

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
FACT SHEET
(pursuant to NAC 445A.236)

Permittee Name: Storey County Public Works
P.O. Box 435
Virginia City, NV 89440

Permit Number: NV0020451

Location: Virginia City Wastewater Treatment Facility
½ mile east of Nevada Highway 341 on Six Mile Canyon Road
Virginia City, Storey County, Nevada
Township 17N, Range 21E, Section 28
Latitude: 39° 18' 32"N, Longitude: 119° 38' 09"W

General:

The Permittee operates a 100,000 gallon per day (GPD) (30-day average) wastewater treatment facility (WWTF), which services a population of 500 residents and seasonal tourists in Virginia City, Nevada. Flow into the treatment plant enters the headworks, which consists of a bar screen, aerated grit removal channel, flow recorder, and weir. The flow then splits between two parallel 50,000 GPD extended aeration package plants, each consisting of a comminutor, extended aeration basin, final clarifier, and chlorine contact chamber (liquid hypochlorite). Activated sludge from the clarifiers is periodically wasted to a common gravity sludge thickener tank and then to two sludge lagoons for final dewatering prior to landfill disposal. During the summer months, the wasted sludge is also pumped to two sludge drying beds. The influent flow rate to the plant varies by tourism events in Virginia City. To handle these additional loads, a lined flow equalization pond (formerly utilized as an oxidation/settling pond) is used to divert influent flow at the headworks overflow weir. Diversion to the equalization pond occurs when the daily flow exceeds a value of approximately 75,000 GPD. The equalization pond is then pumped back to the treatment plant during periods of low night-time flows (typically 10 PM – 6 AM). Treated, chlorinated effluent is discharged from Outfall E-001 into Six Mile Canyon Creek, approximately ½ mile east of the town.

Receiving Water Characteristics:

The Nevada State Water Quality Regulations have not classified beneficial uses for Six Mile Canyon Creek. The creek supports a riparian corridor immediately below the treatment plant extending for several miles. A fishery does not exist. The creek begins in the eastern outskirts of Virginia City at an elevation of 5,800 feet and flows eastward for approximately six miles toward Dayton Valley. Creek flow during dry weather and after the snowmelt ends is predominately effluent discharge from the treatment plant. The creek typically dissipates (becomes a desert dry wash) before reaching Dayton Valley due to percolation and evapotranspiration processes occurring in the riparian corridor of the creek. It has been observed that the effluent flow diminished entirely approximately 1.25 miles past the treatment plant at a daily discharge of approximately 50,000 GPD. During exceptional precipitation events, storm runoff from Six Mile Canyon can discharge directly to the Carson River through a series of dry wash channels. A 1995 study by Shaw Engineering indicated that downstream nitrate levels in existing Flowery Mining District (lower Six Mile Canyon Creek) monitoring wells (e.g., required by the Nevada Bureau of Mining) have not shown elevated levels of nitrate (drinking water standard of NO₃-N is 10.0 mg/L). The report also indicated that the probable mechanisms for nitrogen removal in the discharged effluent are from natural (biological)

nitrification and denitrification processes, and from plant nitrogen uptake in the riparian corridor. The Permittee has posted warning signs at 500' intervals indicating that treated effluent is being discharged into the creek. The signs are found along the reach of the creek influenced by the treatment plant discharge.

Flow:

The Permittee has applied for a 30-day average flow of 100,000 GPD and a daily maximum flow of 150,000 GPD. The equalization pond can provide over two weeks of temporary storage during high load events. Last year, the daily average flows ranged between 59,000 GPD (weekdays) and 82,000 GPD (weekends) indicating that weekend tourist visitors contributed approximately one-fourth of the daily maximum flow. The dry-weather influent flow to the treatment plant consists of domestic wastewater from homes and commercial establishments (restaurants, bars, tourist shops). Several stormwater inlets in Virginia City, under the control of the Nevada Department of Transportation, still remain connected to the sanitary sewer in Virginia City. Wet-weather flow from these remaining connections into the treatment plant is estimated at 14,000 GPD. Storey County has made progress in disconnecting stormwater inlets from the collection sewer to reduce treatment plant loading.

Proposed Effluent Limitations and Special Conditions:

Table 1 – Plant Discharge Limitations

PARAMETER		DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
		Quarterly Average	Daily Maximum	Measurement Frequency	Sample Type
Influent	Flow ¹ (MGD)	0.10	0.15	Continuous	Flow Meter
	CBOD (mg/l)	Monitor & Report		Monthly	Composite
	TSS (mg/l)	Monitor & Report		Monthly	Composite
Effluent	CBOD (mg/l)	25	35L	Monthly	Composite
	CBOD Removal (%)	85%	85%	Monthly	Calculation
	TSS (mg/l)	30	45	Monthly	Composite
	TSS Removal (%)	85%	85%	Monthly	Calculation
	Fecal Coliform (cfu or mpn / 100 ml) ²	200	400	Monthly	Composite
	Total Nitrogen as N (mg/l)	10	Monitor & Report	Monthly	Composite
	pH (Standard Units)	6.0 to 9.0		Monthly	Discrete

- (1) The flow measurement shall be the sum of the influent calculated via the equalization basin pump timers and the readings on the continuous flowmeter at the influent Cipoletti weir.
- (2) Colony Forming Units (cfu) or Most Probable Number (mpn) per 100 ml effluent.

Schedule of Compliance:

1. **By October 10, 2006**, the Permittee shall submit, for Division review and approval, a formal plan for implementation of denitrification of wastewater effluent from the Virginia City Wastewater Treatment Facility. The formal plan shall also include modifications to the Operations and Maintenance (O&M) Manual, detailing procedures for operation of the denitrification process and maintenance required for any additional equipment.
2. **By October 10, 2006**, the Permittee shall submit a timeline to prepare a feasibility plan for the disconnection of the remaining storm water connections from the sanitary sewer.

Rationale for Permit Requirements:

The Division's rationale for the proposed monitoring conditions is as follows:

- *CBOD*: Presently, the Division requires the Permittee to monitor Carbonaceous Biochemical Oxygen Demand (CBOD) as a surrogate for the 5-day Biochemical Oxygen Demand (BOD₅) requirement. The secondary standard effluent limits for CBOD are 25/35 mg/L (30-day ave. /daily max.) and 85% overall reduction.
- *TSS*: The secondary standard effluent limits for TSS are 30/45 mg/L (30-day ave. /daily max.) and 85% overall reduction.
- *Fecal Coliform*: The effluent limits for fecal coliform are 200/400 per 100 ml (30-day ave. /daily max.) for a surface water discharge of a disinfected effluent.
- *pH*: The permit requirement of 6 to 9 standard units for pH is for protection of the receiving water body.
- *Total Nitrogen*: The Division proposes that nitrogen in the effluent (e.g., ammonia and nitrate) be tracked with a total Nitrogen as N permit limit. An ammonia limit is not considered necessary because of the absence of fish in this disappearing creek (dry creek bed within 1-2 miles downstream)
- *Groundwater Monitoring*: To date, monitoring wells installed downgradient of the treatment plant have not been required by the Division. The Comstock historic mining district, which includes Virginia City and the Six Mile Canyon area, has a long history of mining activity, and naturally occurring mineral deposits have impacted, to some extent, Virginia City's groundwater quality. Virginia City and Gold Hill's drinking water are supplied by the Marlette-Hobart Pipeline (siphon), which was installed in 1873 to provide a reliable source of potable water to the Comstock. Local groundwater quality is generally poor and supplies scarce. Downstream groundwater quality, as monitored by the Flowery Mining District (American Eagle Resources, Inc.) several miles downstream from the treatment plant, has not shown elevated trends in TDS and nitrate levels. As mentioned previously, only storm runoff reaches the lower section of the creek as percolation and evapotranspiration in the riparian corridor remove both water and nutrients (e.g., vegetative uptake) from the discharged effluent per the 1995 Shaw Engineering report.

- *Elimination of Stormwater Connections:* The Division discourages these connections due to the additional hydraulic load on the treatment plant along with the reliance on the equalization pond to store surplus influent in excess of the treatment system's capacity.

Procedures for Public Comment:

The Notice of the Division's intent to renew an NPDES permit authorizing the facility to discharge secondary treated effluent to Six Mile Canyon Creek subject to the conditions contained within the permit is being sent to the **Comstock Chronicle** and **Reno Gazette-Journal** newspapers for publication. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of thirty (30) days following the date of the public notice. The comment period can be extended at the discretion of the Administrator. The deadline date at NDEP for receipt of all comments pertaining to this public notice period is **July 24, 2006 at 5 P.M.**

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of persons.

The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Proposed Determination:

The Division has made the tentative determination to reissue (renew) the proposed NPDES permit for a period of five (5) years.

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May 1, 2006