

CBWWTP ENERGY MANAGEMENT



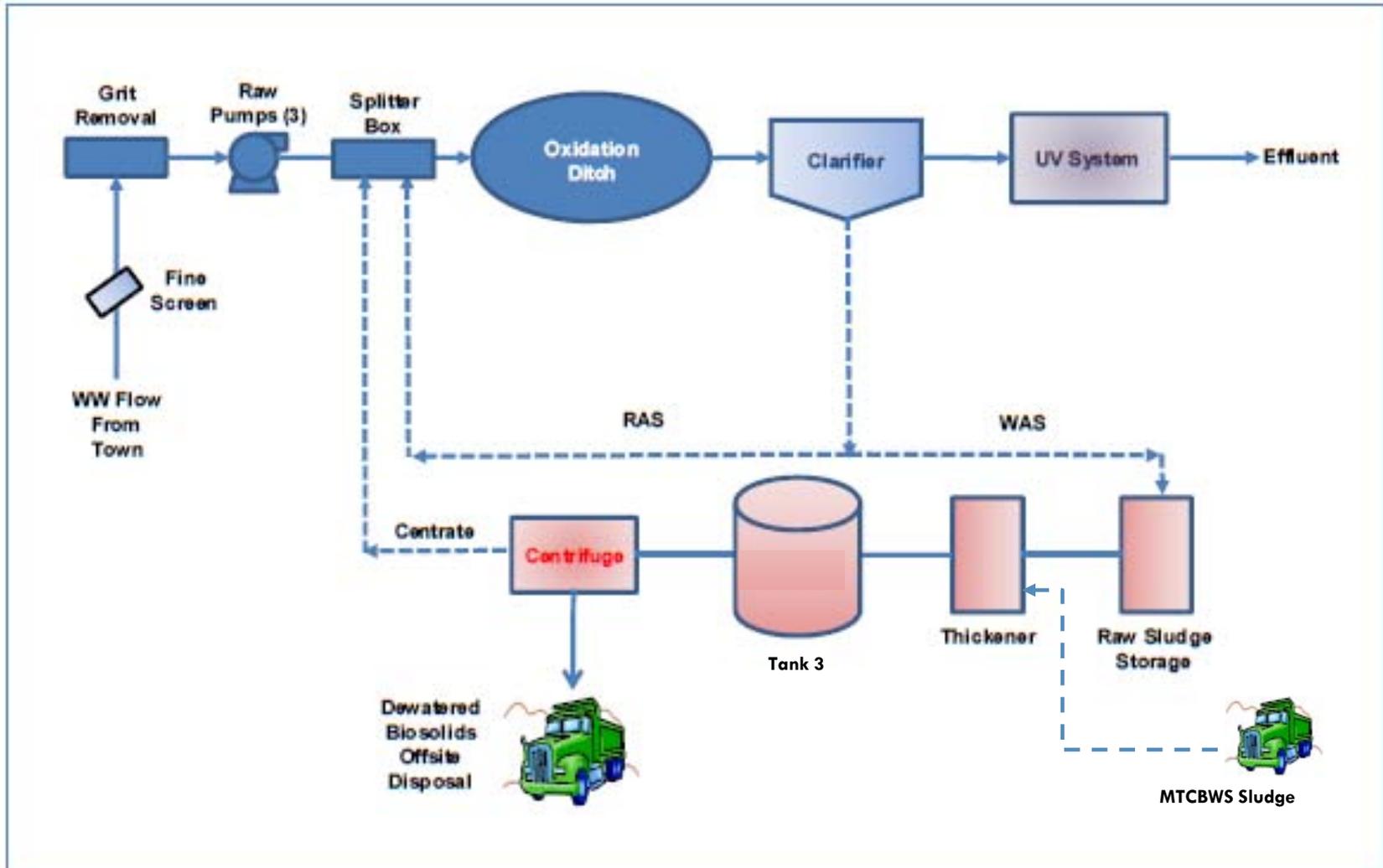
Annual Numbers



- 81 MG of wastewater treated
- 215,000 lbs dry solids hauled (2010)
- 620,000 kW·hrs consumed
 - 479,000 Headworks
 - 141,000 Solids Handling
- 14,300 ccf consumed
 - 2300 Headworks
 - 12,000 Solids Handling
- \$65,000 utility expenditure (2010)



Process Diagram





EPA Pilot Program



Purpose:

- ❑ Reduce utility energy costs
- ❑ Improve the reliability and performance of those assets
- ❑ To minimize the impact of water / wastewater treatment utilities on the environment
- ❑ To partner with communities to substantially reduce energy use and costs and develop individual Energy Management Plans for their water treatment utilities through a pilot program in 2010/2011
- ❑ To share experiences, benefits and lessons with other utilities in the Intermountain West



EPA Pilot Program



Plan:

- Establish goals
- Assess baseline status
- Establish a vision and priorities for improvement
- Identifying energy objectives and targets



EPA Pilot Program



Do:

- Develop action plans to implement energy improvements
- Develop management system 'operating controls' to support energy improvements



EPA Pilot Program



Check and Act:

- Monitoring and measuring energy improvement management programs
- Maintaining your energy improvement programs



EPA Pilot Program



Goals:

- Improve efficiency based on developed metrics.
- Reduce energy consumption in accordance with the Town of Crested Butte Energy Action Plan (20% by 2020).
- Use renewable energy sources where feasible.
- Assess energy uses to make informed decisions on purchasing, budgeting and planning.
- Reduce current and future energy costs.



EPA Pilot Program



Assessing Baseline Status:

- Benchmark energy efficiency information
 - EPA Portfolio Manager
- Conduct an energy audit (July 2011)
- Review legal and other requirements and establish a compliance baseline



EPA Pilot Program



Portfolio Manager - Building View

www.energystar.gov/istar/pmpam/index.cfm?fuseaction=bdg_view_bldg_info

PORTFOLIO MANAGER

Home > My Portfolio > Town of Crested Butte Wastewater Treatment Facility

Facility Summary: **Town of Crested Butte Wastewater Treatment Facility**

Building ID: 2521818
Level of Access: Building Data Administrator

Electric Distribution Utility: Gunnison County Electric Association Inc
Regional Power Grid: [WECC Rockies](#)
[Select my Power Generation Plant](#) to calculate my electric emissions rate
Electric Emissions Rate (kgCO₂e/MBtu): 254.6 ([what is this?](#))

[Generate a Statement of Energy Performance](#) for uses other than applying for the ENERGY STAR.

| General Information | |
|---|--|
| Address: 800 Butte Ave., Crested Butte, CO 81224 | |
| Year Built: 1979 | |
| Property Type: Water Utility/Wastewater Plant | |
| Baseline Rating: N/A | Current Rating: N/A |
| View Period Ending Dates | |
| Water Period Ending Dates Current: N/A Baseline: N/A | Energy Period Ending Dates Current: January 2011 Baseline: N/A |
| Eligibility for the ENERGY STAR | |
| Not Eligible. Water Management Facilities are not eligible to apply for the Energy Star | |

Facility Performance | Set Baseline Periods | Set Energy Performance Target

Select View: Performance: Water/Wastewater Treatment Facilities | Create View | Edit View

| 12 Months Ending | Current Rating (1-100) | Average Flow (MGD) | Current Weather Normalized Source Energy per Flow (kBtu/gpd) | National Median Source EUI (kBtu/gpd) | Current Site Electric Use (kWh) | Annual Energy Cost (US Dollars \$) | Current Total GHG Emissions (MtCO ₂ e) |
|------------------|------------------------|--------------------|--|---------------------------------------|---------------------------------|------------------------------------|---|
| April 2011 | N/A | N/A | N/A | 9.0 | N/A | \$59,087.48 | N/A |
| Select Date | | | | | | | |

Change

REFRESH VIEW

| Space Name | Space Type | Average Influent Flow (MGD) | Alerts |
|-------------------------------------|--------------------------------------|-----------------------------|---|
| Headworks/Treatment | Municipal Wastewater Treatment Plant | 0.18 | Data > 120 days old more info |

General Facility Administration
[Track](#) Energy Performance Improvements
[Delete](#) this Facility from Portfolio Manager
[Contact](#) us

Sharing Data
[Add](#) user to share this Facility
[Modify](#) list of users
[Transfer](#) Facility to another user
[View](#) entire Access List for this Facility

Because more than 50% of your building is Wastewater, your building is designated as Wastewater within Portfolio Manager. This building may be eligible for a rating ([Click to learn more](#)). If you can see a rating for this building, please note that the rating takes into account all of the space types you have

start | Energy Audit | Presentation1 | Town Council P... | Portfolio Mana... | Energy Manag... | Data | Microsoft Excel ... | 12:36 PM



Energy Audit



Partnership between:

- ❑ Town of Crested Butte
- ❑ Office of Resource Efficiency
- ❑ National Renewable Energy Lab
- ❑ Mt. CB Water and Sanitation





Energy Audit



Focused on process energy consumption:

- Influent pumping
- Oxidation ditch operation
- Clarification
- Disinfection
- Solids handling





Energy Audit - Conclusions



Short term improvements:

- Modify control scheme to optimize use of WWP-1 during low flow periods
- Turn mixers off when aerator is in operation
- Replace existing DO meter, locate near outfall
- Take one bank of UV lights off line during low flow periods

Potential savings: \$3900/yr



Energy Audit - Conclusions



Long term improvements:

- I&I study to assess issues, develop rehabilitation strategy
- Optimize sizing of influent pumps when replacing
- Add DO meter to SCADA to operate on feedback
- Replace existing aerator
- Convert UV ballasts to provide variable output
- Modify piping of sludge system to bypass Tank 3

Potential savings: \$9000/yr



Energy Management Plan



Plan: Ongoing

- Prioritize improvements
- Identify objectives and targets
 - ▣ Establishing metrics, optimal process parameters



EPA Pilot Program



Do:

- Develop action plans to implement energy improvements
 - DO meter on-line in Jan. 2012
 - Other control improvements to implement recommendations
- Develop management system 'operating controls' to support energy improvements
 - Establish metrics and process control parameters



EPA Pilot Program



Check and Act:

- Monitoring and measuring energy improvement management programs
 - ▣ Smart meters and sub-metering, process data collection
- Maintaining your energy improvement programs
 - ▣ Establishing Standard Operating Procedures and Inspection and Maintenance scheduling



Conclusions



- Energy Audit: Potential savings, will require some work.
- Energy Management Plan: Smart meters and sub-metering will be helpful, especially with new rate structure pending.
- Overall system optimization: Avoid future costs.
 - Additional control and data acquisition.
 - Difficult to calculate ROI.