



STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor

Leo M. Drozdoff, P.E., Director

Colleen Cripps, Ph.D., Administrator

FACT SHEET

(pursuant to NAC 445A.236)

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

Permit Number: NV0020451

Facility Locations: Virginia City Waste Water Treatment Facility
2220 Six Mile Canyon Road approximately ½ mile east of SR 341
Virginia City, Storey County, Nevada
Township 17N, Range 21E, Section 28
Latitude: 39° 18' 32" N, Longitude: 119° 38' 09" W

Discharge Outfalls: 001: Six-Mile Canyon Creek
Latitude 39° 18' 29.11" N, Longitude 119° 38' 11.04" W

002: Truck Fill Station
Latitude 39° 18' 28.29" N, Longitude 119° 38' 11.04" W

General:

Current Facility: The Permittee operates a 0.1 million gallons per day (MGD) (30-day average) waste water treatment facility (WWTF), which services approximately 1,180 residential and commercial connections 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 enters a lined equalization basin pond where it is then pumped out and is split between two parallel 50,000-gallons per day (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, the equalization pond is pumped down prior to the scheduled event. Treated, chlorinated effluent is discharged from Outfall 001 into Six Mile Canyon Creek, approximately ½ mile east of the town.

The renewal permit also incorporates a modification to the permit, which includes a phased approach to improvements proposed for the WWTF. Through efforts by Storey County and NDOT many drainage inlets have been removed from the existing sanitary sewer collection system. Currently only 3 drainage inlets on C Street are connected to the collection system. Storey County has procured a design to pipe the remaining 3 drainage inlets to a stormwater outlet; the disconnections will be completed once funding is available. Other improvements to the system discussed below in Phase 1 and Phases 2-5 have not yet been contracted;

Phase 1 is tentatively scheduled for October 2013-December 2014, and Phases 2-5 are scheduled for June 2014-October 2016. One other change to the permit is to include a reuse of the effluent as dust control at area-wide projects. Once effluent leaves the chlorine contact basin, the flow will be split, with the majority of the discharge directed to Outfall 001, Six Mile Canyon Creek, and minimal discharge directed to an 8,000-gallon truck fill station (Outfall 002).

Phase 1 Improvements involve improvements to the existing WWTF only. The existing equalization pond and extended aeration plant will be completely replaced, in stages, with a larger facility utilizing the same technology. Flow into the new facility will go through mechanized screening, grit removal and metering before being detained in a 90,000-gallon aerated tank. Regulated flow will then enter a return activated sludge treatment plant where it will be aerated and subjected to de-nitrification and clarification. Activated sludge from the clarifier will be pumped to a holding tank/thickener/digester and is then pumped to the new solids handling facility where it will be mixed with a polymer coagulant and dewatered by a new mechanized screw press. All excess fluids will be returned by influent pipe to the treatment plant for subsequent treatment. Solids will be collected in a container and will be disposed of at an approved landfill. Treated effluent will be disinfected with chlorine before leaving the treatment plant and will be discharged at Outfall 001.

Phases 2-5 include improvements to the existing Sanitary Sewer Collection Systems of Virginia City and Gold Hill, including full replacement of the existing Virginia Collection System. Improvements to the existing Gold Hill Septic Collection System include converting 90+ connections from septic to sanitary sewer. Construction totals for phases 2-5 include approximately 68,000 linear feet of 8" main, 6,200 linear feet of 4" laterals, and over 300 new manholes.

Flow: The Permittee has applied for a 30-day average flow of 200,000 gpd and a daily maximum flow of 300,000 gpd to accommodate the planned facility upgrades. The equalization pond can provide over two weeks of temporary storage during high load events. From 2007-2011, the daily average flows ranged between 56,448 gpd (weekdays) and 62,205 gpd (weekends) indicating that weekend tourist visitors contributed approximately 1/10 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). Three 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 during storm events only. Storey County has made substantial progress in disconnecting stormwater inlets from the collection sewer to reduce treatment plant loading.

Receiving Water Characteristics:

Six Mile Canyon Creek: Nevada State Water Quality Regulations have not classified beneficial uses for Six Mile Canyon Creek (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, down-gradient 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 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 as 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 de-nitrification processes, and from plant nitrogen uptake in the riparian corridor. The Permittee has posted warning signs at 500' intervals indicating that "Class D" treated effluent is being discharged into the creek. The signs are found along the reach of the Creek influenced by the treatment facility discharge. As flows increase in the future with planned treatment facility upgrades and expansion, the signage shall increase as needed, beyond the current 1 ¼-mile distance from the WWTF.

Groundwater via dust control from truck fill station:

"Class B" treated effluent will also be used for dust control at area-wide construction sites. The water will evaporate and/or infiltrate to groundwater.

Site Groundwater: In the area of the treatment facility/discharge location, the elevation of the groundwater table averages approximately 150 feet below ground surface, and it varies with location substantially. The local groundwater flow is generally southeast towards the Carson River and Dayton Valley. There are no public drinking water supply wells within 6,000 feet of the WWTF or discharge outfall.

Corrective Actions Sites: There are no Bureau of Corrective Actions (BCA) remediation sites within a one-mile radius of the treatment facility or discharge location.

Discharge Characteristics: The facility has a current design capacity of 0.1 MGD (30-day average), but with WWTF expansion and improvements, capacity will be increased to 0.2 MGD. During the period from June 2007 through March 2012, the following selected discharge characteristics shown in Table 1 were reported in Discharge Monitoring Reports (DMRs):

Table 1. VCWWTP Historical Water Quality Monitoring Data (June 2005-March 2012)

Parameters and Units		Permit Limit	Mean	Maximum	Minimum	Number of Exceedances
Influent Flow, (MGD)	30-Day Average	0.1	0.071	0.17	0.032	0
	Daily Max	0.15	0.075	0.66	0.032	1
BOD ₅ , Influent (mg/l)	30-Day Average	M&R	266	1200	0	0
	Daily Max	M&R	266	1200	0	0
BOD ₅ , Effluent (mg/l)	30-Day Average	30	8	20	6	0
	Daily Max	45	9	20	6	0
	% Removal	85	95	99	83	1

Parameters and Units		Permit Limit	Mean	Maximum	Minimum	Number of Exceedances
TSS Influent (mg/l)	Daily Max	M&R	320	2250	71	0
	30-Day Average	M&R	9	20	6	0
TSS Effluent (mg/l)	30-Day Average	30	11	23	10	0
	Daily Max	45	12	30	10	0
	% Removal	85	92	99	70	2
Total Nitrogen as N (mg/l)	7-Day Average	10.0	6.3	18.0	1.1	3
	Daily Max	M&R	7.0	43.0	1.1	0
Fecal Coliform (MPN/100 ml)	30-Day Average	200	3	23	1	0
	Daily Max	400	3.0	85	1	0
pH (S.U.)	Minimum	6.0	7.1	---	6.7	0
	Maximum	9.0		7.6	---	0

The facility has been in substantial compliance with permit limitations. There have been three exceedances of Total Nitrogen (N) as N limits since December 2007; the last exceedance occurred in June 2011.

Proposed Discharge Limitations, Sampling and Monitoring Requirements:

Discharge shall be limited and monitored by the Permittee as specified in Table 2 below. Sampling is required of the influent to the treatment facility (i), and of the effluent (ii) from the treatment facility prior to discharge to Outfall 001, the Creek, or to Outfall 002, the truck fill station.

Table 2. Discharge Limitations, Sampling and Monitoring Requirements

Parameters	Units	Discharge Limitations		Monitoring Requirements		
		30-Day Average	Daily Max	Sampling Locations	Monitoring Frequency	Monitoring Type
Influent Flow Rate ¹	MGD	0.2	0.3	INF (i)	Continuous	Flow meter
BOD ₅ influent	mg/l	---	M&R	INF (i)	Monthly	Composite
BOD ₅ effluent	mg/l	30	45	EFF (ii)	Monthly	Composite
BOD ₅ removal	%	85	85	i, ii	Monthly	Calculation
TSS influent	mg/l	M&R	M&R	INF (i)	Monthly	Composite
TSS effluent	mg/l	30	45	EFF (ii)	Monthly	Composite
TSS removal	%	85	85	i, ii	Monthly	Calculation
TN as N	mg/l	10 ²	---	EFF (ii)	Monthly	Composite
Fecal Coliform	MPN/100ml	200 ³	400 ⁴	EFF (ii)	Monthly	Composite
		2.2	23	002		
pH -SV	S.U.	---	6.0-9.0	EFF (ii)	Monthly	Discrete
TPH	mg/l	---	1.0	EFF (ii)	Annual ⁵	Discrete
Priority Pollutants	µg/l	M&R	M&R	EFF (ii)	Annual ⁵	Discrete

Table 3. Table Definitions and Footnote Explanations

Term/ Footnote	Definitions and Footnote Explanations
MGD	Million gallons per day
INF	Influent to treatment facility
BOD ₅	5-day biological oxygen demand
mg/l	Milligrams per liter
M&R	Monitor and report
EFF	Effluent; discharge from treatment facility at Outfall 001
TSS	Total suspended solids
TN	Total nitrogen species
as N	As nitrogen
MPN	Most probable number (or CFU, colony forming units)
SV	Single value
S.U.	Standard pH units
µg/l	Micrograms per liter
Footnote 1	Flow is equal to the sum of the influent calculated via the equalization basin pump timers and the readings on the continuous flowmeter at the influent Cipoletti weir. Previous flow limit of 0.10 mg/l is increased to accommodate proposed upgrades to and expansion of the waste water treatment facility.
Footnote 2	TN as N limit of 10 mg/l is a 7-day average, not a 30-day average limit.
Footnote 3	The fecal coliform level may not exceed a geometric mean of 200 MPN per 100 ml.
Footnote 4	A maximum of 10% of the total fecal coliform samples may exceed 400 MPN per 100 ml during any 30-day period, without permit violation .
Footnote 5	TPH and Priority Pollutants are to be sampled and analyzed annually and reported on the 4 th quarter DMR.

Rationale for Permit Requirements: The Division’s rationale for the proposed permit limitations and monitoring requirements is discussed below:

Flow: 0.20 MGD -30-day average; 0.30 MGD -daily maximum, based on WWTF expansion and improvements. Influent monitoring is required and limited, and the rationale is explained in the Flow section above.

BOD₅: 30 mg/l -30-day average; 45 mg/l -daily maximum; 85% reduction. These are the secondary treatment standard effluent limits. Permit limits are retained from the previous permit.

TSS: 30 mg/l -30-day average; 45 mg/l -daily maximum; 85% reduction. These are the secondary treatment standard effluent limits. Permit limits are retained from the previous permit.

Total Nitrogen: 10 mg/l -7-day average; M&R -daily maximum. 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 of the discharge outfall). Permit limits are retained from the previous permit.

Fecal Coliform: “Class D” standards for Outfall 001: 200 MPN per 100 ml -30-day average; 400 MPN per 100 ml -daily maximum. These are the effluent limits for surface water

discharge of a disinfected effluent. Permit limits are retained from the previous permit. "Class B" standards for Outfall 002, truck fill station for dust control reuse: 2.2 MPN per 100 ml -30-day average; 23 MPN per 100 ml -daily maximum limits.

pH: 6.0-9.0 S.U. for protection of the receiving water body.

TPH and Attachment A Priority Pollutant Parameters: M&R. Sampling and analysis is required annually in the 4th quarter.

Groundwater Monitoring: To date, monitoring wells installed down-gradient 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 or 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 Permittee will continue to eliminate these connections as funding becomes available.

Schedule of Compliance: The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications which the Administrator may make in approving the schedule of compliance:

- The Permittee shall achieve compliance with the effluent limitations upon issuance of the permit.
- Within 30 days of completion of Phase 1 of the WWTP improvements/expansion the Permittee shall submit to the Division, for review and approval, two copies of an updated Operations and Maintenance (O&M) Manual prepared in accordance with applicable sections of WTS-2 *Minimum Information Required for an Operation and Maintenance Manual for a Wastewater Treatment Plant*, to the following address:

Division of Environmental Protection
Bureau of Water Pollution Control
901 S. Stewart Street, Suite 4001
Carson City, Nevada 89701

- Within 30 days of completion of Phase 1 of the WWTF improvements/expansion the Permittee shall submit to the Division, for review and approval, two copies of the engineering as-built plans.

- Within 30 days of abandonment of the sludge lagoons, the Permittee shall provide the Engineer's Certification of final abandonment and cleanout of the lagoons, in accordance with WTS-20.
- By **MM DD**, 2017, the Permittee shall perform Whole Effluent Toxicity acute testing, and shall test the facility effluent for the Clean Water Act Priority Pollutants.

Proposed Determination: The Division has made the tentative determination to issue the renewal permit for a period of five (5) years.

Procedures for Public Comment: The Notice of the Division's intent to renew a NPDES permit authorizing the Permittee to discharge to Six Mile Creek, for a five-year period, subject to the conditions contained within the permit, is being sent to the **Reno Gazette Journal** and to the **Comstock Chronicle** 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 publication of the public notice in the newspaper. The comment period can be extended at the discretion of the Administrator. The deadline date and time by which all comments are to be submitted (via postmarked mail or time-stamped faxes, e-mails, or hand-delivered items) to the Division is **June 25, 2012 by 5:00 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.

Prepared by: Jeryl R. Gardner, P.E.
Date: May 2012