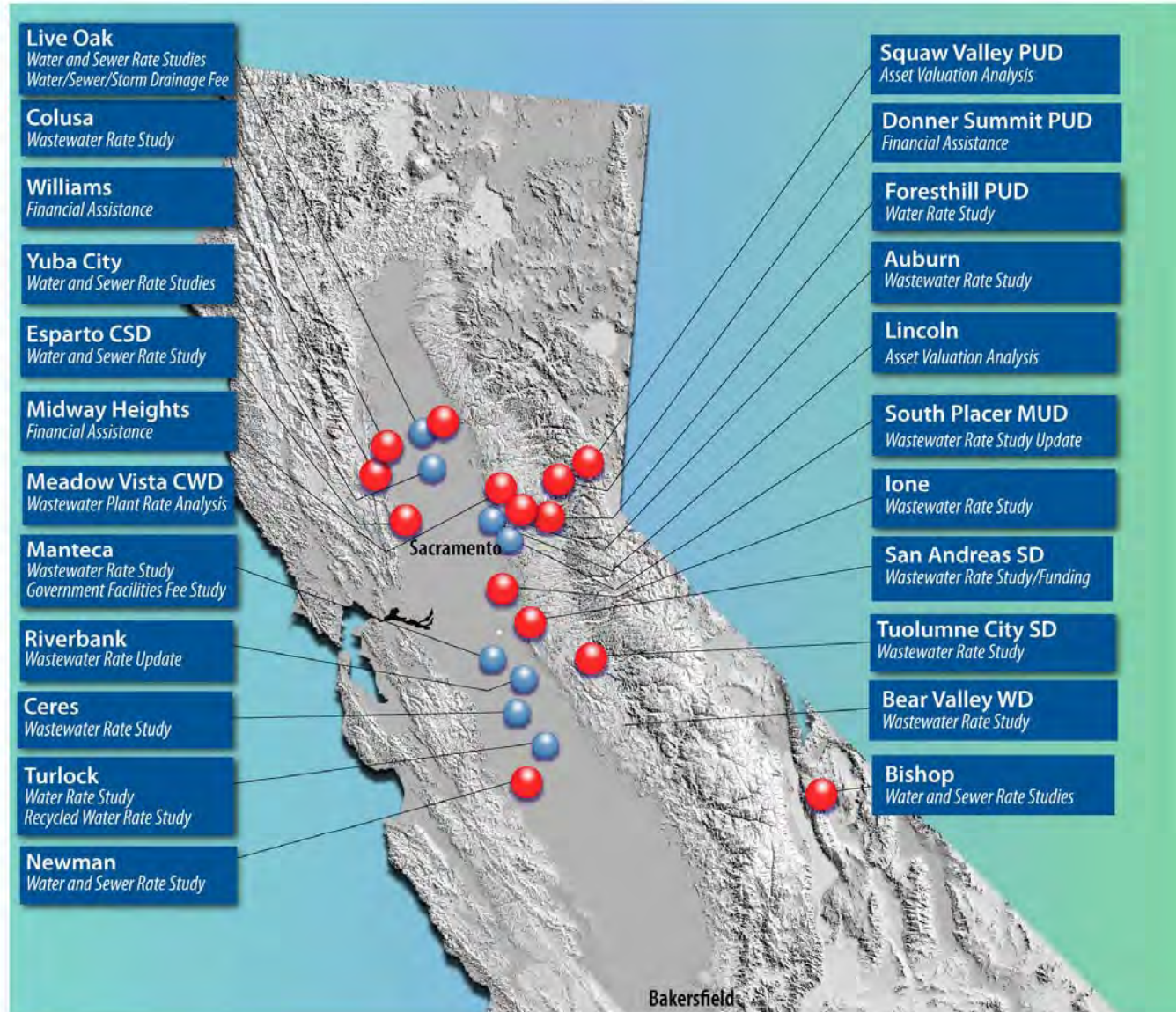
Environmental Schedule

- ❖ Conduct biological and archeological surveys between late June and October 2010
- ❖ CEQA and NEPA public scoping meetings between August and September 2010
- ❖ Complete Administrative Draft CEQA/NEPA in January 2011
- ❖ Complete and circulate Public Draft CEQA/NEPA in February 2011
- ❖ Final CEQA/NEPA with Notice of Determination and Record of Decision by late June 2011

Financing Strategy

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Senior Economist

DONNER SUMMIT Public Utility District



Evaluation of Financing Strategy

- ❖ **Total Project Cost**
- ❖ **Project Beneficiaries** (existing and/or new customers)
- ❖ **Board Policies**
- ❖ **Timing Requirements**
- ❖ **Financing (Bond / Loan) Considerations:**
 - ◆ Terms (length, rate)
 - ◆ Total financing costs
 - ◆ Ability to repay / security / disclosure

Planning Cost Financing

◆ Project Feasibility Study (May 2010 Wastewater Facilities Plan)	\$346,000
◆ Preliminary Design Report	\$382,200
◆ Environmental Documentation and Permitting	\$687,500
◆ Financial Strategy and Application Assistance	\$67,700
◆ Public Outreach and Education \$39,400	
<u>Total Estimated Cost</u>	<u>\$1,522,800</u>

Cash Funded	\$44,800
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CWSRF Planning Loan	\$1,478,000
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Construction Cost Financing

❖ Typical Costs Include:

- ◆ Final Design
- ◆ Value Engineering
- ◆ Construction Management
- ◆ Administration Costs associated with design and construction
- ◆ Bond / Low-interest Loan Financing

Federal and State Grants and Low-Interest Loans

❖ Federal

- ◆ United States Department of Agriculture (USDA)
Rural Utilities

❖ State

- ◆ Clean Water Revolving Fund Program (CWSRF)

May work best with a combination of these funding sources

Comparison of USDA and CWSRF Programs

Source	Term of Loan (Years)	Interest Rate
USDA	40	3.25% or 4.125%
<i>Faster processing time, higher financing costs but spread over longer time period (less rate impact), frequently works with CDBG</i>		
CWSRF	30	2.7%
<i>Lower interest rate and potential to refinance planning loan at lower rate than current 2.7%, longer processing time</i>		

Reasonable Rates

❖ SRF and USDA Program Requirements

- ◆ Customer rates including loan (debt service) no greater than 1.5 – 2.0% of MHI

	Sierra Lakes	Donner Summit
2009 Median Household Income *	\$46,964	\$40,817
Monthly Median Household Income	\$3,914	\$3,401
Monthly Sewer Bill	\$91.35	\$110.32
Monthly Wastewater Bill as % of MHI	2.3%	3.2%

* Sierra Lakes 78% of CA MHI, Donner Summit 68% of CA MHI, per SWRCB Division of Financial Assistance, June 2010.

Grant Funding Potential

- ❖ **Community Development Block Grants (CDBG)**
 - ◆ With County sponsorship
- ❖ **Various Federal Programs***
 - ◆ Chiefly “green” infrastructure and projects tackling water conservation and climate change issues
- ❖ **Sierra Nevada Conservancy**
 - ◆ For jurisdictions within the Sierra Nevada to improve water quality
- ❖ **Truckee Tahoe Community Foundation**

** Funding match often required*

Questions and Answers