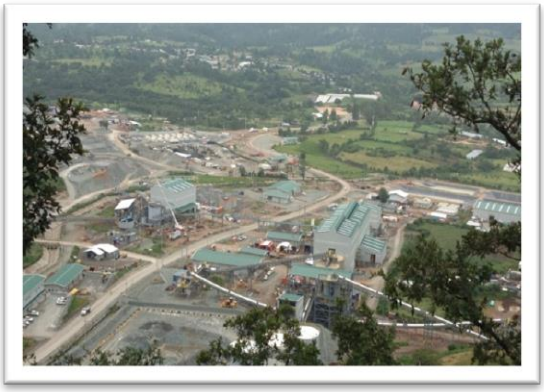
Proyecto Minero Escobal

San Rafael Las Flores, Santa Rosa



Informe de Monitoreo Ambiental

05 – 2013

Minera San Rafael S.A.
GUATEMALA

Preparado para:

Ministerio de Ambiente y Recursos Naturales (MARN)

Informe Trimestral de Monitoreo Ambiental

Preparado por:

Departamento de Ambiente

San Rafael Las Flores, Santa Rosa, Guatemala

Mayo - Julio 2013

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1. Introducción

El presente informe ilustra al Ministerio de Ambiente y Recursos Naturales (**MARN**) lo siguiente:

A. Resultados obtenidos durante los monitoreos ambientales referente a la calidad del aire (material particulado, gases de combustión y niveles de presión sonora), calidad de agua, vibraciones, salud y seguridad ocupacional y geoquímica de roca realizados durante el periodo de mayo a julio 2013.

Esto como parte de los compromisos ambientales de Minera San Rafael, S.A. (**la empresa**) en base a la resolución 549-2012/DIGARN/ODGR/hapc, inciso B, el cual se lee "La entidad MINERA SAN RAFAEL, SOCIEDAD ANÓNIMA, deberá continuar realizando los monitoreos en base a lo descrito en cada una de las resoluciones citadas en el primer considerando (4590-2008/ELER/CG), (262-2011/ECM/caml), (3061-2011/DIGARN/ECM/beor), llevando su respectivo registro y presentar los resultados de los monitoreos de cada uno de los proyectos de forma trimestral".

- Proyecto de Exploración Minera Oasis ante el MARN con base en la resolución 4590-2008/ELER/CG, compromiso número VII; el cual se lee: "llevar un monitoreo mensual de la calidad de aire y niveles de ruido en el Área de Influencia Directa (**AID**) y presentar resultados mensualmente al MARN."

- Proyecto de Túneles de Exploración Minera Oasis ante el MARN con base en la resolución 262-2011/ECM/caml, compromiso número XII; el cual se lee: "Continuar con el programa de monitoreo de la calidad del agua y aire, implementado desde 2008."

- Proyecto Minero Escobal ante el MARN con base en la resolución 3061-2011/DIGARN/ECM/beor, compromisos número III y número VI; los cuales se leen: "La Empresa deberá de implementar el plan de monitoreo ambiental descrito en capítulo 13 y cumplirá con los límites establecidos por el MARN, además de lineamientos internacionales como Banco Mundial, Corporación Financiera internacional (CFI), Agencia de Protección Ambiental de los Estados Unidos (USEPA), Organización Mundial de la Salud (OMS) y Administración de la Salud y Seguridad Ocupacional (OSHA), según el componente que sea monitoreado…" y "Llevar un registro documentado del caudal bombeado de los pozos de abastecimiento y del agua bombeada desde los túneles hacia las piletas, así como de las descargas y los parámetros de descarga…".

B. Resultados de calidad de agua y de calidad de aire, como parte de los compromisos ambientales de la empresa ante el MARN con base en la resolución 3061-2011/DIGARN/ECM/beor, compromisos número XXXI; el cual se lee: "Presentar los informes de monitoreo de la calidad del agua de los cuerpos naturales de agua potencialmente afectados por las actividades del proyecto y de la calidad del aire a este Ministerio en forma anual."

C. Copia de registro documentado del Caudal bombeado desde los túneles hacia la planta de tratamiento y de su descarga hacia la Quebrada Escobal, como parte de los compromisos ambientales de la empresa ante el MARN con base en la resolución 3061-2011/DIGARN/ECM/beor, compromisos número VI; el cual se lee: "llevar un registro documentado del caudal bombeado de los pozos de abastecimiento y del agua bombeada desde los túneles hacia las piletas, así como de las descargas y los parámetros de descarga, remitiendo a este Ministerio una copia mensual de estos registros."

El contenido del presente informe corresponde a la evaluación de los siguientes componentes ambientales:

- Calidad de Aire: Se monitorearon nueve estaciones ubicadas dentro del área de Influencia (AI) del proyecto para medir la concentración de material particulado igual o menor a 10 micrómetros (**PM_{10}**), en microgramos por metro cúbico (**$\mu g/m^3$**). También se monitorearon siete estaciones para medir la concentración de metales en PM_{10}, sólidos sedimentables totales (**PST**), y gases de combustión: dióxido de azufre (**SO_2**) y óxidos nitrosos (**NO_x**).

- Calidad de Presión Sonora: Se monitorearon nueve estaciones ubicadas dentro del ID del proyecto, para determinar los niveles de presión sonora, en decibeles escala A (**dBa**). y respuesta lenta.

- Calidad de Agua: Se tomaron muestras en 11 estaciones de agua superficial, 5 estaciones de agua subterránea (manantiales), 1 estación de pozos de producción y 11 estaciones de agua en pozos de monitoreo ubicadas en el ID del proyecto

- Sedimentos: Se tomaron muestras de sedimentos en las mismas estaciones de agua superficial ubicadas en el AI del proyecto.

- Calidad de Efluente: Se tomaron muestras mensuales en el efluente de la Planta de tratamiento de aguas proveniente de túneles.

- Vibraciones: Se instalaron tres medidores de vibraciones, los cuales registraron la velocidad de partícula durante cada una de las voladuras. En total se registraron 621 voladuras durante los meses de mayo a julio 2013.

- Geoquímica de roca estéril: Se analizó el pH en pasta de 37 muestras de material extraído de los túneles.

- Mediciones de Seguridad y Salud Ocupacional: Se analizaron seis estaciones de monitoreo de presión sonora, tres estaciones de material particulado, y se presenta un extracto de las mediciones rutinarias de gases para determinar ácido sulfhídrico (H_2S)

- Copia de registro documentado del caudal bombeado de los pozos del agua bombeada desde los túneles hacia las piletas. En el anexo 12.1 se presenta copia de las lecturas diarias de flujómetros y los cálculos realizados para determinar los caudales bombeados del portal Este y el portal Oeste, durante los meses de mayo a julio 2013.

2. Condiciones Ambientales

En el Cuadro 2-1 se enlistan algunos parámetros meteorológicos imperantes en el área del Proyecto correspondientes al periodo de mayo a julio 2013; y en la Figura 2-1 se representa la dirección del viento durante los diferentes meses de estudio.

Cuadro 2-1. Información meteorológica correspondiente al periodo de mayo a julio 2013, Proyecto Minero Escobal.

TEMPERATURA (°C)			VELOCIDAD DEL VIENTO (km/h)			RÁFAGAS (km/h)	HUMEDAD RELATIVA (%)			EVAPORACIÓN (mm)			PRECIPITACIÓN PLUVIAL (mm)
Max	Min	Media	Max	Min	Media	Max	Max	Min	Media	Max	Min	Media	TOTAL
MAYO 2013													
32.3	11.8	21.0	88.9	0.3	9.8	128.5	99.9	18.8	76.4	100.5	1.7	27.1	143.2
JUNIO 2013													
29.0	15.5	21.0	84.3	0.3	10.3	116.6	99.9	38.5	78.6	156.3	40.3	113.4	128.8
JULIO 2013													
28.9	14.5	21.0	61.7	0.3	13.7	95.3	99.9	22.5	74.8	302.4	121.9	168.8	119.7

Donde Max = valor máximo; Min = valor mínimo; °C = grados Celsius; Km/h = kilómetros por hora; % = porcentaje; mm = milímetros.
Fuente: Estación Meteorológica Escobal, 2013.

Fotografía: Gustavo E. Díaz Corzo, 2012.

Fotografía 2-1 Estación meteorológica Escobal (UTM NAD27 zona 15 804812, 1601042), San Rafael Las Flores, Santa Rosa.

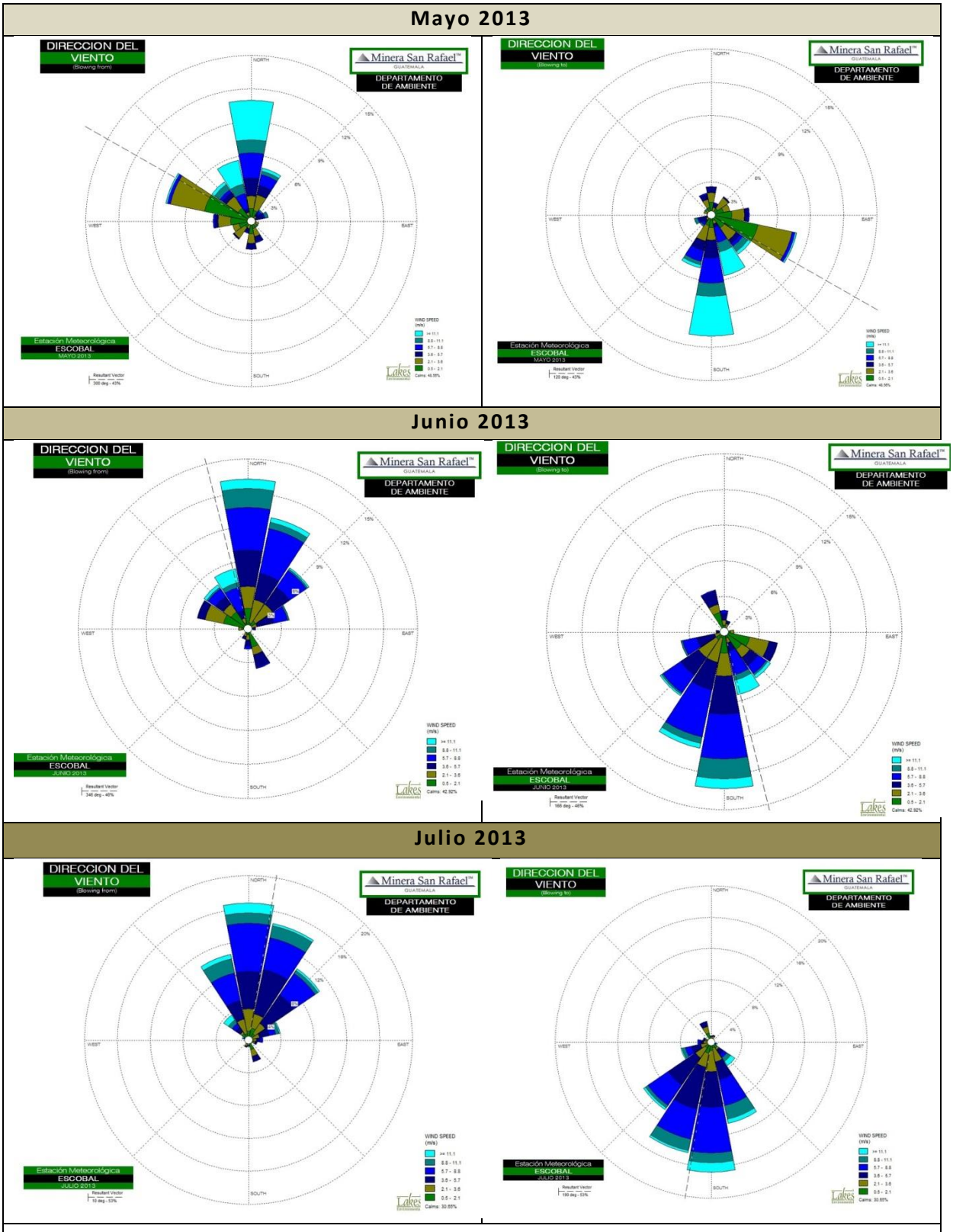


Figura 2-1 Dirección del viento durante el periodo de mayo a julio 2013. Proyecto Minero Escobal.

3. Calidad de Aire

3.1 Material Particulado

3.1.1. Sitios de Monitoreo

En el Cuadro 3-1 se enlistan las estaciones de monitoreo de material particulado menor o igual a 10 micrómetros (PM_{10}) localizadas dentro de la propiedad de la mina, y en la jurisdicción de los centros poblados ubicados en el área de influencia (AI) del Proyecto: Los Planes, La Cuchilla, El Fucío, Sabana Redonda, Portón de los Ángeles y San Rafael Las Flores. Su ubicación se presenta en la Figura 3-1.

Cuadro 3-1. Sitios de Monitoreo de PM_{10} en el AI del Proyecto.

ESTACIÓN	PERIODICIDAD	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		ALTITUD (msnm)	SITIO
EA-1A	Mensual	805797	1601582	1417	Depósito de suelos, a inmediaciones de Aldea Los Planes
EA-1B	Trimestral	803891	1601678	1328	Poblado San Rafael Las Flores, cercano a escuela
EA-2A	Mensual	806427	1601605	1564	Aldea La Cuchilla
EA-3	Mensual	807165	1601255	1679	Área Este del proyecto, a inmediaciones de Aldea El Fucío.
EA-3A	Trimestral	805892	1600161	1416	Aldea El Fucío
EA-4A	Trimestral	805146	1599680	1360	Caserío El Portón de los Ángeles
EA-5A	Trimestral	804352	1600408	1339	Aldea Sabana Redonda, al sur-oeste del proyecto
EA-6	Trimestral	805187	1603054	1434	Al norte del Proyecto, ruta a Mataquescuintla
EA-7A	Mensual	805425	1601523	1320	Al noreste de pileta de agua de proceso y Pileta de Cumplimiento Ambiental, jurisdicción de Aldea Los Planes

Fuente: Departamento de ambiente, Minera San Rafael.

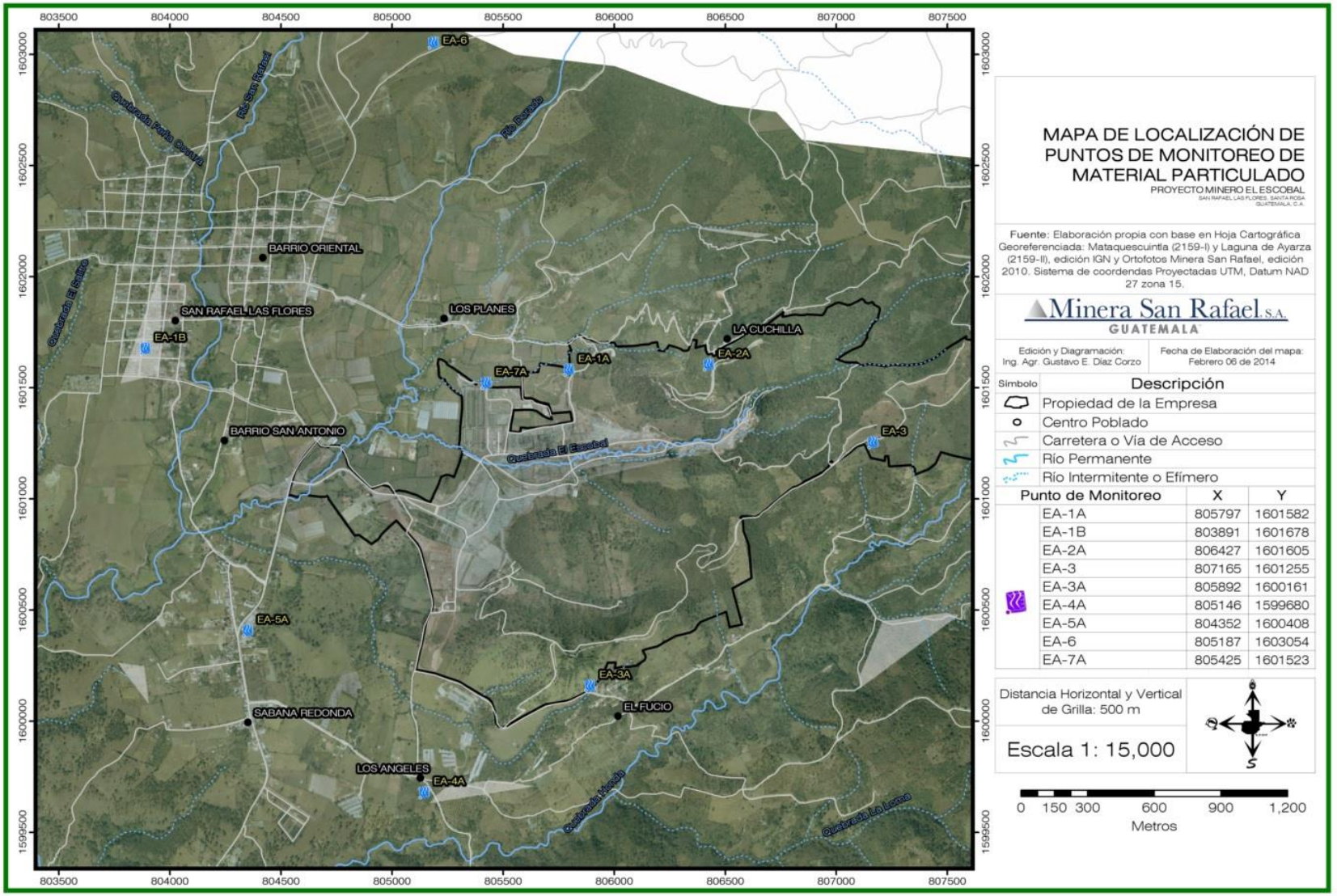


Figura 3-1 Mapa de localización de las estaciones de monitoreo de material particulado. Proyecto Minero Escobal.

3.1.2. Metodología

En el Cuadro 3-2 se describe el procedimiento, parámetros y equipo utilizados en la medición de PM_{10}.

Cuadro 3-2. Procedimiento y equipo utilizado para la medición de material particulado, Proyecto Minero Escobal

PARÁMETROS ANALIZADOS	
PM_{10}	Material particulado igual o menor a 10 micrómetros (≤10 µm).
PROCEDIMIENTO	
La medición se realiza haciendo pasar un flujo continuo de aire durante 24±1 horas por un filtro de fibra de vidrio que ha sido pesado inicialmente en un laboratorio equipado para realizar el análisis gravimétrico correspondiente; luego de la toma de muestra, el filtro es enviado de nuevo al mismo laboratorio para determinar su peso final. Con los datos obtenidos del muestreo y del análisis gravimétrico, se determina la concentración de PM_{10}. El equipo de medición utilizado cumple con las especificaciones de la Agencia de Protección Ambiental de los Estados Unidos (EPA).	
EQUIPO UTILIZADO	
Nombre	PM_{10} Air Sampler
Modelo	PQ 200
Fabricante	BGI INSTRUMENTS
LABORATORIO CONTRATADO	
Nombre	Laboratorio Ambiental, S.A.

3.1.3. Resultados

Los valores de PM_{10} registrados durante los muestreos realizados, se mantienen dentro de los valores esperados para las diferentes localidades, conforme a la línea base de calidad del aire y los valores establecidas por la EPA y el Banco Mundial (150 µg/m^3). En el Cuadro 3-3 se presentan los resultados de PM_{10}

durante los meses de mayo a julio 2013, los resultados de laboratorio del análisis gravimétrico de filtros y los cálculos realizados para determinar el PM_{10} se presentan en el anexo 12.2.1

Cuadro 3-3. Resultados de PM_{10} en estaciones de monitoreo durante los meses de mayo a julio 2013, Proyecto Minero Escobal.

Estación	Norma*	Guías*		Línea Base			Resultados		
	USEPA	Banco Mundial	OMS	Promedio	Máximo	Mínimo	may-13	jun-13	jul-13
	(µg/m3)								
EA-1A	150	150**	50	24.36	89.95	3.67	123.17	33.32	24.15
EA-1B				NR	NR	NR	53.09	NA	NA
EA-2A				21.40	76.20	2.74	41.43	27.49	19.19
EA-3				25.68	78.85	1.25	39.69	37.67	28.17
EA-3A				NR	NR	NR	92.53	NA	NA
EA-4A				103.55	120.40	86.70	76.74	NA	NA
EA-5A				50.73¥	104.80¥	11.80¥	52.01	NA	NA
EA-6				23.05	57.90	1.70	25.12	NA	NA
EA-7A				46.48¥	115.90¥	13.40¥	73.41	29.90	23.95

Nota: µg/m^3 = microgramos por metro cúbico; **NR** = Cálculo No Realizado por falta de datos de línea base; **NA** = no analizado (ver periodicidad en Cuadro 3-1)

[1]USEPA, 2006. Normas nacionales de calidad de aire ambiental (NAAQS), 40 CFR parte 50 (US). [2]Guías Generales sobre Medio Ambiente, Salud y Seguridad, Corporación Financiera Internacional, Grupo del Banco Mundial 2007. [3]Guía de Calidad del Aire, OMS 2005.

* Las normas de calidad de aire ambiental son los niveles de calidad del aire fijados y publicados a partir de procesos legislativos nacionales y procesos regulatorios, mientras que las guías sobre calidad del aire ambiental hacen referencia a niveles de calidad del aire obtenidos principalmente a través de datos clínicos, toxicológicos y epidemiológicos; ** este valor corresponde al límite provisional 1 dado por esta guía.

¥: Corresponde a los valores de línea base de la estación EA-5 y de la estación EA-7 respectivamente.

Los resultados obtenidos durante los meses de mayo a julio 2013 se encontraron entre 19.19 a 123.17 µg/m^3. La estación EA-6 presentó el menor valor de PM_{10} durante el mes de mayo (25.12 µg/m^3), y la estación EA-2A durante los meses de junio y julio (27.49 y 19.19 µg/m^3 respectivamente). El mayor valor de PM_{10} se observó en la estación EA-1A durante el mes de mayo (123.17 µg/m^3), mientras que la estación EA-3 presentó los mayores valores en los meses de junio y julio (37.67 y 28.17 µg/m^3respectivamente).

Los valores de PM_{10} registrados están por debajo de los límites máximos establecidos durante el levantamiento de línea base, a excepción de los registrados en la estación EA-1A para el mes de mayo 2013.

La estación EA-1A se encuentra ubicada a escasos 20m de la esquina noreste del top soil. Debido al movimiento de camiones con top soil durante este mes (etapa de construcción, Fotografía 3-1) fue necesario implementar riego en caminos cada media hora, mojar la carga y taparla; pero las condiciones imperantes de viento (dirección norte-sur) provocaron que partículas procedentes de la zona norte (terrenos privados, Fotografía 3-2) fueran a caer a la propiedad de la empresa. A finales de marzo 2013 se inició con los trabajos de estabilización de taludes y conservación de suelo en el Top Soil (Fotografía 3-3y Fotografía 3-4). Durante los meses de junio y julio 2013 se observó una disminución considerable en el PM_{10} registrado.

Fotografía 3-1. Movimiento de tierras realizadas en Top Soil. Mayo 2013

Fotografía 3-2. Terrenos privados ubicados al norte de estación EA-1A

Fotografía 3-3. Trabajos finales de estabilización de talud en depósitos de suelo sur. Mayo 2013

Fotografía 3-4. Depósitos de suelo sur. Junio 2013

Los valores de PM_{10} registrados para las estaciones muestreadas fueron menores a los valores establecidas por la EPA y el Banco Mundial (150 $\mu g/m^3$). En general los valores de PM_{10} registrados en todas las estaciones superaron los valores establecidos por las guías de OMS (50 $\mu g/m^3$); lo cual representa un incremento normal el cual ha sido registrado en temporadas secas de años anteriores, según los resultados de la línea base de calidad de aire (Cuadro 3-3).

3.2 Metales en Material Particulado

3.2.1. Sitios de Monitoreo

En el Cuadro 3-4 se enlistan las estaciones de monitoreo de metales en material particulado menor o igual a 10 micrómetros (PM_{10}) localizadas dentro de los terrenos de la mina, y en la jurisdicción de los centros poblados ubicados en el área de influencia (AI) del Proyecto: Los Planes, La Cuchilla, El Fucío, Sabana Redonda, Portón de los Ángeles y San Rafael Las Flores. Su ubicación se presenta en la Figura 3-1.

Cuadro 3-4. Sitios de Monitoreo de PM_{10} en el AI del Proyecto.

ESTACIÓN	PERIODICIDAD	Sistema de Coordenadas Proyectadas UTM, NAD27 ZONA 15		ALTITUD (msnm)	SITIO
EA-1B	Trimestral*	803891	1601678	1328	Poblado San Rafael Las Flores, cercano a escuela
EA-2A	Trimestral*	806427	1601605	1564	Aldea La Cuchilla
EA-3A	Trimestral*	805892	1600161	1416	Aldea El Fucío
EA-4A	Trimestral*	805146	1599680	1360	Caserío El Portón de los Ángeles
EA-5A	Trimestral*	804352	1600408	1339	Aldea Sabana Redonda, al sur-oeste del Proyecto
EA-6	Trimestral*	805187	1603054	1434	Al norte del Proyecto, ruta a Mataquescuintla
EA-7A	Trimestral*	805425	1601523	1320	Al noreste de pileta de agua de proceso y Pileta de Cumplimiento Ambiental, jurisdicción de aldea Los Planes

Fuente: Departamento de ambiente, Minera San Rafael

*1er y 3er trimestre del año se analiza metales totales, 2do y 4to trimestre únicamente mercurio total. El análisis del laboratorio es destructivo, por tanto es imposible analizar metales y mercurio en un mismo filtro.

3.2.2. Metodología

En el Cuadro 3-5 se describe el procedimiento, parámetros y laboratorio empleado para la determinación de metales en PM_{10}.

Cuadro 3-5. Procedimiento y laboratorio empleado para la determinación de metales en PM_{10}, Proyecto Minero Escobal

PARÁMETROS ANALIZADOS	
Metales en PM_{10}	Hg
PROCEDIMIENTO	
Los mismos filtros empleados para determinar el PM_{10} del muestreo trimestral, son enviados al laboratorio para determinar la cantidad de metales por el método analítico EPA 6010Bmod y EPA 6020mod, los resultados se dan en µg por filtro. Este peso se divide por el volumen de aire muestreado para obtener la concentración en $\mu g/m^3$. El análisis de laboratorio es destructivo, por tanto es imposible analizar metales y mercurio en un mismo filtro; por tanto en el 1er y 3er trimestre del año se analiza metales totales, 2do y 4to trimestre únicamente mercurio total.	
LABORATORIO	
Nombre	Laboratorio Ambiental S.A. (parte de CTA)

3.2.3. Resultados

En el Cuadro 3-6 se presentan los resultados de concentración de mercurio en PM_{10} durante el mes de mayo 2013, los resultados de laboratorio del análisis de metales en filtros y los cálculos realizados para determinar el PM_{10} se presentan en el anexo 12.2.2.

La concentración de mercurio registradas durante mayo 2013 fueron menores a las registradas durante noviembre 2012 para la mayoría de las estaciones.

Cuadro 3-6. Resultados de concentración de mercurio en PM_{10} ($\mu g/m^3$) durante el mes de mayo 2013, Proyecto Minero Escobal.

	Parámetros	LD	EA-1B	EA-2A	EA-3A	EA-4A	EA-5A	EA-6	EA-7A
			2147-1616	2156-1424	2150-0201	2144-1339	2158-1696	2153-1122	2145-1414
may-13	volumen (m^3)		20.91	20.28	20.64	20.85	20.96	20.7	20.84
may-13	Mercurio Total ($\mu g/m^3$)	0.0001	0.0001	0.0001	0.0032	<0.0001	0.0005	<0.0001	0.0004
nov-12	Mercurio Total ($\mu g/m^3$)	0.0001	0.0006	0.0015	0.0006	0.0007	0.0009	0.0005	0.0005

Nota: $\mu g/m^3$ = microgramos por metro cúbico; m^3 = metro cúbico.

3.3 Partículas Sedimentables Totales (PST)

3.3.1. Sitios de Monitoreo

En el Cuadro 3-7 se enlistan las estaciones de monitoreo de PST ubicada en el área de influencia (AI) del Proyecto. Su ubicación se presenta en la Figura 3-2

Cuadro 3-7. Sitios de Monitoreo de PST en el AI del Proyecto.

ESTACIÓN	PERIODICIDAD	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		ALTITUD (msnm)	SITIO
EA-1C	Trimestral	803887	1601801	1337	Poblado San Rafael Las Flores, cercano a escuela
EA-2B	Trimestral	806470	1601796	1555	Aldea La Cuchilla
EA-3B	Trimestral	806538	1600367	1427	Aldea El Fucío
EA-4A	Trimestral	805142	1599903	1336	Caserío El Portón de los Ángeles
EA-5A	Trimestral*	804352	1600408	1339	Aldea Sabana Redonda, al sur-oeste del Proyecto
EA-6	Trimestral	805168	1603247	1344	Al norte del Proyecto, ruta a Mataquescuintla
EA-7A	Trimestral	805425	1601523	1320	Noreste de pileta de agua de proceso y Pileta de Cumplimiento Ambiental, jurisdicción Aldea Los Planes

Fuente: Departamento de ambiente, Minera San Rafael.

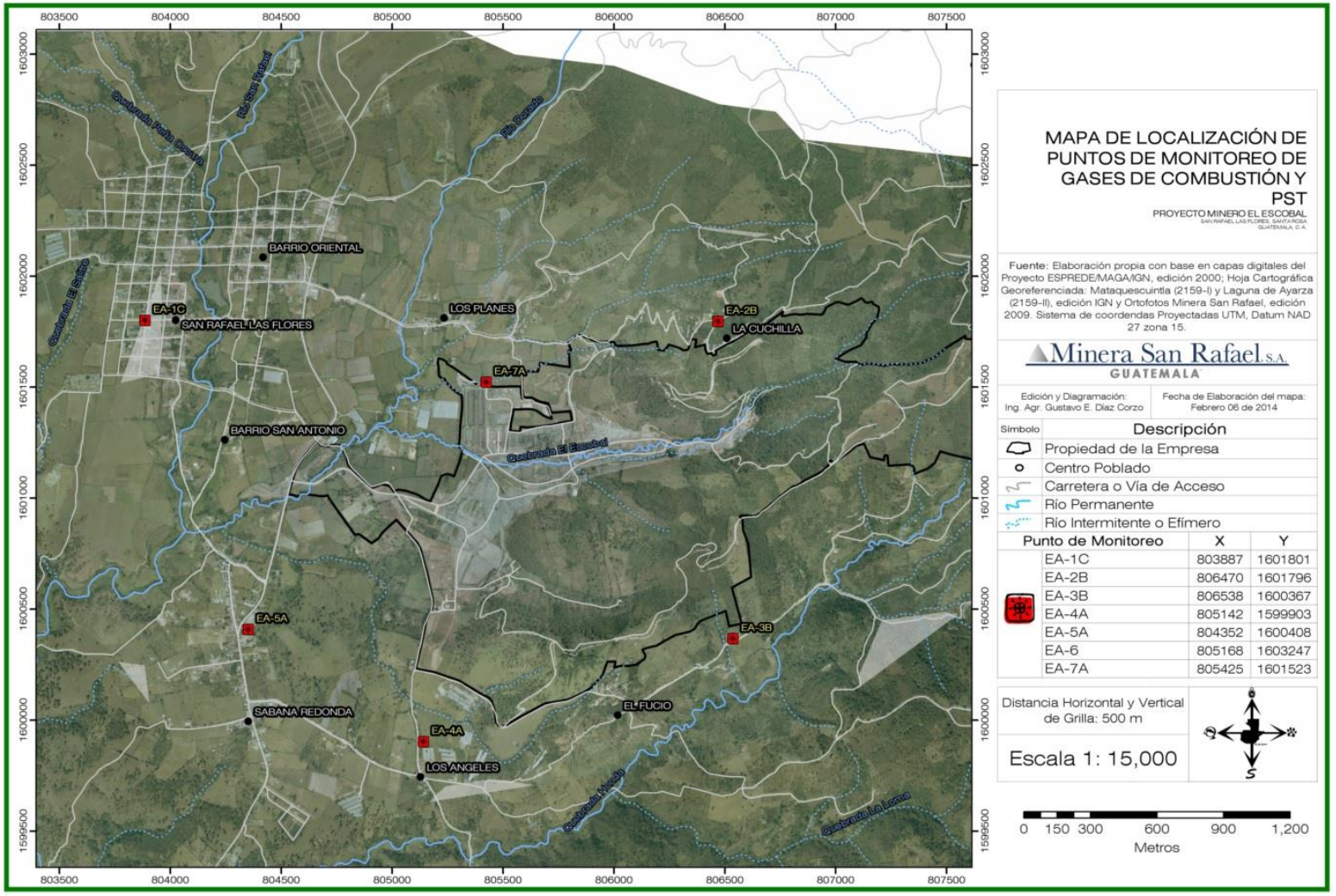


Figura 3-2 Mapa de localización de las estaciones de monitoreo de PST y gases de combustión, Proyecto Minero Escobal

3.3.2. Metodología

En el Cuadro 3-8 se describe el procedimiento, parámetros y equipo utilizados en la medición de PST.

Cuadro 3-8. Procedimiento y equipo utilizado para la medición de PST, Proyecto Minero Escobal

PARÁMETROS ANALIZADOS	
PST	Partículas Sedimentables Totales
PROCEDIMIENTO	
Los muestreos fueron realizados por personal de la empresa Consultoría y Tecnología Ambiental (CTA), siguiendo la metodología ASTM D 1739-98 (re-aprobación 2004). La medición se realiza dejando reposar un recipiente limpio y de dimensiones conocidas en la estación de monitoreo durante un lapso de tiempo de 30 ± 2 días. El recipiente es enviado al laboratorio donde se determina los sólidos insolubles, sólidos solubles y sólidos totales que sedimentaron dentro de dicho recipiente.	
EQUIPO UTILIZADO	
Nombre	High Altitude Ambient Particulate Sampler
Modelo	Diseño establecido en norma ASTM D 1739-98
Fabricante	CTA

3.3.3. Resultados

En el Cuadro 3-9 se presentan los resultados de Partículas Sedimentables Totales (PST) realizado durante junio 2013. El resumen del informe de resultados presentado por el contratista se presenta en el anexo 12.2.3

Cuadro 3-9. Resultados de PST en estaciones de monitoreo durante junio 2013, Proyecto Minero Escobal.

Parámetro	Norma	Guías	EA-1C	EA-2B	EA-3B	EA-4A				EA-5A				EA-6	EA-7A
						Línea Base			Muestreo	Línea Base (EA-5)			Muestreo		
	USEPA	Banco Mundial y OMS	jun-13	jun-13	jun-13	Promedio	Mínimo	Máximo	jun-13	Promedio	Mínimo	Máximo	jun-13	jun-13	jun-13
	g/(m^2 x 30 días)														
Sólidos Insolubles	ND	ND	6.91	2.87	3.08	7.5	2.6	14.9	3.74	6.5	0.8	16.0	3.60	1.24	1.88
Sólidos Solubles	ND	ND	2.24	2.09	1.68	2.6	0.9	5.7	2.15	11.3	2.0	37.0	1.69	2.04	2.04
Sólidos Totales	ND	ND	9.15	4.96	4.76	10.1	4.6	20.6	5.89	17.6	3.2	50.0	5.28	3.28	3.92

Nota: g/(m^2 x 30 días)= gramos por metro cuadrado durante 30 días. ND: estas normas y guías no establecen un límite para estos parámetros

Los valores de PST se encuentran entre 3.92 a 9.15 g/(m^2 x 30 días), los cuales corresponden a las estaciones EA-7A y EA-1C respectivamente. El valor para la estación EA-5A (5.28 g/(m^2 x 30 días)) se encuentra dentro de los valores mínimos y máximos registrados durante el establecimiento de la línea bases. No se cuenta con datos de línea base de las estaciones EA-1C, EA-2B, EA-3B, EA-6 y EA-7.

Durante el pasado trimestre el valor registrado para la estación EA-4A en el mes de marzo 2013 (42.59 g/(m^2 x 30 días)) fue superior al valor máximo registrado durante el establecimiento de la línea base (20.60 g/(m^2 x 30 días)) y se atribuyó dicho aumento a fuentes externas al Proyecto, especialmente a la construcción de una vivienda a menos de 15 metros del punto donde se colocó el equipo de medición. Dicha construcción fue culminada en el mes de abril 2013, y el resultado obtenido en el mes de junio fue de 5.89 g/(m^2 x 30 días) el cual se encuentra dentro de los límites establecidos durante el levantamiento de línea base; comprobándose que el aumento en los valores de PST registrado durante el trimestre anterior se debieron a fuentes externas al Proyecto.

3.4 Gases de Combustión (SO_2 y NO_2)

3.4.1 Sitios de Monitoreo

En el Cuadro 3-10 se enlistan las estaciones de monitoreo de dióxido de azufre (SO_2) y de dióxido de nitrógeno (NO_2) ubicada en el área de influencia (AI) del Proyecto. Su ubicación se presenta en la Figura 3-2.

Cuadro 3-10. Sitios de Monitoreo de SO_2 y NO_2 en el AI del Proyecto.

ESTACIÓN	PERIODICIDAD	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		ALTITUD (msnm)	SITIO
EA-1C	Trimestral	803887	1601801	1337	Poblado San Rafael Las Flores, cercano a escuela
EA-2B	Trimestral	806470	1601796	1555	Aldea La Cuchilla
EA-3B	Trimestral	806538	1600367	1427	Aldea El Fucío
EA-4A	Trimestral	805142	1599903	1336	Caserío El Portón de los Ángeles
EA-5A	Trimestral*	804352	1600408	1339	Aldea Sabana Redonda, al sur-oeste del Proyecto

ESTACIÓN	PERIODICIDAD	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		ALTITUD (msnm)	SITIO
EA-6	Trimestral	805168	1603247	1344	Al norte del Proyecto, ruta a Mataquescuintla
EA-7A	Trimestral	805425	1601523	1320	Noreste de pileta de agua de proceso y Pileta de Cumplimiento Ambiental, Jurisdicción Aldea Los Planes

Fuente: Departamento de Ambiente, Minera San Rafael.

3.4.2 Metodología

En el Cuadro 3-11 se describe el procedimiento, parámetros y equipo utilizados en la medición de gases de combustión.

Cuadro 3-11. Procedimiento y equipo utilizado para la medición de gases de combustión, Proyecto Minero Escobal

PARÁMETROS ANALIZADOS	
SO_2	Dióxido de azufre
NO_2	Dióxido de nitrógeno
PROCEDIMIENTO	
Los muestreos fueron realizados por personal de la empresa Consultoría y Tecnología Ambiental siguiendo las metodologías: **SO_2:** Metodología descrita en el CFR, del título 40, parte 50, apéndice A de la USEPA. **NO_2:** Metodología descrita en el método de referencia designado por la USEPA No. EQN-1277-026.	
EQUIPO UTILIZADO	
Nombre	RAC3 Gas Sampler
Modelo	209063
Fabricante	Andersen Instrument´s

3.4.3 Resultados

En el Cuadro 3-12 se presentan los resultados de las mediciones de SO_2 y NO_2 realizadas en siete estaciones de calidad de aire; el resumen del informe de resultados presentado por el contratista se presenta en el anexo 12.2.3. En las mediciones efectuadas durante este trimestre se obtuvieron valores por debajo del límite de detección del método en todas las estaciones para SO_2 (<13µg/m^3) y para la mayoría de las estaciones para NO_2 (<9µg/m^3). Únicamente se detectaron concentraciones muy cercanas al límite de detección (<9µg/m^3) en la estación EA-4A. Se dará seguimiento a este parámetro en futuros muestreos para descartar o confirmar que la detección de este parámetro se deba a un error en el análisis de la muestra (por estar el resultado tan cerca del límite de detección del método).

Todos los valores registrados de SO_2 y de NO_2 son menores a los valores guías establecidos por el Banco Mundial, la OMS y la USEPA. Lo anterior indica que las actividades realizadas durante el período reportado no han originado variaciones significativas en los parámetros reportados.

Cuadro 3-12. Resultados de Gases de combustión en estaciones de monitoreo durante el mes de junio 2013, Proyecto Minero Escobal.

Parámetro	Norma	Guías		EA-1C	EA-2B	EA-3B	EA-4A	EA-5A				EA-6	EA-7A			
							Muestreo	Línea Base**			Muestreo		Línea Base**			
	USEPA[1]	Banco Mundial[2]	OMS[3]	jun-13	jun-13	jun-13	jun-13	Promedio	Mínimo	Máximo	jun-13	jun-13	Promedio	Mínimo	Máximo	jun-13
	(µg/m^3)															
SO_2	370	20	20	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13
NO_2	100*	40*	40*	<9	<9	<9	9	<9	<9	<9	<9	<9	<9	<9	<9	<9

Nota: µg/m3 = microgramos por metro cúbico; SO_2= dióxido de azufre, NO_2= dióxido de nitrógeno.

[1]Guía USEPA, 2006. Normas nacionales de calidad de aire ambiental (NAAQS), 40 CFR parte 50 (US). [2]Guías Generales sobre Medio Ambiente, Salud y Seguridad, Corporación Financiera Internacional, Grupo del Banco Mundial 2007. [3]Guía de Calidad del Aire, OMS 2005.

* Las normas de calidad de aire ambiental son los niveles de calidad del aire fijados y publicados a partir de procesos legislativos nacionales y procesos regulatorios, mientras que las guías sobre calidad del aire ambiental hacen referencia a niveles de calidad del aire obtenidos principalmente a través de datos clínicos, toxicológicos y epidemiológicos; ** este valor corresponde a la concentración promedio anual.

** Corresponde a los valores de línea base de la estación EA-5 y de la estación EA-7 respectivamente.

3.5 Niveles de Presión Sonora

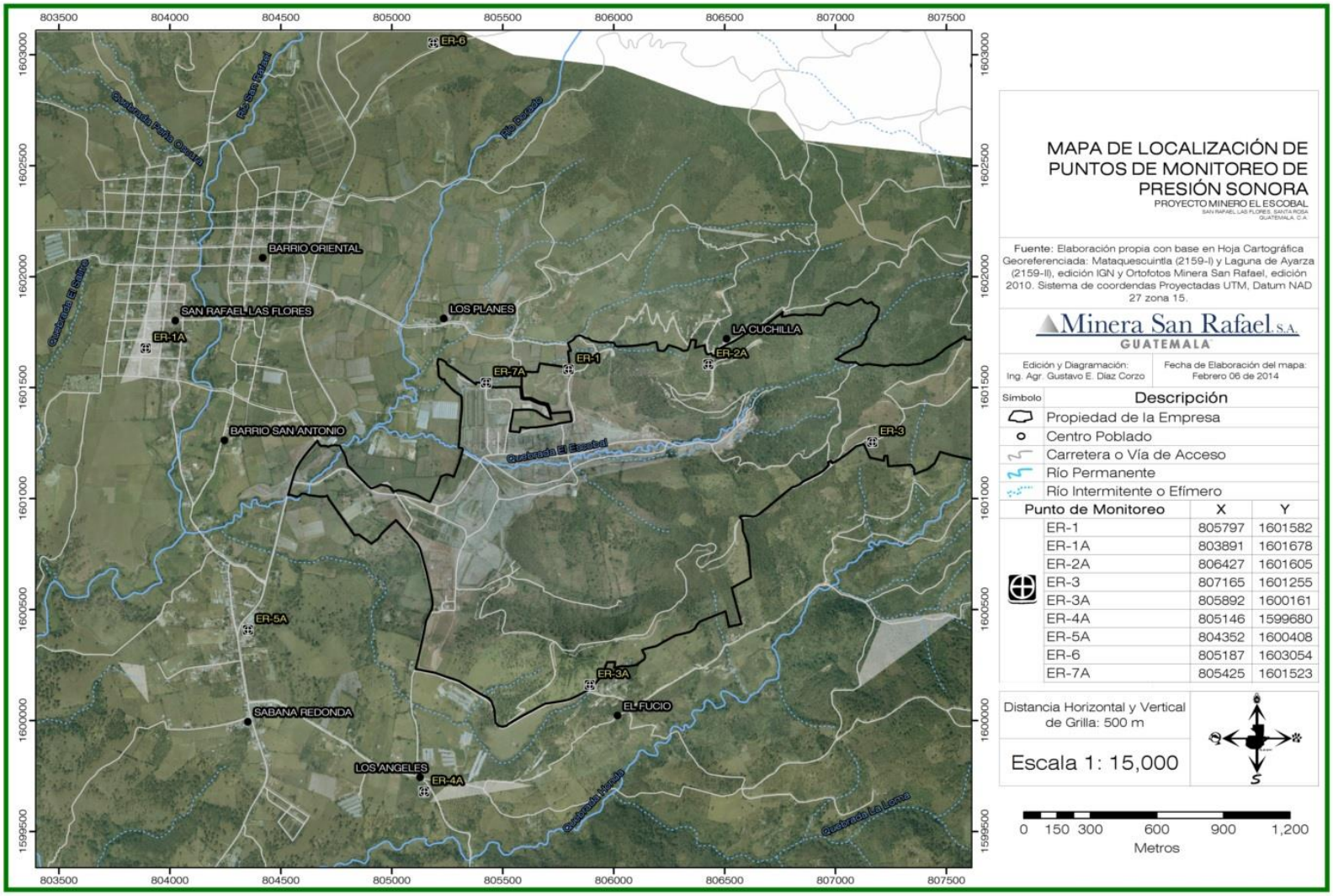
3.5.1 Sitios de Monitoreo

En el Cuadro 3-13 se enlistan las estaciones de monitoreo de presión sonora ubicados en el AI del Proyecto, localizadas en la jurisdicción de los centros poblados: Los Planes, La Cuchilla, El Fucío, Sabana Redonda, Portón de los Ángeles y San Rafael Las Flores. Su ubicación se presenta en la Figura 3-3.

Cuadro 3-13. Sitios de Monitoreo de Presión Sonora en el AI del Proyecto.

ESTACIÓN	PERIODICIDAD	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		ALTITUD (msnm)	SITIO
ER-1	Mensual	805797	1601582	1417	Depósito de suelos, a inmediaciones de Aldea Los Planes
ER-1A	Trimestral	803891	1601678	1328	Poblado San Rafael Las Flores, cercano a Escuela
ER-2	Mensual	806427	1601605	1564	Aldea La Cuchilla
ER-3	Mensual	807165	1601255	1679	Área este del proyecto, a inmediaciones de Aldea El Fucío.
ER-3A	Trimestral	805892	1600161	1416	Aldea El Fucío
ER-4A	Trimestral	805146	1599680	1360	Caserío El Portón de los Ángeles
ER-5A	Trimestral	804352	1600408	1339	Aldea Sabana Redonda, al sur-oeste del proyecto
ER-6	Trimestral	805187	1603054	1434	Al norte del Proyecto, ruta a Mataquescuintla
ER-7A	Mensual	805425	1601523	1320	Al noreste de pileta de agua de proceso y Pileta de Cumplimiento Ambiental, Jurisdicción de Aldea Los Planes

Fuente: Departamento de ambiente, Minera San Rafael.



Recorte de pantalla realizado: 10/02/2014 01:42 p.m.

Figura 3-3 Mapa de localización estaciones de monitoreo de presión sonora en el Proyecto. Proyecto Minero Escobal

3.5.2 Metodología

En el Cuadro 3-14 se describe el procedimiento, parámetros y equipo utilizado en la medición de los niveles de presión sonora ubicados dentro del AI del Proyecto.

Cuadro 3-14. Procedimiento y equipo utilizado para la medición de presión sonora, Proyecto Minero Escobal

PARÁMETROS ANALIZADOS	
L_{MAX}	Dato máximo durante 24 horas.
L_{MIN}	Dato mínimo durante 24 horas.
L_{EQ}	Promedio ponderado equivalente de datos.
Promedio Diurno	Promedio ponderado equivalente de datos de 07:00 am a 10:00 pm
Promedio Nocturno	Promedio ponderado equivalente de datos de 10:00 pm a 07:00 am
PROCEDIMIENTO	
La medición del nivel de presión sonora se realiza durante 24 horas, efectuando lecturas de decibeles en escala A en respuesta lenta en intervalo de 10 minutos. Los datos obtenidos en las mediciones son crudos y automáticamente grabados en el equipo, los cuales se descargan a una computadora utilizando el programa Quest Professional II. Solamente el promedio diurno y nocturno son calculados por separado.	
EQUIPO UTILIZADO	
Nombre	Sound Pro
Modelo	SE/DL
Fabricante	Quest Technologies, Inc.

3.5.3. Resultados

En el Cuadro 3-15 se observan los niveles de presión sonora (NPS) registrados durante los meses de mayo a julio 2013 Los informes generado por los equipos de medición se presentan en el anexo 12.2.4.

Los resultados obtenidos de NPS en las estaciones muestreadas respecto al parámetro de Leq están dentro del rango de 46.5dBa y 58.9 dBa, los cuales corresponden a las estaciones ER-2 y ER-3 respectivamente.

La estación ER-2 presentó el menor promedio diurno (46.5 dBa) y la estación ER7A el menor promedio nocturno (43.0 dBa) de todas las mediciones efectuadas en los meses de mayo a julio 2013; mientras que la estación ER-3 presentó el mayor promedio diurno (60.0 dBa) y el mayor promedio nocturno (56.6 dBa).

Las estaciones ER-1, ER-2, ER-3, ER-5A y ER-6 presentaron valores de promedio diurno y nocturno dentro de los valores mínimos y máximos registrados en el establecimiento de la línea base. Las estaciones ER-1A y ER-3A no cuentan con línea base.

En la estación ER-4A se obtuvieron valores de promedio nocturno (49.7 dBa) y promedio diurno (53.37 dBa) mayores a los valores máximos establecidos en el levantamiento de la línea base (48.9 dBa y 50.4 dBa respectivamente). El aumento de los niveles de presión sonora en el área son atribuidas a fuentes independientes del proyecto, como los sonidos de vegetación y ramas de árboles localizados al rededor del equipo de medición (Fotografía 3-5 y Fotografía 3-6); lo cual se evidencia al observar la relación entre la velocidad del viento y las ráfagas imperantes en la zona durante el muestreo (velocidad máxima del viento de 73.77 kph y ráfagas entre 20.45 a 108 kph, Figura 3-4) con los picos de Lmax registrados por el equipo de medición (Figura 3-5).

La estación ER-7A presentó únicamente en junio 2013 un promedio diurnos (54.3 dBa) mayor a los máximos medidos en el levantamiento de la línea base de la estación ER-7 (53.5 dBa); esta nueva estación se encuentra dentro del proyecto, a unos 250m de la antigua estación (ER-7) que se ubicaba en el poblado; a pesar de ello los promedios diurnos registrados en los meses de mayo y julio (52.4 dBa y 51.2 dBa) y los promedios nocturnos de mayo, junio y julio (47.3, 43.0 y 45.7dBa respectivamente) si están dentro de los límites de la línea base.

Cabe recalcar que durante el primer trimestre 2013 ninguna de las estaciones monitoreadas presentaron valores promedio diurno y nocturno superiores al valor de la guía para jornada diurna y nocturna del Banco Mundial para zonas industriales (70 dBa).

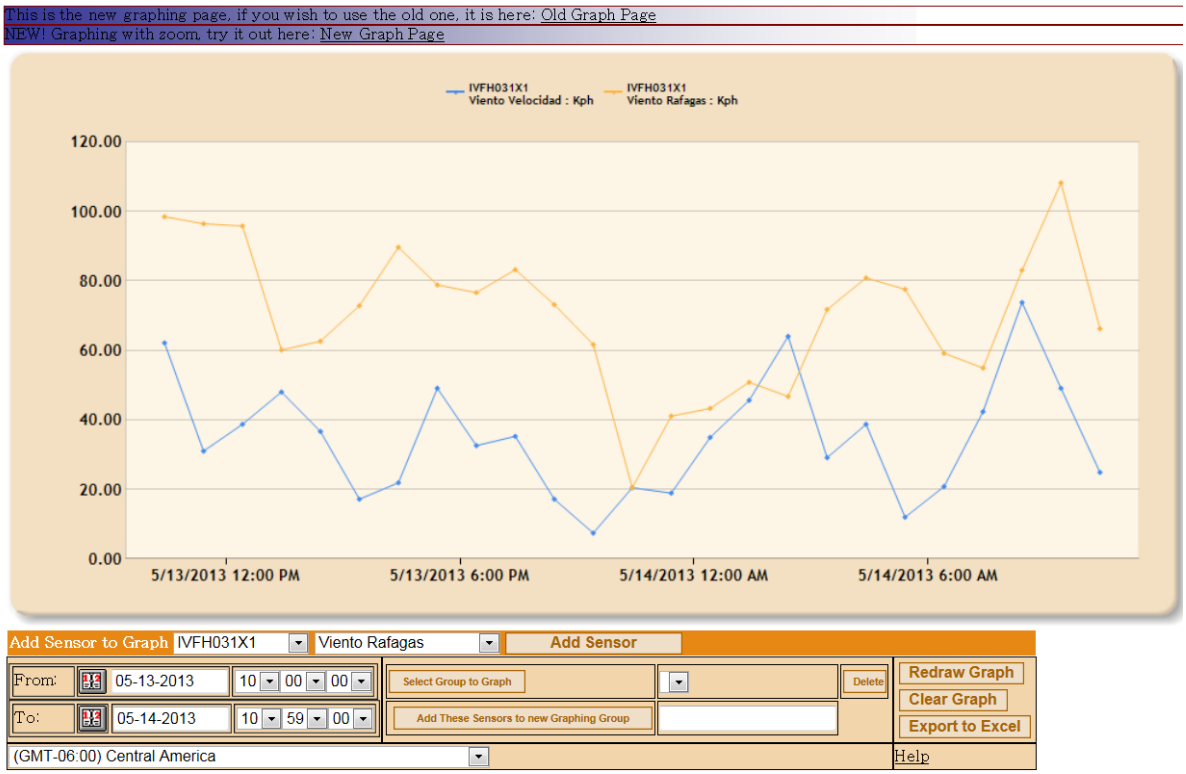


Figura 3-4 Velocidad de viento y ráfaga de viento durante muestreo de NPS en estación ER-4A, Estación Meteorológica Minera San Rafael, S.A. 13/05/2013 10:25 am a 14/05/2013 10:25am.

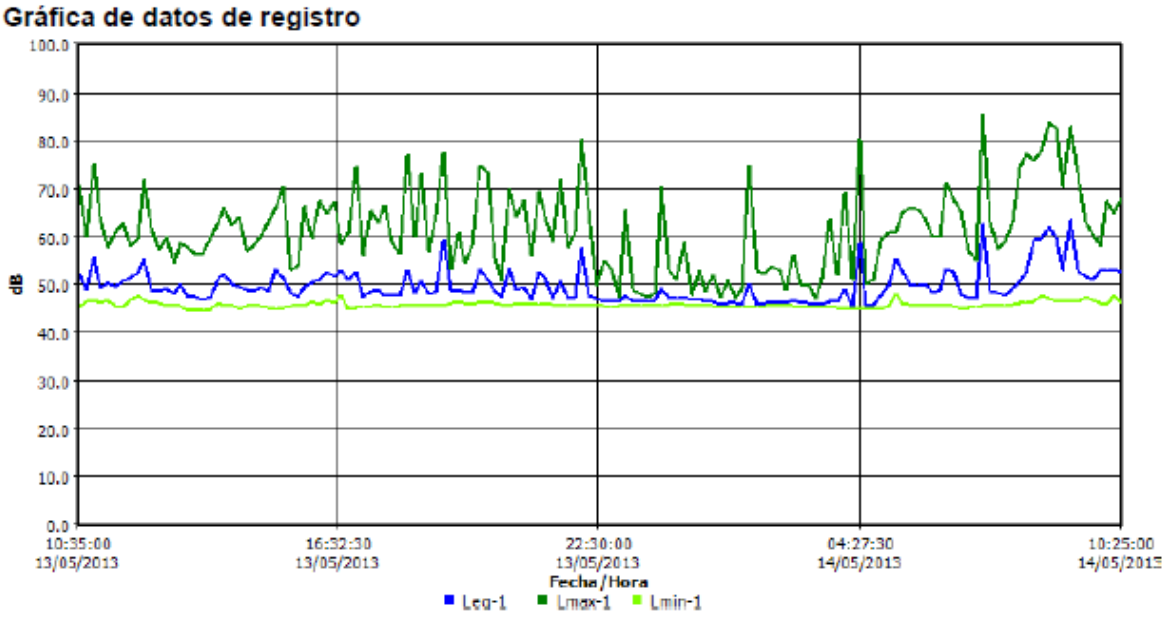


Figura 3-5 Extracto reporte monitoreo NPS estación ER-4A, mayo 2013. (ver página 119)

Fotografía 3-5. Vista al norte del equipo de medición NPS. 13 de marzo 2013

Fotografía 3-6. Vista al sur del equipo de medición NPS. 13 de marzo 2013

Cuadro 3-15. Resultados de los niveles de presión sonora en estaciones de monitoreo mensual durante los meses de mayo a julio 2013, Proyecto Minero Escobal.

Parámetro	Norma	Guías			ER-1						ER-2					
					Línea Base						Línea Base					
	USEPA	OMS	Banco Mundial		Promedio	Máximo	Mínimo	may-13	jun-13	jul-13	Promedio	Máximo	Mínimo	may-13	jun-13	jul-13
			Residencial	Industrial												
	dBA															
Lmax	NL	NL	NL	NL	89.3	99.5	64.6	76.6	80.3	83.2	86.7	97.8	64.9	69.1	71.8	82.5
Lmin	NL	NL	NL	NL	32.5	37.7	27.0	35.9	41.1	37.0	35.2	42.8	26.5	39.0	41.3	40.1
Leq	NL	NL	NL	NL	49.9	57.1	41.2	53.4	53.5	49.1	49.4	58.7	39.7	49.1	46.5	46.9
PD	55	55	55	70	50.5	59.1	39.7	53.9	54.8	49.6	48.8	57.1	39.8	49.6	46.5	47.3
PN	55	50	45	70	47.6	55.7	39.3	52.4	49.9	46.3	46.6	54.5	37.9	48.3	46.5	46.5

Parámetro	Norma	Guías			ER-3						ER-7A					
					Línea Base						Línea Base*					
	USEPA	OMS	Banco Mundial		Promedio	Máximo	Mínimo	may-13	jun-13	jul-13	Promedio	Máximo	Mínimo	may-13	jun-13	jul-13
			Residencial	Industrial												
	dBA															
Lmax	NL	NL	NL	NL	87.4	100.7	67.2	91.6	80.7	79.2	87.5	89.0	82.1	81.3	74.3	73.2
Lmin	NL	NL	NL	NL	49.4	56.2	26.9	40.7	31.5	30.4	NR	NR	NR	38.3	39.2	40.3
Leq	NL	NL	NL	NL	56.8	63.2	39.7	58.9	52.1	56.7	52.8	54.5	50.9	51.0	52.4	49.7
PD	55	55	55	70	56.5	63.1	41.0	60.0	53.3	56.9	52.1	53.5	50.4	52.4	54.3	51.2
PN	55	50	45	70	57.2	64.0	34.1	56.6	49.3	56.7	49.7	50.9	48.8	47.3	43.0	45.7

Nota: dBA = decibeles en escala A; PD = promedio diurno (de 07:00 a 22:00); PN = promedio nocturno (de 22:00 a 7:00); Lmax = lectura máxima registrada de dBA; Lmin= lectura mínima registrada de dBA; NL = no hay límite establecido para este parámetro; *: los valores de línea base corresponden a la estación ER-7.

Cuadro 3-16. Resultados de los niveles de presión sonora en estaciones de monitoreo trimestral durante el mes de mayo 2013, Proyecto Minero Escobal.

Parámetro	Norma	Guías			ER-1A				ER-3ª				ER-4A			
					Línea Base			may-13	Línea Base			may-13	Línea Base			may-13
	USEPA	OMS	Banco Mundial		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo	
			Residencial	Industrial												
	dBA				dBA				dBA				dBA			
Lmax	NL	NL	NL	NL	NR	NR	NR	97.2	NR	NR	NR	72.8	80.6	78.2	82.1	85.8
Lmin	NL	NL	NL	NL	NR	NR	NR	42.8	NR	NR	NR	37.9	NR	NR	NR	44.9
Leq	NL	NL	NL	NL	NR	NR	NR	56.5	NR	NR	NR	48.6	50.2	49.3	50.9	52.3
PD	55	55	55	70	NR	NR	NR	58.3	NR	NR	NR	49.5	49.5	48.4	50.4	53.37
PN	55	50	45	70	NR	NR	NR	48.0	NR	NR	NR	46.68	48.6	48.2	48.9	49.7

Parámetro	Norma	Guías			ER-5A				ER-6			
					Línea Base			may-13	Línea Base			may-13
	USEPA	OMS	Banco Mundial		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo	
			Residencial	Industrial								
	dBA				dBA				dBA			
Lmax	NL	NL	NL	NL	91.6	85.1	92.2	82.7	82.2	82.2	82.2	72
Lmin	NL	NL	NL	NL	NR	NR	NR	34.2	NR	NR	NR	34.1
Leq	NL	NL	NL	NL	65.8	51.6	67.6	50.2	56.2	56.2	56.2	48.1
PD	55	55	55	70	61.2	50.2	63.8	51.6	57.1	57.1	57.1	47.9
PN	55	50	45	70	62.8	45.9	65.0	45.9	48.4	48.4	48.4	48.4

Nota: dBA = decibeles en escala A; PD = promedio diurno (de 07:00 a 22:00); PN = promedio nocturno (de 22:00 a 7:00); Lmax = lectura máxima registrada de dBA; Lmin= lectura mínima registrada de dBA; NL = no hay límite establecido para este parámetro; NR = Cálculo No Realizado por falta de datos de línea base.

4. Calidad del Agua

4.1. Sitios de Monitoreo

En el Cuadro 4-1 se enlistan las estaciones de monitoreo de calidad de agua superficial y subterránea localizadas en las quebradas, ríos, manantiales, pozos de monitoreo y pozos mecánicos ubicados en el AI del Proyecto. Su ubicación se presenta en la Figura 4-1, Figura 4-2 y Figura 4-3.

Cuadro 4-1. Sitios de Monitoreo de Calidad de Agua en el AI del Proyecto.

ESTACIÓN	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		TIPO	SITIO
SW-1	807053	1601682	Agua Superficial	Quebrada El Escobal, aguas arriba.
SW-2	805811	1601164	Agua Superficial	Quebrada El Escobal, en medio de la propiedad
SW-2A	805295	1601230	Agua Superficial	Quebrada El Escobal, Salida de la propiedad
SW-3	805337	1602453	Agua Superficial	Rio El Dorado, aguas arriba
SW-4	804781	1601228	Agua Superficial	Rio El Dorado, aguas abajo
SW-4A	804629	1601052	Agua Superficial	Río El Dorado, por puente de acceso al Proyecto, 30mts aguas abajo SW-4
SW-5	810882	1603313	Agua Superficial	Rio Tapalapa
SW-6	808391	1597689	Agua Superficial	Rio Los Vados
SW-7	806989	1600618	Agua Superficial	Quebrada La Honda.
SW-8	804054	1600834	Agua Superficial	Unión Río San Rafael y El Dorado.
SW-9	803772	1597635	Agua Superficial	Río Tapalapa, aguas abajo (cercano a la Ceibita)
GW-1A	808670	1599754	Agua Subterránea	Nacimiento de agua permanente, Aldea El Volcancito
GW-2	807515	1601059	Agua Subterránea	Nacimiento de agua permanente, Aldea El Fucio
GW-3	806193	1601194	Agua Subterránea	El Mora, zona central del proyecto (frente a portal Oeste)
GW-4	805992	1600533	Agua	Aguas arriba del depósito de

ESTACIÓN	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		TIPO	SITIO
			Subterránea	colas y de GW5
GW-5	805962	1600525	Agua Subterránea	Aguas arriba del depósito de colas.
MW-1	806309	1601203	Agua Subterránea	Área de planta de pasta (Amate)
MW-2	805206	1600565	Agua Subterránea	Sur-oeste del depósito de colas.
MW-3	805153	1600790	Agua Subterránea	Al oeste del depósito de colas
MW-4	805186	1601009	Agua Subterránea	Al sur de montículos (acuífero somero)
MW-5	805304	1601277	Agua Subterránea	Al oeste de taller, en el límite de la propiedad de MSR.
MW-6	805457	1601454	Agua Subterránea	Al norte de almacén general
MW-7	805796	1601582	Agua Subterránea	Al oeste de depósito de suelos No. 1.
MW-8	805304	1601277	Agua Subterránea	Al oeste de taller, pozo de abastecimiento de oficinas temporales.
MW-9	805198	1601019	Agua Subterránea	Al sur de montículos (Acuífero profundo)
MW-10	806601	1601397	Agua Subterránea	Al norte del Portal Este
MW-11	805612	1601064	Agua Subterránea	Al norte de zona de infiltración quebrada Escobal.
PSA-SR	803678	1602044	Agua Subterránea	Pozo mecánico ubicado en las piscinas de San Rafael las Flores
RW-1	804809	1600972	Agua Subterránea	Pozo artesanal ubicado en Finca Suandys

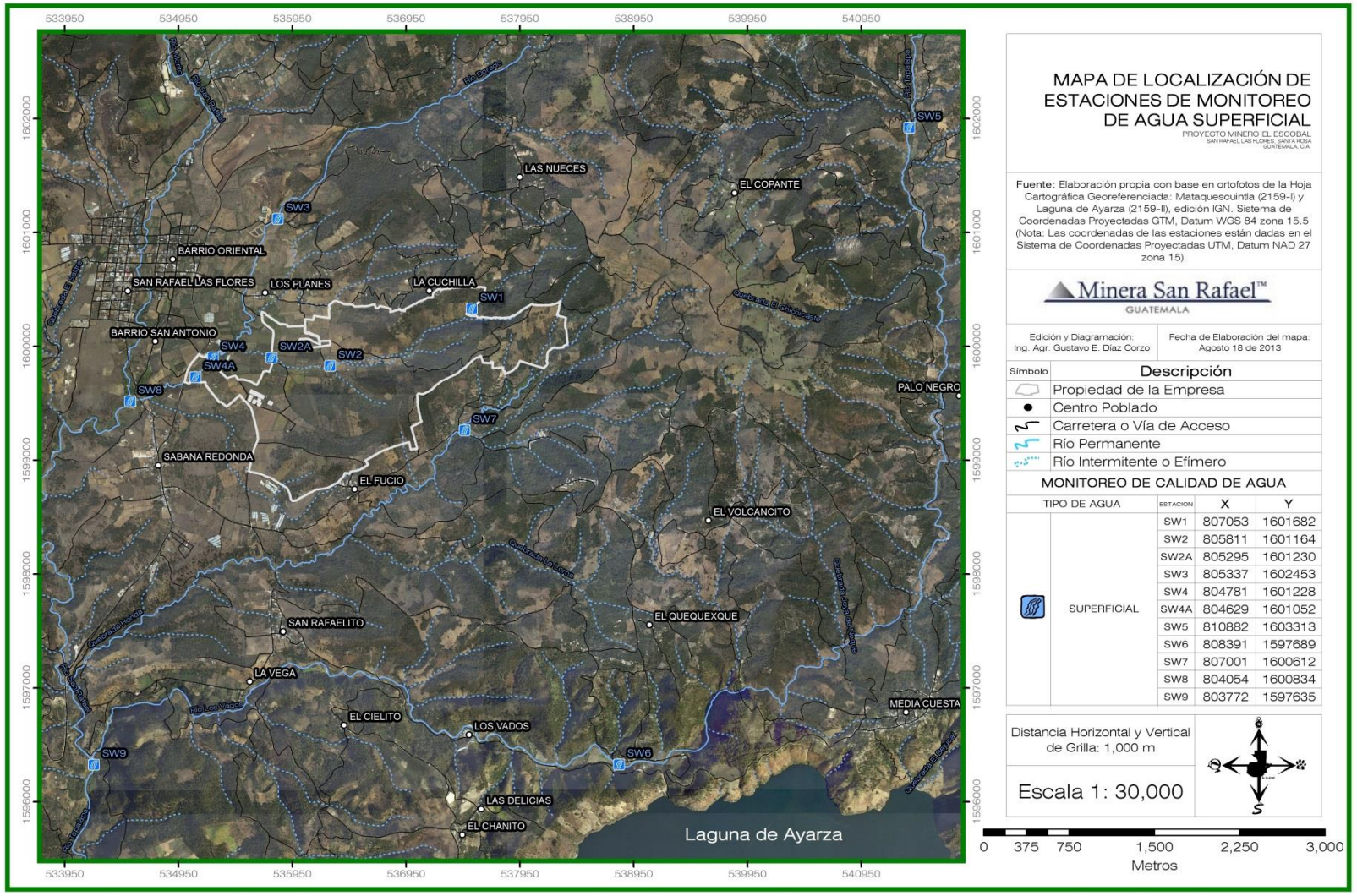


Figura 4-1 Mapa de localización de las estaciones de monitoreo de agua superficial, Proyecto Minero Escobal

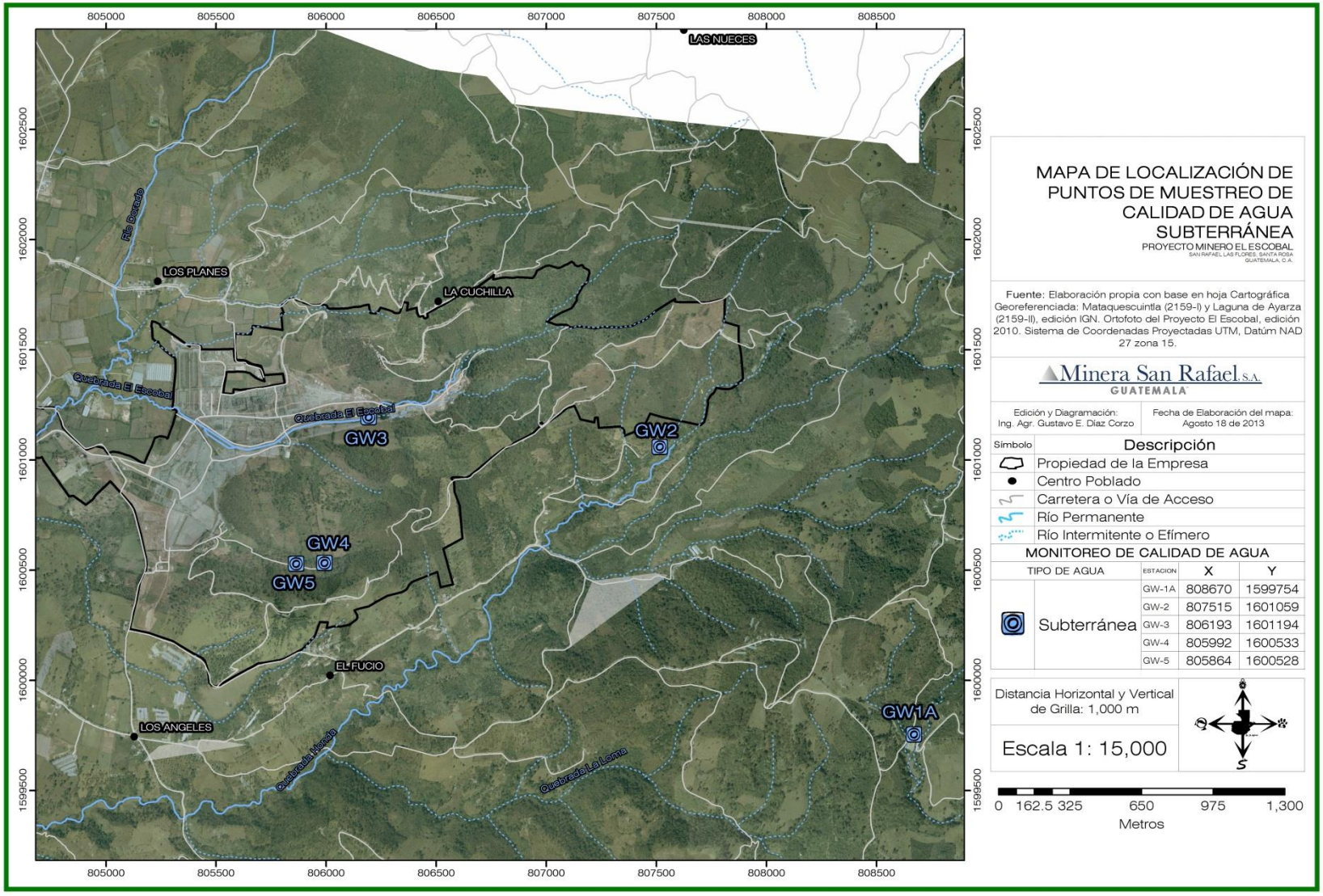


Figura 4-2 Mapa de localización estaciones de monitoreo de agua subterránea (Manantiales), Proyecto Minero Escobal

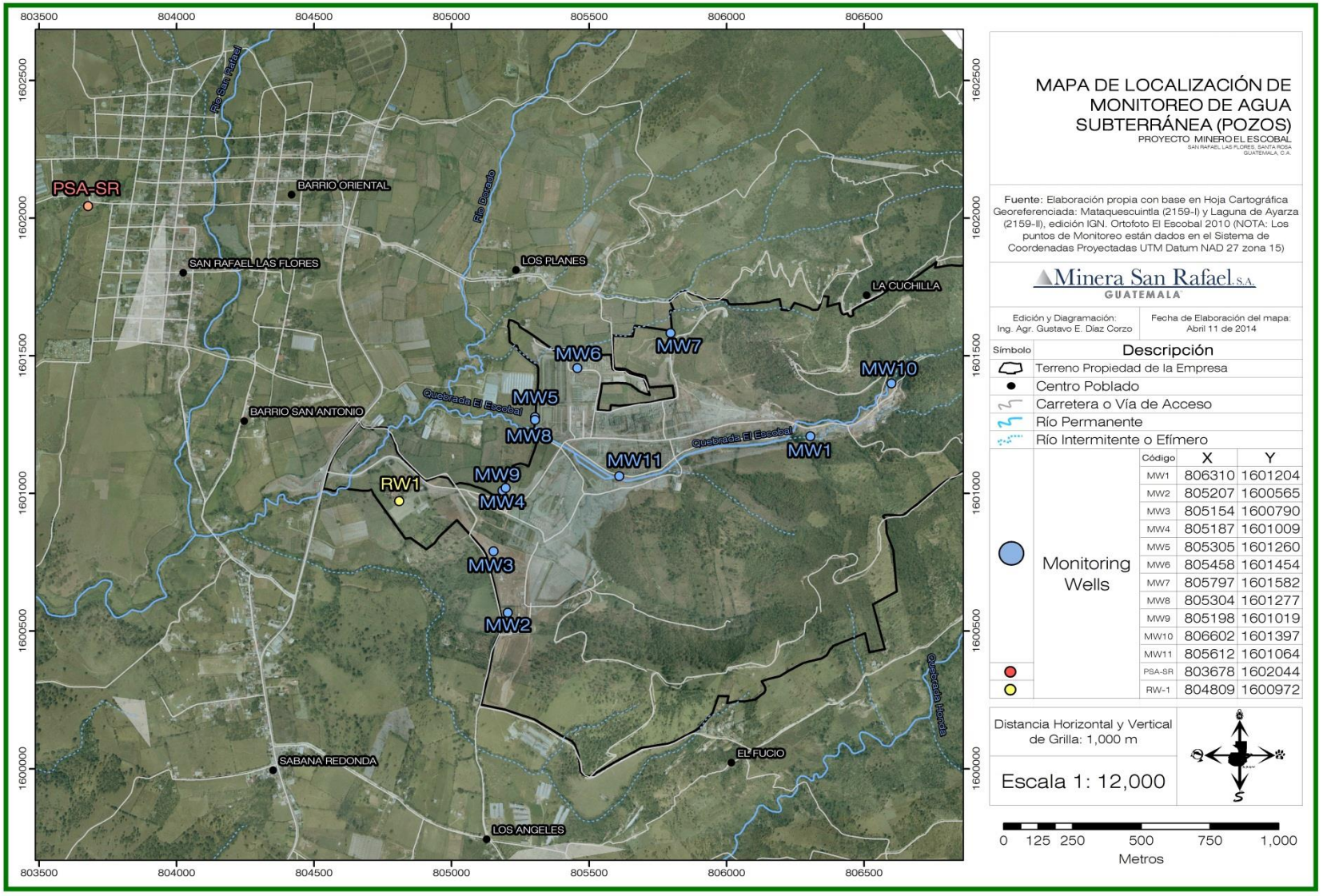


Figura 4-3 Mapa de localización pozos de monitoreo, pozo artesanal y pozo de producción. Proyecto Minero Escobal

4.2. Metodología

En el Cuadro 4-2 se describe el procedimiento y equipo utilizado para la toma de muestras de agua.

Cuadro 4-2 Procedimiento y equipo utilizado para medir parámetros In Situ de muestras de agua, Proyecto Minero Escobal.

PARÁMETROS ANALIZADOS	
In Situ	pH, conductividad eléctrica, oxígeno disuelto, temperatura y sólidos disueltos totales
Laboratorio	Laboratorio ACZ: Aceites y Grasas, Hidrocarburos Totales de Petróleo, Metales Totales (solo en agua superficial); Metales Disuelto, Cationes, Aniones y demás parámetros fisicoquímicos. Laboratorio Ecosistemas: DBO, coliformes totales, color, Cromo hexavalente.
PROCEDIMIENTO	
Basado en el procedimiento de toma de muestra dado por Water Management Consultants y el laboratorio ACZ para las muestras del perfil SW y GW. Y en el procedimiento dado por *Standard Methods for the Examination of Water and Wastewater, part 1060 B* para las muestras de agua residual.	
EQUIPO UTILIZADO	
Nombre	Multiparámetros
Modelo	PCD650
Fabricante	OAKTON

Laboratorio empleado y valores de referencia: Las muestras fueron analizadas en el laboratorio ACZ, 2773 Downhill Drive Steamboat Springs, Colorado USA, el cual se encuentra acreditado y avalado por la USEPA. Los análisis de color, DBO, coliformes fecales y cromo hexavalente fueron analizados en el laboratorio Ecosistemas Proyectos Ambientales, S.A., laboratorio respaldado por un Sistema de Calidad ISO 17025, otorgado por la Oficina Guatemalteca de Acreditación (OGA); y con ello los análisis acreditados cuentan con validez internacional según OGA-LE 006-04.

4.3. Resultados

4.3.1. Control de Calidad

En el monitoreo correspondiente al mes de junio 2013 se emplearon muestras control para determinar la confiabilidad de los parámetros analizados por el laboratorio encargado del análisis de muestras En total se efectuaron 3 muestras blanco y tres muestras duplicado y una solución estándar de metales; los resultados obtenidos se presentan en Cuadro 4-3 y Cuadro 4-4

Cuadro 4-3. Resultados de control de calidad para metales totales, junio 2013, Proyecto Minero Escobal.

Parámetros	Unid	Solución Estándar			jun-13	
		concentración	dilución	valor referencia	Resultado	% de recuperación
Aluminio Total	mg/L	500	1:10000	0.1	0.08	80%
Arsénico Total	mg/L	100	1:10000	0.02	0.0217	109%
Berilio Total	mg/L	100	1:10000	0.02	0.02	100%
Cadmio Total	mg/L	25	1:10000	0.005	0.0053	106%
Cobalto Total	mg/L	100	1:10000	0.02	0.02	100%
Hierro Total	mg/L	100	1:10000	0.02	0.03	150%
Manganeso Total	mg/L	100	1:10000	0.02	0.015	75%
Níquel Total	mg/L	100	1:10000	0.02	0.02	100%
Plomo Total	mg/L	100	1:10000	0.02	0.0218	109%
Selenio Total	mg/L	25	1:10000	0.005	0.0053	106%
Vanadio Total	mg/L	250	1:10000	0.05	0.051	102%
Zinc Total	mg/L	100	1:10000	0.02	0.02	100%

Dónde: **mg/L**: miligramos por litro; **%**: porcentaje

El porcentaje de recuperación de la solución estándar fue la esperada para la mayoría de los metales totales analizados, únicamente el hierro total se recuperó 50% más de lo esperado, por lo cual los valores reportados de hierro para este trimestre muy probablemente sean mayores a los valores reales contenidos en las muestras tomadas.

En uno de las tres muestras blanco, se detectaron concentraciones mínimas de fosfatos, sulfatos, cadmio disuelto, plata disuelta, y zinc disuelto Debido a que las concentraciones detectadas están muy cerca a los límites de detección del método, se considera que no hay un aporte significativo de estos elementos en los resultados obtenidos. Todos los demás parámetros analizados por el laboratorio

son confiables tanto en manipulación de las muestras como en precisión del análisis.

Cuadro 4-4. Resultados de control de calidad, blanco y duplicado, para los análisis de agua superficial y subterránea, junio 2013, Proyecto Minero Escobal

Parámetros	Unid	Blancos de Campo			Muestras Duplicado					
		Agua EMSURE (metales) y Agua Desmineralizada (FisQ)			Duplicado	Original	Duplicado	Original	Duplicado	Original
		SW10	GW10	MW20	SW11	SW2A	GW11	GW2	MW21	MW9
Alcalinidad Total	mg/L	<2	<2	<2	115	116	125	125	138	138
Cloruros	mg/L	<1	<1	<1	38	38	5	5	26	26
Fluoruros	mg/L	<0.1	<0.1	<0.1	1.2	1.2	0.3	0.3	1.5	1.5
Fosfatos	mg/L	<0.03	0.09	<0.03	<0.03	<0.03	0.06	0.06	0.06	0.06
Cianuro Total	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Amonio	mg/L	<0.05	<0.05	<0.05	0.92	0.98	<0.05	<0.05	<0.05	<0.05
Nitratos/Nitritos N	mg/L	<0.02	<0.02	<0.02	1.77	1.75	2.51	2.46	<0.02	<0.02
Nitrogeno Kjeldahl	mg/L	<0.1	<0.1	<0.1	1.2	1	<0.1	0.3	0.3	<0.1
Sulfatos	mg/L	<1	<1	3	880	890	280	270	310	310
Fósforo Dis. (Orto)	mg/L	<0.01	<0.01	<0.01	0.01	0.01	0.05	0.05	0.02	0.03
Fósforo Total	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.02	0.03	0.04
STD (TDS)	mg/L	<10	<10	<10	1380	1360	600	600	640	650
SST (TSS)	mg/L	<5	<5	<5	<5	<5	<5	5	13	10
ST (TS)	mg/L	<10	<10	<10	1420	1420	620	610	660	670
Hidrocarburos (TPH)	mg/L	<0.1	NA	NA	<0.1	<0.1	NA	NA	NA	NA
Grasas y Aceites	mg/L	2.02	NA	NA	<2.02	<2.02	NA	NA	NA	NA
DQO	mg/L	<10	NA	NA	<10	<10	NA	NA	NA	NA
Aluminio Disuelto	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Aluminio Total	mg/L	<0.03	NA	NA	0.03	0.04	NA	NA	NA	NA
Antimonio Disuelto	mg/L	<0.0004	<0.0004	<0.0004	0.0039	0.004	0.0005	0.0005	<0.0004	<0.0004
Antimonio Total	mg/L	<0.0004	NA	NA	0.0049	0.005	NA	NA	NA	NA
Arsénico Disuelto	mg/L	<0.0002	<0.0002	<0.0002	0.0085	0.0091	0.0026	0.0028	0.0019	0.0024
Arsénico Total	mg/L	<0.0002	NA	NA	0.0079	0.0087	NA	NA	NA	NA
Bario Disuelto	mg/L	<0.003	<0.003	<0.003	0.046	0.046	0.365	0.360	0.056	0.056
Bario Total	mg/L	<0.003	NA	NA	0.047	0.049	NA	NA	NA	NA
Berillio Disuelto	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Berillio Total	mg/L	<0.01	NA	NA	<0.01	<0.01	NA	NA	NA	NA
Boro Disuelto	mg/L	<0.01	<0.01	<0.01	0.09	0.09	<0.01	<0.01	0.06	0.06
Boro Total	mg/L	<0.01	NA	NA	0.07	0.07	NA	NA	NA	NA
Cadmio Disuelto	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001
Cadmio Total	mg/L	<0.0001	NA	NA	<0.0001	<0.0001	NA	NA	NA	NA
Calcio Disuelto	mg/L	<0.2	<0.2	<0.2	302	310	106	106	124	124
Calcio Total	mg/L	<0.2	NA	NA	311	319	NA	NA	NA	NA

Parámetros	Unid	Blancos de Campo			Muestras Duplicado					
		Agua EMSURE (metales) y Agua Desmineralizada (FisQ)			Duplicado	Original	Duplicado	Original	Duplicado	Original
		SW10	GW10	MW20	SW11	SW2A	GW11	GW2	MW21	MW9
Cobalto Disuelto	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Cobalto Total	mg/L	<0.01	NA	NA	<0.01	<0.01	NA	NA	NA	NA
Cobre Disuelto	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobre Total	mg/L	<0.01	NA	NA	<0.01	<0.01	NA	NA	NA	NA
Cromo Disuelto	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cromo Total	mg/L	<0.01	NA	NA	<0.01	<0.01	NA	NA	NA	NA
Hierro Disuelto	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	5.37	5.36
Hierro Total	mg/L	<0.02	NA	NA	0.05	0.04	NA	NA	NA	NA
Magnesio Disuelto	mg/L	<0.2	<0.2	<0.2	24	24.4	17.3	17.50	23.6	23.7
Magnesio Total	mg/L	<0.2	NA	NA	23.9	24.7	NA	NA	NA	NA
Manganeso Disuelto	mg/L	<0.005	<0.005	<0.005	0.229	0.245	0.610	0.608	0.482	0.481
Manganeso Total	mg/L	<0.005	NA	NA	0.232	0.24	NA	NA	NA	NA
Mercurio Disuelto	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Mercurio Total	mg/L	<0.0002	NA	NA	<0.0002	<0.0002	NA	NA	NA	NA
Molibdeno Disuelto	mg/L	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Molibdeno Total	mg/L	<0.02	NA	NA	<0.02	<0.02	NA	NA	NA	NA
Níquel Disuelto	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Níquel Total	mg/L	<0.01	NA	NA	<0.01	<0.01	NA	NA	NA	NA
Plata Disuelta	mg/L	0.00006	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Plata Total	mg/L	<0.00005	NA	NA	<0.00005	<0.00005	NA	NA	NA	NA
Plomo Disuelto	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Plomo Total	mg/L	<0.0001	NA	NA	0.0005	0.0003	NA	NA	NA	NA
Potasio Disuelto	mg/L	<0.3	<0.3	<0.3	5.9	6	10.4	10.4	5.2	5.3
Potasio Total	mg/L	<0.3	NA	NA	6.6	6.8	NA	NA	NA	NA
Selenio Disuelto	mg/L	<0.0001	<0.0001	<0.0001	0.0002	0.0002	<0.0001	0.0002	<0.0001	<0.0001
Selenio Total	mg/L	<0.0001	NA	NA	0.0002	0.0002	NA	NA	NA	NA
Sodio Disuelto	mg/L	<0.3	<0.3	<0.3	58.5	59.4	32	32.2	39.6	39.8
Sodio Total	mg/L	<0.3	NA	NA	60.2	61.7	NA	NA	NA	NA
Zinc Disuelto	mg/L	<0.01	0.03	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Zinc Total	mg/L	<0.01	NA	NA	<0.01	<0.01	NA	NA	NA	NA
Color Aparente	u Pt/Co	<1	<1	<1	<0.05	<0.05	1	<1	418	441
Color Real	u Pt/Co	<1	<1	<1	<10	<10	<1	<1	13	2
Cromo Hexavalente	mg/L	<0.05	<0.05	<0.05	94	49	<0.05	<0.05	<0.05	<0.05
Coliformes Fecales	NMP/100mL	<2	<2	<2	7	7	<2	<2	2400	2400
DBO	mg/L	<10	NA	NA	<1	<1	NA	NA	NA	NA

Dónde: **u.e**.: unidades exponenciales; **mg/L**: miligramos por litro; **NMP/100ml:** número más probable en 100ml; **u Pt/Co:** unidades platino cobalto.

4.3.2. Agua Superficial

Según los parámetros analizados, todas las estaciones monitoreadas cumplen con los límites máximos permisibles dados por el Acuerdo Gubernativo 236-2006 para entes generadores nuevos.

En el Cuadro 4-5 se presentan los resultados de la calidad del agua superficial para el mes de junio 2013 en las once estaciones de monitoreo y un resumen estadístico (promedio, valor máximo y valor mínimo) de la línea base establecida para cada estación. Los resultados del laboratorio se presentan en el anexo 12.4.1.

Las estaciones muestreadas presentaron un pH neutro (6.19 a 7.80 u.e.); en ninguna de las estaciones se reportaron valores de grasas y aceites, cianuro total cumpliendo con las guías establecidas por la USEPA para la salud humana, y el IFC y Acuerdo Gubernativo 236-2006 (Acuerdo) para aguas residuales. Únicamente en la estación SW8 se detectó una concentración de 17 mg/L de Demando Bioquímica de Oxígeno (DBO). La Demanda Química de Oxígeno se detectó únicamente en las estaciones SW8 (30mg/L) y SW9 (10mg/L) en concentraciones dentro de los límites establecidos durante el levantamiento de línea base (30mg/L y 10mg/L respectivamente).

Las estaciones muestreadas presentaron concentraciones por debajo de las directrices de la USEPA para la salud humana de Cloruros (250 mg/L), Fluoruros (4 mg/L) y concentraciones muy por debajo de los límites establecidos por el acuerdo para Fósforo total (10 mg/l) y el Banco Mundial (2mg/L). Se detectó sólidos suspendido totales únicamente en las estaciones SW2, SW3, SW7, SW8 en concentración de 6mg/L, y en la estación SW9 en concentración de 18mg/L, muy por debajo de los límites establecidos por el acuerdo (100 mg/L) y el Banco Mundial (50mg/L).

Los Sulfatos Totales y los sólidos disueltos totales (TDS) fueron detectados en la estación SW1, SW3, SW5, SW6, SW7 y SW9 en concentraciones por debajo de la directriz establecida por la USEPA (250 y 500 mg/L respectivamente). En la estación SW2 se reportaron concentraciones de Sulfatos Totales de 880 mg/L los cuales se encuentran por debajo de las concentraciones máximas registradas durante el levantamiento de línea base para esta estación (1600 mg/L). Las otras estaciones muestreadas se registraron concentraciones de Sulfatos Totales en el rango de 430 a 880 mg/L y de TDS en el rango de 780 a 1290 mg/l).

El Berilio, Cadmio, Cobre, Cromo, Mercurio y Níquel no fueron detectados en ninguna de las estaciones muestreadas. Mientras que el Bario, Plomo y Selenio fueron detectados en concentraciones menores a los límites máximos registrados

durante el levantamiento de línea base y menores a las guías establecidas en la USEPA (1mg/L, 0.015mg/L y 0.17mg/Lrespectivamente).

El Antimonio fue detectado en las estaciones SW1, SW2, SW2A, SW4, SW4A, SW7, SW8 y SW9 en concentraciones que están en el rango de 0.0006 a 0.0058 mg/L; valores que están por debajo de la guía establecida por la USEPA (0.006 mg/L). El Aluminio fue detectado en todas las estaciones en concentraciones que están dentro de los límites establecidos durante el levantamiento de la línea base.

Las concentraciones de Arsénico Total se encuentran por debajo de los límites establecidos por el Acuerdo (0.1 mg/L) y las guías de la USEPA (0.01mg/L) en la mayoría de las estaciones; la excepción se da en la estación SW3 y SW2. La estación SW3 (Río El Dorado, aguas arriba) presentó una concentración de 0.0118mg/L, el cual es menor al límite máximo establecido durante el levantamiento de línea base (0.0137mg/L); la estación SW2 (Quebrada Escobal, en medio de la propiedad) presentó una concentración de 0.0119 mg/L, cabe mencionar que la concentración de Arsénico Total obtenida en la muestra tomada ese mismo día, en la estación SW2A, que se ubica en la quebrada Escobal justo antes que el agua abandone la propiedad (aproximadamente 400 metros aguas abajo de SW2), se redujo a 0.0087 mg/L. Se dará seguimiento a la tendencia que tenga este parámetro en futuros muestreos.

Cuadro 4-5. Resultados de la Calidad del Agua Superficial junio 2013, Proyecto Minero Escobal (1/4).

Unidades	USEPA Salud Humana	IFC Agua Residual Tratada	Acuerdo 236-2006	SW1-E Quebrada Escobal - aguas arriba				SW2-E Quebrada Escobal - en medio del proyecto				SW2A-E Quebrada Escobal - salida del Proyecto			
				Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13
				Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo	
u.e.	**5.0-9.0**	**6.0-9.0**	**6.0-9.0**	7.60	7.14	8.06	7.63	7.42	6.56	7.87	7.25	NR	NR	NR	7.80
°C			**+/- 7**	17.4	13.0	19.8	17.7	22.4	20.3	25.6	27.7	NR	NR	NR	26.7
uS/cm				277.9	66.3	566.6	218.9	807.3	177.3	1965.0	1438.0	NR	NR	NR	1351.0
mg/L				3.60	0.09	6.37	7.49	4.76	3.50	5.75	7.80	NR	NR	NR	7.12
mg/L				104	38	161	94	80	44	119	128	NR	NR	NR	116
mg/L	**250**			5	4	7	6	31.8	6	70	43	NR	NR	NR	38
mg/L	**4**			0.15	0.10	0.20	<0.1	0.60	0.10	1.20	1.20	NR	NR	NR	1.20
mg/L				0.185	0.09	0.31	0.19	0.188	0.06	0.4	<0.03	NR	NR	NR	<0.03
mg/L	**0.14**		**1.00**	0.004	<0.003	0.015	<0.003	<0.003	<0.003	<0.003	<0.003	NR	NR	NR	<0.003
mg/L				<0.005	<0.005	0.07	<0.05	<0.05	<0.05	0.07	<0.05	NR	NR	NR	0.98
mg/L				1.61	0.08	4.87	0.23	2.46	0.03	4.90	0.09	NR	NR	NR	1.75
mg/L				4.0	0.2	25.9	0.4	0.3	<0.1	0.8	<0.1	NR	NR	NR	1.0
mg/L	**250.0**			26	10	42	43	473	14	1600	880	NR	NR	NR	890
mg/L				0.06	0.03	0.10	0.07	0.06	0.02	0.13	0.01	NR	NR	NR	0.01
mg/L		**2.00**	**10.00**	0.37	0.04	2.51	0.06	0.08	0.03	0.19	<0.01	NR	NR	NR	<0.01
mg/L	**500**			225	170	280	220	754	170	1620	1370	NR	NR	NR	1360
mg/L		**50**	**100**	164	5	780	<5	67	<5	320	6	NR	NR	NR	<5
mg/L				346	200	1080	220	850	230	1660	1380	NR	NR	NR	1420
mg/L				<0.1	<0.09	<0.1	<0.1	<0.1	<0.09	<0.1	<0.1	NR	NR	NR	<0.1
mg/L		**10**	**10**	<2.062	<2.062	<2.248	<2.02	<2.04	<2.04	<2.04	<2.02	NR	NR	NR	<2.02
mg/L		**125.0**		15.7	<10	40.0	<10	13.0	<10	30.0	<10	NR	NR	NR	<10
mg/L				0.08	<0.03	0.09	<0.03	0.04	<0.03	0.12	<0.03	NR	NR	NR	<0.03
mg/L	**0.20**			5.02	<0.03	35.10	0.05	2.35	0.06	8.77	0.15	NR	NR	NR	0.04
mg/L				<0.0004	<0.0004	0.0006	0.0006	<0.0004	<0.0004	<0.0004	0.0011	NR	NR	NR	0.004
mg/L	**0.006**			<0.0004	<0.0004	0.0007	0.0006	<0.0004	<0.0004	0.0005	0.0015	NR	NR	NR	0.005
mg/L				0.0022	0.0005	0.0034	0.0044	0.0018	0.0013	0.0024	0.0112	NR	NR	NR	0.0091
mg/L	**0.010**		**0.100**	0.0034	0.0015	0.0094	0.0042	0.0027	0.0012	0.0054	0.0119	NR	NR	NR	0.0087
mg/L				0.1361	0.0860	0.2070	0.1440	0.1090	0.0880	0.1330	0.0470	NR	NR	NR	0.0460
mg/L	**1**			0.1860	0.1000	0.4340	0.1400	0.1314	0.0960	0.1860	0.0480	NR	NR	NR	0.0490
mg/L				<0.002	<0.002	<0.01	<0.01	<0.002	<0.002	<0.002	<0.01	NR	NR	NR	<0.01
mg/L	**0.004**			<0.002	<0.002	<0.01	<0.01	<0.002	<0.002	<0.002	<0.01	NR	NR	NR	<0.01
mg/L				<0.01	<0.01	<0.01	<0.01	0.114	<0.01	0.29	0.12	NR	NR	NR	0.09
mg/L				<0.01	<0.01	0.02	<0.01	0.108	<0.01	0.28	0.1	NR	NR	NR	0.07
mg/L				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	NR	NR	NR	<0.0001
mg/L	**0.003**		**0.1**	<0.0001	<0.0001	0.0007	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	NR	NR	NR	<0.0001
mg/L				45.2	18.9	74.5	45.8	144.9	20.7	333.0	320.0	NR	NR	NR	310.0
mg/L				45.5	20.9	70.5	44.5	144.6	20.5	331.0	314.0	NR	NR	NR	319.0
mg/L				<0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	NR	NR	NR	<0.01
mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
mg/L	**1.3**		**3**	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.02	<0.01	NR	NR	NR	<0.01
mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
mg/L	**0.1**		**0.1**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
mg/L				<0.02	<0.02	0.04	<0.02	0.04	<0.02	0.12	<0.02	NR	NR	NR	<0.02
mg/L	**0.3**			2.71	<0.02	19.50	0.02	1.30	0.06	5.19	0.76	NR	NR	NR	0.04
mg/L				3.93	2.60	5.30	3.90	15.94	3.20	37.30	26.30	NR	NR	NR	24.40
mg/L				4.15	2.80	5.20	3.70	15.14	3.60	32.20	26.40	NR	NR	NR	24.70
mg/L				0.005	<0.005	0.020	<0.005	0.020	<0.005	0.070	0.389	NR	NR	NR	0.245
mg/L	**0.05**			0.104	<0.005	0.721	<0.005	0.060	0.007	0.174	0.406	NR	NR	NR	0.240
mg/L				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NR	NR	NR	<0.0002
mg/L	**0.002**		**0.01**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NR	NR	NR	<0.0002
mg/L				<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	NR	NR	NR	<0.02
mg/L				<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	NR	NR	NR	<0.02
mg/L				<0.01	<0.01	0.030	<0.01	0.013	<0.01	0.040	<0.01	NR	NR	NR	<0.01
mg/L	**0.61**		**2.00**	<0.01	<0.01	0.040	<0.01	0.022	<0.01	0.040	<0.01	NR	NR	NR	<0.01
mg/L				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NR	NR	NR	<0.00005
mg/L				<0.00005	<0.00005	0.000	<0.00005	<0.00005	<0.00005	0.00006	<0.00005	NR	NR	NR	<0.00005
mg/L				<0.0001	<0.0001	0.000	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	NR	NR	NR	<0.0001
mg/L	**0.015**		**0.400**	0.0025	<0.0001	0.0191	<0.0001	0.0009	<0.0001	0.0038	0.0004	NR	NR	NR	0.0003
mg/L				4.4	3.5	5.1	4.6	6.1	4.9	7.6	4.6	NR	NR	NR	6.0
mg/L				5.3	3.5	13.0	4.4	6.3	5.2	7.4	4.6	NR	NR	NR	6.8
mg/L				<0.0001	<0.0001	0.0001	0.0001	0.00045	<0.0001	0.0002	<0.0001	NR	NR	NR	0.0002
mg/L	**0.170**			0.0001	<0.0001	0.00030	<0.0001	0.00011	<0.0001	0.00020	<0.0001	NR	NR	NR	0.0002
mg/L				9.8	8.3	11.6	9.5	40.1	9.4	87.8	61.4	NR	NR	NR	59.4
mg/L				9.5	7.8	11.8	9.4	39.8	9.4	85.2	57.9	NR	NR	NR	61.7
mg/L				0.05	<0.01	0.10	<0.01	0.05	<0.02	0.10	<0.01	NR	NR	NR	<0.01
mg/L	**7.40**		**10.00**	0.06	<0.01	0.12	<0.01	0.04	<0.01	0.06	0.04	NR	NR	NR	<0.01
mg/L			**0.1**	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05
mg/L			**200**	NR	NR	NR	<10	NR	NR	NR	<10	NR	NR	NR	<10
NMP/100ml			**<1x10^4**	NR	NR	NR	540	NR	NR	NR	23	NR	NR	NR	49
u Pt/Co			**500**	NR	NR	NR	18	NR	NR	NR	3	NR	NR	NR	7
u Pt/Co				NR	NR	NR	11	NR	NR	NR	<1	NR	NR	NR	<1
NTU				NR	NR	NR	1.07	NR	NR	NR	8.3	NR	NR	NR	1.80

Dónde: **u.e**.: unidades exponenciales; **mg/L**: miligramos por litro; **µS/cm**: microsiemens por centímetro; **°C:** grados centígrados; **NMP/100ml:** número más probable en 100ml; **u Pt/Co:** unidades platino cobalto; **NA**: no analizado; **NR** = Cálculo No Realizado por falta de datos de línea base.

Cuadro 4.4. Resultados de la Calidad del Agua Superficial junio 2013, Proyecto Minero Escobal (2/4).

Parámetros	Unidades	USEPA Salud Humana	IFC Agua Residual Tratada	Acuerdo 236-2006	SW3-E Río El Dorado - Aguas Arriba				SW4-E Rio El Dorado - sobre camino vecinal				SW4A-E Río El Dorado - aguas abajo			
					Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13
					Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo	
pH de campo	u.e.	**5.0-9.0**	**6.0-9.0**	**6.0-9.0**	7.58	7.17	8.17	7.31	7.40	6.56	7.94	7.20	NR	NR	NR	7.22
Temperatura campo	°C			**+/- 7**	19.8	17.0	24.0	23.2	21.0	17.2	24.0	28.5	NR	NR	NR	25.8
Conductividad de campo	uS/cm				219.7	80.0	374.5	255.5	308.9	120.0	612.0	1293	NR	NR	NR	1301.0
Oxígeno Disuelto campo	mg/L				3.76	0.05	6.76	6.34	4.25	0.11	7.49	5.63	NR	NR	NR	8.31
Alcalinidad Total	mg/L				83	38	118	105	80	45	102	117	NR	NR	NR	135
Cloruros	mg/L	**250**			2.72727	2	3	3	8.54545	4	16	26	NR	NR	NR	32
Fluoruros	mg/L	**4.00**			0.15	<0.1	0.20	0.10	0.15	0.10	0.20	1.00	NR	NR	NR	1.00
Fosfatos	mg/L				0.11545	0.06	0.37	0.12	0.36455	0.09	1.21	0.12	NR	NR	NR	0.19
Cianuro Total	mg/L	**0.14**		**1.00**	<0.003	<0.003	0.015	<0.003	<0.003	<0.003	0.014	<0.003	NR	NR	NR	<0.003
Amonio	mg/L				0.05	<0.05	0.21	<0.05	0.06	<0.05	0.15	0.96	NR	NR	NR	0.43
Nitratos/Nitritos como N	mg/L				0.59	<0.02	1.51	0.13	4.49	1.96	10.10	2.47	NR	NR	NR	1.75
Nitrogeno Kjeldahl (TKN)	mg/L				0.4	<0.1	0.6	0.5	0.6	0.1	1.3	1.0	NR	NR	NR	0.5
Sulfatos	mg/L	**250**			17	4	25	31	27	10	57	880	NR	NR	NR	870
Fósforo Disuelto (Orto)	mg/L				0.04	0.02	0.12	0.04	0.12	0.03	0.39	0.03	NR	NR	NR	0.06
Fósforo Total	mg/L		**2.00**	**10.00**	0.05	0.02	0.14	0.04	0.17	0.04	0.39	0.03	NR	NR	NR	0.06
STD (TDS)	mg/L	**500**			184	140	220	210	233.636	150	350	1290	NR	NR	NR	1260
SST (TSS)	mg/L		**50**	**100**	74	5	340	6	115	<5	880	<5	NR	NR	NR	<5
ST (TS)	mg/L				232	140	500	220	378	260	1180	1340	NR	NR	NR	1270
Hidrocarburos totales (TPH)	mg/L				<0.1	<0.09	<0.2	<0.1	<0.1	<0.09	<0.1	<0.1	NR	NR	NR	<0.1
Grasas y Aceites	mg/L		**10**	**10**	<2.062	<2.04	<2.326	<2.02	<2.062	<2.02	<2.084	<2.02	NR	NR	NR	<2.02
DQO	mg/L		**125.0**		10.9	<10	40.0	<10	16.8	<10	60.0	<10	NR	NR	NR	<10
Aluminio Disuelto	mg/L				0.06	<0.03	0.15	<0.03	0.03	<0.03	0.10	<0.03	NR	NR	NR	<0.03
Aluminio Total	mg/L	**0.20**			3.25	<0.03	17.40	0.81	5.72	0.07	36.00	0.05	NR	NR	NR	0.04
Antimonio Disuelto	mg/L				<0.0004	<0.0004	<0.0004	<0.0004	0.0007	0.0004	0.0011	0.0067	NR	NR	NR	0.0041
Antimonio Total	mg/L	**0.006**			<0.0004	<0.0004	<0.0004	<0.0004	0.00117	0.0005	0.0037	0.0058	NR	NR	NR	0.0035
Arsénico Disuelto	mg/L				0.0080	0.0041	0.0139	0.0126	0.0054	0.0039	0.0072	0.0089	NR	NR	NR	0.0094
Arsénico Total	mg/L	**0.0100**		**0.1000**	0.0089	0.0060	0.0137	0.0118	0.0087	0.0043	0.0326	0.0081	NR	NR	NR	0.0089
Bario Disuelto	mg/L				0.0915	0.0510	0.1180	0.1210	0.1645	0.0800	0.2340	0.0710	NR	NR	NR	0.0700
Bario Total	mg/L	**1.0000**			0.1245	0.0980	0.2530	0.1320	0.2356	0.1440	0.5670	0.0720	NR	NR	NR	0.0700
Berillio Disuelto	mg/L				<0.002	<0.0002	<0.01	<0.01	<0.002	<0.002	<0.01	<0.01	NR	NR	NR	<0.01
Berillio Total	mg/L	**0.004**			<0.002	<0.0002	<0.01	<0.01	0.002	<0.002	0.003	<0.01	NR	NR	NR	<0.01
Boro Disuelto	mg/L				<0.01	<0.01	0.02	<0.01	0.00818	<0.01	0.02	0.07	NR	NR	NR	0.08
Boro Total	mg/L				<0.01	<0.01	0.02	<0.01	0.01227	<0.01	0.02	0.07	NR	NR	NR	0.08
Cadmio Disuelto	mg/L				0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	NR	NR	NR	<0.0001
Cadmio Total	mg/L	**0.003**		**0.1**	<0.0001	<0.0001	0.0002	<0.0001	0.00012	<0.0001	0.0005	<0.0001	NR	NR	NR	<0.0001
Calcio Disuelto	mg/L				27.8	11.7	39.9	38.1	37.4	18.5	61.7	286.0	NR	NR	NR	285.0
Calcio Total	mg/L				27.9	12.3	38.7	39.2	38.3	17.2	58.9	302.0	NR	NR	NR	285.0
Cobalto Disuelto	mg/L				0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	NR	NR	NR	<0.01
Cobalto Total	mg/L				0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	NR	NR	NR	<0.01
Cobre Disuelto	mg/L				0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
Cobre Total	mg/L	**1.3**		**3**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	NR	NR	NR	<0.01
Cromo Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
Cromo Total	mg/L	**0.1**		**0.1**	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.02	<0.01	NR	NR	NR	<0.01
Hierro Disuelto	mg/L				0.03	<0.02	0.06	0.02	0.03	<0.02	0.15	<0.02	NR	NR	NR	0.03
Hierro Total	mg/L	**0.30**			1.90	0.06	10.20	0.53	3.78	0.09	26.50	0.05	NR	NR	NR	0.07
Magnesio Disuelto	mg/L				2.56	1.30	3.50	3.30	4.16	2.40	7.30	22.80	NR	NR	NR	22.70
Magnesio Total	mg/L				2.69	1.60	3.50	3.30	4.56	2.50	7.30	24.40	NR	NR	NR	23.30
Manganeso Disuelto	mg/L				0.074	0.010	0.381	0.188	0.116	0.011	0.260	0.295	NR	NR	NR	0.312
Manganeso Total	mg/L	**0.050**			0.147	0.025	0.403	0.217	0.284	0.101	1.230	0.306	NR	NR	NR	0.313
Mercurio Disuelto	mg/L				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NR	NR	NR	<0.0002
Mercurio Total	mg/L	**0.002**		**0.01**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NR	NR	NR	<0.0002
Molibdeno Disuelto	mg/L				0.01	<0.01	0.01	<0.02	<0.01	<0.01	<0.01	<0.02	NR	NR	NR	<0.02
Molibdeno Total	mg/L				0.01	<0.01	0.01	<0.02	<0.01	<0.01	<0.01	<0.02	NR	NR	NR	<0.02
Níquel Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.020	<0.01	NR	NR	NR	<0.01
Níquel Total	mg/L	**0.61**		**2.00**	<0.01	<0.01	0.050	<0.01	0.010	<0.01	0.060	<0.01	NR	NR	NR	<0.01
Plata Disuelta	mg/L				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NR	NR	NR	<0.00005
Plata Total	mg/L				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00011	<0.00005	NR	NR	NR	<0.00005
Plomo Disuelto	mg/L				<0.0001	<0.0001	0.000	<0.0001	<0.0001	<0.0001	0.00020	<0.0001	NR	NR	NR	0.000
Plomo Total	mg/L	**0.015**		**0.400**	0.0013	<0.0001	0.0072	0.0004	0.0030	<0.0001	0.0198	0.0002	NR	NR	NR	0.0002
Potasio Disuelto	mg/L				4.2	3.5	5.5	5.0	5.8	4.2	8.7	6.6	NR	NR	NR	6.7
Potasio Total	mg/L				4.5	3.6	7.0	5.1	6.5	4.4	11.7	6.7	NR	NR	NR	6.7
Selenio Disuelto	mg/L				<0.0001	<0.0001	0.0001	0.0002	0.00014	<0.0001	0.0005	0.0003	NR	NR	NR	0.0002
Selenio Total	mg/L	**0.170**			<0.0001	<0.0001	0.00010	<0.0001	0.00020	<0.0001	0.00020	0.00020	NR	NR	NR	0.0001
Sodio Disuelto	mg/L				12.6	7.7	16.6	13.4	12.4	9.0	15.6	52.1	NR	NR	NR	56.1
Sodio Total	mg/L				12.2	7.5	15.4	13.7	12.1	8.6	15.2	55.5	NR	NR	NR	56.5
Zinc Disuelto	mg/L				0.07	<0.01	0.14	<0.01	0.06	0.05	0.14	<0.01	NR	NR	NR	<0.01
Zinc Total	mg/L	**7.40**		**10.00**	0.17	<0.01	1.01	<0.01	0.06	0.01	0.17	<0.01	NR	NR	NR	<0.01
Cromo Hexavalente	mg/L			**0.1**	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05
DBO	mg/L			**200**	NR	NR	NR	<10	NR	NR	NR	<10	NR	NR	NR	<10
Coliformes Fecales	NMP/100ml			**$<1x10^4$**	NR	NR	NR	540	NR	NR	NR	16000	NR	NR	NR	23
Color Aparente	u Pt/Co			**500**	NR	NR	NR	74	NR	NR	NR	9	NR	NR	NR	6
Color Real	u Pt/Co				NR	NR	NR	19	NR	NR	NR	<1	NR	NR	NR	<1
Turbidez	NTU				NR	NR	NR	3.45	NR	NR	NR	2.02	NR	NR	NR	1.40

Dónde: **u.e.**: unidades exponenciales; **mg/L**: miligramos por litro; **µS/cm**: microsiemens por centímetro; **°C:** grados centígrados; **NMP/100ml:** número más probable en 100ml; **u Pt/Co:** unidades platino cobalto; **NA**: no analizado; **NR** = Cálculo No Realizado por falta de datos de línea base.

Cuadro 4.4. Resultados de la Calidad del Agua Superficial junio 2013, Proyecto Minero Escobal (3/4).

Parámetros	Unidades	USEPA Salud Humana	IFC Agua Residual Tratada	Acuerdo 236-2006	SW5-E Río Tapalapa - aguas arriba				SW6-E Río Los Vados				SW7-E Quebrada Onda			
					Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13
					Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo	
pH de campo	u.e.	**5.0-9.0**	**6.0-9.0**	**6.0-9.0**	7.52	7.13	8.04	6.95	7.43	7.11	7.82	7.04	7.55	6.91	7.98	6.19
Temperatura campo	°C			**+/- 7**	17.4	14.5	21.5	18.3	19.4	12.2	27.3	20.7	18.7	15.0	21.3	20.5
Conductividad de campo	uS/cm				72.1	0.1	160.2	160.7	259.0	60.0	948.0	155.5	216.0	120.0	416.2	188.0
Oxígeno Disuelto campo	mg/L				3.99	0.03	8.01	6.95	4.03	0.02	8.31	7.24	3.93	0.06	7.54	6.46
Alcalinidad Total	mg/L				25	13	43	27	48	22	108	38	65.8	30.0	101.0	46
Cloruros	mg/L	**250**			1.8	1	3	2	43.9	3	230	13	3.7	3.0	5.0	4
Fluoruros	mg/L	**4**			<0.1	<0.1	<0.1	<0.1	0.11	<0.1	0.30	<0.1	0.10	<0.1	0.20	<0.1
Fosfatos	mg/L				0.0435	<0.03	0.18	0.03	0.0765	<0.03	0.27	0.03	0.1	0.1	0.2	0.09
Cianuro Total	mg/L	**0.14**		**1.00**	0.003	<0.003	0.014	<0.003	<0.003	<0.003	0.014	<0.003	<0.003	<0.003	0.0	<0.003
Amonio	mg/L				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	<0.05
Nitratos/Nitritos como N	mg/L				0.13	0.03	0.42	0.12	0.30	<0.02	1.22	<0.02	1.1	<0.1	3.5	0.14
Nitrogeno Kjeldahl (TKN)	mg/L				0.2	<0.1	0.4	0.1	0.2	0.1	0.5	0.2	0.4	<0.1	0.7	<0.1
Sulfatos	mg/L	**250.0**			17	<10	47	17	14	<10	23	22	26	9	38	66
Fósforo Disuelto (Orto)	mg/L				0.15	<0.01	0.06	0.01	0.03	<0.01	0.09	0.01	0.0	0.0	0.1	0.03
Fósforo Total	mg/L		**2.00**	**10.00**	0.02	<0.01	0.05	0.02	0.04	0.02	0.08	0.02	0.1	0.0	0.2	0.03
STD (TDS)	mg/L	**500**			84	60	110	90	187	90	540	120	174.0	140.0	240.0	200
SST (TSS)	mg/L		**50**	**100**	95	<5	32	<5	21	<5	105	<5	51.8	<5	330.0	6
ST (TS)	mg/L				97	70	130	90	221	120	550	120	259	150	610	210
Hidrocarburos totales (TPH)	mg/L				<0.09	<0.09	<0.1	<0.1	11.5438	<0.1	92	<0.1	<0.1	<0.09	<0.1	<0.1
Grasas y Aceites	mg/L		**10**	**10**	<2.062	<2.02	<2.084	<2.02	<2.062	<2.02	<2.084	<2.02	<2.062	<2.02	<2.084	<2.02
DQO	mg/L		**125.0**		6.5	<10	20.0	<10	<10	<10	30.0	<10	10.0	<10	40.0	<10
Aluminio Disuelto	mg/L				0.06	<0.03	0.14	0.10	0.03	<0.03	0.08	0.03	0.03	<0.03	0.13	<0.03
Aluminio Total	mg/L	**0.20**			1.09	<0.03	3.69	0.50	1.89	<0.03	8.13	0.53	3.1	0.1	16.4	0.52
Antimonio Disuelto	mg/L				<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0013	<0.0004	<0.0004	<0.0004	0.0	0.0007
Antimonio Total	mg/L	**0.006**			<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0	<0.0004	0.0	0.0007
Arsénico Disuelto	mg/L				0.0014	0.0005	0.0024	0.0016	0.0032	0.0007	0.0076	0.0022	0.0038	0.0022	0.0054	0.0035
Arsénico Total	mg/L	**0.010**		**0.100**	0.0018	0.0013	0.0028	0.0019	0.0039	0.0025	0.0074	0.0025	0.0045	0.0030	0.0061	0.0037
Bario Disuelto	mg/L				0.0447	0.0230	0.0720	0.0550	0.0618	0.0270	0.1360	0.0530	0.0946	0.0520	0.1430	0.1070
Bario Total	mg/L	**1**			0.0556	0.0390	0.0690	0.0580	0.0806	0.0550	0.1360	0.0600	0.2142	0.0880	0.9900	0.1080
Berillio Disuelto	mg/L				<0.002	<0.002	<0.01	<0.01	<0.002	<0.002	<0.01	<0.01	<0.002	<0.002	<0.01	<0.01
Berillio Total	mg/L	**0.004**			0.002	<0.002	<0.01	<0.01	<0.002	<0.002	0.003	<0.01	<0.002	<0.002	0.0	<0.01
Boro Disuelto	mg/L				0.01	<0.01	0.01	<0.01	0.361	<0.01	1.82	0.1	<0.01	<0.01	0.0	<0.01
Boro Total	mg/L				0.01	<0.01	0.02	<0.01	0.3785	<0.01	1.93	0.1	0.0	<0.01	0.0	<0.01
Cadmio Disuelto	mg/L				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmio Total	mg/L	**0.003**		**0.1**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0003	<0.0001
Calcio Disuelto	mg/L				7.9	3.4	13.7	8.6	15.1	5.4	38.9	12.5	23.1	11.2	38.1	26.9
Calcio Total	mg/L				7.7	3.4	13.1	8.7	14.8	5.9	37.5	13.1	23.0	11.5	36.7	25.6
Cobalto Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	0.0	<0.01
Cobalto Total	mg/L				<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0	<0.01
Cobre Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobre Total	mg/L	**1.3**		**3**	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cromo Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cromo Total	mg/L	**0.1**		**0.1**	0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.020	<0.01
Hierro Disuelto	mg/L				0.06	0.03	0.09	0.19	0.10	<0.02	0.28	0.08	0.02	<0.02	0.07	0.09
Hierro Total	mg/L	**0.3**			0.71	0.16	1.82	0.42	1.25	0.33	4.79	0.52	1.85	0.08	9.50	0.36
Magnesio Disuelto	mg/L				1.46	0.80	2.50	1.70	3.00	1.40	7.40	2.70	4.14	2.20	6.40	4.70
Magnesio Total	mg/L				1.46	0.90	2.50	1.60	3.09	1.80	7.50	2.60	4.30	2.60	6.50	4.50
Manganeso Disuelto	mg/L				0.025	0.006	0.047	0.037	0.114	<0.005	0.551	0.054	0.032	0.014	0.074	0.196
Manganeso Total	mg/L	**0.05**			0.041	0.014	0.062	0.041	0.148	0.040	0.543	0.069	0.098	0.019	0.342	0.173
Mercurio Disuelto	mg/L				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Mercurio Total	mg/L	**0.002**		**0.01**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molibdeno Disuelto	mg/L				<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02
Molibdeno Total	mg/L				<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02
Níquel Disuelto	mg/L				<0.01	<0.01	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Níquel Total	mg/L	**0.61**		**2.00**	0.013	<0.01	0.030	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.040	<0.01
Plata Disuelta	mg/L				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Plata Total	mg/L				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0001	<0.00005
Plomo Disuelto	mg/L				<0.0001	<0.0001	0.000	0.000	0.000	<0.0001	0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Plomo Total	mg/L	**0.015**		**0.400**	0.0003	<0.0001	0.0012	0.0003	0.0007	<0.0001	0.0028	0.0006	0.0	<0.0001	0.0083	0.0003
Potasio Disuelto	mg/L				3.0	2.5	3.7	3.2	4.1	3.2	7.1	3.7	4.1	3.6	5.4	4.4
Potasio Total	mg/L				3.0	2.2	4.1	3.3	4.2	3.1	7.5	3.7	4.5	3.6	7.0	4.2
Selenio Disuelto	mg/L				<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Selenio Total	mg/L	**0.170**			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00010	<0.0001	<0.0001	<0.0001	0.0	<0.0001
Sodio Disuelto	mg/L				6.3	3.7	10.8	5.6	32.2	6.0	135.0	13.5	11.7	8.7	15.4	10.4
Sodio Total	mg/L				6.0	3.4	9.4	5.7	31.1	5.3	124.0	13.8	11.5	8.3	15.5	10.2
Zinc Disuelto	mg/L				0.04	<0.01	0.10	0.01	<0.1	<0.1	0.40	<0.01	0.13	<0.01	0.81	<0.01
Zinc Total	mg/L	**7.40**		**10.00**	0.20	<0.01	1.60	<0.01	<0.1	<0.1	0.22	<0.01	0.34	<0.01	1.87	<0.01
Cromo Hexavalente	mg/L			**0.1**	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05
DBO	mg/L			**200**	NR	NR	NR	<10	NR	NR	NR	<10	NR	NR	NR	<10
Coliformes Fecales	NMP/100ml			**<1x10^4**	NR	NR	NR	700	NR	NR	NR	540	NR	NR	NR	1600
Color Aparente	u Pt/Co			**500**	NR	NR	NR	62	NR	NR	NR	74	NR	NR	NR	66
Color Real	u Pt/Co				NR	NR	NR	19	NR	NR	NR	21	NR	NR	NR	12
Turbidez	NTU				NR	NR	NR	8.58	NR	NR	NR	10.50	NR	NR	NR	28.50

Dónde: **u.e**.: unidades exponenciales; **mg/L**: miligramos por litro; **µS/cm**: microsiemens por centímetro; **°C:** grados centígrados; **NMP/100ml:** número más probable en 100ml; **u Pt/Co:** unidades platino cobalto; **NA**: no analizado; **NR** = Cálculo No Realizado por falta de datos de línea base.

Cuadro 4.4. Resultados de la Calidad del Agua Superficial junio 2013, Proyecto Minero Escobal (4/4).

Parámetros	Unidades	USEPA Salud Humana	IFC Agua Residual Tratada	Acuerdo 236-2006	SW8-E Aguas debajo de la unión Río San Rafael y El Dorado				SW9-E Río Tapalapa, aguas debajo de la union Rio San Rafael, Los Vados y Quebrada Honda			
					Línea Base¤			jun-13	Línea Base¤			jun-13
					Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo	
pH de campo	u.e.	**5.0-9.0**	**6.0-9.0**	**6.0-9.0**	7.49	7.00	9.83	6.54	7.86	7.54	10.67	7.34
Temperatura campo	°C			**+/- 7**	22.1	18.9	25.1	26.5	21.8	19.1	24.2	22.0
Conductividad de campo	uS/cm				363.7	186.8	807.6	874.1	267.4	121.8	518.0	486.4
Oxígeno Disuelto campo	mg/L				5.14	0.28	7.48	6.52	6.16	0.78	8.47	6.99
Alcalinidad Total	mg/L				79	50	110	110	70	45	90	77
Cloruros	mg/L	**250**			10	7	19	22	11.5	6	20	21
Fluoruros	mg/L	**4**			0.27	0.10	0.60	0.50	0.22	0.10	0.30	0.20
Fosfatos	mg/L				0.55	0.28	1.02	0.99	0.48667	0.22	1.3	0.28
Cianuro Total	mg/L	**0.14**		**1.00**	0.007	<0.003	0.014	<0.003	0.006	<0.003	0.013	<0.003
Amonio	mg/L				0.24	<0.05	0.58	1.60	0.13	<0.05	0.22	0.05
Nitratos/Nitritos como N	mg/L				3.07	2.01	5.23	2.00	1.97	1.14	3.85	1.22
Nitrogeno Kjeldahl (TKN)	mg/L				0.7	<0.1	1.6	3.3	0.6	0.3	0.9	0.4
Sulfatos	mg/L	**250.0**			91	22	360	430	60	25	169	167
Fósforo Disuelto (Orto)	mg/L				0.18	0.08	0.33	0.27	0.18	0.09	0.49	0.10
Fósforo Total	mg/L		**2.00**	**10.00**	0.27	0.12	0.51	0.59	0.25	0.09	0.58	0.15
STD (TDS)	mg/L	**500**			312	160	750	780	255	160	440	390
SST (TSS)	mg/L		**50**	**100**	34	<5	102	6	73	<5	340	18
ST (TS)	mg/L				362	180	750	810	310	200	450	420
Hidrocarburos totales (TPH)	mg/L				<0.01	<0.01	<0.01	0.1	<0.01	<0.01	0.2	<0.1
Grasas y Aceites	mg/L		**10**	**10**	<2.04	<2.02	<2.062	<2.02	<2.02	<2.02	<5	<2.02
DQO	mg/L		**125.0**		20.0	<10	40.0	30.0	17.8	<10	35.0	10.0
Aluminio Disuelto	mg/L				0.03	<0.03	0.06	<0.03	0.09	<0.03	0.22	<0.03
Aluminio Total	mg/L	**0.20**			2.39	0.04	7.35	0.25	2.96	0.41	8.62	1.20
Antimonio Disuelto	mg/L				0.001	<0.0004	0.0033	0.0023	0.00058	<0.0004	0.0013	0.0008
Antimonio Total	mg/L	**0.006**			0.0010	<0.0004	0.0027	0.0021	0.00068	<0.0004	0.0012	0.0007
Arsénico Disuelto	mg/L				0.0043	0.0025	0.0064	0.0068	0.0040	0.0023	0.0057	0.0045
Arsénico Total	mg/L	**0.010**		**0.100**	0.0060	0.0041	0.0096	0.0074	0.0042	0.0020	0.0060	0.0047
Bario Disuelto	mg/L				0.1072	0.0740	0.1430	0.1040	0.0943	0.0560	0.1350	0.0950
Bario Total	mg/L	**1**			0.1355	0.1020	0.1850	0.1120	0.1208	0.0900	0.1540	0.1070
Berillio Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Berillio Total	mg/L	**0.004**			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boro Disuelto	mg/L				0.02	<0.01	0.05	0.05	0.0425	<0.01	0.09	0.10
Boro Total	mg/L				0.02	<0.01	0.06	0.05	0.04083	<0.01	0.1	0.09
Cadmio Disuelto	mg/L				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmio Total	mg/L	**0.003**		**0.1**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001
Calcio Disuelto	mg/L				50.4	17.5	156.0	160.0	35.7	18.2	78.3	67.7
Calcio Total	mg/L				52.1	18.6	156.0	169.0	36.2	18.5	79.7	67.0
Cobalto Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalto Total	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobre Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobre Total	mg/L	**1.3**		**3**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cromo Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cromo Total	mg/L	**0.1**		**0.1**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hierro Disuelto	mg/L				0.06	0.02	0.11	0.08	0.09	<0.02	0.17	0.02
Hierro Total	mg/L	**0.3**			1.53	0.05	4.36	0.56	0.98	0.25	2.17	0.89
Magnesio Disuelto	mg/L				6.30	3.20	14.70	14.20	6.02	3.30	9.70	8.50
Magnesio Total	mg/L				6.55	3.30	14.80	15.30	6.18	3.40	10.10	8.50
Manganeso Disuelto	mg/L				0.095	0.009	0.118	0.282	0.057	0.023	0.148	0.091
Manganeso Total	mg/L	**0.05**			0.181	0.047	0.349	0.304	0.115	0.043	0.187	0.159
Mercurio Disuelto	mg/L				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Mercurio Total	mg/L	**0.002**		**0.01**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molibdeno Disuelto	mg/L				<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02
Molibdeno Total	mg/L				<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02
Níquel Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Níquel Total	mg/L	**0.61**		**2.00**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Plata Disuelta	mg/L				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Plata Total	mg/L				<0.00005	<0.00005	0.000	<0.00005	<0.00005	<0.00005	0.00007	<0.00005
Plomo Disuelto	mg/L				0.0001	<0.0001	0.000	<0.0001	0.000	<0.0001	0.001	<0.0001
Plomo Total	mg/L	**0.015**		**0.400**	0.0030	<0.0001	0.0089	0.0008	0.0022	0.0002	0.0080	0.0015
Potasio Disuelto	mg/L				6.5	5.8	7.4	9.9	6.0	4.5	8.1	6.4
Potasio Total	mg/L				6.8	6.4	7.8	9.6	6.1	4.8	8.5	6.4
Selenio Disuelto	mg/L				<0.0001	<0.0001	0.0002	0.0001	<0.0001	<0.0001	0.0001	<0.0001
Selenio Total	mg/L	**0.170**			0.0001	<0.0001	0.00020	0.00010	<0.0001	<0.0001	0.00010	<0.0001
Sodio Disuelto	mg/L				18.8	12.3	33.7	40.0	17.6	10.7	26.9	25.9
Sodio Total	mg/L				18.4	12.9	34.3	42.6	17.4	11.0	28.5	26.2
Zinc Disuelto	mg/L				<0.01	<0.01	0.03	<0.01	<0.01	<0.01	0.03	<0.01
Zinc Total	mg/L	**7.40**		**10.00**	0.02	<0.01	0.04	0.02	<0.01	<0.01	0.03	<0.01
Cromo Hexavalente	mg/L			**0.1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
DBO	mg/L			**200**	15	15	25	17.00000	<10	<10	<10	<10
Coliformes Fecales	NMP/100ml			**<1x10^4**	2.E+06	2.E+04	5.E+06	2.E+03	9.E+04	1.E+02	2.E+05	2.E+04
Color Aparente	u Pt/Co			**500**	172	19	351	158	342	29	824	92
Color Real	u Pt/Co				20	22	36	13	43	10	60	13
Turbidez	NTU				14.15	6.09	22.20	17.60	25.72	4.93	46.50	20.60

Dónde: **u.e**.: unidades exponenciales; **mg/L**: miligramos por litro; **µS/cm**: microsiemens por centímetro; **°C:** grados centígrados; **NMP/100ml:** número más probable en 100ml; **u Pt/Co:** unidades platino cobalto.**NA**: no analizado; **NR** = Cálculo No Realizado por falta de datos de línea base. .

4.3.3. Agua Subterránea

En general los parámetros analizados para los 5 puntos de monitoreo cumplen con el Acuerdo 236-2006 y los valores en general se encuentran dentro del rango estadístico de la línea base. En el Cuadro 4-6, se presentan los resultados de la calidad del agua subterránea (manantiales) para el mes de junio 2013 en las cinco estaciones de monitoreo.

La temperatura de las estaciones muestreadas se encontró entre 18.6 y 22.7 °C. La lectura menor de pH se obtuvo en la estación GW4 (5.84 u.e.) y la mayor en la estación GW3 (6.58 u.e.) Los Sólidos Suspendidos Totales (TSS) se detectaron en las estaciones GW2 (10 mg/L) y GW3 (5 mg/L). Las concentraciones registradas de Cloruros y Fluoruros están por debajo de las directrices dadas por la USEPA (250 mg/L y 4 mg/L respectivamente).

Los sulfatos y sólidos disueltos totales (TDS) están por debajo de las guías dadas por la USEPA (250mg/L y 500 mg/l respectivamente) en la mayoría de las estaciones a excepción de GW3, donde se obtuvieron concentraciones de 270mg/L de sulfatos y 600mg/l de TDS; se dará seguimiento a este parámetro en futuros muestreos para comprobar o descartar que dicho aumento se deba a las actividades realizadas dentro de la empresa. De corroborarse que el aumento se deba a las actividades generadas dentro del proyecto, se procederá a tomar las medidas necesarias para su corrección.

El Cianuro, Berilio, Cromo, Mercurio, Molibdeno, Níquel y Plata no fueron detectados en ninguna de las estaciones; el Selenio fue detectado en las estaciones GW2 y GW5, en concentraciones por debajo de la guía dada por la USEPA (0.0001 mg/L y 0.0002 mg/L respectivamente); el Antimonio fue detectado en las estaciones GW2 (0.0016 mg/L) y en GW3 (0.0005 mg/L) en concentraciones por debajo de la guía de la USEPA (0.01 mg/L).

En todas las estaciones la concentración de Arsénico se encuentra por debajo del valor máximos establecidos durante la elaboración de línea base, y la mayoría por debajo de la directriz de la USEPA (0.01 mg/L) a excepción de GW2 que presentó una concentración de 0.0209mg/L (máximo línea base 0.0299 mg/l).

Las concentraciones de Bario están por debajo de la directriz de la USEPA (1 mg/L) en todas las estaciones. El Cadmio se detectó únicamente en las estaciones GW3 y GW4 en concentraciones menores a las guías dadas por la USEPA y Acuerdo (0.003 y 0.1 mg/l respectivamente). El Plomo se detectó en las estaciones GW2, GW4 y GW5 en concentraciones por debajo de las guías de la USEPA y Acuerdo (0.015 y 0.4 mg/L).

En la estación GW4 se detectaron concentraciones de Aluminio y Hierro mayores a los límites establecidos durante la línea base y las directrices dadas por la USEPA (0.2 y

0.3 mg/L), y en la estación GW2 únicamente el Hierro. Debido a que se desconoce la fuente de estos incrementos, se dará seguimiento a la tendencia que tenga estos parámetros en estas estaciones para comprobar o descartar que dicho aumento se deba a las actividades realizadas dentro de la empresa. De corroborarse que el aumento se deba a las actividades generadas dentro del proyecto, se procederá a tomar las medidas necesarias para su corrección.

Los resultados de laboratorio se presentan en el Anexo 12.4.2.

Cuadro 4-6 Resultados de la Calidad de Agua Subterránea (manantiales) junio 2013, Proyecto Minero Escobal.

Y

Parámetros	Unidades	USEPA Salud Humana	IFC Agua Residual Tratada	Acuerdo 236-2006	GW1-A Nacimiento-Aldea El Volcancito				GW-2 Nacimiento- Aldea El Fucio				GW-3 Nacimiento - Zona central del Proyecto (frente portal Oeste)				GW-4 Manantial - Aguas arriba de depósito de colas				GW-5 Manantial - Aguas arriba de depósito de colas, debajo de GW-4			
					Línea Base¤				Línea Base¤				Línea Base¤				Línea Base¤				Línea Base¤			
					Promedio	Mínimo	Máximo	jun-13	Promedio	Mínimo	Máximo	jun-13	Promedio	Mínimo	Máximo	jun-13	Promedio	Mínimo	Máximo	jun-13	Promedio	Mínimo	Máximo	jun-13
pH de campo	u.e.	**5.0-9.0**	**6.0-9.0**	**6.0-9.0**	7.08	6.89	7.26	6.54	6.54	6.01	7.16	6.25	6.54	6.21	7.13	6.58	6.13	6.13	6.13	5.84	NR	NR	NR	6.05
Temp de campo	°C			**+/- 7**	15.2	14.8	15.6	18.6	21.4	19.0	23.7	19.2	19.4	18.5	21.0	22.7	18.1	18.1	18.1	19.1	NR	NR	NR	19.7
Conductividad de campo	uS/cm				229.8	223.0	236.5	141.5	323.4	111.3	500.5	173.5	315.3	236.7	501.1	789.6	147.3	147.3	147.3	153.7	NR	NR	NR	125.5
Oxígeno Disuelto de campo	mg/L				0.10	0.03	0.17	5.97	1.18	0.13	2.35	1.15	0.68	0.03	1.26	5.03	0.14	0.14	0.14	7.33	NR	NR	NR	2.25
Alcalinidad Total	mg/L				31	31	31	31	83	35	153	51	83	71	97	125	35	35	35	22	NR	NR	NR	38
Cloruros	mg/L	**250**			15	14	16	4	4	2	7	5	5	3	6	5	4	4	4	19	NR	NR	NR	4
Fluoruros	mg/L	**4**			<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.2	0.15	0.1	0.2	0.3	<0.1	<0.1	<0.1	<0.1	NR	NR	NR	0.2
Fosfatos	mg/L				0.18	0.12	0.24	<0.03	0.36	0.12	0.74	0.31	0.27	0.12	0.52	0.06	0.09	0.09	0.09	0.16	NR	NR	NR	0.03
Cianuro Total	mg/L	**0.14**		**1.00**	0.008	<0.003	0.014	<0.003	0.004	<0.003	0.012	<0.003	0.005	<0.003	0.014	<0.003	<0.003	<0.003	<0.003	<0.003	NR	NR	NR	<0.003
Amonio	mg/L				<0.05	<0.05	0.1	0.090	0.059	<0.05	0.160	<0.05	0.065	<0.05	0.140	<0.05	<0.05	<0.05	<0.05	0.160	NR	NR	NR	0.130
Nitratos/Nitritos como N	mg/L				2.19	1.90	2.48	1.54	0.74	0.14	1.10	<0.02	1.19	0.05	3.16	2.46	0.07	0.07	0.07	0.04	NR	NR	NR	0.75
Nitrogeno Kjeldahl (TKN)	mg/L				0.7	0.3	1.1	0.7	0.6	0.2	0.9	0.3	0.5	<0.05	1.2	0.3	0.3	0.3	0.3	2.7	NR	NR	NR	0.2
Sulfatos	mg/L	**250.0**			12.5	11.0	14.0	6.0	43.0	7.0	90.0	19.0	30.0	16.0	71.0	270	7.0	7.0	7.0	61.0	NR	NR	NR	10.0
Fósforo Total	mg/L		**2.00**	**10.00**	0.10	0.02	0.17	0.06	0.18	0.09	0.27	0.15	0.10	0.05	0.15	0.02	0.03	0.03	0.03	0.23	NR	NR	NR	0.04
STD (TDS)	mg/L	**500.00**			190	190	190	144	223	130	350	160	213	190	260	600	170	170	170	572	NR	NR	NR	160
SST (TSS)	mg/L		**50**	**100**	7	6	7	<20	8	6	9	10	39	5	105	5	206	206	206	<5	NR	NR	NR	<5
ST (TS)	mg/L				200	180	220	160	238	140	380	160	218	170	270	610	360	360	360	620	NR	NR	NR	280
Aluminio Disuelto	mg/L	**0.200**			<0.03	<0.03	<0.03	<0.03	0.08	<0.03	0.24	0.09	<0.03	<0.03	0.04	<0.03	1.42	1.42	1.42	3.14	NR	NR	NR	0.25
Antimonio Disuelto	mg/L	**0.01**			<0.0004	<0.0004	<0.0004	<0.0004	0.0008	<0.0004	0.0011	0.0008	0.0004	<0.0004	0.0010	0.0005	<0.0004	<0.0004	<0.0004	<0.0004	NR	NR	NR	<0.0004
Arsénico Disuelto	mg/L	**0.01**		**0.1**	0.0010	0.0008	0.0011	0.0024	0.0156	0.0043	0.0299	0.0209	0.0059	0.0037	0.0115	0.0028	0.0008	0.0008	0.0008	0.0022	NR	NR	NR	0.0007
Bario Disuelto	mg/L	**1**			0.025	0.022	0.028	0.034	0.240	0.125	0.451	0.139	0.186	0.120	0.328	0.360	0.127	0.127	0.127	0.253	NR	NR	NR	0.063
Berillio Disuelto	mg/L	**0.00400**			<0.01	<0.002	<0.01	<0.01	<0.01	<0.002	<0.01	<0.01	<0.01	<0.002	<0.01	<0.01	<0.002	<0.002	<0.002	<0.01	NR	NR	NR	<0.01
Boro Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	NR	NR	NR	<0.01
Cadmio Disuelto	mg/L	**0.0030**		**0.1000**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0002	NR	NR	NR	<0.0001
Calcio Disuelto	mg/L				5.7	5.1	6.2	5.5	33.45	9.6	65.3	17.2	31.6	25.7	43.4	106	4.4	4.4	4.4	6.8	NR	NR	NR	4.3
Cobalto Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	NR	NR	NR	<0.01
Cobre Disuelto	mg/L	**1.3**		**3**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	NR	NR	NR	<0.01
Cromo Disuelto	mg/L	**0.1**		**0.1**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
Hierro Disuelto	mg/L	**0.3**			0.02	<0.02	0.03	<0.02	0.10	0.03	0.17	0.49	0.10	<0.02	0.33	<0.02	0.74	0.74	0.74	4.52	NR	NR	NR	0.10
Magnesio Disuelto	mg/L				3.1	2.9	3.3	2.3	5.9	1.8	12.0	3.1	4.9	3.3	8.3	17.5	2.6	2.6	2.6	3.0	NR	NR	NR	2.8
Manganeso Disuelto	mg/L	**0.05**			<0.005	<0.005	<0.005	<0.005	0.123	0.020	0.356	0.190	0.057	<0.005	0.133	0.608	0.069	0.069	0.069	1.090	NR	NR	NR	0.047
Mercurio Disuelto	mg/L	**0.002**		**0.010**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NR	NR	NR	<0.0002
Molibdeno Disuelto	mg/L				<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	NR	NR	NR	<0.01
Níquel Disuelto	mg/L	**0.61**		**2**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
Plata Disuelta	mg/L				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NR	NR	NR	<0.00005
Plomo Disuelto	mg/L	**0.015**		**0.4**	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0002	<0.0001	<0.0001	0.0001	<0.0001	0.0009	0.0009	0.0009	0.0081	NR	NR	NR	0.0002
Potasio Disuelto	mg/L				7.3	5.9	8.6	4.3	2.9	1.3	4.3	2.1	3.8	2.5	5.0	10.4	4.6	4.6	4.6	7.4	NR	NR	NR	6.5
Selenio Disuelto	mg/L	**0.17**			0.0002	<0.0001	0.0003	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0001	NR	NR	NR	<0.0001
Sodio Disuelto	mg/L				17.6	16.9	18.2	8.6	13.5	7.2	22.0	9.2	11.5	9.3	16.4	32.2	10.3	10.3	10.3	10.2	NR	NR	NR	12.1
Zinc Disuelto	mg/L	**7.4**		**10**	<0.01	<0.01	<0.01	0.12	<0.1	<0.1	0.10	<0.01	0.94	<0.1	3.47	<0.01	0.10	0.10	0.10	0.07	NR	NR	NR	<0.01
turbidez	NTU				NR	NR	NR	16.9	NR	NR	NR	14.1	NR	NR	NR	0.46	NR	NR	NR	631	NR	NR	NR	48.7
Materia Flotante	visual			**Ausente**	NR	NR	NR	Presente	NR	NR	NR		NR	NR	NR		NR	NR	NR		NR	NR	NR	
Color Aparente	u Pt/Co			**500**	NR	NR	NR	123.0	NR	NR	NR	114.0	NR	NR	NR	<1	NR	NR	NR	4220.0	NR	NR	NR	303.0
Color Real	u Pt/Co				NR	NR	NR	38	NR	NR	NR	12	NR	NR	NR	<1	NR	NR	NR	687	NR	NR	NR	192
Cromo Hexavalente	mg/L			**0.1**	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05
Coliformes Fecales	NMP/100mL			**<1x10^4**	NR	NR	NR	2400	NR	NR	NR	23.00	NR	NR	NR	<2	NR	NR	NR	94	NR	NR	NR	1600

Dónde: **u.e**.: unidades exponenciales; **mg/L**: miligramos por litro; **µS/cm**: microsiemens por centímetro; **°C:** grados centígrados; **NMP/100ml:** número más probable en 100ml; **u Pt/Co:** unidades platino cobalto: **NA**: no analizado; **NR** = Cálculo No Realizado por falta de datos de línea base. Fuente ACZ Laboratories, Inc.

Cuadro 4-7 Resultados de la medición de calidad de agua subterránea (Pozos de Monitoreo, Producción y Artesanal), Junio 2013, Proyecto Minero Escobal. (1/3)

Parámetros	Unidades	USEPA Salud Humana	IFC Agua Residual Tratada	Acuerdo 236-2006	MW-1				MW-2				MW-3				MW-4				MW-5			
					Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13
					Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo	
pH de campo	u.e.	5.0-9.0	6.0-9.0	6.0-9.0	6.24	6.18	6.30	6.10	6.56	6.37	6.77	5.79	6.44	6.34	6.49	6.09	6.32	6.23	6.41	6.04	6.19	6.04	6.34	5.94
Temp de campo	°C			+/- 7	21.8	21.3	22.5	23.3	24.4	23.4	25.1	24.6	24.1	23.7	24.5	24.5	23.3	22.2	24.4	23.4	23.4	23.0	24.6	23.4
Conductividad de campo	uS/cm				254.4	235.9	271.2	374.3	427.5	211.9	1001.3	144.6	803.9	741.6	829.1	489.1	916.9	872.1	944.8	659.5	469.7	401.4	494.1	881.5
Oxígeno Disuelto de campo	mg/L				0.63	0.20	1.35	6.24	0.75	0.30	1.21	4.77	0.65	0.11	1.44	4.24	0.97	0.48	1.93	7.33	0.82	0.19	1.77	6.16
Alcalinidad Total	mg/L				60	52	69	61	64	56	80	44	84	82	86	77	85	83	88	85	66	61	68	101
Cloruros	mg/L	250			4	3	5	5	12	3	28	4	16	16	17	13	20	19	21	20	9	8	9	23
Fluoruros	mg/L	4			0.2	0.1	0.2	0.1	0.4	0.2	0.7	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.2	0.1	0.2	0.2
Fosfatos	mg/L				0.27	0.24	0.31	0.25	0.23	0.21	0.27	0.19	0.32	0.27	0.37	0.25	0.25	0.24	0.27	0.19	0.20	0.15	0.24	0.09
Cianuro Total	mg/L	0.14		1.00	0.005	<0.003	0.015	<0.003	0.004	<0.003	0.011	<0.003	0.005	<0.003	0.014	<0.003	0.005	<0.003	0.015	<0.003	0.005	<0.003	0.015	<0.003
Amonio	mg/L				<0.05	<0.05	<0.05	0.060	<0.05	<0.05	<0.05	0.050	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitratos/Nitritos como N	mg/L				2.67	2.22	3.09	3.23	2.48	2.04	2.93	2.66	2.20	2.08	2.26	2.37	2.13	1.98	2.32	2.15	3.32	3.00	3.57	2.64
Nitrogeno Kjeldahl (TKN)	mg/L				0.2	<0.1	0.3	<0.1	0.6	<0.1	1.1	<0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.3	0.2
Sulfatos	mg/L	250.0			13.0	10.0	14.0	105.0	28.5	4.0	97.0	7.0	166.0	162.0	169.0	137.0	212.5	210.0	220.0	230.0	72.3	64.0	76.0	370.0
Fósforo Total	mg/L		2.00	10.00	0.14	0.10	0.21	0.09	0.24	0.06	0.44	0.10	0.09	0.08	0.10	0.08	0.07	0.06	0.08	0.06	0.06	0.05	0.07	0.04
STD (TDS)	mg/L	500.00			203	180	210	320	253	190	360	190	470	460	480	400	553	540	560	530	305	290	320	740
SST (TSS)	mg/L		50	100	142	40	264	54	346	137	584	280	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	5
ST (TS)	mg/L				415	280	600	440	598	350	810	450	488	450	510	390	555	520	580	530	325	280	350	750
Aluminio Disuelto	mg/L	0.200			0.08	<0.03	0.16	0.20	0.04	<0.03	0.07	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Antimonio Disuelto	mg/L	0.01			<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Arsénico Disuelto	mg/L	0.01		0.1	0.0040	0.0029	0.0047	0.0041	0.0011	0.0008	0.0014	<0.0002	0.0023	0.0021	0.0027	0.0016	0.0023	0.0021	0.0028	0.0013	0.0013	0.0010	0.0016	<0.0002
Bario Disuelto	mg/L	1			0.068	0.054	0.084	0.173	0.030	0.024	0.039	0.031	0.036	0.032	0.041	0.034	0.042	0.038	0.047	0.043	0.162	0.157	0.166	0.140
Berillio Disuelto	mg/L	0.00400			<0.002	<0.002	0.003	<0.01	<0.002	<0.002	0.003	<0.01	<0.002	<0.002	0.003	<0.01	<0.002	<0.002	0.003	<0.01	<0.002	<0.002	0.003	<0.01
Boro Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.04	0.02	0.06	0.05	0.07	0.05	0.08	0.06	0.09	0.07	0.02	<0.01	0.03	0.03
Cadmio Disuelto	mg/L	0.0030		0.1000	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcio Disuelto	mg/L				10.8	8.2	13.2	36.4	20.6	9.4	48.7	7.6	80.3	76.4	83.3	63.2	100.0	93.0	107.0	99	40.8	39.2	42.2	144
Cobalto Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobre Disuelto	mg/L	1.3		3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cromo Disuelto	mg/L	0.1		0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hierro Disuelto	mg/L	0.3			0.02	<0.02	0.04	0.32	<0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
Magnesio Disuelto	mg/L				5.2	4.8	5.8	10.9	3.5	2.4	6.1	2.7	10.3	10.1	10.7	7.9	11.3	10.9	11.6	10.9	7.3	6.8	7.6	20.8
Manganeso Disuelto	mg/L	0.05			0.024	<0.005	0.047	0.033	0.108	0.030	0.308	0.035	<0.005	<0.005	0.008	<0.005	0.009	<0.005	0.021	<0.005	<0.005	<0.005	<0.005	<0.005
Mercurio Disuelto	mg/L	0.0		0.01	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molibdeno Disuelto	mg/L				<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02
Níquel Disuelto	mg/L	0.61		2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Plata Disuelta	mg/L				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Plomo Disuelto	mg/L	0.015		0.4	0.0002	<0.0001	0.0003	0.0011	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0002	<0.0001
Potasio Disuelto	mg/L				3.9	3.6	4.2	5.6	2.2	1.9	2.4	3.4	4.2	3.9	4.6	3.8	4.7	4.5	5.2	4.8	6.0	5.5	6.5	9.0
Selenio Disuelto	mg/L	0.17			0.0003	0.0002	0.0003	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0003	0.0003	0.0004	0.0003	0.0004	0.0003
Sodio Disuelto	mg/L				18.0	15.8	22.1	17.3	22.0	17.4	33.6	15.6	29.5	28.2	30.9	25.6	32.3	30.4	35.8	31.6	16.9	15.6	19.1	27.8
Zinc Disuelto	mg/L	7.4		10	0.09	<0.01	0.24	0.18	0.03	<0.01	0.11	0.16	0.05	<0.01	0.10	0.02	<0.01	<0.01	0.10	0.01	<0.01	<0.01	0.10	0.03
Turbidez	NTU				NR	NR	NR	77.8	NR	NR	NR	33.8	NR	NR	NR	2.42	NR	NR	NR	0.5	NR	NR	NR	2.63
Color Aparente	u Pt/Co			500	NR	NR	NR	438	NR	NR	NR	66	NR	NR	NR	<1	NR	NR	NR	<1	NR	NR	NR	<1
Color Real	u Pt/Co				NR	NR	NR	1	NR	NR	NR	<1	NR	NR	NR	<1	NR	NR	NR	<1	NR	NR	NR	<1
Cromo Hexavalente	mg/L			0.1	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05
Coliformes fecales	NMP/100 ml			$<1x10^4$	NR	NR	NR	9200	NR	NR	NR	23	NR	NR	NR	5400	NR	NR	NR	2800	NR	NR	NR	5400

Cuadro 4-6. Resultados de la medición de calidad de agua subterránea (Pozos de Monitoreo, Producción y Artesanal), Junio 2013, Proyecto Minero Escobal. (2/3)

Parámetros	Unidades	USEPA Salud Humana	IFC Agua Residual Tratada	Acuerdo 236-2006	MW-6				MW-7				MW-8				MW-9			
					Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13
					Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo	
pH de campo	u.e.	**5.0-9.0**	**6.0-9.0**	**6.0-9.0**	6.22	6.17	6.25	5.79	6.38	6.14	6.98	6.90	6.16	6.07	6.29	6.59	7.15	6.90	7.40	6.94
Temp de campo	°C			**+/- 7**	22.3	21.6	22.8	24.9	22.4	22.0	23.1	22.4	23.3	23.2	23.4	23.1	27.5	25.9	29.0	25.7
Conductividad de campo	uS/cm				538.2	342.9	752.6	1858.0	299.6	285.9	323.8	263.5	426.8	424.6	428.1	686.5	1595.0	1569.0	1621.0	861.4
Oxígeno Disuelto de campo	mg/L				0.69	0.19	1.67	3.65	0.61	0.25	1.19	3.12	0.72	0.16	1.45	4.99	0.38	0.35	0.41	2.10
Alcalinidad Total	mg/L				65	62	68	90	48	41	60	82	68	66	70	73	147	136	157	138
Cloruros	mg/L	**250**			11	6	17	83	11	9	12	10	6	6	6	15	37	36	37	26
Fluoruros	mg/L	**4**			0.2	0.1	0.2	0.1	0.1	0.1	0.2	<0.1	0.2	0.1	0.2	0.1	2.6	2.5	2.6	1.5
Fosfatos	mg/L				0.17	0.15	0.21	<0.03	0.11	0.09	0.18	0.06	0.23	0.21	0.24	0.16	<0.03	<0.03	<0.03	0.06
Cianuro Total	mg/L	**0.14**		**1.00**	0.005	<0.003	0.015	<0.003	0.005	<0.003	0.015	<0.003	0.005	<0.003	0.015	<0.003	0.007	<0.003	0.012	<0.003
Amonio	mg/L				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitratos/Nitritos como N	mg/L				5.08	4.42	6.15	0.89	4.75	4.08	5.24	1.65	2.76	2.63	2.83	2.89	<0.02	<0.02	<0.02	<0.02
Nitrogeno Kjeldahl (TKN)	mg/L				<0.1	<0.1	0.2	<0.1	0.2	<0.1	0.4	<0.1	0.1	<0.1	0.2	<0.1	0.2	<0.1	0.4	<0.1
Sulfatos	mg/L	**250.0**			85.3	33.0	153.0	1040.0	19.3	17.0	23.0	21.0	54.7	54.0	55.0	230.0	440.0	440.0	440.0	310.0
Fósforo Total	mg/L		**2.00**	**10.00**	0.05	0.04	0.06	0.03	0.04	0.01	0.07	0.02	0.07	0.06	0.08	0.05	<0.01	<0.01	0.02	0.04
STD (TDS)	mg/L	**500.00**			340	260	440	1690	233	220	250	250	277	270	290	530	905	890	920	650
SST (TSS)	mg/L		**50**	**100**	<5	<5	<5	<5	20	7	45	6	9	6	14	<5	27	25	29	10
ST (TS)	mg/L				345	240	450	1660	260	230	280	260	300	290	310	530	940	910	970	670
Aluminio Disuelto	mg/L	**0.200**			<0.03	<0.03	0.05	<0.03	0.05	<0.03	0.07	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Antimonio Disuelto	mg/L	**0.01**			0.0005	<0.0004	0.0012	<0.0004	0.0006	0.0005	0.0008	0.0006	0.0010	0.0009	0.0011	0.0009	<0.0004	<0.0004	<0.0004	<0.0004
Arsénico Disuelto	mg/L	**0.01**		**0.1**	0.0028	0.0024	0.0032	0.0014	0.0034	0.0029	0.0041	0.0017	0.0021	0.0019	0.0024	0.0009	0.0030	0.0007	0.0052	0.0024
Bario Disuelto	mg/L	**1**			0.198	0.134	0.281	0.182	0.156	0.129	0.176	0.317	0.125	0.122	0.129	0.223	0.031	0.028	0.034	0.056
Berillio Disuelto	mg/L	**0.00400**			<0.002	<0.002	0.003	<0.01	<0.002	<0.002	0.003	<0.01	<0.002	<0.002	0.003	<0.01	<0.01	<0.002	<0.01	<0.01
Boro Disuelto	mg/L				<0.01	<0.01	<0.01	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	0.09	0.08	0.10	0.06
Cadmio Disuelto	mg/L	**0.0030**		**0.1000**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcio Disuelto	mg/L				52.5	35.1	71.9	357	16.7	13.9	19.6	22.5	34.6	32.5	36.3	90.6	185.5	170.0	201.0	124
Cobalto Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobre Disuelto	mg/L	**1.3**		**3**	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	0.01	<0.01	<0.01	<0.01	<0.01
Cromo Disuelto	mg/L	**0.1**		**0.1**	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.10	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
Hierro Disuelto	mg/L	**0.3**			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.06	<0.02	<0.02	<0.02	<0.02	5.52	1.53	9.51	5.36
Magnesio Disuelto	mg/L				7.5	4.9	10.5	44.4	4.8	4.6	5.0	6.6	6.4	6.3	6.7	16.0	35.8	34.4	37.2	23.7
Manganeso Disuelto	mg/L	**0.05**			<0.005	<0.005	0.006	<0.005	0.007	<0.005	0.012	0.023	0.019	0.012	0.029	<0.005	0.203	0.149	0.257	0.481
Mercurio Disuelto	mg/L	**0.0**		**0.01**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molibdeno Disuelto	mg/L				<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02
Níquel Disuelto	mg/L	**0.61**		**2**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Plata Disuelta	mg/L				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0	<0.00005
Plomo Disuelto	mg/L	**0.015**		**0.4**	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0009	<0.0001	<0.0001	<0.0001	<0.0001
Potasio Disuelto	mg/L				5.7	5.0	6.5	14.8	6.2	5.4	6.8	8.0	4.8	4.6	5.1	6.7	4.8	4.6	5.0	5.3
Selenio Disuelto	mg/L	**0.17**			0.0005	0.0004	0.0005	0.0004	0.0002	0.0001	0.0002	<0.0001	0.0004	0.0003	0.0006	0.0003	<0.0001	<0.0001	<0.0001	<0.0001
Sodio Disuelto	mg/L				14.0	12.3	17.0	68.9	19.1	15.4	27.5	16.9	15.2	15.0	15.6	22.3	45.1	44.7	45.4	39.8
Zinc Disuelto	mg/L	**7.4**		**10**	0.03	<0.01	0.10	0.06	0.03	<0.01	0.10	0.43	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	0.01	0.01
Turbidez	NTU				NR	NR	NR	1.6	NR	NR	NR	2.26	NR	NR	NR	0.62	NR	NR	NR	2.07
Color Aparente	u Pt/Co			**500**	NR	NR	NR	<1	NR	NR	NR	14	NR	NR	NR	<1	NR	NR	NR	441
Color Real	u Pt/Co				NR	NR	NR	<1	NR	NR	NR	<1	NR	NR	NR	<1	NR	NR	NR	2
Cromo Hexavalente	mg/L			**0.1**	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05
Coliformes fecales	NMP/100 ml			**<1x10^4**	NR	NR	NR	9200	NR	NR	NR	120	NR	NR	NR	<2	NR	NR	NR	2400

Cuadro 4-6 Resultados de la medición de calidad de agua subterránea (Pozos de Monitoreo, Producción y Artesanal), junio 2013, Proyecto Minero Escobal. (3/3)

Parámetros	Unidades	USEPA Salud Humana	IFC Agua Residual Tratada	Acuerdo 236-2006	MW-10				MW-11				PSA-SR				RW-1			
					Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13	Línea Base¤			jun-13
					Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo		Promedio	Mínimo	Máximo	
pH de campo	u.e.	**5.0-9.0**	**6.0-9.0**	**6.0-9.0**	7.06	6.98	7.13	6.56	NR	NR	NR	7.57	7.45	7.45	7.45	6.67	NR	NR	NR	6.57
Temp de campo	°C			**+/- 7**	24.2	23.9	24.4	21.6	NR	NR	NR	32.7	27.8	27.8	27.8	30.0	NR	NR	NR	24.4
Conductividad de campo	uS/cm				828.4	825.0	831.7	1253	NR	NR	NR	1675.0	663.9	663.9	663.9	986.0	NR	NR	NR	894.0
Oxígeno Disuelto de campo	mg/L				0.26	0.21	0.31	1.72	NR	NR	NR	4.61	0.05	0.05	0.05	6.67	NR	NR	NR	440.30
Alcalinidad Total	mg/L				237	234	240	171	NR	NR	NR	121	186	186	186	179	NR	NR	NR	71
Cloruros	mg/L	**250**			3	2	3	3	NR	NR	NR	71	32	32	32	4	NR	NR	NR	41
Fluoruros	mg/L	**4**			0.3	0.3	0.3	0.9	NR	NR	NR	2.6	0.7	0.7	0.7	0.7	NR	NR	NR	0.4
Fosfatos	mg/L				0.06	0.06	0.06	0.22	NR	NR	NR	<0.03	0.06	0.06	0.06	<0.03	NR	NR	NR	0.09
Cianuro Total	mg/L	**0.14**		**1.00**	0.007	<0.003	0.012	<0.003	NR	NR	NR	<0.003	0.003	0.003	0.003	<0.003	NR	NR	NR	<0.003
Amonio	mg/L				<0.05	<0.05	<0.05	<0.05	NR	NR	NR	<0.05	0.1	0.1	0.1	<0.05	NR	NR	NR	<0.05
Nitratos/Nitritos como N	mg/L				<0.02	<0.02	0.03	<0.02	NR	NR	NR	<0.02	<0.02	<0.02	<0.02	<0.02	NR	NR	NR	6.65
Nitrogeno Kjeldahl (TKN)	mg/L				<0.1	<0.1	<0.1	<0.1	NR	NR	NR	<0.1	<0.1	<0.1	<0.1	<0.1	NR	NR	NR	1.0
Sulfatos	mg/L	**250.0**			75.0	73.0	77.0	580.0	NR	NR	NR	810.0	45.0	45.0	45.0	380.0	NR	NR	NR	358.0
Fósforo Total	mg/L		**2.00**	**10.00**	0.02	0.01	0.03	0.44	NR	NR	NR	<0.01	0.02	0.02	0.02	0.01	NR	NR	NR	0.03
STD (TDS)	mg/L	**500.00**			395	390	400	1010	NR	NR	NR	1390	320	320	320	720	NR	NR	NR	770
SST (TSS)	mg/L		**50**	**100**	<5	<5	<5	50	NR	NR	NR	<5	<5	<5	<5	<5	NR	NR	NR	6
ST (TS)	mg/L				410	410	410	1060	NR	NR	NR	1410	300	300	300	730	NR	NR	NR	800
Aluminio Disuelto	mg/L	**0.200**			<0.03	<0.03	<0.03	0.08	NR	NR	NR	<0.03	0.06	0.06	0.06	<0.03	NR	NR	NR	0.09
Antimonio Disuelto	mg/L	**0.01**			0.0087	0.0079	0.0094	0.0479	NR	NR	NR	0.0007	<0.0004	<0.0004	<0.0004	<0.0004	NR	NR	NR	<0.0004
Arsénico Disuelto	mg/L	**0.01**		**0.1**	0.0101	0.0099	0.0102	0.0072	NR	NR	NR	0.0010	0.0136	0.0136	0.0136	0.0128	NR	NR	NR	0.0028
Bario Disuelto	mg/L	**1**			0.088	0.084	0.091	0.091	NR	NR	NR	0.028	0.125	0.125	0.125	0.134	NR	NR	NR	0.093
Berillio Disuelto	mg/L	**0.00400**			<0.01	<0.002	<0.01	<0.01	NR	NR	NR	<0.1	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
Boro Disuelto	mg/L				0.01	<0.01	0.02	<0.01	NR	NR	NR	0.17	0.07	0.07	0.07	0.11	NR	NR	NR	0.03
Cadmio Disuelto	mg/L	**0.0030**		**0.1000**	0.001	0.001	0.001	0.0005	NR	NR	NR	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	NR	NR	NR	<0.0001
Calcio Disuelto	mg/L				100.9	97.8	104.0	252	NR	NR	NR	278	47.5	47.5	47.5	126	NR	NR	NR	126
Cobalto Disuelto	mg/L				<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
Cobre Disuelto	mg/L	**1.3**		**3**	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
Cromo Disuelto	mg/L	**0.1**		**0.1**	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
Hierro Disuelto	mg/L	**0.3**			0.80	0.16	1.44	3.57	NR	NR	NR	2.05	0.05	0.05	0.05	0.34	NR	NR	NR	0.24
Magnesio Disuelto	mg/L				12.9	12.4	13.3	25.2	NR	NR	NR	41.0	4.1	4.1	4.1	9.0	NR	NR	NR	23.8
Manganeso Disuelto	mg/L	**0.05**			0.717	0.682	0.751	0.402	NR	NR	NR	0.041	0.030	0.030	0.030	0.069	NR	NR	NR	0.015
Mercurio Disuelto	mg/L	**0.0**		**0.01**	<0.0002	<0.0002	<0.0002	<0.0002	NR	NR	NR	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NR	NR	NR	<0.0002
Molibdeno Disuelto	mg/L				<0.01	<0.01	0.01	<0.02	NR	NR	NR	<0.02	<0.01	<0.01	<0.01	<0.02	NR	NR	NR	<0.02
Níquel Disuelto	mg/L	**0.61**		**2**	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01	<0.01	<0.01	<0.01	<0.01	NR	NR	NR	<0.01
Plata Disuelta	mg/L				<0.00005	<0.00005	<0.00005	<0.00005	NR	NR	NR	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	NR	NR	NR	<0.00005
Plomo Disuelto	mg/L	**0.015**		**0.4**	0.0222	0.0219	0.0225	0.0247	NR	NR	NR	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	NR	NR	NR	0.0006
Potasio Disuelto	mg/L				3.7	3.6	3.7	4.2	NR	NR	NR	5.0	2.5	2.5	2.5	2.9	NR	NR	NR	16.5
Selenio Disuelto	mg/L	**0.17**			<0.0001	<0.0001	<0.0001	<0.0002	NR	NR	NR	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	NR	NR	NR	<0.0001
Sodio Disuelto	mg/L				16.8	16.2	17.3	26.5	NR	NR	NR	79.6	55.2	55.2	55.2	93.9	NR	NR	NR	32.4
Zinc Disuelto	mg/L	**7.4**		**10**	0.17	0.16	0.17	1.37	NR	NR	NR	0.04	0.12	0.12	0.12	0.03	NR	NR	NR	0.04
Turbidez	NTU				NR	NR	NR	220	NR	NR	NR	11.9	NR	NR	NR	2.75	NR	NR	NR	11.6
Color Aparente	u Pt/Co			**500**	NR	NR	NR	835	NR	NR	NR	504	NR	NR	NR	12	NR	NR	NR	66
Color Real	u Pt/Co				NR	NR	NR	<1	NR	NR	NR	<1	NR	NR	NR	<1	NR	NR	NR	<1
Cromo Hexavalente	mg/L			**0.1**	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05	NR	NR	NR	<0.05
Coliformes fecales	NMP/100 ml			**$<1x10^4$**	NR	NR	NR	4.5	NR	NR	NR	<2	NR	NR	NR	700	NR	NR	NR	<2

Dónde: **u.e.**: unidades exponenciales; **mg/L**: miligramos por litro; **µS/cm**: microsiemens por centímetro; **°C:** grados centígrados; **NMP/100ml:** número más probable en 100ml; **u Pt/Co:** unidades platino cobalto.; **NA**: no analizado; **NR** = Cálculo No Realizado por falta de datos de línea base. Fuente ACZ Laboratories Inc

La mayoría de pozos monitoreados cumplen con los límites máximos permisibles dados en el Acuerdo 236-2006 para entes generadores nuevos y los valores en general se encuentran dentro del rango estadístico de la línea base. En el

Cuadro 4-7 se presentan los resultados de la calidad del agua subterránea (Pozos de Monitoreo, Producción y Artesanal) correspondientes al mes de junio 2013.

Los valores de pH de todos los pozos presentaron una ligera disminución atribuida a daños en el sensor de pH, los valores de pH medidos en el laboratorio estuvieron en el rango de 7.5 a 7.6 u.e. El sensor de pH fue cambiado inmediatamente después de percatarse de este daño durante la verificación mensual.

Las concentraciones registradas de Cloruros y Fluoruros están por debajo de las guías dadas por la USEPA (250 mg/L y 4 mg/L respectivamente).

En los pozos MW2, MW3, MW7 y MW9 los valores registrados de sulfatos se encuentran dentro de los límites establecidos durante el levantamiento de línea base; para los pozos MW1, MW4 y MW8 los valores registrados fueron mayores al máximo de línea base pero menores a la guía establecida por la USEPA (250 mg/L); en los pozos MW5, MW6, MW10, MW11 y PSASR se observó un aumento en los valores registrados, los cuales se encuentran en el rango de 370 a 1040 mg/L.

El Cianuro, Berilio, Cromo, Mercurio, Níquel y Plata no fueron detectados en ninguno de los pozos monitoreados. El Cadmio solo se detectó en el pozo MW10 en concentraciones dentro de los límites de línea base.

El Aluminio se detectó únicamente en los pozos MW1, MW10 y RW1 con valores dentro de los límites establecidos durante el levantamiento de línea base y por debajo de la directriz establecida por la USEPA (0.2 mg/L).

El Antimonio se detectó en los pozos MW7, MW8, MW10, y el Cobre en el pozo MW8 en concentraciones por debajo de la guía de la USEPA (0.01 mg/L y 1.3 mg/L respectivamente). El Bario fue detectado en todas las estaciones en concentraciones menores la guía establecida por la USEPA (1 mg/L). El Plomo fue detectado únicamente en el pozo MW1, MW8 y RW1 en concentraciones por debajo la guía establecida por la USEPA (0.015 mg/L), y en MW10 en concentración cercana al límite máximo de línea base (0.0247mg/l).

El Arsénico fue detectado en todas las estaciones, la mayoría en concentraciones dentro de los mínimos y máximos establecidos en la línea base y por debajo de la guía de la USEPA (0.01mg/L). En el pozo PSASR se obtuvo una concentración de 0.0122 mg/L, por debajo a la concentración máxima de línea base (0.0136 mg/L).

El Hierro no fue detectado en la mayoría de los pozos; a excepción de los pozos MW2, MW5 y MW9 donde se detectaron concentraciones que están dentro de los límites máximos y mínimos establecidos en la línea base. En los pozos MW7 y

RW1 se obtuvieron concentraciones de 0.06 y 0.24 mg/L respectivamente el cual es menor las guías de la USEPA (0.3 mg/L). En el pozo MW11 se obtuvo una concentración de 2.05 mg/L no se cuenta con línea base para este pozo. En el pozo MW10 se obtuvo un valor de 3.57 mg/L, como se mencionó en el informe del trimestre anterior, este pozo dejó de bombearse en febrero 2013 y el agua muestreada fue la retenida en la tubería metálica de dicho pozo, lo cual pudo contribuir con el aumento en los valores registrados de este parámetro. En el pozo PSASR se detectó una concentración de hierro de 0.34mg/l, debido a que se desconoce la fuente de este incremento, se dará seguimiento a la tendencia que tenga este parámetro en esta estación para comprobar o descartar que dicho aumento se deba a las actividades realizadas dentro de la empresa. De corroborarse que el aumento se deba a las actividades generadas dentro del proyecto, se procederá a tomar las medidas necesarias para su corrección.

Los resultados de laboratorio se presentan en el Anexo 12.4.2

5. Sedimentos

5.1. Sitios de Monitoreo

En el Cuadro 5-1 se enlistan las estaciones de monitoreo de sedimentos de las quebradas y ríos ubicados dentro o cercanas al AI del Proyecto. Su ubicación se presenta en la Figura 5-1

Cuadro 5-1. Sitios de Monitoreo de Sedimento cercanos y dentro del AI del Proyecto.

ESTACIÓN	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		TIPO	SITIO
SED1	807053	1601682	Sedimento	Quebrada El Escobal, aguas arriba del proyecto.
SED2	805811	1601164	Sedimento	Quebrada El Escobal, en medio del proyecto.
SED2A	805295	1601230	Sedimento	Quebrada El Escobal, Salida de la Propiedad
SED3	805337	1602453	Sedimento	Rio El Dorado, aguas arriba
SED4	804781	1601228	Sedimento	Rio El Dorado, aguas abajo
SED4A	804629	1601052	Sedimento	Río El Dorado, por puente de acceso al Proyecto (Suandys)
SED5	810882	1603313	Sedimento	Rio Tapalapa, aguas arriba
SED6	808391	1597689	Sedimento	Rio Los Vados, aguas abajo
SED7	806989	1600618	Sedimento	Quebrada La Honda.
SED8	804054	1600834	Sedimento	Unión Río San Rafael y El Dorado
SED9	803772	1597635	Sedimento	Río Tapalapa, aguas abajo (cercano a la Ceibita)

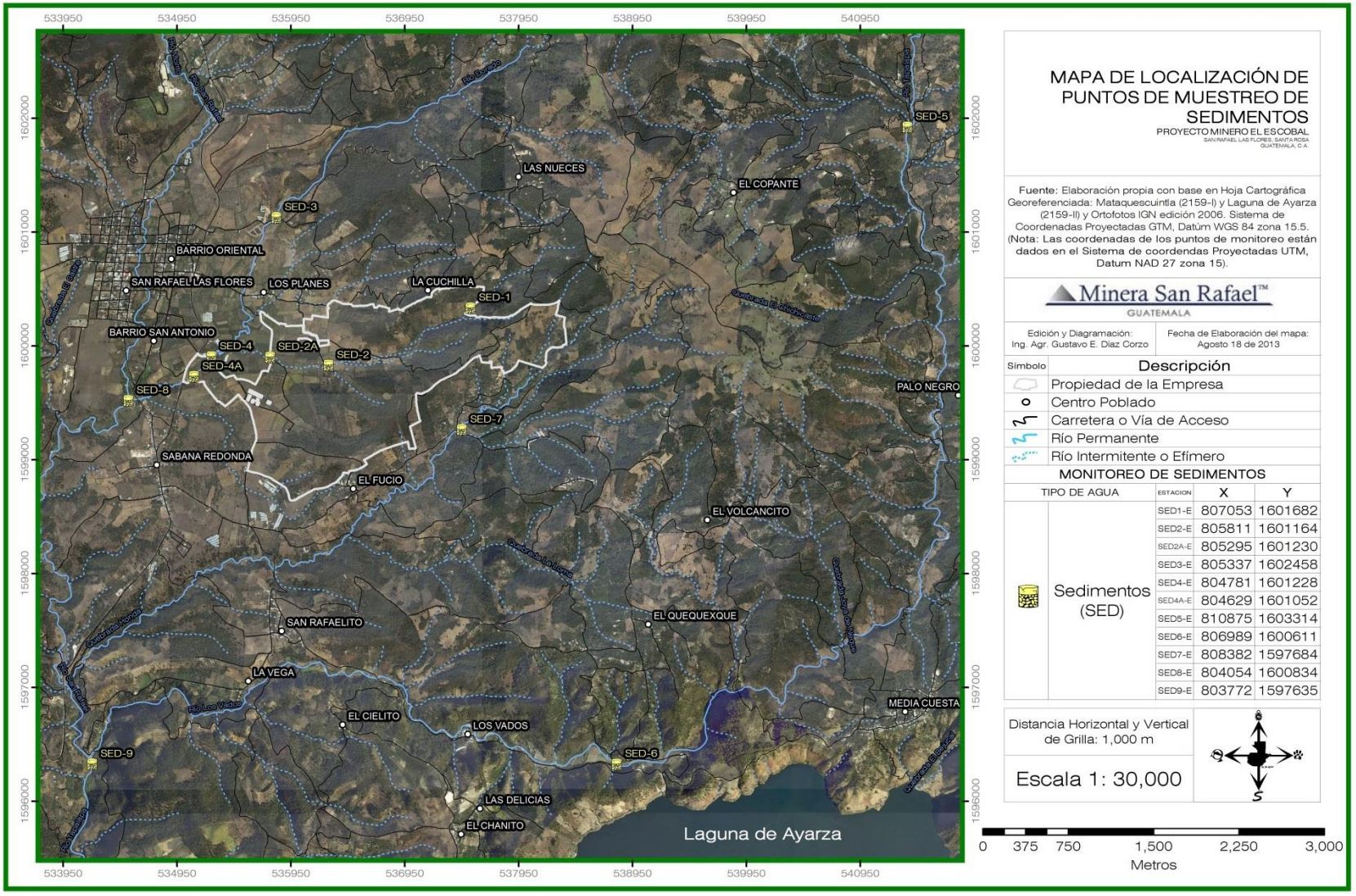


Figura 5-1 Mapa de localización de las estaciones de monitoreo de sedimentos

5.2. Metodología

En el Cuadro 5-2 se describe los parámetros analizados en las muestras de sedimento.

Cuadro 5-2. Parámetros analizados en sedimentos, Proyecto Minero Escobal.

PARÁMETROS ANALIZADOS	
Laboratorio	Metales Totales, Cianuro Total, Fósforo Total..

Laboratorio empleado y valores de referencia: Las muestras fueron analizadas en el laboratorio ACZ, 2773 Downhill Drive Steamboat Springs, Colorado USA, el cual se encuentra acreditado y avalado por la USEPA

5.3. Resultados

En el Cuadro 5-3 se presenta los resultados de metales registrados para el mes de junio 2013. Los resultados del laboratorio se presentan en el Anexo 12.5.

El porcentaje de fósforo total se encuentra en el rango de 0.003% (SED-5) a 0.021% (SED-2). No se detectó cianuro en ninguna de las estaciones muestreadas,

El mercurio solo se detectó en SED-4 (0.08 mg/kg), en SED-5 (0.17 mg/kg), en SED-8 (0.05 mg/kg) y en SED-9 (0.06 mg/kg) en concentraciones por debajo del Límite Máximo Permisibles (25 mg/kg) para la disposición de lodos en el suelo establecidos por el Acuerdo 236-2006. Las concentraciones de Cadmio, Cromo y Plomo registradas están muy por debajo de los Límites Máximos Permisibles.

Todas las estaciones muestreadas registraron concentraciones de Arsénico menor al Límite Máximo Permisible (50 mg/Kg).

Cuadro 5-3. Resultados de sedimentos, junio 2013, Proyecto Minero Escobal.

Parámetro	Unidades	Acuerdo 236-2006 Aplicación al suelo*	SED-1	SED-2	SED-2A	SED-3	SED-4	SED-4A
			jun-13	jun-13	jun-13	jun-13	jun-13	jun-13
Arsénico Total	mg/Kg**	**50**	13.1	46.4	22.4	14.3	14.6	18.3
Cadmio Total	mg/Kg**	**50**	0.15	0.75	0.81	0.2	0.42	0.28
Cromo Total	mg/Kg**	**1500**	2.9	5.3	5.7	2.7	3.7	4.2
Plomo Total	mg/Kg**	**500**	11.2	31.5	36	7.66	15.8	11.1
Mercurio Total	mg/Kg**	**25**	<0.05	<0.05	<0.06	<0.05	0.08	<0.05
Cianuro Total	mg/Kg**		<0.1	<0.1	<0.2	<0.2	<0.2	<0.2
Fósforo Total	%		0.0106	0.021	0.019	0.0165	0.015	0.016

Parámetro	Unidades	Acuerdo 236-2006 Aplicación al suelo*	SED-5	SED-6	SED-7	SED-8	SED-9
			jun-13	jun-13	jun-13	jun-13	jun-13
Arsénico Total	mg/Kg**	**50**	5.7	21.8	5.4	12.7	7.0
Cadmio Total	mg/Kg**	**50**	0.18	0.1	0.18	0.25	0.37
Cromo Total	mg/Kg**	**1500**	3.9	8	1.2	4.1	3.5
Plomo Total	mg/Kg**	**500**	7	3.56	7.73	9.33	9.86
Mercurio Total	mg/Kg**	**25**	0.17	<0.04	<0.05	0.05	0.06
Cianuro Total	mg/Kg**		<0.1	<0.1	<0.2	<0.1	<0.2
Fósforo Total	%		0.003	0.0125	0.005	0.0136	0.017

mg/Kg: miligramo por kilogramo; %: porcentaje; na: no analizado ya que en la estación no había flujo de agua. *LMP para suelos con pH < 7 unidades, en los suelos que posean pH>7 se podrán disponer lodos hasta un 50% mayor de los valores presentados como LMP; ** mg/kg de materia seca a 104°C

6. Calidad del Efluente de Planta de Tratamiento

6.1. Sitios de Monitoreo

En el Cuadro 6-1 se describe la estación de monitoreo del efluente del agua proveniente de la planta de tratamiento hacia la quebrada El Escobal. Su ubicación se presenta en la Figura 6-1

Cuadro 6-1. Sitio de Monitoreo de Calidad de Agua de Efluentes de Planta de Tratamiento del Proyecto.

ESTACIÓN	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		SITIO	OBSERVACIÓN
WW9	805467	1601111	Descarga de piletas final de planta de tratamiento	La pileta se empieza a utilizar de manera continua como parte del proceso de tratamiento desde el mes de marzo 2013.

6.2. Metodología

En el Cuadro 6-2 se describe el procedimiento y equipo utilizado para la toma de muestras de agua

Cuadro 6-2 Procedimiento y equipo utilizado para medir parámetros *In Situ* de muestras de agua residual, Proyecto Minero Escobal.

PARÁMETROS ANALIZADOS	
In Situ	pH, conductividad eléctrica, oxígeno disuelto, temperatura y sólidos disueltos totales
Laboratorio	Metales pesados Totales y Disueltos, Aceites y Grasas, DQO, DBO, Coliformes totales, Color, Sólidos Disueltos, Sólidos Sedimentables, Cianuro Total.
PROCEDIMIENTO	
Basado en el procedimiento de toma de muestra dado por Water Management Consultants y el laboratorio ACZ para el análisis de Cianuro, y en el	

procedimiento dado por *Standard Methods for the Examination of Water and Wastewater, part 1060 B* para los demás parámetros	
EQUIPO UTILIZADO	
Nombre	multiparámetros
Modelo	PCD650
Fabricante	OAKTON

Laboratorio empleado y valores de referencia: Las muestras de cianuro fueron analizadas en el laboratorio ACZ, 2773 Downhill Drive Steamboat Springs, Colorado USA, el cual se encuentra acreditado y avalado por la USEPA. Las muestras de agua residual fueron analizadas en el laboratorio Ecosistemas Proyectos Ambientales, S.A., laboratorio respaldado por un Sistema de Calidad ISO 17025, otorgado por la Oficina Guatemalteca de Acreditación (OGA); y con ello los análisis acreditados cuentan con validez internacional según OGA-LE 006-04.

6.3. Resultados

Durante los monitoreos correspondientes a los meses de mayo a julio 2013, se emplearon muestras control para determinar la confiabilidad de los resultados de parámetros analizados por el laboratorio encargado del análisis de las muestras. En total se efectuaron 3 muestras blanco y una muestra duplicado; los resultados obtenidos se presentan en el Cuadro 6-3

Cuadro 6-3. Resultados de control de calidad para muestras de Efluentes de Planta de Tratamiento, mayo a julio 2013, Proyecto Minero Escobal.

Mes	Unidades	LMP Acuerdo 236-2006	MAYO	JUNIO			JULIO
Control de Calidad			Blanco	Blanco	Duplicado	Original	Blanco
ID Muestra			WW10	WW10	WW11	WW9	WW10
No. Reporte Lab.			763-13	963-13	957-13	956-13	1120-13
Grasas y Aceites	mg/L	**10**	<5	<5	<5	<5	<5
Materia Flotante		**Ausente**	Ausente	Ausente	Ausente	Ausente	Ausente
DBO	mg/L	**200**	<10	<10	<10	<10	<10
DQO	mg/L		<25	<25	<25	<25	<25
SST (TSS)	mg/L	**100**	<10	<10	<10	<10	<10
Sólidos Sedimentables	ml/L		<0.1	<0.1	<0.1	<0.1	<0.1
Nitrógeno Total	mg/L	**20**	<1	<1	11.2	17.6	<1
Fósforo Total	mg/L	**10**	<0.05	<0.05	0.06	0.05	<0.05
Arsénico	mg/L	**0.1**	<0.002	<0.002	0.005	0.005	<0.002
Cadmio	mg/L	**0.1**	<0.02	<0.02	<0.02	<0.02	<0.02
Cobre	mg/L	**3**	<0.03	<0.03	<0.03	<0.03	<0.03
Cromo Hexavalente	mg/L	**0.1**	<0.05	<0.05	<0.05	<0.05	<0.05
Cianuro Total	mg/L	**1**	N.A.	N.A.	<0.003	<0.003	N.A.
Mercurio	mg/L	**0.01**	<0.004	<0.004	<0.004	<0.004	<0.004
Níquel	mg/L	**2**	<0.05	<0.05	<0.05	<0.05	<0.05
Plomo	mg/L	**0.4**	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	mg/L	**10**	<0.01	<0.01	<0.01	<0.01	<0.01
Color Aparente	u Pt/Co	**500**	<1	<1	24	24	<1
Color Real			<1	<1	<1	<1	<1
Coliformes Fecales	NMP/100ml	**<1x10^4**	<2	<2	49	49	<2

N.A.: no analizado; u.e. unidades electroquímicas. °C: grados centígrados. mg/L: miligramos por litro. U Pt/Co: unidades de Platino-Cobalto. NMP/100ml: número más probable en 100 mililitros. NA: no analizado **Naranja**: resultados no cumplen con estándares de calidad de MSR. Azul: análisis efectuados en laboratorio ACZ..

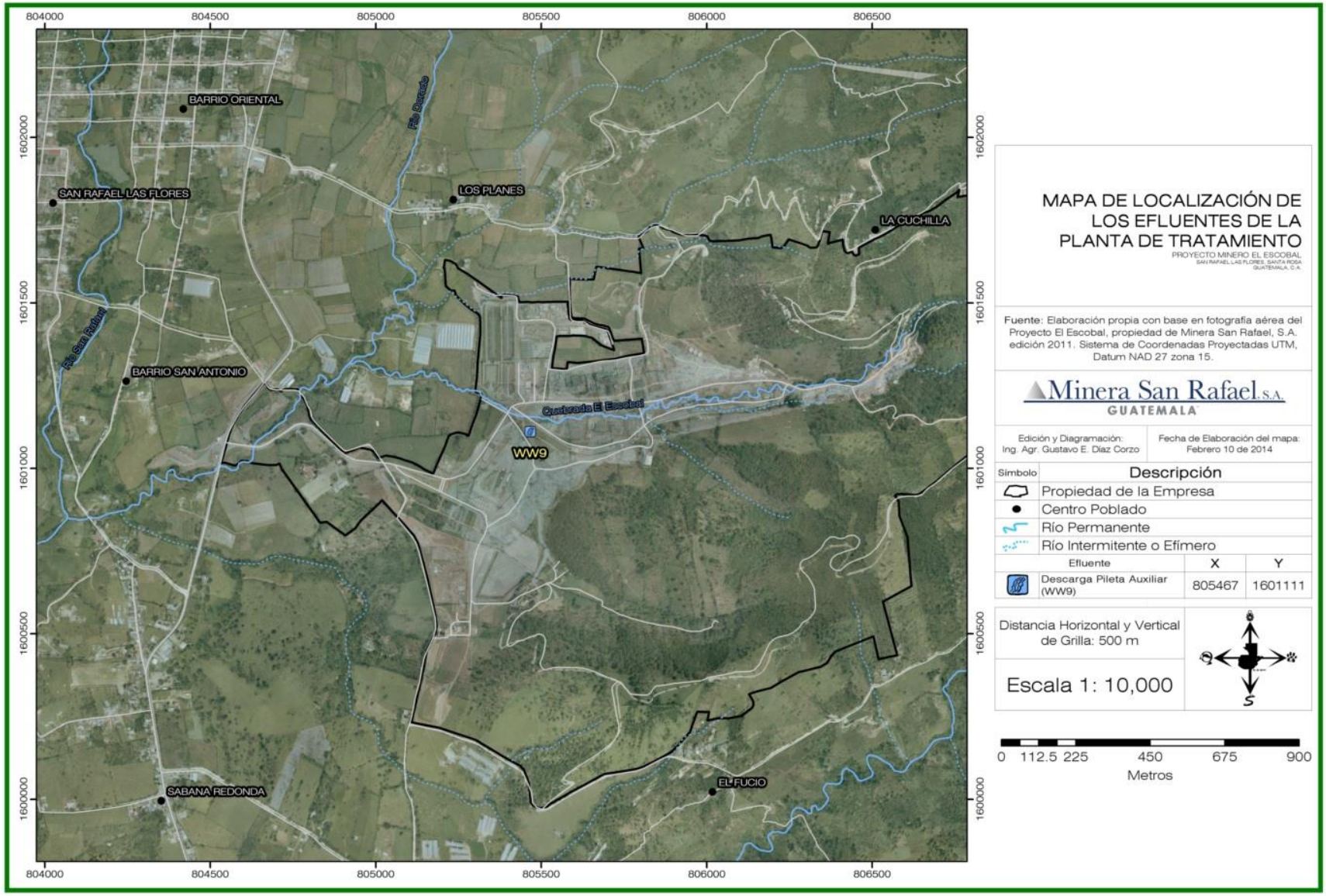


Figura 6-1 Mapa de localización de las estaciones de monitoreo de Efluentes de Planta de Tratamiento del Proyecto.

Para la preparación de blancos analíticos de los parámetros fisicoquímicos, y metales se utilizó agua desmineralizada, para los parámetros microbiológicos se utilizó agua salvavidas embotellada.

Todos los parámetros analizados por los dos laboratorios son confiables en manipulación de las muestras y precisión del análisis.

En el Cuadro 6-4 se pueden observar los resultados de la calidad del efluente de la planta de tratamiento del Proyecto Minero Escobal. Los resultados de laboratorio se presentan en el Anexo 12.6.

Los valores de pH se encontraron en el rango de 7.60 a 8.99 u.e. y los de temperatura en el rango de 25.3 a 27.8 °C.

En todos los muestreos efectuados, la concentración de Cianuro Total, Grasas y Aceites, Demanda Bioquímica de Oxígeno (DBO), Demanda Química de Oxígeno (DQO), Sólidos Suspendidos Totales (SST), Cadmio Total, Cobre Total, Mercurio Total, Níquel Total, Plomo Total, Zinc Total y color real están por debajo del límite de detección del método empleado en el laboratorio.

Según los resultados obtenidos las descargas de la planta de tratamiento cumplieron con todos los límites máximos permisibles dados por el Acuerdo Gubernativo 236-2006 para entes generadores nuevos durante los meses de mayo a julio 2013.

Cuadro 6-4. Calidad del Efluente de la Planta de Tratamiento durante los meses de mayo a julio 2013, Proyecto Minero Escobal

Mes	Unidades	LMP Acuerdo 236-2006 [1]	Banco Mundial[2]	LMP EPA[3]	MAYO	JUNIO	JULIO
Fecha Muestreo					15-May-13	26-Jun-13	17-Jul-13
ID Muestra					WW9	WW9	WW9
No. Reporte Lab.					758-13	956-13	1114-13
pH de campo	u.e.	**6.0-9.0**	**6.0-9.0**	**6.0-9.0**	8.99	7.60	7.72
Temp de campo	°C	**+/- 7**	**+/- 3**		25.3	26.6	27.8
Grasas y Aceites	mg/L	**10**	**10**		<5	<5	<5
Materia Flotante		**Ausente**			Ausente	Ausente	Ausente
DBO	mg/L	**200**	**50**		<10	<10	<10
DQO	mg/L		**150**		<25	<25	<25
SST (TSS)	mg/L	**100**	**50**	**30**	<10	<10	<10
Sólidos Sedimentables	ml/L				<0.1	<0.1	<0.1
Nitrógeno Total	mg/L	**20**	**10**		4.5	17.6	9.4
Fósforo Total	mg/L	**10**	**2**		0.06	0.05	0.05
Arsénico	mg/L	**0.1**	**0.1**		0.003	0.005	0.006
Cadmio	mg/L	**0.1**	**0.05**		<0.02	<0.02	<0.02
Cobre	mg/L	**3**	**0.3**	**0.3**	<0.03	<0.03	<0.03
Cromo Hexavalente	mg/L	**0.1**	**0.1**		0.06	<0.05	<0.05
Cianuro Total	mg/L	**1**	**1**		<0.003	<0.003	<0.003
Mercurio	mg/L	**0.01**	**0.002**	**0.002**	<0.004	<0.004	<0.004
Níquel	mg/L	**2**	**0.5**		<0.05	<0.05	<0.05
Plomo	mg/L	**0.4**	**0.2**	**0.6**	<0.05	<0.05	<0.05
Zinc	mg/L	**10**	**0.5**	**1.5**	<0.01	<0.01	<0.01
Color Aparente	u Pt/Co	**500**			13	24	51
Color Real					<1	<1	<1
Coliformes Fecales	NMP/100ml	**<1x10^4**	**400**		<2	49	23

NA: no analizado. u.e. unidades electroquímicas. °C: grados centígrados. mg/L: miligramos por litro. U Pt/Co: unidades de Platino-Cobalto. NMP/100ml: número más probable en 100 mililitros. Azul: análisis efectuados en laboratorio ACZ.

[1] Límites establecidos en el artículo No. 21, para entes generadores nuevos que descargan aguas residuales a cuerpos receptores.
[2] Límites establecidos por el Banco Mundial para el Sector Minero, aplica a los vertidos directos de efluentes tratados a aguas superficiales de uso general.
[3] Límite Máximos para cualquier día, establecidos por la EPA en CFR 440, Subparte J, 440.102

7. Análisis de Lodos Generados por Planta de Tratamiento

7.1. Sitios de Monitoreo

En el Cuadro 8-1 se describe la estación de monitoreo de la descarga de lodos generados por la planta de tratamiento. Su ubicación se presenta en la Figura 7-1.

Cuadro 7-1. Sitio de Monitoreo de lodos generados por Planta de Tratamiento del Proyecto.

ESTACIÓN	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		SITIO	OBSERVACIÓN
SED-WW7	805714	1601058	Descarga de planta de tratamiento agua de portales	Planta inicia operaciones en el mes de abril 2012.

7.2. Metodología

En el Cuadro 7-2 se describe el procedimiento y equipo utilizado para la toma de muestras de lodos.

Cuadro 7-2 Procedimiento para análisis de lodos generados por la Planta de Tratamiento, Proyecto Minero Escobal.

PARÁMETROS ANALIZADOS	
Laboratorio	Metales Totales: Arsénico, Cadmio, Cromo, Plomo, Mercurio.
PROCEDIMIENTO	
Toma de muestra basado en Capitulo II: Toma de muestras de aguas residuales, aguas para reuso y lodos, del Manual General del Reglamento de Las Descargas y Reuso de Aguas Residuales y de la Disposición de Lodos según el Acuerdo Ministerial Número 105-2008.	

Laboratorio empleado y valores de referencia: Las muestras fueron analizadas en el laboratorio Ecosistemas Proyectos Ambientales, S.A., laboratorio respaldado por un Sistema de Calidad ISO 17025, otorgado por la Oficina Guatemalteca de Acreditación (OGA); y con ello los análisis acreditados cuentan con validez internacional según OGA-LE006-04.

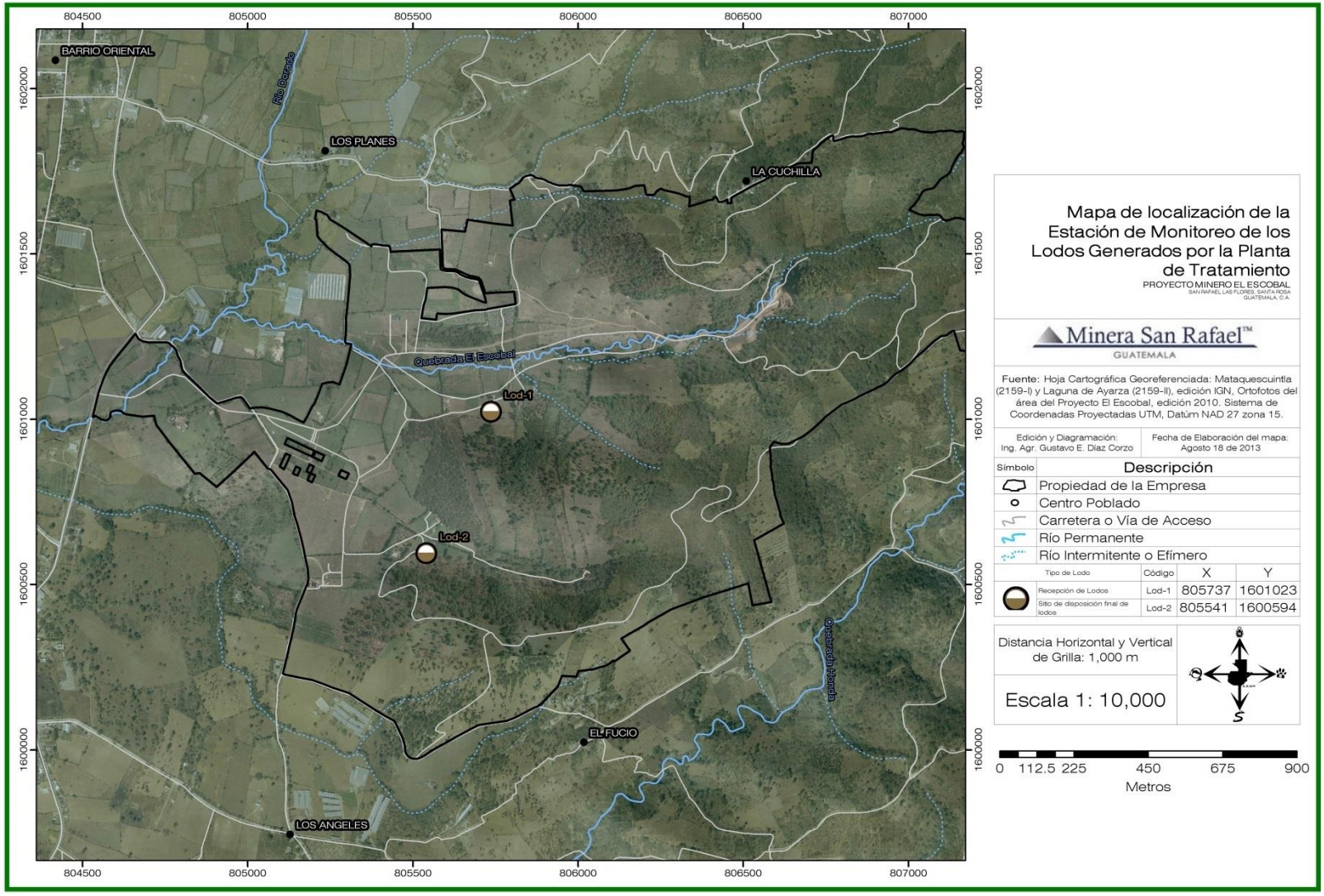


Figura 7-1 Mapa de localización de la estación de monitoreo de los Lodos Generados por la Planta de Tratamiento del Proyecto.

7.3. Resultados

Los resultados obtenidos durante el monitoreo de lodos realizado durante el mes de julio 2013 se presentan en el Cuadro 8-3.

Cuadro 7-3 Resultado de Análisis de Lodos Generados por la Planta de Tratamiento, julio 2013, Proyecto Minero Escobal.

Parámetro	Unidades	Acuerdo 236-2006 Confinamiento o aislamiento	SED-WW7 Ref. 1121-13
Arsénico Total	mg/Kg**	**>100**	17.5
Cadmio Total	mg/Kg**	**>100**	<4
Cromo Total	mg/Kg**	**>3000**	<6
Plomo Total	mg/Kg**	**>1000**	492
Mercurio Total	mg/Kg**	**>50**	<2

**mg/Kg: miligramo por kilogramo de materia seca a 104°C; %: porcentaje.

Todos los parámetros analizados se encuentran muy por debajo de las concentraciones establecidas en el Acuerdo Gubernativo 236-2006 para confinamiento o aislamiento.

8. Vibraciones

8.1. Sitios de Monitoreo

La Empresa, instaló tres equipos para la medición de vibraciones eXPeak Seismograph modelo eXAD-8 de la empresa Physical Measurement Technologies, Inc. Estos equipos son automatizados y registran la velocidad (mm/seg) y la frecuencia (Hz) de forma constante. La ubicación de las estaciones de monitoreo se presenta en el Cuadro 8-1 y en la Figura 8-1.

Cuadro 8-1: Estaciones de monitoreo de vibraciones, Proyecto Minero Escobal

ESTACIÓN	SISTEMA DE COORDENADAS PROYECTADAS UTM, NAD27 ZONA 15		SITIO
BS-1	806424.11	1601608.4	Colindancia con Aldea La Cuchilla
BS-2	806366.07	1601291.1	Entre ambos portales
BS-3	805798.17	1601563.8	Depósito de Suelo

Figura 8-1 Mapa de localización de las estaciones de monitoreo de vibraciones

8.2. Metodología

En el Cuadro 8-2 se describe el procedimiento y equipo utilizado para el registro de vibraciones

Cuadro 8-2. Procedimiento y equipo utilizado para medir vibraciones. Proyecto Minero Escobal

PARAMETROS ANALIZADOS	
Velocidad	Velocidad de partícula
PROCEDIMIENTO	
Se registraron todas las voladuras realizadas en ambos portales durante los meses de mayo a julio 2013. Y se enlistan las velocidades de partículas registrados por los equipos de vibraciones.	
EQUIPO UTILIZADO	
Equipo	eXPeak Seismograph modelo eXAD-8
Fabricante	Physical Measurement Technologies, Inc.

8.3. Resultados

Como se observa en el Cuadro 8-3, todas las mediciones de las voladuras registradas en los instrumentos, dieron resultados por debajo del límite de detección del equipo (1.3 mm/s) y según la norma del United States Bureau of Mines, el limite a partir del cual, las vibraciones inducidas por una voladura pueden ocasionar daños a estructuras, es de 50.8 mm/s. Por lo que se puede determinar que las mismas no son sensibles y por lo tanto no representan un impacto para el medio ambiente. Además, vale la pena mencionar que conforme los trabajos de construcción de los túneles avancen, las voladuras se realizarán cada vez más distantes de la superficie.

Cuadro 8-3 Resultados de medición de vibraciones durante los meses de mayo a julio 2013, Proyecto Minero Escobal.

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Mayo	OESTE 1265-6540	2	05:15	<1.3
	6740-1265 ESTE	4	05:50	<1.3
	6720-1290 ESTE	4	05:55	<1.3
	C/FRENTE W1265 W	4	06:00	<1.3
	6640-1290 W	4	06:00	<1.3
	ESTE RAMPA PRINCIPAL	4	17:00	<1.3
	ESTE 1265 C/F W	4	17:05	<1.3
	ESTE 1265-6880	4	17:10	<1.3
	OESTE RAMPA PRINCIPAL	4	17:25	<1.3
	OESTE 1265-6560	4	17:35	<1.3
	OESTE 1265-6580	4	17:45	<1.3
	1340 O ESTE	5	05:50	<1.3
	6760-1290 ESTE	5	05:55	<1.3
	R/PRICIPAL W	5	06:00	<1.3
	R/PRINCIPAL ESTE	5	06:00	<1.3
	ESTE 1265-6720	5	17:00	<1.3
	ESTE 1290-6860	5	17:05	<1.3
	ESTE 1290-6900	5	17:10	<1.3
	OESTE 1265-6600	5	17:25	<1.3
	6900-1290 este	6	05:50	<1.3
	6720-1265 este	6	05:55	<1.3
	c/frente este-1265 oeste	6	06:00	<1.3
	1340 oeste	6	06:00	<1.3
	ESTE 1290-6720	6	17:00	<1.3
	ESTE 1265 c/f w	6	17:05	<1.3
	ESTE 1265 c/f e	6	17:10	<1.3
	OESTE 1265-6560	6	17:25	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Mayo	OESTE 1265 C/F W	6	17:35	<1.3
	OESTE 1290-6640	6	17:45	<1.3
	6560-1265 W	7	05:50	<1.3
	C/FRENTE ESTE 1340 W	7	05:55	<1.3
	C/FRENTE W DE 1340 W	7	06:00	<1.3
	6720-1290 ESTE	7	06:00	<1.3
	C/FRENTE ESTE 1265 ESTE	7	06:10	<1.3
	ESTE 1290-6860	7	17:00	<1.3
	ESTE 1265-6880	7	17:05	<1.3
	ESTE RAMPA PRINCIPAL	7	17:10	<1.3
	OESTE 1265-6600	7	17:25	<1.3
	OESTE RAMPA PRINCIPAL	7	17:35	<1.3
	6560-1265 W	8	05:50	<1.3
	6600-1265 w	8	05:55	<1.3
	6900-1290 este	8	06:00	<1.3
	C/FRENTE ESTE 1265 ESTE	8	06:00	<1.3
	ESTE 1265-6720	8	17:00	<1.3
	ESTE 1265 c/f w	8	17:05	<1.3
	OESTE RAMPA PRINCIPAL	8	17:10	<1.3
	OESTE 1265 C/F E	8	17:25	<1.3
	OESTE 1290-6640	8	17:35	<1.3
	6880-1265 ESTE	9	05:50	<1.3
	6800-1265 ESTE	9	05:55	<1.3
	6440-1265 OESTE	9	06:00	<1.3
	C/FRENTE ESTE-1265 W	9	06:00	<1.3
	R/PRINCIPAL OESTE	9	06:05	<1.3
	ESTE RAMPA PRINCIPAL	9	17:00	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Mayo	ESTE 1265 c/f w	9	17:05	<1.3
	OESTE 1340 C/F E	9	17:10	<1.3
	OESTE 1340 C/F W	9	17:25	<1.3
	OESTE 1290-6640	9	17:35	<1.3
	ESGUINCHE R/P ESTE	10	05:55	<1.3
	6860-1290 ESTE	10	06:00	<1.3
	6440-1290 OESTE	10	06:00	<1.3
	R/PRINCIPAL OESTE	10	06:05	<1.3
	ESTE 1290-6800	10	17:00	<1.3
	ESTE 1265 c/f e	10	17:05	<1.3
	OESTE 1290-6400	10	17:10	<1.3
	OESTE 1265-6400	10	17:25	<1.3
	OESTE 1230 conexión	10	17:35	<1.3
	ESTE 1265 C/F E	11	05:55	<1.3
	ESTE 1265-6700 DESGUIN	11	06:00	<1.3
	OESTE RAMPA PRINCIPAL	11	06:10	<1.3
	OESTE 1340 C/F W	11	06:25	<1.3
	ESTE 1290-6800	11	17:00	<1.3
	ESTE 1265 c/f w	11	17:05	<1.3
	ESTE 1265-6720	11	17:10	<1.3
	OESTE 1265-c/f E	11	17:25	<1.3
	OESTE 1265- 6620	11	17:35	<1.3
	OESTE 1265-6560	11	17:45	<1.3
	ESTE 1265 c/f w	12	05:45	<1.3
	ESTE 1290-6860	12	05:50	<1.3
	OESTE 1265-6620	12	05:55	<1.3
	ESTE 1230 desguinche	12	17:00	<1.3
	OESTE 1265-6560	12	17:05	<1.3
	OESTE 1265- 6400	12	17:10	<1.3
	ESTE 1265-6720	13	05:45	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Mayo	ESTE 1265-6880	13	05:50	<1.3
	OESTE RAMPA PRINCIPAL	13	05:55	<1.3
	OESTE 1290-6440	13	06:00	<1.3
	OESTE 1265-6560	13	06:05	<1.3
	ESTE 1290-6800	13	17:00	<1.3
	OESTE 1265-6400	13	17:05	<1.3
	OESTE 1265- 6440	13	17:10	<1.3
	OESTE 1290-6400	13	17:25	<1.3
	ESTE 1265 c/f E	14	05:45	<1.3
	ESTE 1315	14	05:50	<1.3
	OESTE 1290-6440	14	05:55	<1.3
	OESTE 1265-6400	14	06:00	<1.3
	OESTE 1265-6440	14	06:05	<1.3
	OESTE 1290-6400	14	17:00	<1.3
	OESTE 1265-6560	14	17:05	<1.3
	ESTE 1265-6880	14	17:10	<1.3
	ESTE RAMPA PRINCIPAL	14	17:15	<1.3
	ESTE 1265 c/f E	15	05:45	<1.3
	ESTE 1265-6800	15	05:50	<1.3
	OESTE 1265 c/f E	15	05:55	<1.3
	OESTE 1265-6400	15	06:00	<1.3
	OESTE RAMPA PRINCIPAL	15	06:05	<1.3
	OESTE 1315	15	17:00	<1.3
	ESTE 1265 C/F W	15	17:05	<1.3
	ESTE 1290-6800	15	17:10	<1.3
	ESTE RAMPA PRINCIPAL	15	17:15	<1.3
	ESTE DESKINCHE 1265-6700	15	17:20	<1.3
	ESTE 1315	16	17:20	<1.3
	ESTE 1265-6840	16	17:45	<1.3
	ESTE 1290-6720	16	17:50	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Mayo	OESTE 1265-6560	16	17:50	<1.3
	OESTE 1290-6400	16	18:00	<1.3
	Oeste 1290-6400	17	05:20	<1.3
	Este 1265-6840	17	05:25	<1.3
	Este 1290-6720	17	05:30	<1.3
	6560-1265 OESTE	17	17:45	<1.3
	R/PRINCIPAL OESTE	17	17:45	<1.3
	6800-1290 ESTE	17	17:50	<1.3
	Este 1230	19	05:20	<1.3
	Este 1265 C/F E	19	05:25	<1.3
	Oeste 1265 C/F E	19	05:30	<1.3
	Oeste 1265-6620	19	05:35	<1.3
	Oeste 1315	19	05:40	<1.3
	ESTE PRINCIPAL	20	05:40	<1.3
	ESTE 1290-6720	20	05:45	<1.3
	ESTE 1290-6800	20	05:50	<1.3
	OESTE 1265-6560	20	06:00	<1.3
	OESTE 1265 C/F ESTE	20	06:10	<1.3
	OESTE 1290-6640	20	06:15	<1.3
	6400-1290W	20	17:55	<1.3
	R/PRINCIPAL OESTE	20	18:00	<1.3
	6960-1290 ESTE	20	18:00	<1.3
	6760-1265 ESTE	20	18:05	<1.3
	6400-1265 W	21	05:45	<1.3
	1315 W	21	05:50	<1.3
	C/FRENTE ESTE 1265	21	06:00	<1.3
	6900-1290 ESTE	21	06:00	<1.3
	1230 ESTE	21	06:00	<1.3
	1265-C/FRENTE ESTE	21	06:05	<1.3
	1315-ESTE	21	17:55	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Mayo	R/PRINCIPAL OESTE	21	18:00	<1.3
	1230-OESTE CONECCION	21	18:00	<1.3
	6520-1265 W	21	18:05	<1.3
	6720-1290 ESTE	21	18:05	<1.3
	ESTE PRINCIPAL	22	05:00	<1.3
	ESTE 1315	22	05:05	<1.3
	ESTE 1290-6800	22	05:10	<1.3
	OESTE 1265-6440	22	05:15	<1.3
	OESTE 1265 C/F ESTE	22	05:20	<1.3
	1340 OESTE	22	17:55	<1.3
	6720-1290 ESTE	22	18:00	<1.3
	6800-1265 ESTE	22	18:00	<1.3
	ALIMAK	22	18:00	<1.3
	6400-1290 OESTE	22	18:05	<1.3
	R/PRINCIPAL OESTE	22	18:05	<1.3
	Oeste 1265-6560	23	05:00	<1.3
	oeste 1290-6400	23	05:05	<1.3
	Este 1265-6700	23	05:10	<1.3
	Este 1265-6720	23	05:15	<1.3
	rampa princ. Oeste	23	17:55	<1.3
	1230 coneccion OESTE	23	18:00	<1.3
	1230 CONECCION ESTE	23	18:00	<1.3
	1265-6840 ESTE	23	18:05	<1.3
	1340- OESTE	24	05:00	<1.3
	RAMPA PRINCIPAL OESTE	24	05:05	<1.3
	6800-1290 ESTE	24	05:10	<1.3
	RAMPA PRINCIPAL ESTE	24	05:15	<1.3
	OESTE 1315	24	17:00	<1.3
	ESTE 1290-6720	24	17:15	<1.3
	ESTE 1265-6800	24	17:30	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Mayo	6800-1265 este	25	05:00	<1.3
	1230 oeste	25	05:05	<1.3
	1315 esguinche oeste	25	05:10	<1.3
	1315 este	25	05:15	<1.3
	6900-1265 este	26	05:00	<1.3
	6720-1290 este	26	05:05	<1.3
	6400-1290 oeste	26	05:10	<1.3
	6640-1265 oeste	26	05:15	<1.3
	1230-este	26	06:00	<1.3
	6880-1265 este	26	06:10	<1.3
	RAMPA ESTE PRINCIPAL	27	05:00	<1.3
	6880-1265 ESTE	27	05:05	<1.3
	1315 OESTE	27	05:10	<1.3
	OESTE RAMPA PRINCIPAL	27	17:30	<1.3
	OESTE 1265-6560	27	17:35	<1.3
	ESTE 1290 DESGUINCHE	27	17:40	<1.3
	ESTE 1315 SUMI DESGUIN	27	17:45	<1.3
	ESTE 1265-6800	27	17:50	<1.3
	6400-1265 w	28	05:00	<1.3
	6360-1265 w	28	05:05	<1.3
	1230 ESTE	28	05:10	<1.3
	6700-1265 ESTE	28	05:45	<1.3
	OESTE 1230 CONEXIÓN	28	17:30	<1.3
	OESTE 1315 SUMIDERO	28	17:35	<1.3
	OESTE 1340 SERVICIOS	28	17:40	<1.3
	ESTE 1290-6960	28	17:45	<1.3
	CHIMINEA DUM,AS	29	05:00	<1.3
	1230 OESTE	29	05:05	<1.3
	PRINCIPAL OESTE	29	05:10	<1.3
	PRINCIPAL ESTE	29	05:45	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Mayo	OESTE 1265-6640	29	17:30	<1.3
	OESTE 1365-6620	29	17:35	<1.3
	OESTE 1365-6440	29	17:40	<1.3
	ESTE 1290-6720	29	17:45	<1.3
	ESTE 1265-6880	29	17:50	<1.3
	ESTE 1265-6800	29	17:55	<1.3
	pricipal oeste	30	05:00	<1.3
	principal este	30	05:05	<1.3
	6560-1265 oeste	30	05:10	<1.3
	c/frente ESTE 1265- ESTE	30	05:45	<1.3
	OESTE 1265-6400	30	17:30	<1.3
	OESTE 1290-6440	30	17:35	<1.3
	OESTE 1315	30	17:40	<1.3
	OESTE 1315 SUMIDERO	30	17:45	<1.3
	ESTE 1265-6880	30	17:50	<1.3
	ESTE 1290 VENTILACION	30	17:55	<1.3
	OESTE 1265-6400	31	05:00	<1.3
	OESTE 1265-6680	31	05:05	<1.3
	ESTE 1265-6700	31	05:10	<1.3
	ESTE 1265-6760	31	05:45	<1.3
	OESTE 1265-6640	31	17:30	<1.3
	OESTE 1230 CONEXIÓN	31	17:35	<1.3
	OESTE 1265-6620	31	17:40	<1.3
	ESTE 1265-6720	31	17:45	<1.3
	ESTE 1265-6840	31	17:50	<1.3
Junio	OESTE RAMPA PRINCIPAL	1	05:15	<1.3
	OESTE 1290-6440	1	05:20	<1.3
	OESTE 1230 CONEX	1	05:25	<1.3
	ESTE RAMPA PRINCIPAL	1	05:30	<1.3
	ESTE 1315 SUMIDERO	1	05:35	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Junio	ESTE 1265-6900	1	05:40	<1.3
	OESTE 1265-6640	1	17:30	<1.3
	ESTE 1290-6960	1	17:35	<1.3
	OESTE RAMPA PRINCIPAL	2	05:15	<1.3
	ESTE 1290-6960	2	05:20	<1.3
	ESTE 1265-6760	2	05:25	<1.3
	CHIMENEA SUPERFICIE	2	03:00	<1.3
	OESTE 1290-6640	2	17:30	<1.3
	OESTE 1290-6520	2	17:35	<1.3
	ESTE 1265-6700	2	17:40	<1.3
	ESTE 1265-6720	2	17:45	<1.3
	ESTE 1290 VENTILACION	2	17:50	<1.3
	OESTE 1265-6640	3	05:15	<1.3
	OESTE 1290-6520	3	05:20	<1.3
	ESTE 1265-6880	3	05:25	<1.3
	ESTE 1265-6720	3	05:30	<1.3
	CHIMENEA SUPERFICIE	3	03:30	<1.3
	OESTE 1315	3	17:30	<1.3
	OESTE 1230 conexión	3	17:35	<1.3
	ESTE 1265-6900	3	17:40	<1.3
	OESTE 1265-6620	4	05:15	<1.3
	OESTE 1230 conexión	4	05:20	<1.3
	ESTE 1290-6960	4	05:25	<1.3
	ESTE 1290 servicios	4	05:30	<1.3
	OESTE RAMPA PRINCIPAL	4	17:30	<1.3
	ESTE RAMPA PRINCIPAL	4	17:35	<1.3
	ESTE 1265-6920 DESKINCHE	4	17:40	<1.3
	OESTE 1265-6520	5	05:15	<1.3
	OESTE RAMPA PRINCIPAL	5	05:20	<1.3
	ESTE RAMPA PRINCIPAL	5	05:25	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Junio	ESTE 1290-6720	5	05:30	<1.3
	ESTE 1315 SUMIDERO	5	03:30	<1.3
	OESTE DESKINCHE 1265-6660	5	17:30	<1.3
	OESTE 1265-6680	5	17:35	<1.3
	ESTE DESKINCHE 1290-7020	5	17:40	<1.3
	OESTE 1265-6400	6	05:15	<1.3
	OESTE 1230 SUB. EST. ELEC.	6	05:20	<1.3
	OESTE 1290-6440	6	05:25	<1.3
	OESTE 1290-6600	6	05:30	<1.3
	CHIMENEA SUPERFICIE	6	03:30	<1.3
	ESTE 1290-6960	6	05:35	<1.3
	ESTE 1265-6900	6	05:40	<1.3
	ESTE 1265 C/F ESTE	6	05:45	<1.3
	ESTE 1265-6720	6	06:00	<1.3
	OESTE 1290-6640	6	17:30	<1.3
	ESTE 1290 VENTILACION	6	17:35	<1.3
	Chimenea	11	01:10	<1.3
	1290-6520 W	11	05:00	<1.3
	1290-6600 W	11	05:05	<1.3
	1265-6680 W	11	05:10	<1.3
	1315 Sumidero	11	05:10	<1.3
	requema Rampa Principal W	11	05:15	<1.3
	R/PRNCIPAL OESTE	11	18:00	<1.3
	6600-1265 OESTE	11	18:05	<1.3
	R/PRINCIPAL ESTE	11	18:05	<1.3
	6720-1265 ESTE	11	18:05	<1.3
	C/FRENTE ESTE 1290 ESTE	11	18:05	<1.3
	Chimenea	12	03:30	<1.3
	1265-6360 W	12	05:00	<1.3
	Rampa Principal W	12	05:05	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Junio	1290-6920 E	12	05:10	<1.3
	1315 Este	12	05:15	<1.3
	c/f este 1265 este	12	18:00	<1.3
	6400-1265 oeste	12	18:05	<1.3
	6460-1265 oeste	12	18:05	<1.3
	6960-1290 este	12	18:05	<1.3
	6720-1265 este	12	18:05	<1.3
	7020-1290 ESTE	14	05:45	<1.3
	6600-1290 ESTE	14	05:50	<1.3
	1230 SUBESTACION OESTE	14	06:00	<1.3
	6840-1265	14	06:20	<1.3
	1265-6920	14	17:25	<1.3
	1265-6440	14	17:35	<1.3
	OESTE RAMPA PRINCIPAL	14	17:45	<1.3
	1290 DESGUINCHE	14	17:55	<1.3
	ESTE RAMPA PRINCIPAL	14	18:00	<1.3
	DUMAS CHIMENEA	15	21:30	<1.3
	VENTILACION B ESGUINCHE 1290ESTE	15	05:50	<1.3
	PRINCIPAL OESTE	15	06:00	<1.3
	6440-1265 OESTE	15	06:20	<1.3
	1315- ESTE	15	06:20	<1.3
	1265 venti. Desguinche	15	17:25	<1.3
	1265-6720	15	17:35	<1.3
	1265-6880	15	17:45	<1.3
	1290-6680	15	17:55	<1.3
	oeste 1315	15	18:00	<1.3
	este 1315 desbanque	15	18:10	<1.3
	principal oeste	16	05:55	<1.3
	6720-1265	16	05:55	<1.3
	1315- oeste	16	06:00	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Junio	1230 desguinche	16	17:25	<1.3
	1265-6920	16	17:35	<1.3
	1265 c/f este	16	17:45	<1.3
	1290-6600	16	17:55	<1.3
	1290-6680	16	18:00	<1.3
	principal oeste	17	05:55	<1.3
	6940- esguinche -1265	17	05:55	<1.3
	1290 ventilacion este	17	06:00	<1.3
	dumas	17	06:00	<1.3
	6440-1265	17	17:25	<1.3
	oeste principal	17	17:35	<1.3
	1265 ventilacion	17	17:45	<1.3
	principal oeste	18	05:55	<1.3
	6940- esguinche -1265	18	05:55	<1.3
	1290 ventilacion este	18	06:00	<1.3
	dumas	18	06:00	<1.3
	ACC 1240	18	17:25	<1.3
	1290-6600	18	17:35	<1.3
	1290-6680	18	17:45	<1.3
	ESTE 1315	18	17:55	<1.3
	1329 DESGUINCHE	18	18:00	<1.3
	principal oeste	19	05:55	<1.3
	1230 subestacion	19	05:55	<1.3
	6600-1290	19	06:00	<1.3
	6680-1290	19	06:00	<1.3
	dersbanmque y requema	19	06:00	<1.3
	ACC 1240 requema	19	17:25	<1.3
	este rampa principal	19	17:35	<1.3
	1265-6880	19	17:45	<1.3
	OESTE 1315	19	17:55	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Junio	6440-1290 OESTE	20	05:55	<1.3
	6400-1265 OESTE	20	05:55	<1.3
	6600-1265 OESTE	20	06:00	<1.3
	6720-1265 ESTE	20	06:00	<1.3
	1315 RAMPA ESTE	20	06:00	<1.3
	1290-7020	20	17:25	<1.3
	1290 ventilacion oc	20	17:35	<1.3
	1265-6440	20	17:45	<1.3
	1265-6640	20	17:55	<1.3
	1290 c/f este	21	05:25	<1.3
	1290-6760	21	05:30	<1.3
	1290-6640	21	05:35	<1.3
	1265-6640	21	05:40	<1.3
	1265-6440	21	05:45	<1.3
	1290-6840 E	21	17:25	<1.3
	1290 ventilacion Este	21	17:30	<1.3
	1265 Este C/F Este	21	17:35	<1.3
	Rampa principal Este	21	17:40	<1.3
	Rampa Principal Oeste	21	17:45	<1.3
	deskinche 1315	21	17:50	<1.3
	1265-6400	22	05:25	<1.3
	1265-6600	22	05:30	<1.3
	1290-6840	22	05:35	<1.3
	1290-6680	22	05:40	<1.3
	1290-6840 E	22	17:25	<1.3
	1290 ventilacion Este	22	17:30	<1.3
	1265 Este C/F Este	22	17:35	<1.3
	Rampa principal Este	22	17:40	<1.3
	Rampa Principal Oeste	22	17:45	<1.3
	deskinche 1315	22	17:50	<1.3
	E 1290-6760	23	05:25	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Junio	E 1265 C/F E	23	05:30	<1.3
	W 1265 VENTILACION OC	23	05:35	<1.3
	W 1290-6520	23	05:40	<1.3
	1290 E C/F E	23	17:25	<1.3
	1315 W	23	17:30	<1.3
	OESTE RAMPA PRINCIPAL	24	05:25	<1.3
	1265-6720	24	05:30	<1.3
	1265 C/F ESTE	24	05:35	<1.3
	1290-6600	24	05:40	<1.3
	1290 C/F ESTE	24	05:50	<1.3
	1290 VENTILACION B	24	06:00	<1.3
	1290-6840 E	24	17:25	<1.3
	1315 Este	24	17:30	<1.3
	1240 Acceso W	24	17:35	<1.3
	1290 W C/F W Ventilacion	24	17:40	<1.3
	1294-6440 W	24	17:45	<1.3
	ESTE RAMPA PRINCIPAL	25	05:25	<1.3
	1290-6520	25	05:30	<1.3
	1290-6720	25	05:35	<1.3
	Este 1290-6840	25	17:25	<1.3
	Este 1265-6640	25	17:30	<1.3
	Oeste 1240 Acceso	25	17:35	<1.3
	Oeste 1265-6400	25	17:40	<1.3
	1290-6840	26	05:25	<1.3
	OESTE 1315 SUB EST ELECTRICA	26	05:30	<1.3
	ESTE 1315	26	05:35	<1.3
	1265 C/F ESTE	26	05:45	<1.3
	OESTE Principal	26	17:25	<1.3
	ESTE 1290-6680	26	17:30	<1.3
	ESTE 1290 C/F E	26	17:35	<1.3
	OESTE RAMPA PRINCIPAL	27	05:25	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Junio	1265-6520	27	05:30	<1.3
	1290 C/F ESTE	27	05:35	<1.3
	1265-6760	27	05:45	<1.3
	1290-6760	27	05:50	<1.3
	1290-6360	27	06:00	<1.3
	1240 w	27	12:40	<1.3
	1265-6440	27	17:30	<1.3
	1264-6600	27	17:35	<1.3
	1290-6680	28	05:00	<1.3
	1240 Acceso	28	05:05	<1.3
	1315 W	28	05:10	<1.3
	1315 E	28	05:15	<1.3
	1390-6920	28	05:20	<1.3
	1265-6920	28	05:25	<1.3
	1315 subestacion OESTE	28	18:00	<1.3
	6600-1265 OESTE	28	18:00	<1.3
	C/F ESTE 1265 ESTE	28	18:00	<1.3
	6940-1265 ESTE	28	18:05	<1.3
	RAMPA PRINCIPAL ESTE	28	18:10	<1.3
	DUMAS	28	15:30	<1.3
	Rampa Principal Oeste	29	05:35	<1.3
	Rampa Principal Este	29	05:40	<1.3
	1264-6440	29	05:45	<1.3
	1265-6840	29	05:50	<1.3
	1290-6840	29	06:00	<1.3
	6760-1265 ESTE	29	18:00	<1.3
	C/F ESTE 1290 ESTE	29	18:00	<1.3
	1290 VENTILACION "A" OESTE	29	18:00	<1.3
	6520-1265 OESTE	29	18:05	<1.3
	6760-1290 ESTE	29	18:10	<1.3
	1240 Acceso	30	05:45	<1.3
	1290-6680	30	05:50	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Junio	1265- C/F E	30	05:55	<1.3
	6520-1265 OESTE	30	18:00	<1.3
Julio	1240 Sumidero	1	05:45	<1.3
	1290 Ventilacion	1	05:50	<1.3
	1264-6840	1	05:55	<1.3
	Este Principal	1	06:00	<1.3
	6520-1265 OESTE	1	18:00	<1.3
	6760-1290 Este	1	18:05	<1.3
	1315 Subestacion Este	1	18:10	<1.3
	1315 Subestacion Oeste	1	18:15	<1.3
	C/F E 1290	1	18:20	<1.3
	1265-6840	4	17:30	<1.3
	1265-6880 DESGUINCHE	4	17:35	<1.3
	1290-6360	4	17:40	<1.3
	OESTE 1315 C/F ESTE	4	17:45	<1.3
	CHIMENEA	4	16:00	<1.3
	1265-6440	5	17:30	<1.3
	1265-6600	5	17:35	<1.3
	E 1290 C/F E	5	17:40	<1.3
	E 1315 C/F E	5	17:45	<1.3
	desguinche r/principal	7	06:00	<1.3
	rampa este	7	06:00	<1.3
	c/f este 1290	7	06:05	<1.3
	6840-1265	7	06:05	<1.3
	1265-6840	7	17:30	<1.3
	1290-6840	7	17:35	<1.3
	w 1290 ventilacion A	7	17:40	<1.3
	1315-OESTE	8	06:00	<1.3
	6640-1265OESTE	8	06:00	<1.3
	6840-1265 ESTE	8	06:05	<1.3
	6840-1290 ESTE	8	06:05	<1.3
	6680-1265	8	06:05	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Julio	DESBANQUE	8	06:05	<1.3
	1265-6440	8	17:30	<1.3
	1265-6520	8	17:35	<1.3
	1265-6940	8	17:40	<1.3
	1265 c/f este	8	17:45	<1.3
	chimenea	8	16:00	<1.3
	1265-6840 requema	8	17:50	<1.3
	C/FRENTE ESTE -1265	9	06:00	<1.3
	6880-1265	9	06:00	<1.3
	6760-1290	9	06:05	<1.3
	1215-RAMPA OESTE	9	06:05	<1.3
	1290-6760	9	17:30	<1.3
	1290-6360	9	17:35	<1.3
	1265-6760	9	17:40	<1.3
	ESTE RAMPA PRINCIPAL	9	17:45	<1.3
	1315 OESTE	10	06:00	<1.3
	1315 ESTE	10	06:00	<1.3
	1265-6520	10	17:30	<1.3
	1265-6600	10	17:35	<1.3
	1265-6680	10	17:40	<1.3
	C/F ESTE 1265	11	06:00	<1.3
	6520-1265	11	06:00	<1.3
	6760-1265	11	00:00	<1.3
	6880-1265	11	06:00	<1.3
	W 1215	11	17:30	<1.3
	1290-6680	11	17:35	<1.3
	1290 C/F E	11	17:40	<1.3
	1290-7040	11	17:45	<1.3
	ESTE RAMPA PRINCIPAL	11	17:50	<1.3
	OESTE 1315 C/F W	12	05:30	<1.3
	1265-6600	12	05:45	<1.3
	1265-6940	12	05:50	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Julio	ESTE RAMPA PRINCIPAL	12	06:00	<1.3
	1315 E	12	17:30	<1.3
	1265-6360	12	17:35	<1.3
	PRINCIPAL W	12	17:40	<1.3
	1265-6840	12	17:45	<1.3
	OESTE 1315 C/F E	13	05:30	<1.3
	1290-6760	13	05:45	<1.3
	ESTE 1315 C/F ESTE	13	17:30	<1.3
	1265-6680	13	17:35	<1.3
	1290-6680	13	17:40	<1.3
	1265-6520	13	17:45	<1.3
	1265-6840	15	17:30	<1.3
	1265-6880 C/F W	15	17:35	<1.3
	Oeste 1315 C/F E	15	17:40	<1.3
	Oeste 1315 C/F W	15	17:45	<1.3
	1290-6760	15	05:30	<1.3
	1265-6600	15	05:45	<1.3
	1265-6940	15	05:50	<1.3
	ESTE 1315 C/F W	15	05:55	<1.3
	1290-6760	16	05:30	<1.3
	1265-6600	16	05:45	<1.3
	1265-6940	16	05:50	<1.3
	1290 Ventilacion W	16	17:30	<1.3
	1215 Acceso W	16	17:35	<1.3
	Este 1315 C/F W	17	05:30	<1.3
	1290- 6760	17	05:45	<1.3
	1265 oeste	17	05:50	<1.3
	CHIMENEA	17	17:30	<1.3
	1290-6360	17	17:35	<1.3
	1290-7040	17	17:40	<1.3
	1265-6840	17	17:40	<1.3
	1265 C/F E	17	17:45	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Julio	este 1290 6920	18	05:30	<1.3
	oeste 1265-6520	18	05:45	<1.3
	este 1265 6840	18	05:50	<1.3
	1315 E C/F E	18	17:30	<1.3
	1315 W C/F W	18	17:35	<1.3
	Rampa Principal Este	18	17:40	<1.3
	OESTE 1315 C/F E	19	05:30	<1.3
	1265-6960	19	05:45	<1.3
	C/F ESTE 1265	19	17:30	<1.3
	6680-1265	19	17:35	<1.3
	6460-1265	19	17:40	<1.3
	1265-6520	20	05:30	<1.3
	1265-6600	20	05:45	<1.3
	1265-6680	20	05:45	<1.3
	desbanke	20	05:35	<1.3
	6920-1290	20	17:30	<1.3
	6600-1290	20	17:35	<1.3
	1215-oeste	20	17:40	<1.3
	r/principal este	20	06:00	<1.3
	dumas (chiminea)	20	15:00	<1.3
	r/p ESTE	23	06:00	<1.3
	1290-6920	23	06:05	<1.3
	1265-6680	23	06:10	<1.3
	1315-0ESTE	23	06:15	<1.3
	CHIMINEA	23	03:00	<1.3
	1315- oeste	23	18:00	<1.3
	1315-ESTE	23	18:00	<1.3
	ESGUINCHE 1265 ESTE	23	18:05	<1.3
	6360-1265	23	18:05	<1.3
	1265 ventilacion Este	24	06:00	<1.3
	Este Principal	24	06:05	<1.3
	1265-6920	24	06:10	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Julio	1215 w	24	06:15	<1.3
	1265-6360	24	06:20	<1.3
	desbanke 1265	24	06:30	<1.3
	1290 C/F ESTE	24	18:00	<1.3
	1265-6640	24	18:00	<1.3
	1265-68740	24	18:05	<1.3
	6920-1290	25	18:00	<1.3
	1315- ESTE	25	18:00	<1.3
	6680-1265	25	18:05	<1.3
	1290- VENTILACION	27	06:00	<1.3
	6920-1265	27	06:05	<1.3
	RAMPA PRINCIPAL ESTE	27	06:10	<1.3
	E 1315 C/F E	27	17:30	<1.3
	1290-7000	27	17:35	<1.3
	W 1315 C/F E	27	17:40	<1.3
	1265-6360	27	17:45	<1.3
	1290-6720	27	17:50	<1.3
	1290- VENTILACION	28	06:00	<1.3
	6920-1265	28	06:05	<1.3
	RAMPA PRINCIPAL ESTE	28	06:10	<1.3
	E 1315 C/F E	28	17:30	<1.3
	1290-6360	28	17:35	<1.3
	W 1315-6480	28	17:40	<1.3
	w1265ventilacion w	28	17:45	<1.3
	1290 c/f E	28	17:50	<1.3
	1290- VENTILACION	29	06:00	<1.3
	6920-1265	29	06:05	<1.3
	RAMPA PRINCIPAL ESTE	29	06:10	<1.3
	E 1315 C/F E	29	17:30	<1.3
	E 1315 C/F W	29	17:35	<1.3
	ESTE RAMPA PRINCIPAL	29	17:40	<1.3
	1265-6360	29	17:45	<1.3

Mes	Sitio	Día	HORA	Velocidad de Partícula (mm/s)
Julio	1290- VENTILACION	30	06:00	<1.3
	6920-1265	30	06:05	<1.3
	RAMPA PRINCIPAL ESTE	30	06:10	<1.3
	1290-6600	30	17:30	<1.3
	1290-6760	30	17:35	<1.3
	1290- VENTILACION	31	06:00	<1.3
	6920-1265	31	06:05	<1.3
	RAMPA PRINCIPAL ESTE	31	06:10	<1.3
Julio	W 1315 C/F W	31	17:30	<1.3
	E 1315-6700 DESGUINCHE	31	17:35	<1.3
	1265-6360	31	17:40	<1.3
	1265-6920	31	17:45	<1.3
	E 1265 VENTILACION A	31	17:50	<1.3

Donde mm/s: milímetros por segundo; NR: no registrado
Fuente: Base de datos Departamento de Ambiente, Minera San Rafael, S.A

9. Geoquímica de Roca Estéril

9.1. Sitios de Monitoreo

En el cuadro Cuadro 9-1 se enlistan las muestras analizadas de material extraído de los túneles del proyecto, rampa oeste y rampa este, durante los meses de mayo a julio 2013. Su ubicación se presenta en la Figura 9-1, Figura 9-2, Figura 9-3 y Figura 9-4

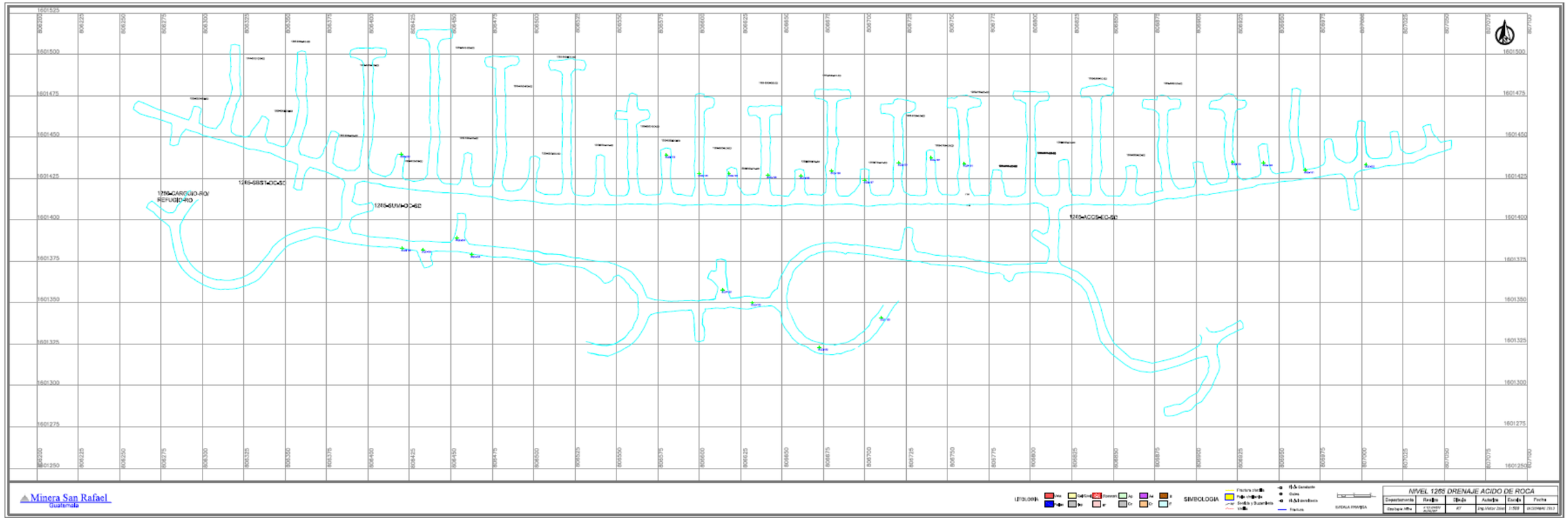
Cuadro 9-1: Sitios de Material Extraído de los Túneles, Proyecto Minero Escobal

Código de Muestra	Área	Coordenadas		
		X	Y	Z
GQE-171	1340-CFO-OC	806491.00	1601392.50	1340.00
GQE-172	1340-CFE-OC	806519.00	1601381.50	1340.00
GQE-173	1265-6720-EC	806720.50	1601434.50	1265.00
GQE-174	1290-6900-EC	806900.00	1601425.50	1290.00
GQE-175	1290-6400-OC	806392.50	1601450.00	1290.00
GQE-176	1290-6440-OC	806438.49	1601446.53	1290.00
GQE-177	1290-6600-OC	806599.74	1601413.34	1290.00
GQE-178	1265-6580-OC	806580.13	1601439.23	1265.00
GQE-179	1290-6820-EC	806820.32	1601416.30	1290.00
GQE-180	1265-6740-EC	806740.00	1601437.50	1265.00
GQE-181	1265-6760-EC	806760.00	1601434.00	1265.00
GQE-182	Rampa Este Central	806672.50	1601323.00	1230.00
GQE-183	1230-CONEXION-EC	806632.00	1601350.00	1230.00
GQE-184	Rampa Oeste Principal	806462.50	1601379.00	1217.20
GQE-185	1265-6620-EC	806618.00	1601428.00	1266.50
GQE-186	1265-6640-EC	806641.50	1601427.00	1266.50
GQE-187	1265-6700-EC	806700.00	1601424.00	1265.00
GQE-188	1265-6680-EC	806680.00	1601429.50	1265.00
GQE-189	1265-6600-EC	806600.00	1601428.00	1265.00
GQE-190	1240-ACC-EC	806586.00	1601390.00	1240.00
GQE-191	1265-CFE-EC	806966.00	1601430.00	1265.00
GQE-192	1290-7020-EC	806445.00	1601722.50	1290.00
GQE-193	Rampa Este Central	806710.00	1601341.00	1220.00

Código de Muestra	Área	Coordenadas		
		X	Y	Z
GQE-194	Rampa Oeste Principal	806433.00	1601382.00	1215.00
GQE-195	1265-6920-EC	806922.00	1601435.00	1265.00
GQE-196	Rampa Oeste Principal	806420.73	1601382.87	1215.00
GQE-197	1315-CFE-OC	806489.57	1601411.00	1314.66
GQE-198	1265-6940-EC	806940.89	1601434.34	1266.56
GQE-199	1265-6660-EC	806661.32	1601426.61	1266.00
GQE-200	1265-6420-OC	806420.17	1601439.52	1265.99
GQE-201	1315-CFTE-EC	806720.50	1601371.00	1315.00
GQE-202	1265-CFTE-EC	807002.50	1601433.50	1265.00
GQE-203	1315-CFW-EC	806720.50	1601374.00	1316.00
GQE-204	1215-ACC-OC	806453.50	1601389.00	1216.00
GQE-205	1290-6500-OC	806500.60	1601429.70	1290.00
GQE-206	1290-6940-EC	806940.30	1601433.00	1290.00
GQE-207	1290-6960-EC	806960.00	1601436.50	1290.00

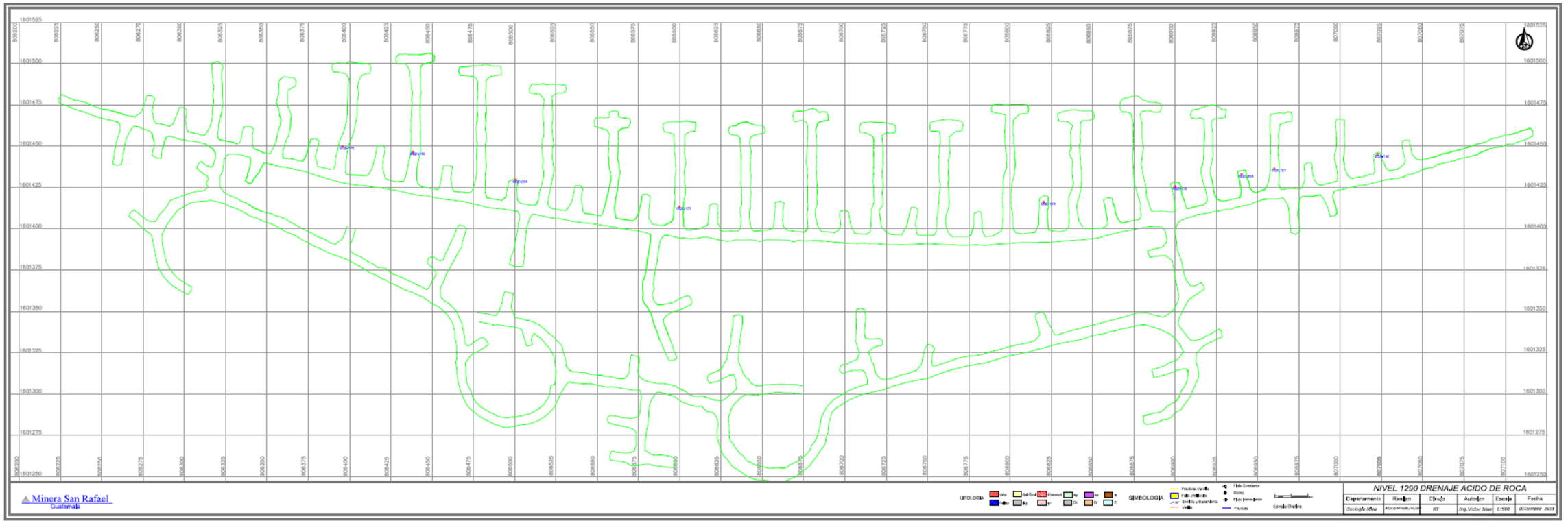
Fuente: Departamento de Geología de Mina, Minera San Rafael

Figura 9-1 Mapa de localización de Sitios de Material Extraído de los Túneles, nivel 1265, Proyecto Minero Escobal 2013



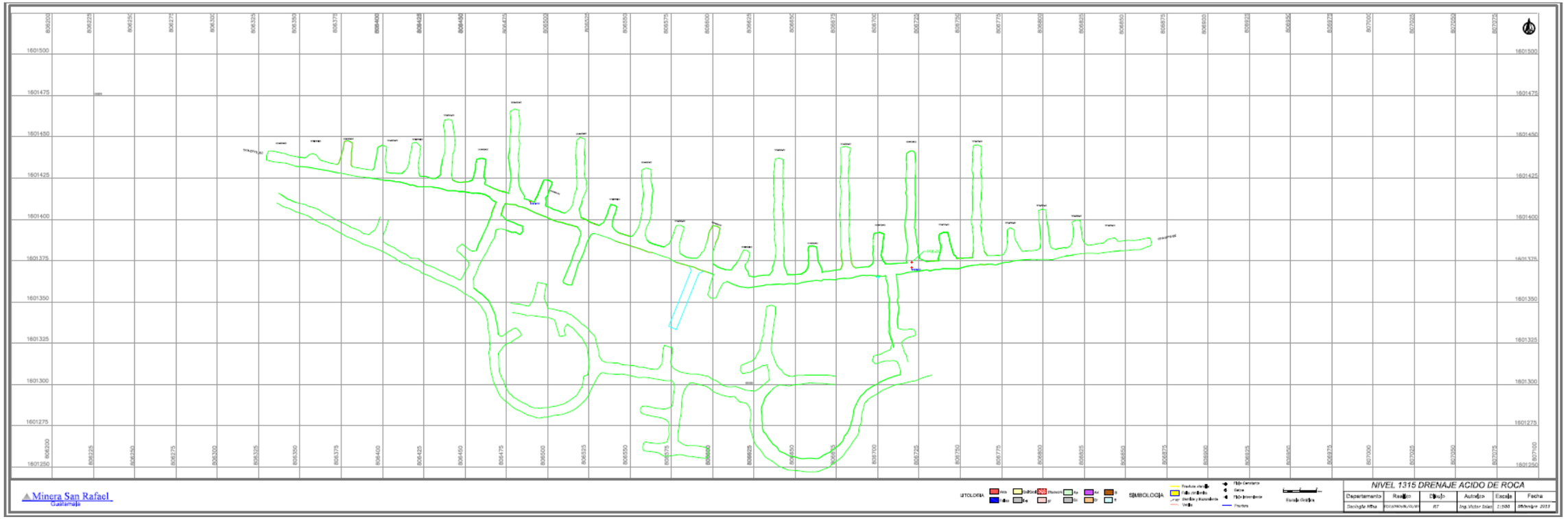
Fuente: Departamento de Geología de Mina, Minera San Rafael

Figura 9-2 Mapa de localización de Sitios de Material Extraído de los Túneles, nivel 1290, Proyecto Minero Escobal 2013



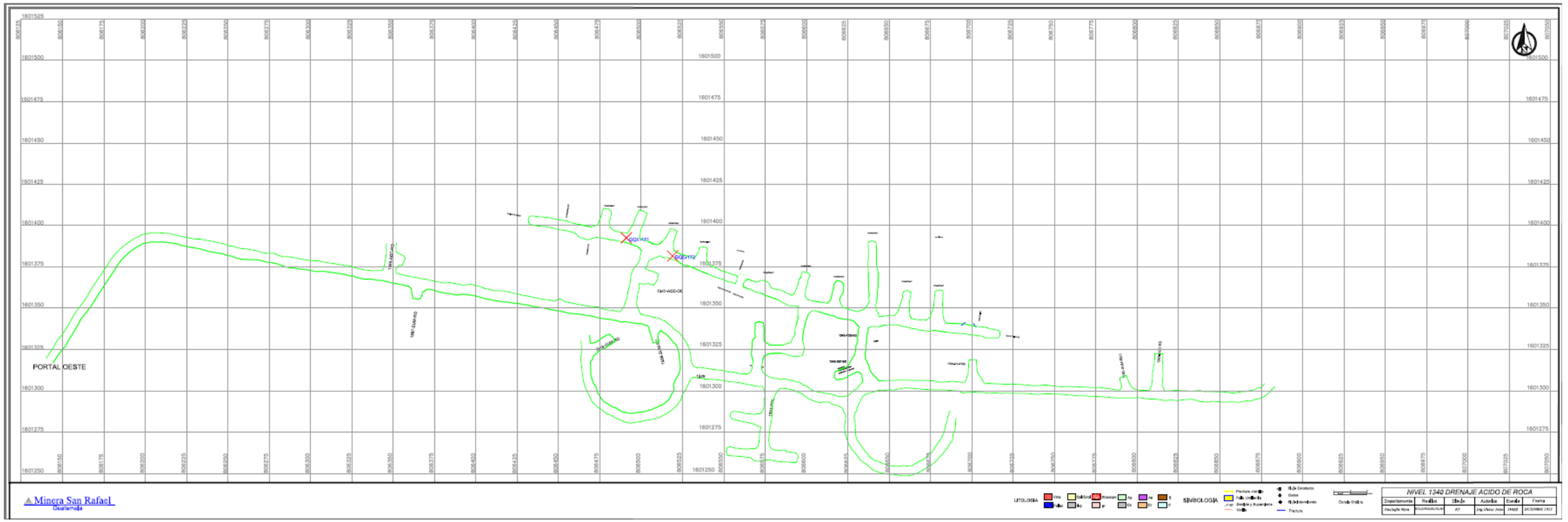
Fuente: Departamento de Geología de Mina, Minera San Rafael.

Figura 9-3 Mapa de localización de Sitios de Material Extraído de los Túneles, nivel 1315, Proyecto Minero Escobal 2013



Fuente: Departamento de Geología de Mina, Minera San Rafael.

Figura 9-4 Mapa de localización de Sitios de Material Extraído de los Túneles, nivel 1340, Proyecto Minero Escobal 2013



Fuente: Departamento de Geología de Mina, Minera San Rafael.

9.2. Metodología

Cuadro 9-2. Procedimiento y equipo utilizado para monitorear de pH en pasta de material extraído de los túneles. Proyecto Minero Escobal

PARÁMETROS ANALIZADOS	
pH	pH en pasta.
PROCEDIMIENTO	
Basados en el método ASTM D4972-01(2007) Standard Test Method for pH of Soils. Se determinó el pH en suspensión de Roca-Agua 1:1 p/v: esto se logró tomando 50 gramos de roca pulverizada y agregándole 50 ml de agua desmineralizada, se agita por 10 minuto y se deja reposar por 10 minutos más, luego se hace lectura directa de pH sobre la suspensión con la ayuda de un potenciómetro previamente calibrado.	
EQUIPO UTILIZADO	
Nombre	Potenciómetro pH & EC
Modelo	H-series H170G
Fabricante	HACH

9.3. Resultados

Los resultados de pH en pasta se presentan en el Cuadro 9-3. Los valores de pH se encontraron en el rango de 8.6 a 9.5 u.e. los cuales no dieron indicios de un potencial de generación ácida, por lo que no fue necesario realizar pruebas de laboratorio para el cálculo de ácido base modificado (ABA por sus siglas en inglés) para descartar o confirmar resultados.

Cuadro 9-3 Resultados de pH en Pasta en muestras de material extraído de Túneles, mayo a julio 2013, Proyecto Minero Escobal.

Código de Muestra	Fecha Toma de Muestra	Fecha Lectura pH	pH pasta	Temperatura (°C)
GQE-171	13/05/2013	29/05/2013	9.25	20
GQE-172	13/05/2013	29/05/2013	9.21	20.1
GQE-173	14/05/2013	29/05/2013	9.34	20.2
GQE-174	14/05/2013	29/05/2013	9.5	20.2
GQE-175	16/05/2013	29/05/2013	8.84	20.5
GQE-176	16/05/2013	29/05/2013	9.17	20.7
GQE-177	16/05/2013	29/05/2013	9.2	21.1
GQE-178	16/05/2013	29/05/2013	9.42	21.1
GQE-179	16/05/2013	29/05/2013	9.04	21.4
GQE-180	19/05/2013	29/05/2013	9.22	21.2
GQE-181	19/05/2013	29/05/2013	9.05	21
GQE-182	30/05/2012	01/06/2013	8.92	25.2
GQE-183	30/05/2013	01/06/2013	9.13	25.4
GQE-184	06/06/2013	25/06/2013	8.99	23
GQE-185	06/06/2013	25/06/2013	8.74	23.6
GQE-186	06/06/2013	25/06/2013	9.07	23.9
GQE-187	15/06/2013	25/06/2013	8.70	25.7
GQE-188	15/06/2013	25/06/2013	9.11	26.1
GQE-189	15/06/2013	25/06/2013	9.00	27
GQE-190	24/06/2013	28/06/2013	9.5	21.8
GQE-191	25/06/2013	28/06/2013	9.08	23.5
GQE-192	26/06/2013	28/06/2013	9.32	24.6
GQE-193	26/06/2013	28/06/2013	9.13	26.1
GQE-194	26/06/2013	28/06/2013	9.39	26.1
GQE-195	27/06/2013	01/07/2013	9.34	23.6
GQE-196	11/07/2013	15/07/2013	8.68	22.6
GQE-197	13/07/2013	15/07/2013	8.89	23.3
GQE-198	13/07/2013	15/07/2013	8.83	23.8
GQE-199	13/07/2013	15/07/2013	9.16	25.5
GQE-200	13/07/2013	15/07/2013	8.89	27.0
GQE-201	15/07/2013	29/07/2013	9.05	28.3
GQE-202	16/07/2013	29/07/2013	8.67	28.0

Código de Muestra	Fecha Toma de Muestra	Fecha Lectura pH	pH pasta	Temperatura (°C)
GQE-203	18/07/2013	29/07/2013	8.6	27.7
GQE-204	18/07/2013	29/07/2013	9.16	27.7
GQE-205	29/07/2013	31/07/2013	9.12	25.7
GQE-206	29/07/2013	31/07/2013	8.96	25.4
GQE-207	29/07/2013	31/07/2013	8.75	24.8

Fuente: registros departamento de medio ambiente, Minera San Rafael.

10.Mediciones de Seguridad Industrial y Salud Ocupacional

10.1. Presión Sonora

Para los periodos de medición del II Trimestre (mayo, junio, julio 2013) , en lo que refiere a presión sonora, nuevamente se han tomado en cuenta los puntos de monitoreo aledaños al área de construcción en Superficie, por contar con gran cantidad de personal, especialmente contratistas, en los puntos ER1, ER2, según muestra la Figura 10-1 que corresponden a las áreas aledañas a los portales, la cantidad de personal que estuvo laborando en tales zonas, son mayormente contratistas, iniciando con cerca de 1574, continuando con 1547 y terminando con cerca de 1474.

Los resultados de la presión sonora se muestran en la Cuadro 10-1, con lo cual indica que estamos haciendo comparaciones base con la norma OSHA, también se hicieron monitoreos mediante el uso de dosímetros portables. Los cuadros muestran, que se está dentro de parámetros aceptables OSHA en los puntos evaluados, debemos considerar que el Leq está acumulado para periodo de 24 horas y es de considerarse que implica una mayor dosis recibida por efecto de acumulación, a pesar de ello se está dentro de parámetros aceptables, lo que indica que si con 24 horas de exposición es aceptable, con mayor razón estaría para un periodo menor, también muestran los cuadros los resultados de evaluaciones hechos al interior de la Mina.

Para este trimestre también se han incluido mediciones realizadas al interior de la Mina bajo un método puntual, las cuales se muestran en el Cuadro 10-2Cuadro 10-3 donde los resultados fueron satisfactorios, donde se encontró que la dosis recibida para los trabajadores con uso del protector auditivo, está dentro de niveles aceptables.

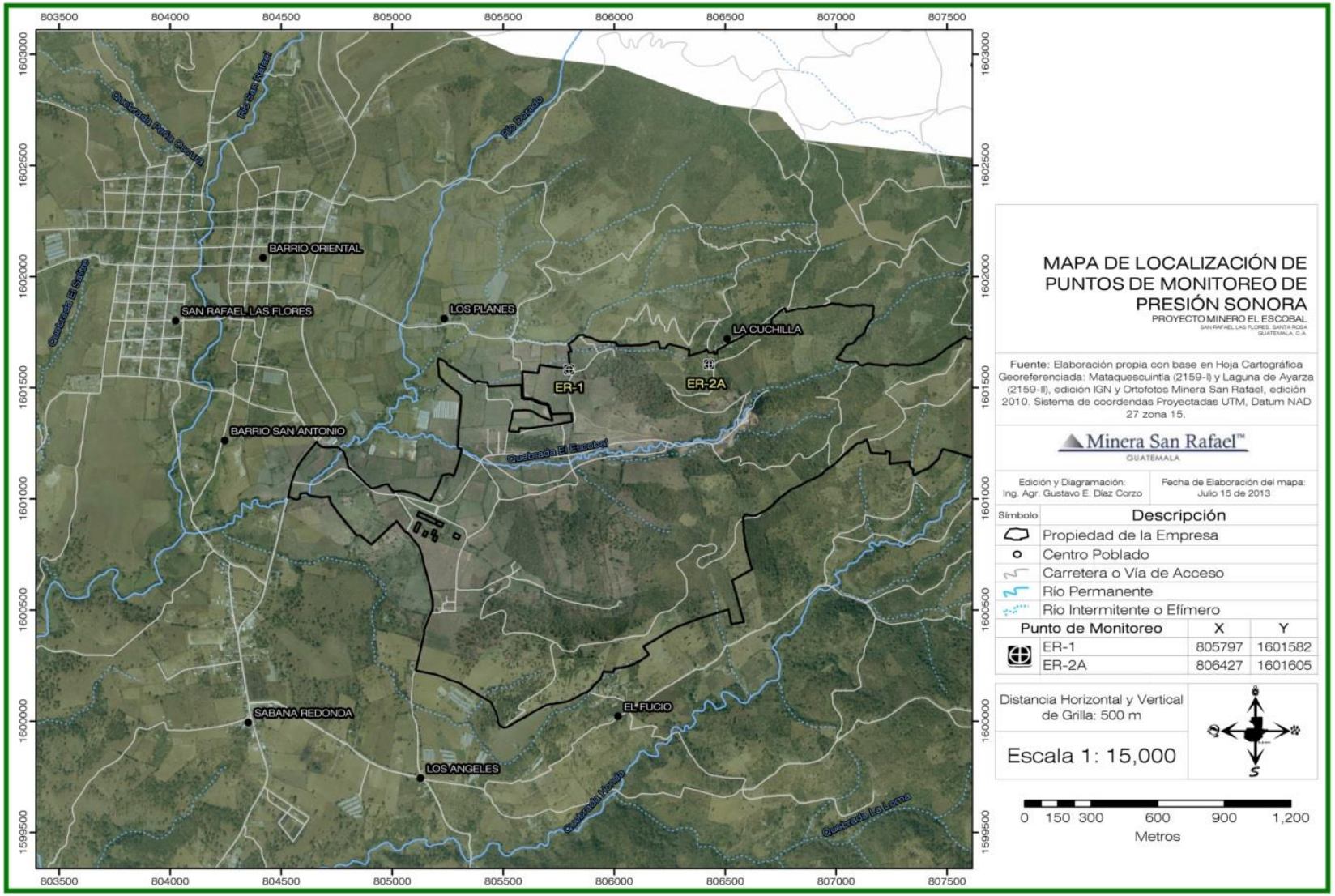


Figura 10-1 Mapa Localización Puntos Monitoreo Presión Sonora de Salud Ocupacional

Cuadro 10-1. Resultados de Presión Sonora durante los meses de mayo a julio 2013, Salud Ocupacional. Proyecto Minero Escobal.

ER - 1 Coordenadas UTM: X 805801 m, Y 1601417 m.	2013		
Trimestre	II		
Mes	May	Jun	Jul
Fecha	20/5/13	24/6/13	29/7/13
Hora Inicio	12:00	15:50	14:30
Duración	24h	24h	24h
Lmax dBA	76.6	80.3	83.2
Lmin dBA	35.9	41.1	37
Prom. Diurno dBA	53.9	54.79	49.63
Prom. Nocturno dBA	52.4	49.86	46.32
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 12 horas (12.1 horas y 10.6 horas)*	86 87	86 87	86 87
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 24 horas (24.3 horas y 21.1 horas)*	82 83	82 83	82 83
Duración de Referencia OSHA	24.3h 21.1h	24.3h 21.1h	24.3h 21.1h
Leq	53.4	53.5	49.1
Resultado (Leq ≤ Límite, entonces es Aceptable)	Aceptable	Aceptable	Aceptable

ER - 2 Coordenadas UTM: X 806425 m, 1601616 m.	2013		
Trimestre	II		
Mes	May	Jun	Jul
Fecha	20/5/13	24/6/13	29/7/13
Hora Inicio	11:15	11:00	10:25
Duración	24h	24h	24h
Lmax dBA	69.1	71.8	82.5
Lmin dBA	39	41.3	40.1
Prom. Diurno dBA	49.6	46.48	47.27
Prom. Nocturno dBA	48.27	46.54	46.5
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 12 horas (12.1 horas y 10.6 horas)*	86 87	86 87	86 87
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 24 horas (24.3 horas y 21.1 horas)*	82 83	82 83	82 83
Duración de Referencia OSHA	24.3h 21.1h	24.3h 21.1h	24.3h 21.1h
Leq	49.1	46.5	46.9
Resultado (Leq ≤ Límite, entonces es Aceptable)	Aceptable	Aceptable	Aceptable

Puesto de Operador de Scoop	2013		
Trimestre	II		
Mes	May	Jun	Jul
Fecha	No realizada por disturbios	19/06/2013	10/07/2013
Hora Inicio		07:00	07:00
Duración		12 hrs	12 hrs
Lmax dBA		142.2	144.1
Lmin dBA		60	60
Prom. Diurno dBA		92.9	94.7
Prom. Nocturno dBA		-	-
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 12 horas (12.1 horas y 10.6 horas)*	86 87	86 87	86 87
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 24 horas (24.3 horas y 21.1 horas)*	82 83	82 83	82 83
Duración de Referencia OSHA	24.3h 21.1h	24.3h 21.1h	24.3h 21.1h
Leq (Normal sin uso de EPP)		90	91.7
Leq ajustado (Con EPP, homologación 29 dBA a 50% = NRR 14.5 dBA)		75.5	77.2
Observación/Comentario		Sin EPP sobrepasaría la dosis, considerando que el tiempo efectivo del turno es < 10.6 hrs.	Sin EPP sobrepasaría la dosis, considerando que el tiempo efectivo del turno es < 10.6 hrs.
Resultado (Leq ajustado ≤ Límite, entonces es Aceptable)		Aceptable	Aceptable

Puesto de Operador de Jumbo	2013		
Trimestre	II		
Mes	May	Jun	Jul
Fecha	No realizada por disturbios	26/06/2013	10/07/2013
Hora Inicio		07:00	07:00
Duración		2:30 hrs	12 hrs
Lmax dBA		124.2	144.5
Lmin dBA		60	60
Prom. Diurno dBA		50.7	97.3
Prom. Nocturno dBA		-	-
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 12 horas (12.1 horas y 10.6 horas)*	86 87	86 87	86 87
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 24 horas (24.3 horas y 21.1 horas)*	82 83	82 83	82 83
Duración de Referencia OSHA	24.3h 21.1h	24.3h 21.1h	24.3h 21.1h
Leq (Normal sin uso de EPP)		55.7	94.4
Leq ajustado (Con EPP, homologación 29 dBA a 50% = NRR 14.5 dBA)		41.2	79.9
Observación/Comentario		Sin EPP sobrepasaría la dosis, considerando que el tiempo efectivo del turno es < 10.6 hrs.	Sin EPP sobrepasaría la dosis, considerando que el tiempo efectivo del turno es < 10.6 hrs.
Resultado (Leq ajustado ≤ Límite, entonces es Aceptable)		Aceptable	Aceptable

Puesto de Supervisor de Servicios Mina	2013
Trimestre	II
Mes	Jul
Fecha	10/07/2013
Hora Inicio	07:00
Duración	12 hrs
Lmax dBA	136.3
Lmin dBA	60
Prom. Diurno dBA	86.7
Prom. Nocturno dBA	-
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 12 horas (12.1 horas y 10.6 horas)*	86 87
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 24 horas (24.3 horas y 21.1 horas)*	82 83
Duración de Referencia OSHA	24.3h 21.1h
Leq (Normal sin uso de EPP)	83.8
Leq ajustado (Con EPP, homologación 29 dBA a 50% = NRR 14.5 dBA)	69.3
Observación/Comentario	Sin EPP sobrepasaría la dosis, considerando que el tiempo efectivo del turno es < 10.6 hrs.
Resultado (Leq ajustado ≤ Límite, entonces es Aceptable)	Aceptable

Puesto de Operador de Boltec	2013	
Trimestre	II	
Mes	May	Jun
Fecha	No realizado por disturbios	19/06/2013
Hora Inicio		07:00
Duración		12 hrs
Lmax dBA		143.7
Lmin dBA		60
Prom. Diurno dBA		92.7
Prom. Nocturno dBA		-
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 12 horas (12.1 horas y 10.6 horas)*	86 87	86 87
Límite Nivel de Sonido Ponderado-A dBA acorde a OSHA para 24 horas (24.3 horas y 21.1 horas)*	82 83	82 83
Duración de Referencia OSHA	24.3h 21.1h	24.3h 21.1h
Leq (Normal sin uso de EPP)		89.8
Leq ajustado (Con EPP, homologación 29 dBA a 50% = NRR 14.5 dBA)		75.3
Observación/Comentario		Sin EPP sobrepasaría la dosis, considerando que el tiempo efectivo del turno es < 10.6 hrs.
Resultado (Leq ajustado ≤ Límite, entonces es Aceptable)		Aceptable

NOTA:

dBA = decibeles en escala A y respuesta Lenta.
Lmax = lectura más alta durante la medición
Lmin = lectura más baja durante la medición
Leq = promedio ponderado equivalente de datos durante la medición.
Prom. Diurno = promedio logarítmico de Leq registrados de 07:00 a 22:00 horas o turno diurno Mina
Prom. Nocturno = promedio logarítmico de Leq registrados de 22:00 a 07:00 horas o turno nocturno mina
ND = No determinado
* Regulación 29 CFR, OSHA, Estándares, Parte 1910, Subparte G, Subtitulo Salud Ocupacional y Control Ambiental, Estándar número 1910.95 App A, Título Cálculo de Exposición al ruido (Noise exposure computation), Tabla G16a.

Fuente: Departamento de Seguridad Industrial, Minera San Rafael,S.A

Cuadro 10-2. Resultados de Mediciones de Presión Sonora en Mina Subterránea para los meses mayo a julio 2013. Proyecto Minero Escobal

Ciclo	PASO BÁSICO DEL CICLO	CICLO DE MINADO	Tiempo de exposición al nivel de ruido en horas = C	Nivel máximo permitido 12.1 horas OSHA dbA (T1)	Nivel máximo permitido 10.6 horas OSHA dbA (T2)	Nivel de Ruido en dBA en Fast/Hi	Nivel de Ruido dBA en Slow/Low	Exposición		Promedio del Tiempo de exposición máximo permisible OSHA en el nivel de ruido promedio para E1 en horas = T1 sin EPP	Promedio del Tiempo de exposición máximo permisible OSHA en el nivel de ruido promedio para E2 en horas = T2 con EPP	d = % de la dosis permitida sin epp (C/T1)	% Dosis diaria acumulada sin EPP	d = % de la dosis permitida con epp (C/T2)	% Dosis diaria acumulada con EPP
								Exposición Promedio Sin epp= E1 dBA Medido en modo Lento/Bajo	Exposición Promedio con epp (50% atenuación proyectada del NRR 29dbA = 14.5 dbA) = E2 dBA						
	Variable	Variable	Medido	Fijo	Fijo	Variable	Variable	Medido	Fórmula	Tabla	Tabla	Fórmula	Fórmula	Fórmula	Fórmula
Trimestre IV (Noviembre, Diciembre, Enero)	1	**Rezagado/Acarreo**	1.5	87	88	90	88	88	73.5	10.6	32	14.15%	14.15%	4.69%	4.69%
	2	**Fortificación/Sosteniendo**	2.5	87	88	89	88	88	73.5	10.6	32	23.58%	37.74%	7.81%	12.50%
	3	**Lanzado**	3	87	88	81	80	80	65.5	32	32	9.38%	47.11%	9.38%	21.88%
	4	**Perforando**	3	87	88	92	90	90	75.5	8	32	37.50%	84.61%	9.38%	31.25%
	5	**Cargando**	1	87	88	88	85	85	70.5	16	32	6.25%	90.86%	3.13%	34.38%
	TOTALES		11	Horas de ciclo óptimo calculado								**D1=**	**91%**	**D2=**	**34%**
												D1=	0.9086	**D2=**	0.3438
													Sin EPP		Con EPP

EQUIPO UTILIZADO: SOUND LEVEL METER
MARCA: RadioShack Technology PLUS
MODELO: 3300099
SERIAL 03A12
CALIBRADOR: ACOUSTIC CALIBRATOR CLASS 1
MARCA: 3M QUEST
MODELO: AC-300
SERIAL AC-300001349
CLASE Y REFERENCIA: IEC 60942 2003, ANSI S1.40 (R2011), 114db - 1kHz, 250 Hz

D1 ≥ 1 Entonces aplicar controles, máquinas, medio ambiente, EPP.

D2 ≥ 1 Fuera de norma. D2 < 1 Aceptable

RESULTADO FINAL: D2 < 1 ACEPTABLE

CONCLUSIÓN: De acuerdo a cálculos y estudios, se concluye que con el uso de EPP tapon auditivo que tiene atenuación de 29dbA y una efectividad proyectada de NRR 14.5 dBA. Aun sin la atenuación del epp no se alcanza a recibir el 100% de la dosis marcada por OSHA.

Fuente: Departamento de Seguridad Industrial, Minera San Rafael,S.A

10.2. Mediciones de Partículas Respirables

Para hacer estos estudios, se han realizado con un monitor de polvo sedimentable respirable en los mismos puntos renombrados EA-1A y EA-2A según muestra la Figura 10-2 que al igual que en la medición de Presión Sonora, se ha optado por tomar como referencia las áreas donde se encuentra mayor personal. Los resultados de medición para el Trimestre II (mayo a julio 2013) se muestran en el Cuadro 10-3. y adicionalmente en este trimestre, también se hicieron mediciones en Mina Subterránea, los resultados fueron satisfactorios como puede apreciarse también en dichos cuadros, y se está dentro de parámetros aceptables, en algunos casos de manera normal y otros después de la aplicación del factor de compensación por homologación de EPP, se está dentro de rango y en ningún momento se excede el límite normal, que es el parámetro que refiere el fabricante para el respirador usado en las áreas de monitoreo, marca 3M código 8210 N95 Homologación NIOSH.

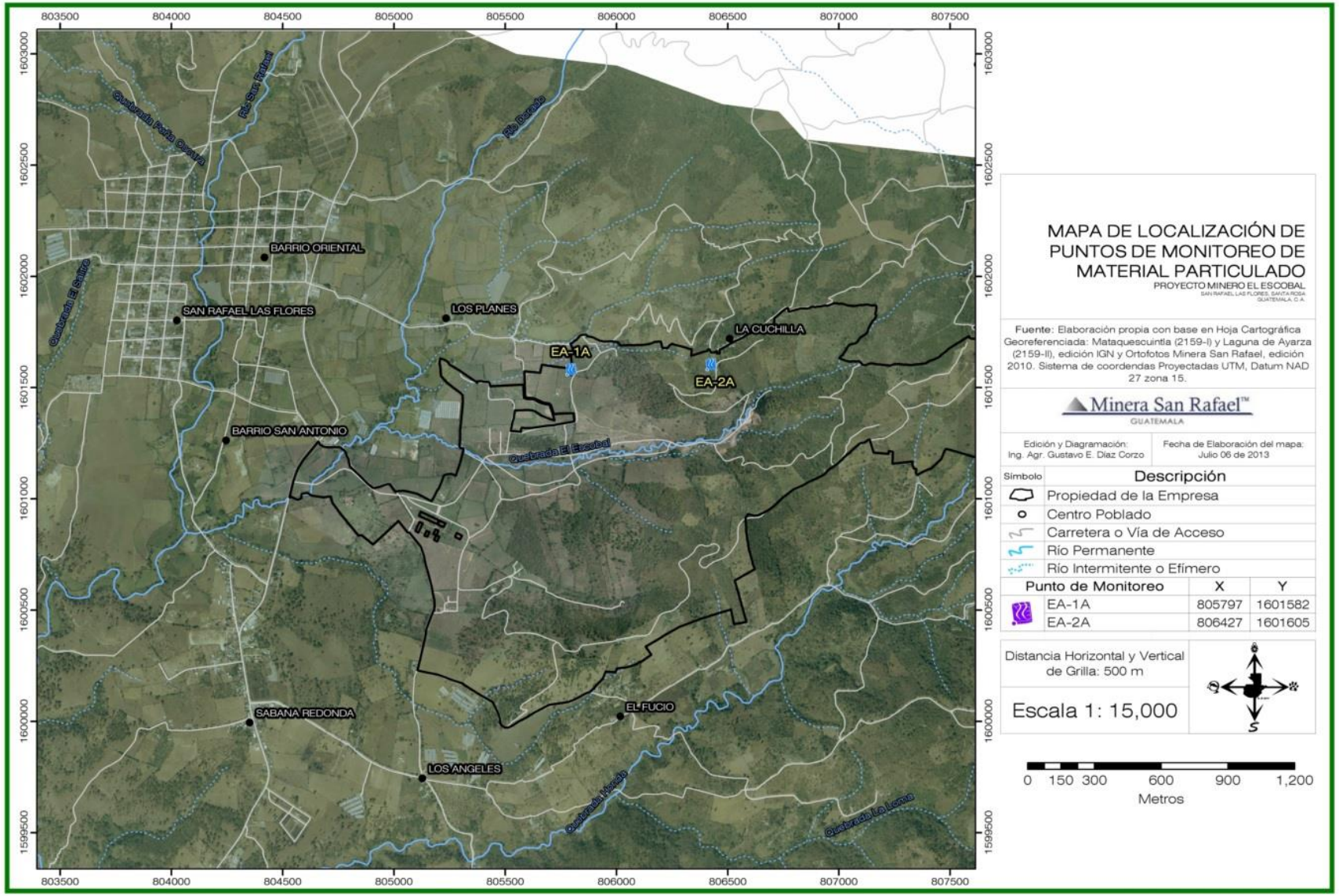


Figura 10-2 Mapa Localización Puntos Monitoreo Partículas Respirables, Salud Ocupacional

Cuadro 10-3. Resultados de Material Particulado durante los meses de mayo a julio 2013, Salud Ocupacional. Proyecto Minero Escobal.

EA - 1A Coordenadas UTM: X 806418 m, Y 1601233 m.							2013		
Trimestre							II		
Mes	Unidades	NORMA DE REFERENCIA PARA SILICE/SILICONA	AJUSTE DE EXPOSICIÓN CON LA CERTIFICACION DEL RESPIRADOR N95 3M 8210 A 95% DE EFICIENCIA MÍNIMA, CON EPP	NORMA*	GUÍA*		May	Jun	Jul
Fecha							16/05/2013	06/06/2013	22/07/2013
Hora Inicio				USEPA[1]	BANCO MUNDIAL[2]	OMS[3]	12:00	15:40	14:30
Duración		OSHA	95%				23:59	23:59	23:59
OSHA Fraccion Respirable PM_4	mg/m^3	5	100	150	150	50	-	-	-
OSHA Polvo Total @ PM_{10}	mg/m^3	15	300	150	150	50	0.12317	0.03332	0.02415
EA - 2A Coordenadas UTM: X 806396 m, 1601558 m.							2013		
Trimestre							II		
Mes	Unidades	NORMA DE REFERENCIA PARA SILICE/SILICONA	AJUSTE DE EXPOSICIÓN CON LA CERTIFICACION DEL RESPIRADOR N95 3M 8210 A 95% DE EFICIENCIA MÍNIMA, CON EPP	NORMA µg/m3	GUIA µg/m3		May	Jun	Jul
Fecha							20/5/13	24/6/13	29/7/13
Hora Inicio				USEPA[1]	BANCO MUNDIAL[2]	OMS[3]	11:05	10:40	10:10
Duración		OSHA	95%				23:59	23:59	23:59
OSHA Fraccion Respirable PM_4	mg/m^3	5	100	150	150	50	-	-	-
OSHA Polvo Total @ PM_{10}	mg/m^3	15	300	150	150	50	0.04143	0.02749	0.01919
Interior Mina General							2013		
Trimestre							II		
Mes	Unidades	NORMA DE REFERENCIA PARA SILICE/SILICONA	AJUSTE DE EXPOSICIÓN CON LA CERTIFICACION DEL FILTRO 7093C/37173 3M P100 (99.97% DE EFICIENCIA MÍNIMA) CON EPP	NORMA µg/m3	GUIA µg/m3		May	Jun	Jul
Fecha							25/6/13	22/7/13	31/8/13
Hora Inicio				USEPA[1]	BANCO MUNDIAL[2]	OMS[3]	14:33	9:41	14:02
Duración		OSHA	99.97%				01:12hrs	01:08hrs	1:20hrs
OSHA Fraccion Respirable PM_4	mg/m^3	5	16667	150	150	50	0.502	0.620	0.68
OSHA Polvo Total @ PM_{10}	mg/m^3	15	50000	150	150	50	0.649	0.663	0.814

Nota: OSHA Fracción respirable no fue tomado en esta ocasión, sin embargo sea con el uso de EPP o sin el uso de el (ajustando con la norma OSHA) del respirador mismo, ajuste recomendado por el fabricante, estámos dentro de parámetros, es decir que si comparamos aún la norma para fracción respirable con el resultado de Polvo Total, estamos mas que seguros de estar dentro de norma.

Fuente: Departamento de Seguridad Industrial, Minera San Rafael, S.A.

10.3. Mediciones de Gas

Las mediciones de Gas, se hacen en forma rutinaria, turno a turno, y debido a que no se ha rebasado los límites permisibles cuando se encuentra maquinaria presente trabajando en las áreas según norma OSHA (Tabla Z1 1910.100 Límites para aires contaminados), es la razón por la que se ha mantenido los sistemas de ventilación de manera normal, como se puede apreciar en Cuadro 10-4, como se mencionó en el reporte del Trimestre I 2013 dada la no presencia de Ácido Sulfhídrico - Sulfuro de Hidrógeno (H_2S) se siguió monitoreando y para efectos de informe se omitirá hasta detectar la primera vez. De igual forma, para efectos de publicación de informes, se seleccionará la primer etapa del ciclo que aparezca en las mediciones rutinarias, por lo que en dichos cuadro, como se mencionó desde el I Trimestre, se ha colocado como mínimo 3 turnos de alguno de los meses del trimestre, a fin de tener información más compacta y sistematizada.

Cuadro 10-4. Extracto de las mediciones del II trimestre 2013, acorde a procedimiento de tomar la primera etapa del ciclo que aparezca.

MEDICIONES DE CALIDAD DE AIRE Y TEMPERATURA EN INTERIOR MINA 2013								
FECHA	Lugar	Maquinaria	Etapa de Ciclo	CO (PPM) 50 ppm	Hora	Turno	Reportado por	
02/05/2013	1340 O	AT-02	Cargando	0	00:20	Nocturno	Luis Rios	5
	1290 6720	RB-03	Fortificando	0	01:25			
	1290 6760	AT-01	Cargando	0	01:33			
	1290 6640	JD-03	Perforando	1	01:45			4
	1265 O 6560	RB-04	Fortificando	0	02:15			2
	1265 O 6600	AT-01	Cargando	0	02:25			
03/05/2013	Lecturas a inicio de turno					Diurno	Juan Carlos Fernández / René Rivera	
	1265 CFTE EC		VOLADURA	23	06:40			
	1290 6760		VOLADURA	17	06:40			
	1340 CFTE E		VOLADURA	10	06:40			
	1265 6600		VOLADURA	19	06:40			
	1290 6640		VOLADURA	14	06:40			
	1265 SUM O	LM55	Sondeo UG	4	15:01			
	1265 6560 O	AT02	Cargue	10	15:15			
	1265 6600	RB04	Fortificando	7	15:25			
	RE 1265 a 1240	PC05	Mantenimiento eléctrico	4	15:38			
	1290 6680 E	LM55	Sondeo UG	6	15:45			
	1290 6760 E	RB03	Fortificando	5	15:55			
03/05/2013	Lecturas a inicio de turno					Nocturno	Luis Rios	
	Frente Principal Este	-	-	28	19:10			
	1265 E CFO	-	-	39	19:10			
	1265 E 6880	-	-	31	19:10			
	Frente Principal Oeste	-	-	0	19:10			
	1265 O 6560	-	-	27	19:10			
	1265 O 6580	-	-	24	19:10			
	1250 O	-	-	0	19:10			
	1340 O	RB-02	Fortificando	0	01:45			
	1290 6680	LM-55	Sondeo	1	02:10			
	1290 6860	RB-01	Fortificando	6	02:25			
	1290 6640	-	Cargando	7	02:40			
	1230 O	FT-01	Servicios	0	03:05			
04/05/2013	Lecturas a inicio de turno					Diurno	Juan Carlos Fernández / René Rivera	
	Oeste 1265 CFTE E	-	VOLADURA	7	06:40			
	1290 6640 E	-	VOLADURA	1	06:40			
	Este 1265 6740 E	-	VOLADURA	13	06:40			
	1290 6720 E	-	VOLADURA	7	06:40			
	1340 SBST O	RB02	Fortificando	1	13:49			
	1329 CONEXIÓN	FT02	Servicio a portón 1329	0	13:55			
	1265 SUM O	LM55	Sondeo UG	11	15:20			
	1265 O CFTE O	ST02	Lanzando	10	15:30			3
	1265 O CFTE E	AT02	cargue explosivos	15	15:50			
	1265 O 6560	RB04	Fortificando	18	16:00			
	1265 O 6580	RB02	Fortificando	13	16:05			
04/05/2013	Lecturas a inicio de turno					Nocturno	Antonio Sapón	
	Oeste 1265 6600	Ninguna	Pegada turno anterior	11	19:00			
	Este 1290 6860	Ninguna	Pegada turno anterior	11	19:05			
	Este 1290 6900	Ninguna	Pegada turno anterior	11	19:05			
	Este 1265 6720	Ninguna	Pegada turno anterior	22	19:10			
	Este 1265 6880	RB-03	Sosteniendo	8	00:00			
	Frente Principal Este	RB-03	Sosteniendo	8	00:32			
	Oeste 1265 CFO	ST-02	Zarpeo	0	00:50			
	Oeste SUM 1265	LM-55	Sondeo UG	0	01:15			
	Oeste 1265 6560	JD-04	Perforación	11	01:45			
05/05/2013	Lecturas a inicio de turno					Diurno	Juan Carlos Fernández	
	Frente principal Este	-	VOLADURA	17	06:45			
	1290 6760 EC	-	VOLADURA	16	06:45			
	1340 AC	-	VOLADURA	0	06:40			
	Frente principal Oeste	-	VOLADURA	0	06:40			
	1265 SUM O	LM55	ESTACION SONDEO	16	12:15			
	1265 6600 OC	AT01	CARGUIO	17	11:56			
	1290 6560 OC	FT01	Fortificando	14	12:15			
	1290 6640 EC	JD02	PERFORANDO	12	12:30			
	1290 6680 EC	LM55	ESTACION SONDEO	13	12:38			
	1290 6720 EC	JD03	PERFORANDO	12	12:45			
05/05/2013	Lecturas a inicio de turno					Nocturno	Antonio Sapón	
	Oeste 1265 CFO	Ninguna	Pegada turno anterior	30	18:50			
	Oeste 1265 6560	Ninguna	Pegada turno anterior	27	18:50			
	Oeste 1290 6640	Ninguna	Pegada turno anterior	14	18:55			
	Este 1265 CFO	Ninguna	Pegada turno anterior	0	19:00			
	Este 1265 CFE	Ninguna	Pegada turno anterior	27	19:00			
	Este 1290 6720	Ninguna	Pegada turno anterior	12	19:05			
	Oeste 1265 CFE	AT-02	Carguillo	9	22:20			
	Oeste SUM 1265	LM-55	Sondeo UG	13	22:45			
	Este 1290 6680	GP-03	Cementando	17	23:15			
	Este 1290 6640	RB-02	Sosteniendo	15	23:50			
	Este 1290 6860	RB-03	Sosteniendo	25	00:15			
06/05/2013	Lecturas a inicio de turno					Diurno	Juan Carlos Fernández	
	1265 6720 EC	-	VOLADURA	27	06:50			
	1290 6900 EC	-	VOLADURA	16	06:50			
	1340 CFTO OC	-	VOLADURA	0	06:40			
	1265 CFTE OC	-	VOLADURA	8	06:45			
	1340 CFTO OC	RB05	Fortificando	0	12:22			
	1340 ACC EC	LM55	ESTACION SONDEO	0	12:30			
	1315 EC	MONOFLOW	SERVICIOS	21	12:38			
	1265 CFTO EC	RB01	Fortificando	18	12:50			
	frente principal Este	AT02	CARGUIO	11	13:54			
	1290 6860 EC	JD06	PERFORANDO	8	14:05			
	1265 CFTO OC	ST02	Lanzando	0	14:20			
	1265 6560 OC	JD04	Perforando	1	14:35			
	1265 6000 OC	AT01	CARGUIO	0	14:42			
06/05/2013	Lecturas a inicio de turno					Nocturno	Antonio Sapón	
	Frente Principal Oeste	Ninguna	Pegada turno anterior	0	18:40			
	Oeste 1265 6600	Ninguna	Pegada turno anterior	35	18:45			
	Frente Principal Este	Ninguna	Pegada turno anterior	15	18:55			
	Este 1265 6880	Ninguna	Pegada turno anterior	33	19:00			
	Este 1290 6860	Ninguna	Pegada turno anterior	20	19:04			
	Oeste 1340	JD-01	Perforando	0	00:00			
	Este 1290 6900	RB-01	Sosteniendo	9	00:30			
	Oeste 1290 6480	LH-01	Perforando	11	01:15			
	Oeste 1290 6560	FT-01	Cementando	12	01:35			
	Este 1265 6720	RB-04	Sosteniendo	14	01:55			
	Este 1265 CFE	JD-03	Perforando	18	02:21			
	Frente Principal Este	JD-06	Perfilando	11	02:45			
07/05/2013	Lecturas a inicio de turno					Diurno	Luis Rios	
	1265 E CFO	-	-	30	06:45			
	1290 6720	-	-	27	06:45			
	1290 6740	-	-	23	06:45			
	1265 E CFE	-	-	36	06:45			
	1340 CFE O	-	-	18	06:45			
	1340 CFO O	-	-	18	06:45			
	1265 O 6560	-	-	15	06:45			
	1265 O CFO	-	-	9	06:45			
	1340 O	LL-02	Rezagando	2	11:30			1
	1290 6480	LH-01	Perforando	7	11:45			
	1290 6640	AT-02	Cargando	9	12:05			
	1265 O CFO	ST-01	Lanzando	10	12:20			
	1265 O 6600	RB-05	Fortificando	12	12:30			
	Frente Principal Oeste	RB-04	Fortificando	4	12:45			
	1290 6760	RB-01	Fortificando	13	12:58			
	1340 E	LM-55	Sondeo	0	13:20			

Fuente: Departamento de Seguridad Industrial, Minera San Rafael,S.A

11.Conclusiones

- Los valores de PM_{10} registrados durante los meses de mayo a julio 2013 fueron menores a las concentraciones establecidas por la EPA y el Banco Mundial (150 $\mu g/m^3$) para las estaciones monitoreadas; y la mayoría se encuentran dentro de los valores mínimos y máximos registrados durante el establecimiento de la línea base.

- No se detectó dióxido de azufre en las siete estaciones de calidad de aire muestreadas durante el mes de junio 2013, y dióxido de nitrógeno se detectó únicamente en la estación de Sabana Redonda en concentraciones muy cercanas al límite de detección del método.

- Los promedios diurnos y nocturnos de las estaciones ER-1, ER-2, ER-3, ER-5A, ER-6 y ER-7A se encuentran dentro de los valores mínimos y máximos registrados durante el establecimiento de la línea base. La mayoría de las estaciones monitoreadas, a excepción de ER-1A y ER-3A, cumplen con los límites para promedios diurnos y nocturnos dados por la USEPA (55 dBa), y ninguno supera los promedios diurnos y nocturnos dados por el Banco Mundial para zonas industriales (70 dBa)

- Las estaciones de monitoreo de agua superficial cumplieron con los límites máximos permisibles dados por el Acuerdo Gubernativo 236-2006 para entes generadores nuevos; presentaron un pH neutro y en ninguna estación se detectaron concentraciones de Aceites y Grasas, Cianuro Total, Berilio, Cadmio, Cobre, Cromo, Mercurio y Níquel. Las concentraciones de Cloruros, Fluoruros, Antimonio, Bario, Cobre, Selenio y Plata están por debajo de las directrices la USEPA para la salud humana, y el Fósforo total y por debajo de los límites establecidos por el Acuerdo 236-2006. El Arsénico y el Aluminio se detectaron en concentraciones dentro de las concentraciones mínimas y máximas en el establecimiento de línea base en la mayoría de las estaciones.

- En general los parámetros analizados para los nacimientos GW-1A, GW-2, GW-3, GW-4 y GW-5 cumplen con el Acuerdo 236-2006 y los valores en general se encuentran dentro del rango estadístico de la línea base. El Arsénico disuelto se detectó por debajo de la los límites establecidos en la línea base; no se detectó Cianuro Total, Berilio, Cromo, Mercurio, Molibdeno, Níquel y Planta.

- Todos los pozos de monitoreo cumplen con los límites máximos permisibles dados en el Acuerdo 236-2006 para entes generadores nuevos y los valores en general se encuentran dentro del rango estadístico de la línea base, la excepción se da en las lecturas de pH In Situ las cuales son descartadas pues el sensor presentó daño durante el monitoreo.

- Se verificó que los resultados proporcionados por los laboratorios Ecosistemas Proyectos Ambientales y ACZ Laboratory son confiables tanto en manipulación como en precisión y exactitud, según el análisis de aseguramiento de calidad efectuado con los resultados de las muestras blanco, duplicados y estándar de metales.

- Las concentraciones de Arsénico, Cadmio, Cromo, Plomo y Mercurio registradas en los sedimentos de las estaciones muestreadas en el mes de junio 2013 están por debajo de los Límites Máximos Permisibles (LMP) para la disposición de lodos en el suelo establecidos por el Acuerdo 236-2006.

- El efluente WW9 de la planta de tratamiento del proyecto Escobal cumplió con los límites máximos permisibles dados por el Acuerdo Gubernativo 236-2006 para entes generadores nuevos; según los resultados de laboratorios obtenidos durante los muestreos efectuados en los meses de mayo a julio 2013.

- Todos los parámetros analizados en los lodos generados por el clarificador de la planta de tratamiento SED-WW7 cumplen con los límites máximos permisibles establecidos en el Acuerdo Gubernativo 236-2006 para la aplicación al suelo

- Todas vibración inducidas por las voladuras registradas durante los meses de mayo a julio 2013 están por debajo del límite de detección del equipo

empleado (1.3 mm/s), el cual es menor al límite a partir del cual las vibraciones inducidas por una voladura puede ocasionar daños (50.8 mm/s) según la norma del United States Bureau of Mines.

- Los valores de pH en Pasta obtenidos de las muestras de material extraído de los túneles durante los meses de mayo a julio 2013 no dieron indicios de un potencial de generación ácida.

- Se está por debajo del Límite de Nivel de Sonido ponderado A acorde a OSHA para 24 horas (82-83 dBa) en los puntos evaluados. Según los datos obtenidos de presión sonora de salud ocupacional en los meses de mayo a julio 2013.

- En ningún momento se excede el límite normal de polvo sedimentable respirable en las estaciones monitoreadas; que es el parámetro que refiere el fabricante para el respirador usado en las áreas de monitoreo, marca 3M código 8210 N95 Homologación NIOSH.

12.Anexos

12.1. Caudal Bombeado de Túneles a Planta de Tratamiento y su Descarga Hacia la Quebrada El Escobal

MAYO 2013																															
Descarga/fecha	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
LECTURA FLUJÓMETRO (m^3)																															
Portal Este (tubería 6")	SD	SD	94746	95537	96202	97193	97330	98038	98905	99850	100554	100923	101501	101869	102267	102635	102990	103442	103652	104027	105086	106569	106984	107500	107742	107792	107819	107845	108152	109050	109514
Total Este (tubería 8")	SD	SD	SD	603367	604265	605253	606487	607404	608321	609236	SD	611601	612690	614180	615485	616828	618042	SD	620472	621530	623345	624935	626434	628295	630177	631783	633100	634385	SD	637442	638832
Portal Oeste (tubería 6")	SD	SD	164380	164439	164529	164765	164789	164812	164813	164813	164829	164844	165223	164881	164930	165148	165361	165743	165978	166086	166169	166944	166673	166173	166532	166957	166638	167155	168000	169186	166632
Portal Oeste (tubería 8")	SD	SD	604089	606314	608462	610470	612941	615049	616974	619031	621357	623855	625594	628250	630509	632225	634234	636190	639176	641184	642665	643499	645071	646959	648672	650208	652187	654317	655806	656987	658201
Clarificador	SD	SD	1277546	1281803	1285276	1288753	1291983	1295174	1299082	1302251	1306144	1309277	1312401	1315372	1318221	1321854	1325245	1328168	1332419	1335503	1338744	1341939	1344895	1348916	1352328	1355042	1358449	1362096	1365653	1369137	1371642
VOLUMEN BOMBEADO (m^3)																															
Portal Este (tubería 6")			3062	791	665	991	137	708	867	945	705	369	578	368	398	368	355	452	210	375	1059	1483	415	516	242	50	27	26	307	898	464
Total Este (tubería 8")					898	988	1234	917	917	915			1089	1490	1306	1343	1214			1058	1815	1590	1500	1861	1882	1606	1317	1285			1390
Portal Oeste (tubería 6")			60	59	90	236	24	23	1	0	16	15	379	-342	49	218	213	382	235	108	83	775	-271	-500	359	425	-319	517	845	1186	-2554
Portal Oeste (tubería 8")			5552	2225	2148	2008	2471	2108	1925	2057	2326	2498	1739	2656	2259	1716	2009	1956	2986	2008	1481	834	1572	1888	1713	1536	1979	2130	1489	1181	1214
Clarificador			7048	4257	3473	3477	3230	3191	3908	3169	3893	3133	3124	2971	2849	3633	3391	2923	4251	3084	3241	3195	2956	4021	3412	2714	3407	3647	3557	3484	2505
CAUDAL PROYECTADO (gpm)																															
Portal Este (tubería 6")			187	145	122	182	25	130	159	173	129	68	106	67	73	67	65	83	39	69	194	272	76	95	44	9	5	5	56	165	85
Total Este (tubería 8")					165	181	226	168	168	168			200	273	239	246	223	0	0	194	333	291	275	341	345	294	241	236			255
Portal Oeste (tubería 6")			11	11	17	43	4	4	0	0	3	3	69	-63	9	40	39	70	43	20	15	142	-50	-92	66	78	-58	95	155	217	-468
Portal Oeste (tubería 8")			339	408	394	368	453	386	353	377	426	458	319	487	414	315	368	359	547	368	272	153	288	346	314	282	363	391	273	217	223
Clarificador			431	780	637	637	592	585	716	581	714	574	573	545	522	666	622	536	779	565	594	586	542	737	626	498	625	669	652	639	459

JUNIO 2013																														
Descarga/fecha	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
LECTURA FLUJÓMETRO (m^3)																														
Portal Este (tubería 6")	110027	110628	111036	111267	111516	111832	112344	112642	112895	113190	113491	113770	114090	114398	114669	114906	115175	115400	115684	115907	116170	116413	116640	116905	117041	117396	117839	118366	118883	119703
Total Este (tubería 8")	640175	642101	643359	644836	646665	648044	650031	651751	653076	SD	656847	657772	SD	SD	SD	SD	SD	SD	665538	667437	669091	671130	672338	673676	674703	676028	677147	678180	679057	681040
Portal Oeste (tubería 6")	167380	167856	168037	168552	168808	168990	169190	169469	169728	170273	170762	171150	170191	170894	171514	172077	173118	174146	175353	175853	176240	177040	177605	178281	177733	177795	177800	178402	179063	179419
Portal Oeste (tubería 8")	659463	661267	662581	663899	665961	667015	668578	670668	671252	673342	675100	676828	678383	679822	680956	682097	683226	684058	685023	686472	687969	688942	689935	691208	692972	694136	695048	695980	696809	698407
Clarificador	1371686	1377787	1379371	1382030	1385261	1387180	1389402	1392312	1393953	1396409	1398687	1401605	1404086	1406750	1409043	1410946	1413272	1415623	1417672	1419664	1421519	1423636	1425998	1428149	1430250	1432223	1434206	1436402	1438346	1442868
VOLUMEN BOMBEADO (m^3)																														
Portal Este (tubería 6")	513	601	408	231	249	316	512	298	253	295	301	279	320	308	271	237	269	225	284	223	263	243	227	265	136	355	443	527	517	820
Total Este (tubería 8")	1343	1926	1258	1478	1829	1379	1986	1720	1325			925								1899	1654	2039	1208	1338	1027	1324	1119	1033	877	1982
Portal Oeste (tubería 6")	748	476	181	515	256	182	200	279	259	545	489	388	-959	703	620	563	1041	1028	1207	500	387	800	565	676	-548	62	5	602	661	356
Portal Oeste (tubería 8")	1262	1804	1314	1318	2062	1054	1563	2090	584	2090	1758	1728	1555	1439	1134	1141	1129	832	965	1449	1497	973	993	1273	1764	1164	912	932	829	1598
Clarificador	44	6101	1584	2659	3231	1919	2222	2910	1641	2456	2278	2918	2481	2664	2293	1903	2326	2351	2049	1992	1855	2117	2362	2151	2101	1973	1983	2196	1944	4522
CAUDAL PROYECTADO (gpm)																														
Portal Este (tubería 6")	94	110	75	42	46	58	94	55	46	54	55	51	59	56	50	43	49	41	52	41	48	45	42	49	25	65	81	97	95	150
Total Este (tubería 8")	246	353	231	271	335	253	364	315	243			170								348	303	374	221	245	188	243	205	189	161	363
Portal Oeste (tubería 6")	137	87	33	94	47	33	37	51	47	100	90	71	-176	129	114	103	191	188	221	92	71	147	104	124	-100	11	1	110	121	65
Portal Oeste (tubería 8")	231	331	241	242	378	193	287	383	107	383	322	317	285	264	208	209	207	153	177	266	274	178	182	233	323	213	167	171	152	293
Clarificador	8	1119	290	487	592	352	407	534	301	450	418	535	455	488	420	349	426	431	376	365	340	388	433	394	385	362	364	403	356	829

m^3: metro cúbico; gpm: galones por minuto; gris: datos descartados por reinicio en flujómetros. NL: no hay lectura

Fuente: Registros de Campo de Volumen Acumulado Bombeada de Túneles y cálculos de caudal proyectado, Departamento de Ambiente, Minera San Rafael, S.A

JULIO 2013																															
Descarga/fecha	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
LECTURA FLUJÓMETRO (m^3)																															
Portal Este (tubería 6")	119703	120154	120453	120962	121451	121908	122362	122780	123062	123156	123647	123889	124340	124710	125072	125534	126048	126454	126898	127297	127717	128134	128570	129393	129759	130253	130835	131231	131878	132286	132585
Total Este (tubería 8")	681040	681784	682488	683338	684006	684745	685491	686120	686681	64241	1186	1720	2202	2781	3322	3993	4579	5140	5739	6323	6889	7423	8001	8712	9150	9579	3808	4011	4179	4362	4654
Portal Oeste (tubería 6")	179419	179737	180313	180820	180859	181626	182374	183130	183735	184403	184513	185300	185756	185918	186482	187250	188125	188983	190075	190772	191629	192450	193552	193950	194359	194474	194511	194939	195250	195693	194937
Portal Oeste (tubería 8")	698407	699215	700060	700937	701905	702968	704003	704988	706111	707387	708397	709370	710496	711586	712819	713875	715041	716116	717148	718387	719547	720473	721086	718721	719085	719274	719444	719643	719949	720402	721369
Clarificador	1442868	1444885	1446930	1448915	1451289	1453512	1455601	1457508	1459530	1461635	1463740	1465723	1467835	1470087	1472218	1474365	1476849	1479026	1481463	1483799	1486073	1488161	1489941	1492600	1494727	1497297	1499167	1501668	1504122	1506407	1508537
VOLUMEN BOMBEADO (m^3)																															
Portal Este (tubería 6")	421	451	299	509	489	457	454	418	282	94	491	242	451	370	362	462	514	406	444	399	420	417	436	823	366	494	582	396	647	408	299
Total Este (tubería 8")	906	745	704	850	669	739	745	630	560	-622440	1186	534	481	580	540	671	587	561	599	584	566	534	578	711	438	429	-5770	203	168	183	291.3
Portal Oeste (tubería 6")		318	576	507	39	767	748	756	605	668	110	787	456	162	564	768	875	858	1092	697	857	821	1102	398	409	115	37	428	311	443	-756
Portal Oeste (tubería 8")	674	808	845	877	968	1063	1035	985	1123	1276	1010	973	1126	1090	1233	1056	1166	1075	1032	1239	1160	926	613	-2365	364	189	170	199	306	453	967
Clarificador	2398	2017	2045	1985	2374	2223	2089	1907	2022	2105	2105	1983	2112	2252	2131	2147	2484	2177	2437	2336	2274	2088	1780	2659	2127	2570	1870	2501	2454	2285	2130
CAUDAL PROYECTADO (gpm)																															
Portal Este (tubería 6")	77	83	55	93	90	84	83	77	52	17	90	44	83	68	66	85	94	74	81	73	77	76	80	151	67	91	107	145	237	150	55
Total Este (tubería 8")	166	137	129	156	123	135	137	115	103	-114114	217	98	88	106	99	123	108	103	110	107	104	98	106	130	80	79	-1058	74	62	67	53
Portal Oeste (tubería 6")		58	106	93	7	141	137	139	111	122	20	144	84	30	103	141	160	157	200	128	157	151	202	73	75	21	7	157	114	162	-139
Portal Oeste (tubería 8")	124	148	155	161	177	195	190	181	206	234	185	178	206	200	226	194	214	197	189	227	213	170	112	-434	67	35	31	73	112	166	177
Clarificador	440	370	375	364	435	408	383	350	371	386	386	364	387	413	391	394	455	399	447	428	417	383	326	487	390	471	343	459	450	419	391

m^3: metro cúbico; gpm: galones por minuto; gris: datos descartados por reinicio en flujómetros. NL: no hay lectura

Fuente: Registros de Campo de Volumen Acumulado Bombeada de Túneles y cálculos de caudal proyectado, Departamento de Ambiente, Minera San Rafael, S.A

12.2. Resultados crudos de calidad de aire

12.2.1. Material Particulado (PM_{10})

BGI PQ200 Air Sampling System — Downloaded May 2013

Job Details:
Job Name: EA-1A
Version: PQ200
Serial No: 1.00
Pump Time:
Flags: NA

Job Code: EA-1A
Site Name: Los Planes (Top Soil Deposit)
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	649	645	647	mmHg
TA	33.1	12.5	20.7	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat occured			NA	°C

Timer Information:

	Date (dd-mmm)	Time (hh:mm:ss)
Start:	16-May-13	12:00:00
Stop:	17-May-13	12:00:00
ET:		23:59:00

Mass Concentration Data:

Filter ID:	2152-0404	
Final Wt:	143.120	mg
Initial Wt:	140.560	mg
Delta Wt:	2.560	mg
Total Vol:	20.78	m^3
Mass Conc:	123.17	µg/m³

Notes 1: Depósito de Suelos, Proyecto El Escobal
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System — Downloaded May 2013

Job Details:
Job Name: EA-2A
Version: PQ200
Serial No: 1.00
Pump Time:
Flags: NA

Job Code: EA-2A
Site Name: La Cuchilla.
Station Code:
Operators: RP/SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	631	628	629	mmHg
TA	28.4	16.6	19.7	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat occured			NA	°C

Timer Information:

	Date (dd-mmm)	Time (hh:mm:ss)
Start:	20-May-13	11:05:00
Stop:	21-May-13	11:05:00
ET:		23:59:00

Mass Concentration Data:

Filter ID:	2158-1696	
Final Wt:	140.090	mg
Initial Wt:	139.250	mg
Delta Wt:	0.840	mg
Total Vol:	20.28	m^3
Mass Conc:	41.43	µg/m³

Notes 1: Aldea La Cuchilla, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System — Downloaded May 2013

Job Details:
Job Name: EA-3
Version: PQ200
Serial No: 3.00
Pump Time:
Flags: NA

Job Code: EA-3
Site Name: El Fucio, zona este.
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	625	623	624	mmHg
TA	25.9	16.5	19.1	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat occured			NA	°C

Timer Information:

	Date (dd-mmm)	Time (hh:mm:ss)
Start:	20-May-13	12:00:00
Stop:	21-May-13	12:00:00
ET:		23:59:00

Mass Concentration Data:

Filter ID:	2157-1515	
Final Wt:	140.750	mg
Initial Wt:	139.950	mg
Delta Wt:	0.800	mg
Total Vol:	20.16	m^3
Mass Conc:	39.69	µg/m³

Notes 1: Aldea El Fucio, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System — Downloaded May 2013

Job Details:
Job Name: EA-4A
Version: PQ200
Serial No: 1.00
Pump Time:
Flags: NA

Job Code: EA-4
Site Name: Aldea Los Ángeles
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	651	647	649	mmHg
TA	30.6	13.9	20.7	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat occured			NA	°C

Timer Information:

	Date (dd-mmm)	Time (hh:mm:ss)
Start:	13-May-13	10:25:00
Stop:	14-May-13	10:25:00
ET:		23:59:00

Mass Concentration Data:

Filter ID:	2150-0201	
Final Wt:	137.110	mg
Initial Wt:	135.510	mg
Delta Wt:	1.600	mg
Total Vol:	20.85	m^3
Mass Conc:	76.74	µg/m³

Notes 1: Caserío El Portón de los Ángeles, San Rafael Las Flores, Santa Rosa
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System — Downloaded May 2013

Job Details:
Job Name: EA-5A
Version: PQ200
Serial No: 3.00
Pump Time:
Flags: NA

Job Code: EA-5
Site Name: Sabana Redonda
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	653	650	651	mmHg
TA	29.5	15.0	20.1	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat occured			NA	°C

Timer Information:

	Date (dd-mmm)	Time (hh:mm:ss)
Start:	6-May-13	10:05:00
Stop:	7-May-13	10:05:00
ET:		23:59:00

Mass Concentration Data:

Filter ID:	2145-1414	
Final Wt:	142.660	mg
Initial Wt:	141.570	mg
Delta Wt:	1.090	mg
Total Vol:	20.96	m^3
Mass Conc:	52.01	µg/m³

Notes 1: Aldea Sabana Redonda, San Rafael Las Flores, Santa Rosa
Notes 2: Estación que aparece como EA-5 en reporte de pesado final RA-13-11010

BGI PQ200 Air Sampling System — Downloaded May 2013

Job Details:
Job Name: EA-6
Version: PQ200
Serial No: 3.00
Pump Time:
Flags: NA

Job Code: EA-6
Site Name: El Fucío
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	644	641	642	mmHg
TA	27.3	14.7	19.6	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat occured			NA	°C

Timer Information:

	Date (dd-mmm)	Time (hh:mm:ss)
Start:	13-May-13	09:35:00
Stop:	14-May-13	09:35:00
ET:		23:59:00

Mass Concentration Data:

Filter ID:	2156-1424	
Final Wt:	142.880	mg
Initial Wt:	142.360	mg
Delta Wt:	0.520	mg
Total Vol:	20.70	m^3
Mass Conc:	25.12	µg/m³

Notes 1: Aldea El Fucio, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System

Downloaded May 2013

Job Details:

Job Name: EA-7A
Version: PQ200
Serial No: 3.00
Pump Time:
Flags: NA

Job Code: EA-7
Site Name: Los Planes
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	651	647	649	mmHg
TA	32.4	12.5	20.8	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat occured			NA	°C

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	16-May-13	12:25:00
Stop:	17-May-13	12:25:00
ET:	23:59:00	

Mass Concentration Data:

Filter ID:	2153-1122
Final Wt:	143.880 mg
Initial Wt:	142.350 mg
Delta Wt:	1.530 mg
Total Vol:	20.84 m^3
Mass Conc:	73.41 µg/m³

Notes 1: Aldea Los Planes, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System

Downloaded May 2013

Job Details:

Job Name: EA-1B
Version: PQ200
Serial No: 1.00
Pump Time:
Flags: NA

Job Code: EA-1B
Site Name: San Rafael Las Flores
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	652	648	650	mmHg
TA	29.2	15.4	20.3	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat occured			NA	°C

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	6-May-13	09:40:00
Stop:	7-May-13	09:40:00
ET:	23:59:00	

Mass Concentration Data:

Filter ID:	2144-1339
Final Wt:	141.520 mg
Initial Wt:	140.410 mg
Delta Wt:	1.110 mg
Total Vol:	20.91 m^3
Mass Conc:	53.09 µg/m³

Notes 1: San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System

Downloaded May 2013

Job Details:

Job Name: EA-3A
Version: PQ200
Serial No: 3.00
Pump Time:
Flags: NA

Job Code: EA-3A
Site Name: Aldea El Fucío
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	647	644	645	mmHg
TA	31.0	17.0	21.8	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat occured			NA	°C

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	9-May-13	07:10:00
Stop:	10-May-13	07:10:00
ET:	23:59:00	

Mass Concentration Data:

Filter ID:	2147-1616
Final Wt:	144.700 mg
Initial Wt:	142.790 mg
Delta Wt:	1.910 mg
Total Vol:	20.64 m^3
Mass Conc:	92.53 µg/m³

Notes 1: Aldea El Fucio, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

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Reporte Analítico RA-13-11031

Laboratorio AMBIENTAL — oga ACREDITADO OGA-LE-050-12

Cliente: Minera San Rafael
Dirección: Km 8.6 carretera antigua al Salvador, Muxbal, centro Corporativo Muxbal, Torre oeste apto 503 y 504
Proyecto: 178-031
Recepción de muestras: Mayo, 23 de 2013
Análisis de muestras: Mayo, 27-28 de 2013
Emisión de Reporte: Mayo, 28 de 2013

Tipo de Muestra: Filtros tipo cuarzo utilizados para colección de Material Partículado en el Aire.

Método Analítico: 40 CFR, Apéndice J, Parte 50, Capítulo 1, Edición 07-01-97, EPA.

Peso Final de Filtros

No.	Identificación de la Muestra	Código del Filtro[1]	Peso Inicial (gramos)*	Peso Final (gramos)
1	EA-1A	2152-0404	0.14056	0.14312
2	EA-2A	2158-1696	0.13925	0.14009
3	EA-3	2157-1515	0.13995	0.14075
4	EA-4A	2150-0201	0.13551	0.13711
5	EA-5A	2145-1414	0.14157	0.14266
6	EA-6	2156-1424	0.14236	0.14288
7	EA-7A	2153-1122	0.14235	0.14388
8	EA-1B	2144-1339	0.14041	0.14152
9	EA-3A	2147-1616	0.14279	0.14470
10	Blanco**	2184-1010	0.14018	0.14022

[1]: Código de filtro asignado por Laboratorio Ambiental, S.A.
*: Corresponde al peso inicial reportado al cliente en reporte analítico RA-13-11011 y RA-13-11016.
**: Blanco de laboratorio a solicitud de cliente

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Reporte Analítico
RA-13-11031

Laboratorio AMBIENTAL

oga ACREDITADO OGA-LE-010-12

Anexos:

Anexo 1. Cadena de Custodia R-02-000267

Inga. Mónica Soto
Ingeniera Química, Gestor de Calidad
Colegiado 1437

MSc. BSc. Ana Gabriela Juarez
Especialista ambiental, Director de Laboratorio

Redacción:	Fecha:	Revisión y aprobación:	Fecha:	Versión Cliente:
M.S.	Mayo, 28/13	A.G.J	Mayo, 28/13	01

BGI PQ200 Air Sampling System

Downloaded June 2013

Job Details:
Job Name: EA-1A
Version: PQ200
Serial No: 2.00
Pump Time:
Flags: NA

Job Code: EA-1A
Site Name: Los Planes (Top Soil Deposit)
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	647	642	645	mmHg
TA	27.9	17.6	20.9	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat			NA	°C
occured	NA			

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	6-Jun-13	15:40:00
Stop:	7-Jun-13	15:40:00
ET:	23:59:00	

Mass Concentration Data:
Filter ID: 2155-1326
Final Wt: 141.690 mg
Initial Wt: 141.000 mg
Delta Wt: 0.690 mg
Total Vol: 20.71 m^3
Mass Conc: 33.32 µg/m³

Notes 1: Depósito de Suelos, Proyecto El Escobal
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System

Downloaded June 2013

Job Details:
Job Name: EA-2A
Version: PQ200
Serial No: 3.00
Pump Time:
Flags: NA

Job Code: EA-2A
Site Name: La Cuchilla.
Station Code:
Operators: RP/SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	633	631	632	mmHg
TA	27.3	16.0	19.7	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat			NA	°C
occured	NA			

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	24-Jun-13	10:40:00
Stop:	25-Jun-13	10:40:00
ET:	23:59:00	

Mass Concentration Data:
Filter ID: 2177-0330
Final Wt: 141.410 mg
Initial Wt: 140.850 mg
Delta Wt: 0.560 mg
Total Vol: 20.37 m^3
Mass Conc: 27.49 µg/m³

Notes 1: Aldea La Cuchilla, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System

Downloaded June 2013

Job Details:
Job Name: EA-3
Version: PQ200
Serial No: 2.00
Pump Time:
Flags: NA

Job Code: EA-3
Site Name: El Fucio, zona este.
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	626	623	624	mmHg
TA	24.8	15.3	18.8	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat			NA	°C
occured	NA			

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	24-Jun-13	12:05:00
Stop:	25-Jun-13	12:05:00
ET:	23:59:00	

Mass Concentration Data:
Filter ID: 2178-0440
Final Wt: 142.340 mg
Initial Wt: 141.580 mg
Delta Wt: 0.760 mg
Total Vol: 20.18 m^3
Mass Conc: 37.67 µg/m³

Notes 1: Aldea El Fucio, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System

Downloaded June 2013

Job Details:
Job Name: EA-7A
Version: PQ200
Serial No: 1.00
Pump Time:
Flags: NA

Job Code: EA-7A
Site Name: Los Planes
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	649	643	647	mmHg
TA	27.1	18.1	21.4	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat			NA	°C
occured	NA			

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	6-Jun-13	16:15:00
Stop:	7-Jun-13	16:15:00
ET:	23:59:00	

Mass Concentration Data:
Filter ID: 2154-1212
Final Wt: 140.120 mg
Initial Wt: 139.500 mg
Delta Wt: 0.620 mg
Total Vol: 20.74 m^3
Mass Conc: 29.90 µg/m³

Notes 1: NE piletas aua de proceso, aledaño a Aldea Los Planes, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

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Reporte Analítico RA-13-11047

Laboratorio AMBIENTAL — oga ACREDITADO OGA-LE-050-12

Cliente:	Minera San Rafael
Dirección:	Km 8.6 carretera antigua al Salvador, Muxbal, centro Corporativo Muxbal, Torre oeste apto 503 y 504
Proyecto:	178-031 (El Escobal)
Recepción de muestras:	Junio, 27 de 2013
Análisis de muestras:	Julio, 01-02 de 2013
Emisión de Reporte:	Julio, 04 de 2013

Tipo de Muestra:	Filtros tipo cuarzo utilizados para colección de Material Partículado en el Aire.
Análisis solicitado:	Peso final
Método Analítico:	40 CFR, Apéndice J, Parte 50, Capítulo 1, Edición 07-01-97, EPA. Acreditado ISO 17025 según resolución OGA-LE-050-12

No.	Identificación de la Muestra	Código del Filtro[1]	Peso Inicial (gramos)*	Peso Final (gramos)
1	EA-1A	2155-1326	0.14100	0.14169
2	EA-2A	2177-0330	0.14085	0.14141
3	EA-3	2178-0440	0.14158	0.14234
4	EA-7A	2154-1212	0.13950	0.14012

[1]: Código de filtro asignado por Laboratorio Ambiental, S.A.
*: Corresponde al peso inicial reportado al cliente en reporte analítico RA-13-11016 y RA-13-11024.

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Reporte Analítico RA-13-11047

Laboratorio AMBIENTAL — oga ACREDITADO OGA-LE-050-12

Anexos:

Anexo 1. Cadena de Custodia R-02-000268

Este Reporte Analítico ha sido elaborado para uso confidencial y exclusivo del cliente; se prohíbe su reproducción, sin la aprobación escrita del Laboratorio. Los resultados aquí expresados representan el mejor juicio del Laboratorio y son válidos únicamente para la porción de muestra presentada a éste. Laboratorio Ambiental S.A. no asume ninguna responsabilidad ni garantiza la utilización final que se le dé a la información aquí presentada. Laboratorio Ambiental, S.A. no se responsabiliza por el proceso de muestreo.

Inga. Mónica Soto
Ingeniera Química, Gestor de Calidad
Colegiado 1437

MSc. BSc. Ana Gabriela Juarez
Especialista ambiental, Director de Laboratorio

Redacción:	Fecha:	Revisión y aprobación:	Fecha:	Versión Cliente:
M.S.	Julio, 04/13	A.G.J	Julio, 04/13	02

BGI PQ200 Air Sampling System

Downloaded July 2013

Job Details:
Job Name: EA-1A
Version: PQ200
Serial No: 2.00
Pump Time:
Flags: NA

Job Code: EA-1A
Site Name: Los Planes (Top Soil Deposit)
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	649	645	644	mmHg
TA	27.7	16.7	20.5	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat			NA	°C
occured			NA	

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	22-Jul-13	14:30:00
Stop:	23-Jul-13	14:30:00
ET:	23:59:00	

Mass Concentration Data:

Filter ID:	2175-0111
Final Wt:	141.730 mg
Initial Wt:	141.230 mg
Delta Wt:	0.500 mg
Total Vol:	20.70 m^3
Mass Conc:	24.15 µg/m³

Notes 1: Depósito de Suelos, Proyecto El Escobal
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System

Downloaded July 2013

Job Details:
Job Name: EA-2A
Version: PQ200
Serial No: 2.00
Pump Time:
Flags: NA

Job Code: EA-2A
Site Name: La Cuchilla.
Station Code:
Operators: RP/SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	633	630	631	mmHg
TA	28.7	15.4	20.0	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat			NA	°C
occured			NA	

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	29-Jul-13	10:10:00
Stop:	30-Jul-13	10:10:00
ET:	23:59:00	

Mass Concentration Data:

Filter ID:	2180-0606
Final Wt:	141.270 mg
Initial Wt:	140.880 mg
Delta Wt:	0.390 mg
Total Vol:	20.32 m^3
Mass Conc:	19.19 µg/m³

Notes 1: Aldea La Cuchilla, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System

Downloaded July 2013

Job Details:
Job Name: EA-3
Version: PQ200
Serial No: 3.00
Pump Time:
Flags: NA

Job Code: EA-3
Site Name: El Fucio, zona este.
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	628	624	626	mmHg
TA	26.0	14.8	18.9	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat			NA	°C
occured			NA	

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	29-Jul-13	11:05:00
Stop:	30-Jul-13	11:05:00
ET:	23:59:00	

Mass Concentration Data:

Filter ID:	2182-0812
Final Wt:	141.580 mg
Initial Wt:	141.010 mg
Delta Wt:	0.570 mg
Total Vol:	20.23 m^3
Mass Conc:	28.17 µg/m³

Notes 1: Aldea El Fucio, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

BGI PQ200 Air Sampling System

Downloaded July 2013

Job Details:
Job Name: EA-7A
Version: PQ200
Serial No: 3.00
Pump Time:
Flags: NA

Job Code: EA-7A
Site Name: Los Planes
Station Code:
Operators: SA
User1: NA
User2: NA

	Max	Min	Avg	Units
BP	652	647	650	mmHg
TA	27.4	17.2	20.7	°C
Q	---	---	16.71	Lpm
QCV			NA	%
Max overheat			NA	°C
occured			NA	

Timer Information:

	Date dd-mmm	Time hh:mm:ss
Start:	22-Jul-13	15:05:00
Stop:	23-Jul-13	15:05:00
ET:	23:59:00	

Mass Concentration Data:

Filter ID:	2176-0202
Final Wt:	140.580 mg
Initial Wt:	140.080 mg
Delta Wt:	0.500 mg
Total Vol:	20.88 m^3
Mass Conc:	23.95 µg/m³

Notes 1: NE piletas aua de proceso, aledaño a Aldea Los Planes, San Rafael Las Flores, Santa Rosa.
Notes 2: Minera San Rafael

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Reporte Analítico RA-13-11061

Laboratorio AMBIENTAL — OGA ACREDITADO OGA-LE-050-12

Cliente: Minera San Rafael
Dirección: Km 8.6 carretera antigua a El Salvador, Muxbal, Centro Corporativo Muxbal, Torre oeste apto. 503 y 504
Proyecto: 178-031 (El Escobal)
Análisis de muestras: Agosto, 05-06 de 2013
Emisión del reporte: Agosto, 06 de 2013

Tipo de muestra: Filtros de cuarzo utilizados para colección de material particulado en aire.

Análisis: Gravimetría de partículas en filtro de calidad del aire.

Método analítico: 40 CFR, Apéndice J, Parte 50, Capítulo 1, Edición 07-1-97, EPA. Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere.

Acreditado ISO 17025 según resolución OGA-LE-050-12.

No.	Identificación de la muestra	Código del filtro[1]	Peso inicial* (gramos)	Peso final (gramos)
1	EA-1A	2175-0111	0.14123	0.14173
2	EA-2A	2180-0606	0.14088	0.14127
3	EA-3	2182-0818	0.14101	0.14158
4	EA-7A	2176-0202	0.14008	0.14058

[1]: Código asignado por Laboratorio Ambiental, S.A.
*: Corresponde al peso inicial indicado en el reporte analítico RA-13-11024.

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Reporte Analítico
RA-13-11061

Laboratorio AMBIENTAL

oga ACREDITADO OGA-LE-050-12

Anexos:

Anexo 1. Cadena de Custodia R-02-000177

Este Reporte Analítico ha sido elaborado para uso confidencial y exclusivo del cliente; se prohíbe su reproducción, sin la aprobación escrita del Laboratorio. Los resultados aquí expresados representan el mejor juicio del Laboratorio y son válidos únicamente para la porción de muestra presentada a éste. Laboratorio Ambiental, S.A. no asume ninguna responsabilidad ni garantiza la utilización final que se le dé a la información aquí presentada. Laboratorio Ambiental, S.A. no se responsabiliza por el proceso de muestreo.

Inga. Vivian Salazar
Ingeniera Química, Encargado Químico
Colegiado 1849

MSc. BSc. Ana Gabriela Juárez
Especialista ambiental, Director de Laboratorio

Redacción:	Fecha:	Revisión y aprobación:	Fecha:	Versión Cliente:
V.S.	Agosto, 06/13	A.G.J	Agosto, 07/13	01

12.2.2. Informe de Metales en PM_{10}

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Reporte Analítico
RA-13-11039

Laboratorio AMBIENTAL

Cliente:	Minera San Rafael
Dirección:	Km 8.6 carretera antigua al Salvador, Muxbal, centro Corporativo Muxbal, Torre oeste apto 503 y 504
Proyecto:	178-032
Recepción de muestras:	Mayo, 23 de 2013
Fecha de análisis:	Junio, 12-13 de 2013
Emisión del Reporte:	Junio, 14 de 2013

Tipo de Muestra: Filtros tipo cuarzo utilizados para colección de Material Particulado en el Aire

Método Analítico: EPA 7470. Cold-vapor atomic absorption spectrometry (CV-ASS)

Mercurio en Filtros

Parámetros (µg)	LDM	Código de filtros							
		EA-2A	EA-4A	EA-5A	EA-6	EA-7A	EA-1B	EA-3A	Blanco
		2158-1696	2150-0201	2145-1414	2156-1424	2153-1122	2144-1339	2147-1616	2184-1010
*Mercurio (Hg)	0.002	0.016	0.071	0.013	0.007	0.006	0.006	0.008	0.005

* Análisis realizados por laboratorio subcontratado. **LDM:** Límite de detección del método.

Anexos:

Anexo 1. Cadena de Custodia R-02-000267

Este Reporte Analítico ha sido elaborado para uso confidencial y exclusivo del cliente; se prohíbe su reproducción, excepto en su totalidad, sin la aprobación escrita del Laboratorio. Los resultados aquí expresados representan el mejor juicio del Laboratorio y son válidos únicamente para la porción de muestra presentada a éste. Laboratorio Ambiental S.A. no asume ninguna responsabilidad ni garantiza la utilización final que se le dé a la información aquí presentada. Laboratorio Ambiental, S.A. no se responsabiliza por el proceso de muestreo.

Inga. Mónica Soto
Ingeniera Química, Gestor de Calidad
Colegiado 1437

MSc. BSc. Ana Gabriela Juarez
Especialista ambiental, Director de Laboratorio

Redacción Reporte:	Fecha:	Revisiones de Calidad:	Fecha:	Versión Cliente:
M.S.	Junio, 14/13	A.G.J.	Junio, 14/13	01

12.2.3. Informe sobre PST y Gases de Combustión.

Este resumen presenta los resultados del monitoreo de calidad del aire realizado para el proyecto minero El Escobal (**el Proyecto**). El monitoreo fue realizado por Consultoría y Tecnología Ambiental, S.A. (**CTA**) del 24 al 27 de junio para gases de combustión y del 27 de junio al 26 de julio para PST, en San Rafael Las Flores, Santa Rosa, donde se ubica el Proyecto. El propósito del monitoreo fue determinar la calidad de aire ambiental en comunidades aledañas mediante la medición de la concentración de:

- Gases de combustión (**SO_2** y **NO_2**); y
- Partículas Sedimentables Totales (**PST**).

Las estaciones de medición se presentan en el Cuadro 1 y la metodología utilizada en el Cuadro 2.

Cuadro 1: Estaciones de monitoreo de SO_2 y NO_2 y PST

Marzo y Abril 2013		
Estación	Ubicación	Coordenadas
EA-1C	Frente a Escuela San Rafael	E (m): 803,887 N (m): 1,601,801
EA-2B	Aldea La Cuchilla	E (m): 806,470 N (m): 1,601,796
EA-3B	Aldea El Fucío	E (m): 806,538 N (m): 1,600,367
EA-4A	Aldea La Puerta de Los Ángeles	E (m): 805,142 N (m): 1,599,903
EA-5A	Aldea Sabana Redonda	E (m): 804,342 N (m): 1,600,404
EA-6	Norte del proyecto, ruta a Mataquescuintla	E (m): 805,168 N (m): 1,603,247
EA-7A	Perímetro del Proyecto colindante con aldea Los Planes	E (m): 805,425 N (m): 1,601,523

Coordenadas en metros (m). Datum: WGS84 UTM zona 16 N. Fuente: CTA, 2013.

Cuadro 2: Metodologías utilizadas para SO_2 y NO_2 y PST

Gases de Combustión	**SO_2:** Se utilizó el análisis espectrofotométrico, descrito en el Título 40, Parte 50, Apéndice A de la USEPA. **NO_2:** Se utilizó el análisis espectrofotométrico. Método de referencia designado por la USEPA: No. EQN-1277-026.
PST	ASTM D 1739-98 (re-aprobación 2004).

Fuente: CTA, 2013.

Los resultados obtenidos para los gases de combustión se compararon con los valores guía reportados en: Calidad de Aire Ambiental: Guías del Banco Mundial (**el Banco**)[1] para SO_2 y NO_2, tomadas de International Finance Corporation (**IFC**) Industry Sector Guidelines for Mining, December 10, 2007 y General Environment Health and Safety Guidelines, December 19/2008.

En el Cuadro 3 se presentan los resultados obtenidos de la medición de gases de combustión realizada en junio de 2013; y en el Cuadro 4 se presentan los resultados de la medición de PST para el período de 30 dias de junio a julio 2013.

Cuadro 3: Resultados de la medición de gases de combustión en µg/m³

Estaciones de Muestreo	EA-1C	EA-2B	EA-3B	EA-4A	EA-5A	EA-6	EA-7A	Guías del Banco
SO_2	<13	<13	<13	<13	<13	<13	<13	20 µg/m³
NO_2	<9	<9	<9	9	<9	<9	<9	*40µg/m³

SO_2: dióxido de azufre. NO_2: dióxido de nitrógeno. *: Promedio anual. Fuente: Laboratorio Ambiental, S. A., 2013.

Cuadro 4: Resultados de la medición de PST (g/m² x 30 días)

Estaciones de Muestreo	EA-1C	EA-2B	EA-3B	EA-4A	EA-5A	EA-6	EA-7A
Sólidos Insolubles	6.91	2.87	3.08	3.74	3.60	1.24	1.88
Sólidos Solubles	2.24	2.09	1.69	2.15	1.69	2.04	2.04
Sólidos Totales	9.15	4.96	4.76	5.89	5.28	3.28	3.92

Fuente: Laboratorio Ambiental, S. A., 2013.

[1] Guías del Banco Mundial: www.ifc.org/ifcext/EnvironmentalGuidelines

Como resultado del monitoreo realizado en el mes de junio se observa que solamente la estación EA-4A presentó una lectura detectada de 9 µg/m^3 de concentración de NO_2, en esta estación se observó combustión de leña proveniente de las casas vecinas durante el muestreo. Las demás estaciones presentaron niveles por debajo del límite de detección del método analítico utilizado para ambos gases. En general la concentración de NO_2 y SO_2 para todas las estaciones se presentó por debajo de las guías de referencia del Banco. La estación EA-7A tuvo un tiempo de muestreo de 17.5 horas (24±1 horas recomendado) debido a una interrupción en el flujo eléctrico.

La estación que presentó mayor concentración de partículas sedimentables totales (sólidos totales) durante los 30 días de monitoreo fue la EA-1C, mientras que la estación que presentó el menor valor de concentración durante el mismo período fue la EA-6.

12.2.4. Presión Sonora

ER-1

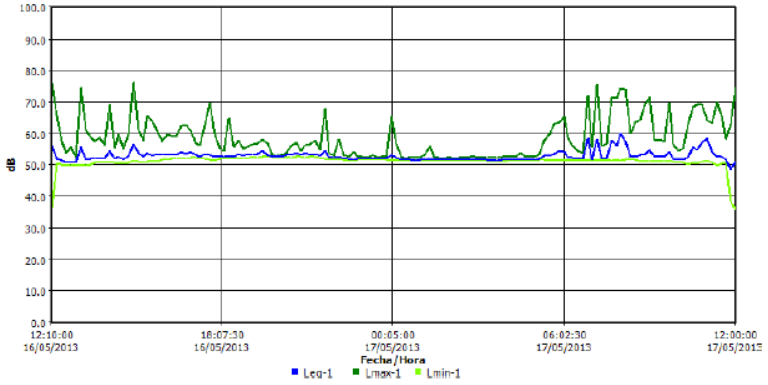
Panel de información

Ubicación	Depósito de Suelos, Proyecto Escobal
Nombre	ER-1
Sesión padre	S084
Hora de inicio	Jueves, 16 de Mayo de 2013 12:00:00
Hora de paro	Viernes, 17 de Mayo de 2013 12:00:00
Nombre del usuario	Ing. Susana Aroche

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	100 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	35.9 dB	Lmax	1	76.6 dB
Lpk	1	102 dB	Leq	1	53.4 dB

Gráfica de datos de registro



1

ER-1A

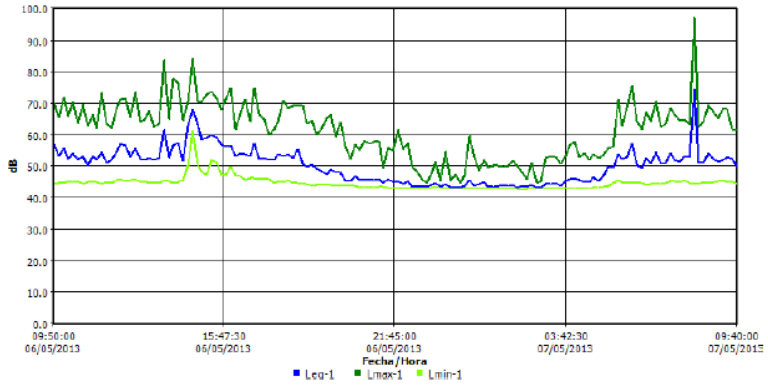
Panel de información

Ubicación	San Rafael Las Flores
Nombre	ER-1A
Sesión padre	S082
Hora de inicio	Lunes, 06 de Mayo de 2013 09:40:00
Hora de paro	Martes, 07 de Mayo de 2013 09:40:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	100 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	42.8 dB	Lmax	1	97.2 dB
Lpk	1	124.9 dB	Leq	1	56.5 dB

Gráfica de datos de registro



1

ER-2

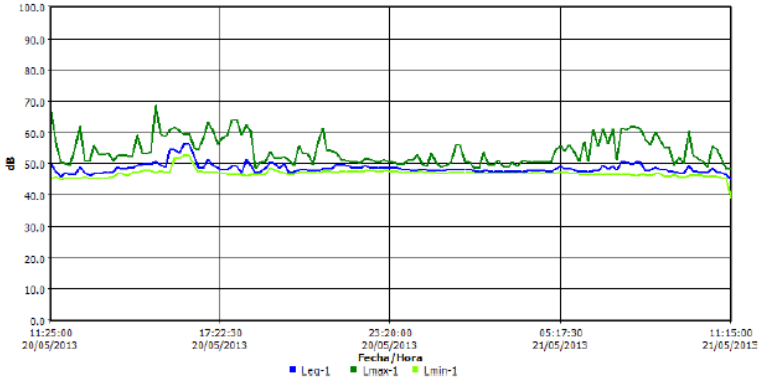
Panel de información

Ubicación	Aldea La Cuchilla
Nombre	ER-2
Sesión padre	S092
Hora de inicio	Lunes, 20 de Mayo de 2013 11:15:00
Hora de paro	Martes, 21 de Mayo de 2013 11:15:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	80 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	39 dB	Lmax	1	69.1 dB
Lpk	1	94.5 dB	Leq	1	49.1 dB

Gráfica de datos de registro



1

ER-3

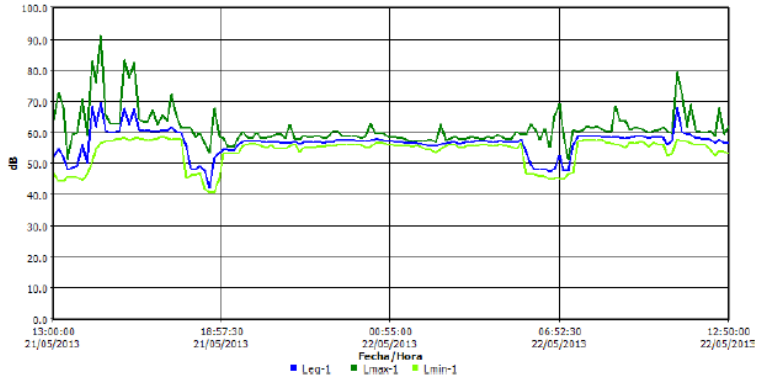
Panel de información

Ubicación	Zona Este, Proyecto Minero Escobal
Nombre	ER-3
Sesión padre	S086
Hora de inicio	Martes, 21 de Mayo de 2013 12:50:00
Hora de paro	Miércoles, 22 de Mayo de 2013 12:50:00
Nombre del usuario	Ing. Susana Aroche

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	100 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	40.7 dB	Lmax	1	91.6 dB
Lpk	1	106.3 dB	Leq	1	58.9 dB

Gráfica de datos de registro



1

ER-3A

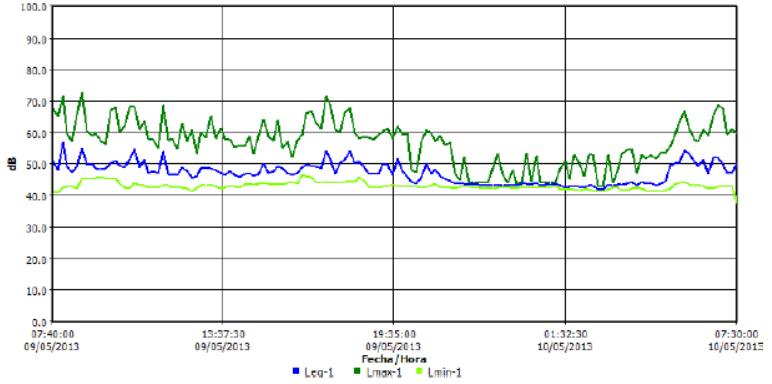
Panel de información

Ubicación	Aldea El Fucío
Nombre	ER-3A
Sesión padre	S089
Hora de inicio	Jueves, 09 de Mayo de 2013 07:30:00
Hora de paro	Viernes, 10 de Mayo de 2013 07:30:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	80 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	37.9 dB	Lmax	1	72.8 dB
Lpk	1	98.9 dB	Leq	1	48.6 dB

Gráfica de datos de registro



1

ER-4A

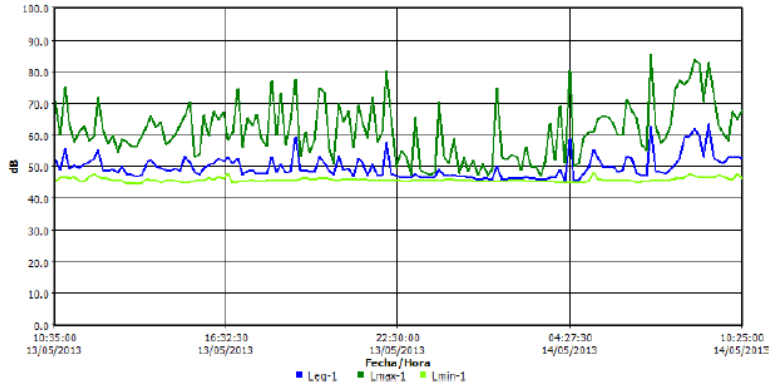
Panel de información

Ubicación	Aldea Los Ángeles
Nombre	ER-4A
Sesión padre	S083
Hora de inicio	Lunes, 13 de Mayo de 2013 10:25:00
Hora de paro	Martes, 14 de Mayo de 2013 10:25:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	100 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	44.9 dB	Lmax	1	85.8 dB
Lpk	1	112.8 dB	Leq	1	52.3 dB

Gráfica de datos de registro



1

ER-5A

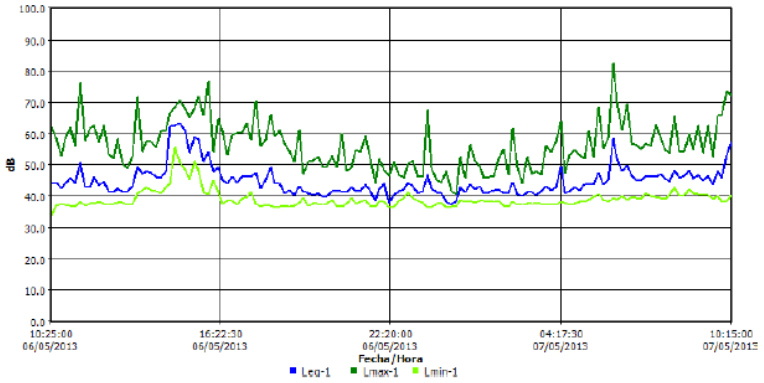
Panel de información

Ubicación	Aldea Sabana Redonda
Nombre	EA-5A
Sesión padre	S088
Hora de inicio	Lunes, 06 de Mayo de 2013 10:15:00
Hora de paro	Martes, 07 de Mayo de 2013 10:15:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	80 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	34.2 dB	Lmax	1	82.7 dB
Lpk	1	107.6 dB	Leq	1	50.2 dB

Gráfica de datos de registro



1

ER-6

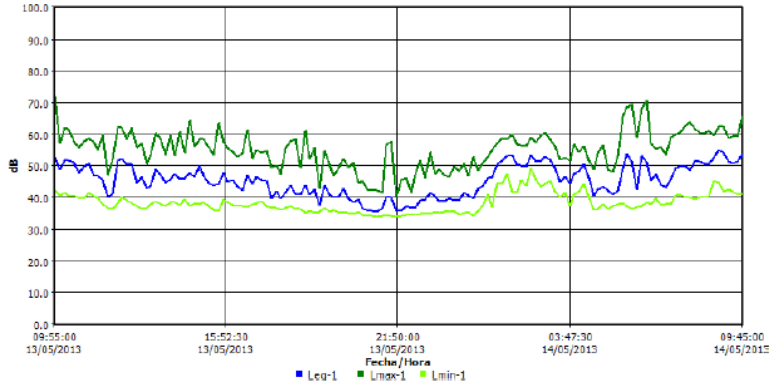
Panel de información

Ubicación	Al norte del proyecto Escobal, ruta a mataquescuintla
Nombre	ER-6
Sesión padre	S090
Hora de inicio	Lunes, 13 de Mayo de 2013 09:45:00
Hora de paro	Martes, 14 de Mayo de 2013 09:45:00
Nombre del usuario	ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Índice de intercambio	1	3 dB	Umbral int.	1	80 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	34.1 dB	Lmax	1	72 dB
Lpk	1	95.3 dB	Leq	1	48.1 dB

Gráfica de datos de registro



1

ER-7A

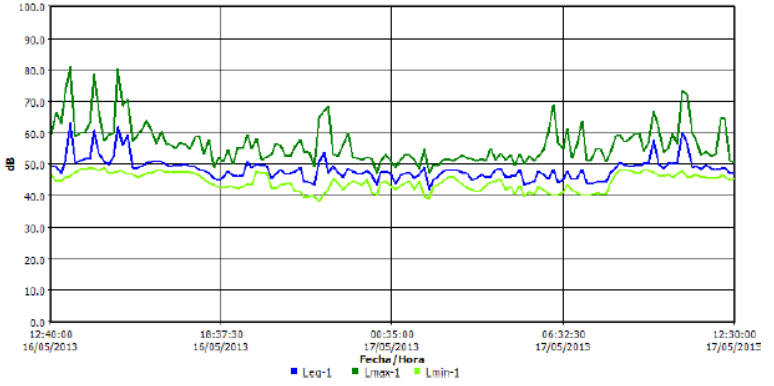
Panel de información

Ubicación	Aldea Los Planes
Nombre	ER-7A
Sesión padre	S091
Hora de inicio	Jueves, 16 de Mayo de 2013 12:30:00
Hora de paro	Viernes, 17 de Mayo de 2013 12:30:00
Nombre del usuario	Ing. Susana Aroche

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Índice de intercambio	1	3 dB	Umbral int.	1	80 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	38.3 dB	Lmax	1	81.3 dB
Lpk	1	105 dB	Leq	1	51 dB

Gráfica de datos de registro



1

ER-1

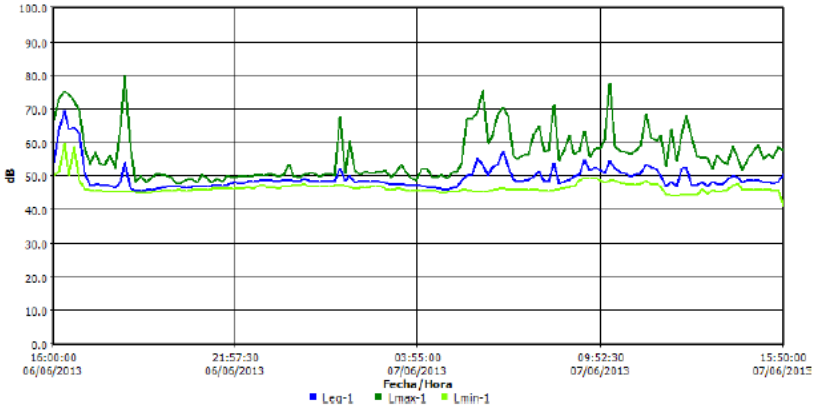
Panel de información

Ubicación	Depósito de Suelos, Proyecto Escobal
Nombre	ER-1
Sesión padre	S087
Hora de inicio	Jueves, 06 de Junio de 2013 15:50:00
Hora de paro	Viernes, 07 de Junio de 2013 15:50:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	100 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	41.1 dB	Lmax	1	80.3 dB
Lpk	1	99.1 dB	Leq	1	53.5 dB

Gráfica de datos de registro



1

ER-2

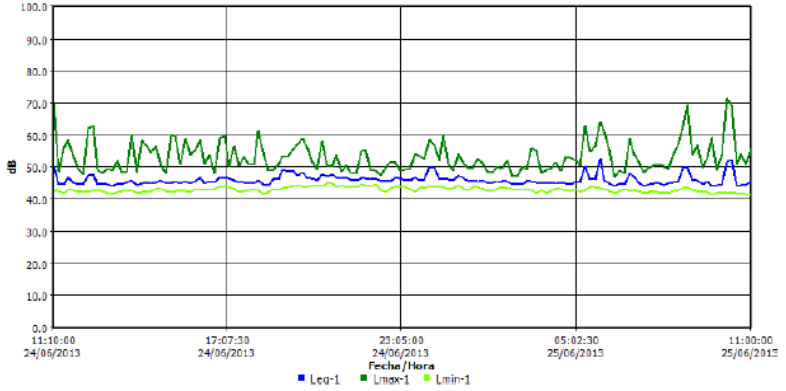
Panel de información

Ubicación	Aldea La Cuchilla
Nombre	ER-2
Sesión padre	S095
Hora de inicio	Lunes, 24 de Junio de 2013 11:00:00
Hora de paro	Martes, 25 de Junio de 2013 11:00:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	80 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	41.3 dB	Lmax	1	71.8 dB
Lpk	1	93.5 dB	Leq	1	46.5 dB

Gráfica de datos de registro



1

1

ER-3

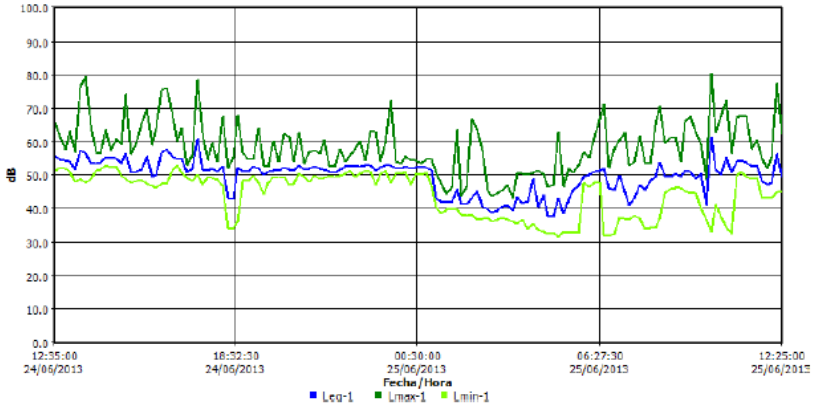
Panel de información

Ubicación	Zona Este, Proyecto Minero Escobal
Nombre	ER-3
Sesión padre	S090
Hora de inicio	Lunes, 24 de Junio de 2013 12:25:00
Hora de paro	Martes, 25 de Junio de 2013 12:25:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	100 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	31.5 dB	Lmax	1	80.7 dB
Lpk	1	100.4 dB	Leq	1	52.1 dB

Gráfica de datos de registro



1

ER-7A

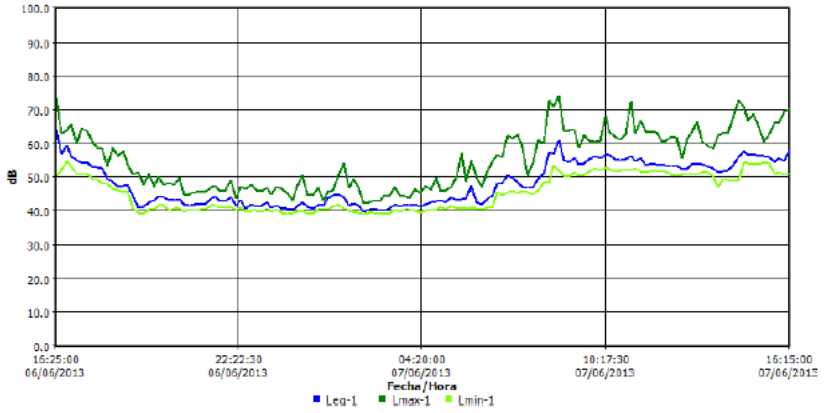
Panel de información

Ubicación	Colindancias de aldea Los Planes
Nombre	ER-7A
Sesión padre	S093
Hora de inicio	Jueves, 06 de Junio de 2013 16:15:00
Hora de paro	Viernes, 07 de Junio de 2013 16:15:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	80 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	39.2 dB	Lmax	1	74.3 dB
Lpk	1	100.3 dB	Leq	1	52.4 dB

Gráfica de datos de registro



1

ER-1

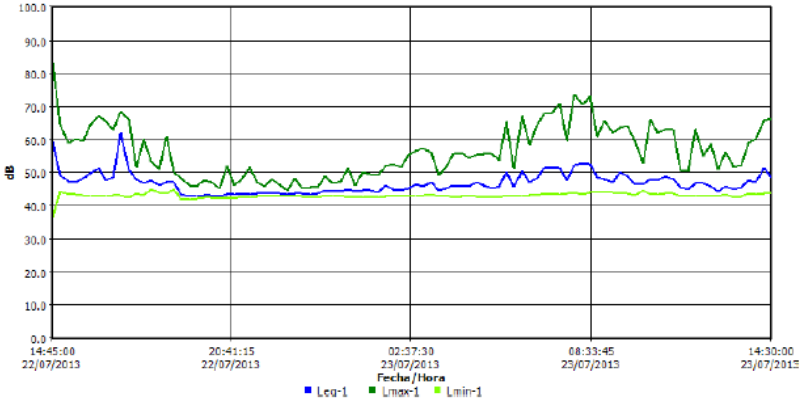
Panel de información

Ubicación	Depósito de Suelos Norte, Proyecto Minero Escobal
Nombre	ER-1
Sesión padre	S097
Hora de inicio	Lunes, 22 de Julio de 2013 14:30:00
Hora de paro	Martes, 23 de Julio de 2013 14:30:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	80 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	37 dB	Lmax	1	83.2 dB
Lpk	1	119.1 dB	Leq	1	49.1 dB

Gráfica de datos de registro



1

ER-2

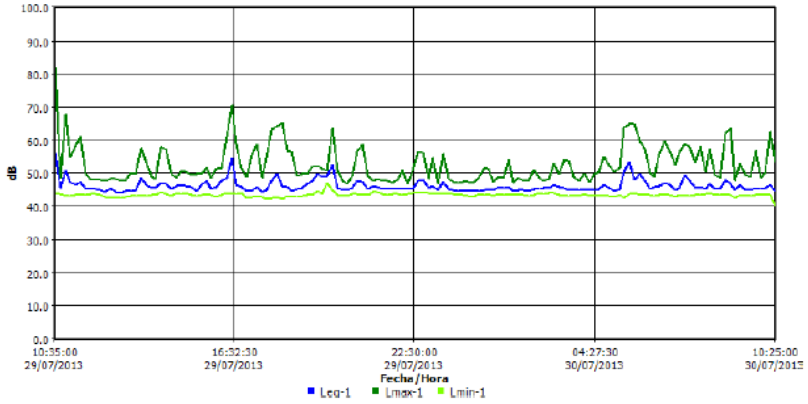
Panel de información

Ubicación	Aldea La Cuchilla
Nombre	ER-2
Sesión padre	S098
Hora de inicio	Lunes, 29 de Julio de 2013 10:25:00
Hora de paro	Martes, 30 de Julio de 2013 10:25:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	80 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	40.1 dB	Lmax	1	82.5 dB
Lpk	1	117.2 dB	Leq	1	46.9 dB

Gráfica de datos de registro



1

ER-3

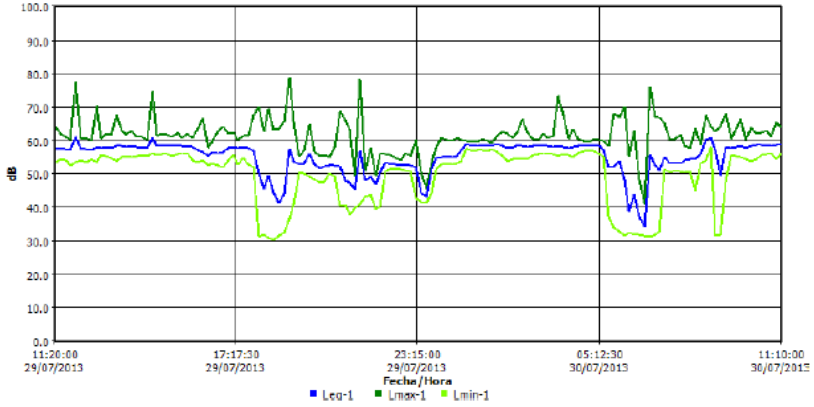
Panel de información

Ubicación	Zona Este, Proyecto Minero Escobal
Nombre	ER-3
Sesión padre	S095
Hora de inicio	Lunes, 29 de Julio de 2013 11:10:00
Hora de paro	Martes, 30 de Julio de 2013 11:10:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	100 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	30.4 dB	Lmax	1	79.2 dB
Lpk	1	93.6 dB	Leq	1	56.7 dB

Gráfica de datos de registro



1

ER-7A

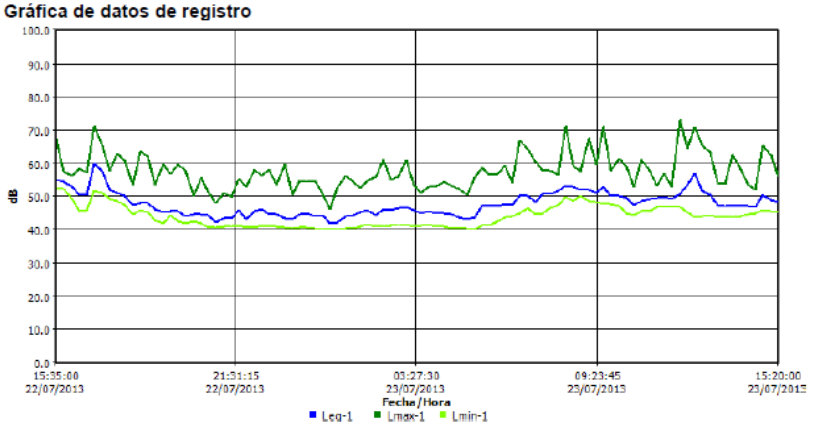
Panel de información

Ubicación	Aldea Los Planes
Nombre	ER-7A
Sesión padre	S094
Hora de inicio	Lunes, 22 de Julio de 2013 15:20:00
Hora de paro	Martes, 23 de Julio de 2013 15:20:00
Nombre del usuario	Ing. Fernanda Barrios

Panel general de datos

Descripción	Medidor/Sensor	Valor	Descripción	Medidor/Sensor	Valor
Indice de intercambio	1	3 dB	Umbral int.	1	100 dB
Ponderación	1	A	Respuesta	1	SLOW
Lmin	1	40.3 dB	Lmax	1	73.2 dB
Lpk	1	99.1 dB	Leq	1	49.7 dB

Gráfica de datos de registro



1

12.3. Certificados de verificación de los equipos utilizados

12.3.1. Material Particulado (PM_{10})

Minera San Rafael — REGISTRO — R-13

Verificación Equipo PQ200

Información del Equipo:					
No. Equipo	AIR-0001	N/S	0938 / 0938	Fecha	5/5/13
Calibrador	tetracal	N/S	0508	Hora	15:33
Caudal (Lpm)					
Equipo	16.70	%dif	1.77	%dif Permitido = 4%	
Calibrador	16.41	Pasa	✓	Falla	
Temperatura Ambiental (°C)					
Equipo	26.1	Diferencia	0.1	Diferencia Permitido = ± 2 °C	
Calibrador	26.2	Pasa	✓	Falla	
Presión Barométrica (mm de Hg)					
Equipo	648	Diferencia	0.5	Diferencia Permitida= ±10mm	
Calibrador	648.5	Pasa	✓	Falla	
Nombre y Firma de Responsable	Susana Arache				

Información del Equipo:					
No. Equipo	AIR-0003	N/S	1053	Fecha	5/5/13
Calibrador	tetracal	N/S	0508	Hora	15:34
Caudal (Lpm)					
Equipo	16.70	%dif	0.78	%dif Permitido = 4%	
Calibrador	16.57	Pasa	✓	Falla	
Temperatura Ambiental (°C)					
Equipo	26.1	Diferencia	0.5	Diferencia Permitido = ± 2 °C	
Calibrador	26.6	Pasa	✓	Falla	
Presión Barométrica (mm de Hg)					
Equipo	649	Diferencia	0.5	Diferencia Permitida= ±10mm	
Calibrador	648.5	Pasa	✓	Falla	
Nombre y Firma de Responsable	Susana Arache				

Información del Equipo:					
No. Equipo		N/S		Fecha	
Calibrador		N/S		Hora	
Caudal (Lpm)					
Equipo		%dif		%dif Permitido = 4%	
Calibrador		Pasa		Falla	
Temperatura Ambiental (°C)					
Equipo		Diferencia		Diferencia Permitido = ± 2 °C	
Calibrador		Pasa		Falla	
Presión Barométrica (mm de Hg)					
Equipo		Diferencia		Diferencia Permitida= ±10mm	
Calibrador		Pasa		Falla	
Nombre y Firma de Responsable					

%dif. = [(calibrador – equipo)/calibrador] x 100

Departamento de Ambiente
Proyecto Minero El Escobal

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Minera San Rafael — REGISTRO — R-13

Verificación Equipo PQ200

Información del Equipo:					
No. Equipo	AIR-0004	N/S	0938	Fecha	05/06/13
Calibrador	Tetracal	N/S	508	Hora	12:32
Caudal (Lpm)					
Equipo	16.70	%dif	2.45%	%dif Permitido = 4%	
Calibrador	16.30	Pasa	✓	Falla	
Temperatura Ambiental (°C)					
Equipo	24.8	Diferencia	0.6	Diferencia Permitido = ± 2 °C	
Calibrador	24.2	Pasa	✓	Falla	
Presión Barométrica (mm de Hg)					
Equipo	647	Diferencia	0.5	Diferencia Permitida= ±10mm	
Calibrador	647.5	Pasa	✓	Falla	
Nombre y Firma de Responsable	Fernanda Barrios				

Información del Equipo:					
No. Equipo	AIR-0002	N/S	0897	Fecha	05/06/13
Calibrador	Tetracal	N/S	508	Hora	12:52
Caudal (Lpm)					
Equipo	16.70	%dif	0.36%	%dif Permitido = 4%	
Calibrador	16.76	Pasa	✓	Falla	
Temperatura Ambiental (°C)					
Equipo	26.5	Diferencia	0.3	Diferencia Permitido = ± 2 °C	
Calibrador	26.8	Pasa	✓	Falla	
Presión Barométrica (mm de Hg)					
Equipo	646	Diferencia	0.5	Diferencia Permitida= ±10mm	
Calibrador	646.5	Pasa	✓	Falla	
Nombre y Firma de Responsable	Fernanda Barrios				

Información del Equipo:					
No. Equipo	AIR-0003	N/S	1053	Fecha	05/06/13
Calibrador	Tetracal	N/S	508	Hora	14:10
Caudal (Lpm)					
Equipo	16.75	%dif	0.66%	%dif Permitido = 4%	
Calibrador	16.64	Pasa	✓	Falla	
Temperatura Ambiental (°C)					
Equipo	29.4	Diferencia	0.4	Diferencia Permitido = ± 2 °C	
Calibrador	29.0	Pasa	✓	Falla	
Presión Barométrica (mm de Hg)					
Equipo	647	Diferencia	0.	Diferencia Permitida= ±10mm	
Calibrador	647.0	Pasa	✓	Falla	
Nombre y Firma de Responsable	Fernanda Barrios				

%dif. = [(calibrador – equipo)/calibrador] x 100

Departamento de Ambiente
Proyecto Minero El Escobal

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Minera San Rafael

REGISTRO R-13

Verificación Equipo PQ200

Información del Equipo:						
No. Equipo	AIR-001	N/S	0938	Fecha	06/07/13	
Calibrador	Tetracal	N/S	508	Hora	11:39	
Caudal (Lpm)						
Equipo	16.67		%dif	2.90	%dif Permitido = 4%	
Calibrador	16.20		Pasa	✓	Falla	
Temperatura Ambiental (°C)						
Equipo	24.2	Diferencia	1	Diferencia Permitido = ± 2 °C		
Calibrador	23.2	Pasa	✓	Falla		
Presión Barométrica (mm de Hg)						
Equipo	648	Diferencia	0.5	Diferencia Permitida= ±10mm		
Calibrador	648.5	Pasa	✓	Falla		
Nombre y Firma de Responsable		Fernanda Barrios				

Información del Equipo:						
No. Equipo	AIR-002	N/S	0877	Fecha	06/07/2013	
Calibrador	Tetracal	N/S	508	Hora	16:34	
Caudal (Lpm)						
Equipo	16.70		%dif	0.00	%dif Permitido = 4%	
Calibrador	16.70		Pasa	✓	Falla	
Temperatura Ambiental (°C)						
Equipo	28.0	Diferencia	0.8	Diferencia Permitido = ± 2 °C		
Calibrador	29.2	Pasa	✓	Falla		
Presión Barométrica (mm de Hg)						
Equipo	646	Diferencia	0.5	Diferencia Permitida= ±10mm		
Calibrador	646.5	Pasa	✓	Falla		
Nombre y Firma de Responsable		Fernanda Barrios				

Información del Equipo:						
No. Equipo	AIR-003	N/S	1053	Fecha	06/07/2013	
Calibrador	Tetracal	N/S	508	Hora	11:57	
Caudal (Lpm)						
Equipo	16.72		%dif	0.36	%dif Permitido = 4%	
Calibrador	16.66		Pasa	✓	Falla	
Temperatura Ambiental (°C)						
Equipo	24.4	Diferencia	0.4	Diferencia Permitido = ± 2 °C		
Calibrador	24.8	Pasa	✓	Falla		
Presión Barométrica (mm de Hg)						
Equipo	649	Diferencia	1	Diferencia Permitida= ±10mm		
Calibrador	648.0	Pasa	✓	Falla		
Nombre y Firma de Responsable		Fernanda Barrios				

%dif. = [(calibrador – equipo)/calibrador] x 100

Departamento de Ambiente
Proyecto Minero El Escobal

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BGI INCORPORATED 58 GUINAN STREET WALTHAM, MA 02451
NIST Traceable Calibration Facility, ISO 9001:2008 Registered

tetraCal

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

(Refer to instruction manual for further details of calibration)

tetraCal Serial Number: **508** DATE: 4-Dec-12

Calibration Operator: Brian DeVoe Jr.

Critical Venturi Flow Meter: Max Uncertainity = 0.346%
Serial Number: 1 *CEESI NVLAP NIST Data File 04BGI151*
Serial Number: 2 *CEESI NVLAP NIST Data File 04BGI152*
Serial Number: 3 *CEESI NVLAP NIST Data File 04BGI153*

Room Temperature: Uncertainity=0.071% Room Temperature: 21.6 C
Brand: Ever-Safe Serial Number: 016076
NIST Traceability No. 516837
tetraCal:
Ambient Temperature (set): 21.6 C
Aux (filter) Temperature (set): C

Barometric Pressure ans Absolute Pressure
Vaisala Model PTB330(50-1100) Digital Accuracy: 0.03371%
S/N D4310002
NIST Traceable (Princo Primary Standard Model 453 S/N W12537) Certificate No. P-7485
tetraCal:
Barometric pressure (set): 766 mm of Hg

Results of Venturi Calibration
Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

No. 1 Q = 5.84257 ΔP ^ 0.52112
No. 2 Q = 1.14339 ΔP ^ 0.52595
No. 3 Q = 0.33920 ΔP ^ 0.55170

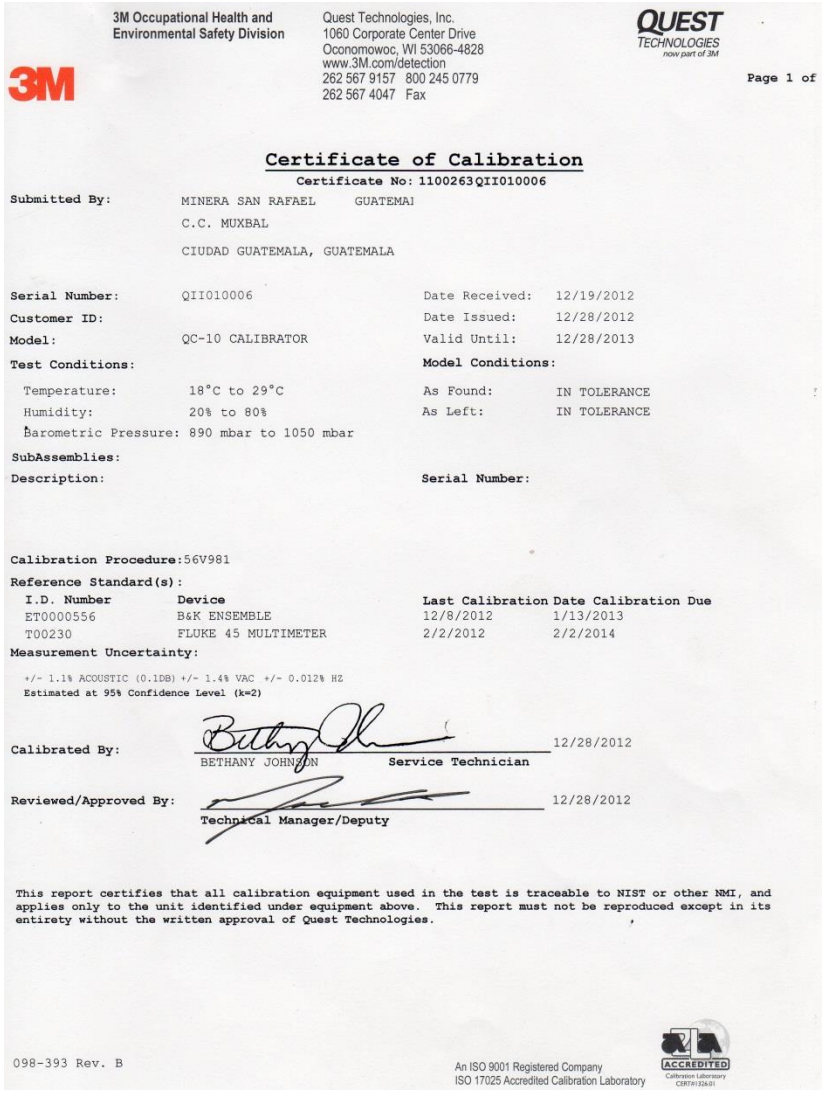
Overall Uncertainty: 0.35%

Date Placed In Service_____
(To be filled in by operator upon receipt)

Recommended Recalibration Date _____
(12 months from date placed in service)

Revised: July 2012

12.3.2. Presión Sonora



3M Occupational Health and Environmental Safety Division

Quest Technologies, Inc.
1060 Corporate Center Drive
Oconomowoc, WI 53066-4828
www.3M.com/detection
262 567 9157 800 245 0779
262 567 4047 Fax

QUEST TECHNOLOGIES now part of 3M

Page 1 of

Certificate of Calibration

Certificate No: 1100263QII010006

Submitted By: MINERA SAN RAFAEL GUATEMAl
C.C. MUXBAL
CIUDAD GUATEMALA, GUATEMALA

Serial Number: QII010006
Customer ID:
Model: QC-10 CALIBRATOR

Date Received: 12/19/2012
Date Issued: 12/28/2012
Valid Until: 12/28/2013

Test Conditions:
Temperature: 18°C to 29°C
Humidity: 20% to 80%
Barometric Pressure: 890 mbar to 1050 mbar

Model Conditions:
As Found: IN TOLERANCE
As Left: IN TOLERANCE

SubAssemblies:
Description: **Serial Number:**

Calibration Procedure: 56V981

Reference Standard(s):

I.D. Number	Device	Last Calibration	Date Calibration Due
ET0000556	B&K ENSEMBLE	12/8/2012	1/13/2013
T00230	FLUKE 45 MULTIMETER	2/2/2012	2/2/2014

Measurement Uncertainty:
+/- 1.1% ACOUSTIC (0.1DB) +/- 1.4% VAC +/- 0.012% HZ
Estimated at 95% Confidence Level (k=2)

Calibrated By: BETHANY JOHNSON **Service Technician** 12/28/2012

Reviewed/Approved By: **Technical Manager/Deputy** 12/28/2012

This report certifies that all calibration equipment used in the test is traceable to NIST or other NMI, and applies only to the unit identified under equipment above. This report must not be reproduced except in its entirety without the written approval of Quest Technologies.

098-393 Rev. B

An ISO 9001 Registered Company
ISO 17025 Accredited Calibration Laboratory

ACCREDITED Calibration Laboratory CERT#1324.01

12.4. Informe Original de los Resultados Analíticos Obtenidos de Muestras de Agua del Laboratorio ACZ Laboratories, INC. Correspondiente al Monitoreo de Junio 2013.

12.4.1. Muestras de Agua Superficial (SW)

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

June 26, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Charlie Muerhoff
Tahoe Resources
5190 Neil Rd. #310
Reno, NV 89052

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12659

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 13, 2013. This project has been assigned to ACZ's project number, L12659. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12659. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after July 26, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

REPAD.01.06.05.02

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. June 26, 2013

Project ID: Escobal
ACZ Project ID: L12659

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 3 miscellaneous samples from Tahoe Resources, Inc. on June 13, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12659. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses except those qualified with an ACZ 'H' flag were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic and organic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Client samples were received at a temperature outside of the acceptable range (See Sample Receipt Form).

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW3-E

ACZ Sample ID: ***L12659-01***
Date Sampled: *06/11/13 11:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/20/13 14:24	jlf
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 11:03	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 14:50	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 13:37	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 13:37	mla
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 12:59	las
Total Hot Plate Digestion	M200.2 ICP								06/20/13 14:10	jjc

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW3-E

ACZ Sample ID: L12659-01
Date Sampled: 06/11/13 11:15
Date Received: 06/13/13
Sample Matrix: Surface Water

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/20/13 3:51	aeb
Aluminum, total	M200.7 ICP	1	0.81		*	mg/L	0.03	0.2	06/22/13 1:14	jjc
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/19/13 20:01	msh
Antimony, total	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/20/13 21:08	msh
Arsenic, dissolved	M200.8 ICP-MS	1	0.0126			mg/L	0.0002	0.001	06/19/13 20:01	msh
Arsenic, total	M200.8 ICP-MS	1	0.0118			mg/L	0.0002	0.001	06/20/13 21:08	msh
Barium, dissolved	M200.7 ICP	1	0.121			mg/L	0.003	0.02	06/20/13 3:51	aeb
Barium, total	M200.7 ICP	1	0.132			mg/L	0.003	0.02	06/22/13 1:14	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:51	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:14	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 3:51	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:14	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:51	aeb
Boron, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:14	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:01	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/20/13 21:08	msh
Calcium, dissolved	M200.7 ICP	1	38.1		*	mg/L	0.2	1	06/20/13 3:51	aeb
Calcium, total	M200.7 ICP	1	39.2			mg/L	0.2	1	06/22/13 1:14	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:51	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:14	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:51	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:14	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:51	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:14	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 3:51	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:14	jjc
Iron, dissolved	M200.7 ICP	1	0.02	B		mg/L	0.02	0.05	06/20/13 3:51	aeb
Iron, total	M200.7 ICP	1	0.53		*	mg/L	0.02	0.05	06/22/13 1:14	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:01	msh
Lead, total	M200.8 ICP-MS	1	0.0004	B		mg/L	0.0001	0.0005	06/20/13 21:08	msh
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 3:51	aeb
Lithium, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:14	jjc
Magnesium, dissolved	M200.7 ICP	1	3.3			mg/L	0.2	1	06/20/13 3:51	aeb
Magnesium, total	M200.7 ICP	1	3.3			mg/L	0.2	1	06/22/13 1:14	jjc
Manganese, dissolved	M200.7 ICP	1	0.188		*	mg/L	0.005	0.03	06/20/13 3:51	aeb
Manganese, total	M200.7 ICP	1	0.217			mg/L	0.005	0.03	06/22/13 1:14	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:10	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/18/13 16:43	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 3:51	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:14	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:51	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:14	jjc
Potassium, dissolved	M200.7 ICP	1	5.0			mg/L	0.3	2	06/20/13 3:51	aeb

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW3-E

ACZ Sample ID: ***L12659-01***
Date Sampled: *06/11/13 11:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	5.1			mg/L	0.3	2	06/22/13 1:14	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 3:51	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:14	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	06/19/13 20:01	msh
Selenium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/25/13 15:23	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/19/13 20:01	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/20/13 21:08	msh
Sodium, dissolved	M200.7 ICP	1	13.4			mg/L	0.3	2	06/20/13 3:51	aeb
Sodium, total	M200.7 ICP	1	13.7			mg/L	0.3	2	06/22/13 1:14	jjc
Strontium, dissolved	M200.7 ICP	1	0.30		*	mg/L	0.01	0.05	06/20/13 3:51	aeb
Strontium, total	M200.7 ICP	1	0.30			mg/L	0.01	0.05	06/22/13 1:14	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:01	msh
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/20/13 21:08	msh
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 3:51	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:14	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 3:51	aeb
Titanium, total	M200.7 ICP	1	0.025	B		mg/L	0.005	0.03	06/22/13 1:14	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/19/13 20:01	msh
Uranium, total	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/20/13 21:08	msh
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 3:51	aeb
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:14	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:51	aeb
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:14	jjc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW3-E

ACZ Sample ID: ***L12659-01***
Date Sampled: *06/11/13 11:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	104		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	105		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.8			%			06/26/13 0:00	calc
Sum of Anions			2.8			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			2.9			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1		U	*	mg/L	10	20	06/24/13 10:39	abm
Chloride	SM4500Cl-E	1	3	B	*	mg/L	1	5	06/20/13 14:56	bsu
Conductivity @25C	SM2510B	1	277		*	umhos/cm	1	10	06/18/13 4:31	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 15:54	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 14:51	jlf
Fluoride	SM4500F-C	1	0.1	B	*	mg/L	0.1	0.5	06/20/13 15:50	abm
Hardness as CaCO3	SM2340B - Calculation		109			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.13		*	mg/L	0.02	0.1	06/21/13 23:07	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	06/21/13 15:00	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.5		*	mg/L	0.1	0.5	06/22/13 15:27	pjb
pH (lab)	SM4500H+ B									
pH		1	8.3	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus		0.12	B		mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.04	B	*	mg/L	0.01	0.05	06/21/13 23:14	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.04	BH	*	mg/L	0.01	0.05	06/13/13 18:28	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.04	B	*	mg/L	0.01	0.05	06/18/13 23:41	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	210		*	mg/L	10	20	06/14/13 12:44	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	6	B	*	mg/L	5	20	06/13/13 16:56	mss3
Residue, Total (TS) @ 105C	SM2540B	1	220		*	mg/L	10	20	06/14/13 11:55	dcw
Sulfate	D516-02 - Turbidimetric	5	31		*	mg/L	5	30	06/22/13 11:39	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 15:10	abm
TDS (calculated)	Calculation		157			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.34						06/26/13 0:00	calc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4-E

ACZ Sample ID: ***L12659-02***
Date Sampled: *06/11/13 11:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/20/13 14:30	jlf
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 11:10	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 15:00	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 13:46	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 13:45	mla
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 13:11	las
Total Hot Plate Digestion	M200.2 ICP								06/20/13 14:22	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4-E

ACZ Sample ID: ***L12659-02***
Date Sampled: *06/11/13 11:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/20/13 3:54	aeb
Aluminum, total	M200.7 ICP	1	0.05	B	*	mg/L	0.03	0.2	06/22/13 1:17	jjc
Antimony, dissolved	M200.8 ICP-MS	1	0.0067			mg/L	0.0004	0.002	06/19/13 20:04	msh
Antimony, total	M200.8 ICP-MS	1	0.0058			mg/L	0.0004	0.002	06/20/13 21:11	msh
Arsenic, dissolved	M200.8 ICP-MS	1	0.0089			mg/L	0.0002	0.001	06/19/13 20:04	msh
Arsenic, total	M200.8 ICP-MS	1	0.0081			mg/L	0.0002	0.001	06/20/13 21:11	msh
Barium, dissolved	M200.7 ICP	1	0.071			mg/L	0.003	0.02	06/20/13 3:54	aeb
Barium, total	M200.7 ICP	1	0.072			mg/L	0.003	0.02	06/22/13 1:17	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:54	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:17	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 3:54	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:17	jjc
Boron, dissolved	M200.7 ICP	1	0.07			mg/L	0.01	0.05	06/20/13 3:54	aeb
Boron, total	M200.7 ICP	1	0.07			mg/L	0.01	0.05	06/22/13 1:17	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:04	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/20/13 21:11	msh
Calcium, dissolved	M200.7 ICP	1	286		*	mg/L	0.2	1	06/20/13 3:54	aeb
Calcium, total	M200.7 ICP	1	302			mg/L	0.2	1	06/22/13 1:17	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:54	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:17	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:54	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:17	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:54	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:17	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 3:54	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:17	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	06/20/13 3:54	aeb
Iron, total	M200.7 ICP	1	0.05		*	mg/L	0.02	0.05	06/22/13 1:17	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:04	msh
Lead, total	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/20/13 21:11	msh
Lithium, dissolved	M200.7 ICP	1	0.07	B		mg/L	0.02	0.1	06/20/13 3:54	aeb
Lithium, total	M200.7 ICP	1	0.07	B		mg/L	0.02	0.1	06/22/13 1:17	jjc
Magnesium, dissolved	M200.7 ICP	1	22.8			mg/L	0.2	1	06/20/13 3:54	aeb
Magnesium, total	M200.7 ICP	1	24.4			mg/L	0.2	1	06/22/13 1:17	jjc
Manganese, dissolved	M200.7 ICP	1	0.295		*	mg/L	0.005	0.03	06/20/13 3:54	aeb
Manganese, total	M200.7 ICP	1	0.306			mg/L	0.005	0.03	06/22/13 1:17	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:12	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/18/13 16:45	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 3:54	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:17	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:54	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:17	jjc
Potassium, dissolved	M200.7 ICP	1	6.6			mg/L	0.3	2	06/20/13 3:54	aeb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4-E

ACZ Sample ID: ***L12659-02***
Date Sampled: *06/11/13 11:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	6.7			mg/L	0.3	2	06/22/13 1:17	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 3:54	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:17	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0003			mg/L	0.0001	0.0003	06/19/13 20:04	msh
Selenium, total	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	06/25/13 15:26	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/19/13 20:04	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/20/13 21:11	msh
Sodium, dissolved	M200.7 ICP	1	52.1			mg/L	0.3	2	06/20/13 3:54	aeb
Sodium, total	M200.7 ICP	1	55.5			mg/L	0.3	2	06/22/13 1:17	jjc
Strontium, dissolved	M200.7 ICP	1	3.03		*	mg/L	0.01	0.05	06/20/13 3:54	aeb
Strontium, total	M200.7 ICP	1	3.15			mg/L	0.01	0.05	06/22/13 1:17	jjc
Thallium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/19/13 20:04	msh
Thallium, total	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/20/13 21:11	msh
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 3:54	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:17	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 3:54	aeb
Titanium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:17	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0004	B		mg/L	0.0001	0.0005	06/19/13 20:04	msh
Uranium, total	M200.8 ICP-MS	1	0.0004	B		mg/L	0.0001	0.0005	06/20/13 21:11	msh
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 3:54	aeb
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:17	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:54	aeb
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:17	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4-E

ACZ Sample ID: ***L12659-02***
Date Sampled: *06/11/13 11:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	117		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	117		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-6.9			%			06/26/13 0:00	calc
Sum of Anions			21.6			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			18.8			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1		U	*	mg/L	10	20	06/24/13 10:47	abm
Chloride	SM4500Cl-E	1	26		*	mg/L	1	5	06/20/13 14:56	bsu
Conductivity @25C	SM2510B	1	1580		*	umhos/cm	1	10	06/18/13 4:40	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 15:57	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 14:52	jlf
Fluoride	SM4500F-C	1	1.0		*	mg/L	0.1	0.5	06/20/13 15:55	abm
Hardness as CaCO3	SM2340B - Calculation		809			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	2.47		*	mg/L	0.02	0.1	06/21/13 23:09	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.96		*	mg/L	0.05	0.5	06/21/13 15:03	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	1.0		*	mg/L	0.1	0.5	06/22/13 15:28	pjb
pH (lab)	SM4500H+ B									
pH		1	8.2	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus		0.12	B		mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.04	B	*	mg/L	0.01	0.05	06/21/13 23:16	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	06/13/13 18:29	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	06/18/13 23:42	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1290		*	mg/L	10	20	06/14/13 12:46	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/13/13 16:57	mss3
Residue, Total (TS) @ 105C	SM2540B	1	1340		*	mg/L	10	20	06/14/13 11:57	dcw
Sulfate	D516-02 - Turbidimetric	50	880		*	mg/L	50	300	06/22/13 11:40	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 15:22	abm
TDS (calculated)	Calculation		1350			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.96						06/26/13 0:00	calc

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4A-E

ACZ Sample ID: ***L12659-03***
Date Sampled: *06/10/13 10:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/20/13 14:36	jlf
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 11:18	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 15:10	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 13:56	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 13:54	mla
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 13:23	las
Total Hot Plate Digestion	M200.2 ICP								06/20/13 14:34	jjc

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4A-E

ACZ Sample ID: ***L12659-03***
Date Sampled: *06/10/13 10:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/20/13 3:57	aeb
Aluminum, total	M200.7 ICP	1	0.04	B	*	mg/L	0.03	0.2	06/22/13 1:20	jjc
Antimony, dissolved	M200.8 ICP-MS	1	0.0041			mg/L	0.0004	0.002	06/19/13 20:07	msh
Antimony, total	M200.8 ICP-MS	1	0.0035			mg/L	0.0004	0.002	06/20/13 21:14	msh
Arsenic, dissolved	M200.8 ICP-MS	1	0.0094			mg/L	0.0002	0.001	06/19/13 20:07	msh
Arsenic, total	M200.8 ICP-MS	1	0.0089			mg/L	0.0002	0.001	06/20/13 21:14	msh
Barium, dissolved	M200.7 ICP	1	0.070			mg/L	0.003	0.02	06/20/13 3:57	aeb
Barium, total	M200.7 ICP	1	0.070			mg/L	0.003	0.02	06/22/13 1:20	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:57	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:20	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 3:57	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:20	jjc
Boron, dissolved	M200.7 ICP	1	0.08			mg/L	0.01	0.05	06/20/13 3:57	aeb
Boron, total	M200.7 ICP	1	0.08			mg/L	0.01	0.05	06/22/13 1:20	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:07	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/20/13 21:14	msh
Calcium, dissolved	M200.7 ICP	1	285		*	mg/L	0.2	1	06/20/13 3:57	aeb
Calcium, total	M200.7 ICP	1	285			mg/L	0.2	1	06/22/13 1:20	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:57	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:20	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:57	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:20	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:57	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:20	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 3:57	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:20	jjc
Iron, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.02	0.05	06/20/13 3:57	aeb
Iron, total	M200.7 ICP	1	0.07		*	mg/L	0.02	0.05	06/22/13 1:20	jjc
Lead, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/19/13 20:07	msh
Lead, total	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/20/13 21:14	msh
Lithium, dissolved	M200.7 ICP	1	0.07	B		mg/L	0.02	0.1	06/20/13 3:57	aeb
Lithium, total	M200.7 ICP	1	0.07	B		mg/L	0.02	0.1	06/22/13 1:20	jjc
Magnesium, dissolved	M200.7 ICP	1	22.7			mg/L	0.2	1	06/20/13 3:57	aeb
Magnesium, total	M200.7 ICP	1	23.3			mg/L	0.2	1	06/22/13 1:20	jjc
Manganese, dissolved	M200.7 ICP	1	0.312		*	mg/L	0.005	0.03	06/20/13 3:57	aeb
Manganese, total	M200.7 ICP	1	0.313			mg/L	0.005	0.03	06/22/13 1:20	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:14	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/18/13 16:47	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 3:57	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:20	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:57	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:20	jjc
Potassium, dissolved	M200.7 ICP	1	6.7			mg/L	0.3	2	06/20/13 3:57	aeb

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4A-E

ACZ Sample ID: *L12659-03*
Date Sampled: *06/10/13 10:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	6.7			mg/L	0.3	2	06/22/13 1:20	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 3:57	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:20	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	06/19/13 20:07	msh
Selenium, total	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0003	06/25/13 15:30	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/19/13 20:07	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/20/13 21:14	msh
Sodium, dissolved	M200.7 ICP	1	56.1			mg/L	0.3	2	06/20/13 3:57	aeb
Sodium, total	M200.7 ICP	1	56.5			mg/L	0.3	2	06/22/13 1:20	jjc
Strontium, dissolved	M200.7 ICP	1	3.01		*	mg/L	0.01	0.05	06/20/13 3:57	aeb
Strontium, total	M200.7 ICP	1	2.98			mg/L	0.01	0.05	06/22/13 1:20	jjc
Thallium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/19/13 20:07	msh
Thallium, total	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/20/13 21:14	msh
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 3:57	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:20	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 3:57	aeb
Titanium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:20	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/19/13 20:07	msh
Uranium, total	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/20/13 21:14	msh
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 3:57	aeb
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:20	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 3:57	aeb
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:20	jjc

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** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4A-E

ACZ Sample ID: *L12659-03*
Date Sampled: *06/10/13 10:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	135		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	135		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-7.4			%			06/26/13 0:00	calc
Sum of Anions			21.9			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			18.9			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1		U	*	mg/L	10	20	06/24/13 10:55	abm
Chloride	SM4500Cl-E	1	32		*	mg/L	1	5	06/20/13 14:56	bsu
Conductivity @25C	SM2510B	1	1530		*	umhos/cm	1	10	06/18/13 4:50	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 15:58	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 14:53	jlf
Fluoride	SM4500F-C	1	1.0		*	mg/L	0.1	0.5	06/20/13 15:58	abm
Hardness as CaCO3	SM2340B - Calculation		806			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	1.75		*	mg/L	0.02	0.1	06/21/13 23:10	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.43	B	*	mg/L	0.05	0.5	06/21/13 15:04	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.5		*	mg/L	0.1	0.5	06/22/13 15:29	pjb
pH (lab)	SM4500H+ B									
pH		1	8.2	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus		0.19			mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.06		*	mg/L	0.01	0.05	06/21/13 23:19	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.06	H	*	mg/L	0.01	0.05	06/13/13 18:30	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.06		*	mg/L	0.01	0.05	06/18/13 23:46	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1260		*	mg/L	10	20	06/14/13 12:48	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/13/13 16:58	mss3
Residue, Total (TS) @ 105C	SM2540B	1	1270		*	mg/L	10	20	06/14/13 11:58	dcw
Sulfate	D516-02 - Turbidimetric	50	870		*	mg/L	50	300	06/22/13 11:53	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 15:26	abm
TDS (calculated)	Calculation		1360			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.93						06/26/13 0:00	calc

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** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of Interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of Interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualist.pdf

REP001.09.12.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12659*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12659-01	WG346138	Aluminum, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346138	Iron, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Manganese, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345790	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG345988	Strontium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	Q6	Sample was received above recommended temperature.
			M410.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346083	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346166	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346197	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12659*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			(digest)		validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to Item C5 of ACZ's Terms & Conditions).
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345665	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345586	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12659*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12659-02	WG346138	Aluminum, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346138	Iron, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Manganese, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345790	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG345988	Strontium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	Q6	Sample was received above recommended temperature.
			M410.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346083	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346166	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346197	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12659***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			(digest)		validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to Item C5 of ACZ's Terms & Conditions).
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345665	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345586	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12659***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12659-03	WG346138	Aluminum, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346138	Iron, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Manganese, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345790	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG345988	Strontium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	Q6	Sample was received above recommended temperature.
			M410.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346083	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346166	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346197	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12659***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			(digest)		validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345665	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345586	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW3-E

ACZ Sample ID: ***L12659-01***
Date Sampled: *06/11/13 11:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 15:56
Analysis Date: 06/17/13 12:43

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	81.2		1	*	%	70	130

REPOR.01.01.01.02

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW3-E

ACZ Sample ID: ***L12659-01***
Date Sampled: *06/11/13 11:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:04

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4-E

ACZ Sample ID: ***L12659-02***
Date Sampled: *06/11/13 11:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 15:57
Analysis Date: 06/17/13 13:09

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	94.4		1	*	%	70	130

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4-E

ACZ Sample ID: ***L12659-02***
Date Sampled: *06/11/13 11:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:05

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

REPOR.01.01.01.02 * Please refer to Qualifier Reports for details.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4A-E

ACZ Sample ID: ***L12659-03***
Date Sampled: *06/10/13 10:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 15:58
Analysis Date: 06/17/13 13:35

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	91.8		1	*	%	70	130

REPOR.01.01.01.02 * Please refer to Qualifier Reports for details.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW4A-E

ACZ Sample ID: ***L12659-03***
Date Sampled: *06/10/13 10:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:06

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

REPOR.01.01.01.02

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
LCL	Lower Control Limit
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
UCL	Upper Control Limit
Sample	Value of the Sample of Interest

QC Sample Types

SURR	Surrogate	*LFM*	Laboratory Fortified Matrix
INTS	Internal Standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
LCSS	Laboratory Control Sample - Soil	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSW	Laboratory Control Sample - Water	*PBS*	Prep Blank - Soil
LFB	Laboratory Fortified Blank	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
O	Analyte concentration is estimated due to result exceeding calibration range.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
J	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
(3) EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Excluding Oil & Grease, solid & biological matrices for organic analyses are reported on a wet weight basis.
(3) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(4) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

REP002.09.12.01

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12659***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12659-01	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.
L12659-02	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.
L12659-03	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.

ACZ Laboratories, Inc.
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Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: ***L12659***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Bismuth, dissolved	M200.7 ICP
Bismuth, total	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Gallium, total	M200.7 ICP
Scandium, dissolved	M200.7 ICP
Scandium, total	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Sulfide as S	SM4500S2-D

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID:	L12659
Date Received:	06/13/2013 08:34
Received By:	ksj
Date Printed:	6/13/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3684	14.1	14	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

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ACZ Laboratories, Inc. L12659 **CHAIN of CUSTODY**
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: mberganza@sanrafael.com.gt
Address: Km 2 L carretera antigua a El Salvador ...
Telephone: (502) 5951 5248

Copy of Report to:

Name: Charlie Muerhoff
Company: Tahoe Resources Inc.
E-mail: cmuerhoff@tahoeresourcesinc...
Telephone:

Invoice to:

Name: Miguel Berganza
Company: Tahoe Resources inc
E-mail: mberganza@sanrafael.com.gt
Address: Km 8 L carretera antigua a El Salvador ...
Telephone: (502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [ ] NO [ ]

Are samples for SDWA Compliance Monitoring? Yes [ ] No [ ]
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernando ... Sampler's site Information State Zip code Time Zone

PROJECT INFORMATION

Quote #: Water Quality
Project/PO #: Escobal
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

SAMPLE IDENTIFICATION	DATE	TIME	Matrix	# of Containers	SW
SW3-E	11/06/13	11:15	SW	10	✓
SW4-E	11/06/13	11:45	SW	10	✓
SW4A-E	10/06/13	10:15	SW	10	✓

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME
[signature]	11/06/13 17:23	[signature]	11/6/13 17:45
		[signature] 6/13/13	08:34

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

L12659 Chain of Custody

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Guatemala June 11th, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

ACZ Laboratories, Inc. L12660 — CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name:	Miguel Berganza	Address:	[illegible]
Company:	Tahoe Resources Inc.		[illegible]
E-mail:	mberganza@sanrafael.com.gt	Telephone:	(502) 5951 5248

Copy of Report to:

Name:	Charlie Alverhoff	E-mail:	[illegible]@tahoeresources.com
Company:	Tahoe Resources Inc.	Telephone:	

Invoice to:

Name:	Miguel Berganza	Address:	[illegible]
Company:	Tahoe Resources Inc.		[illegible]
E-mail:	[illegible]	Telephone:	(502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☐

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: [illegible] Sampler's site information State Zip code Time Zone

PROJECT INFORMATION

Quote #: Water Quality

Project/PO #: Escobal

Reporting state for compliance testing:

Check box if samples include NRC licensed material?

SAMPLE IDENTIFICATION	DATE TIME		Matrix	# of Containers	SW
SW5-E	11/06/13	07:00	SW	10	✓
SW6-E	11/06/13	09:15	SW	10	✓
SW7-E	10/06/13	10:45	SW	10	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Ronald Paez	11/06/13 17:25	[illegible]	11/06/13 17:[illegible]
		[illegible] 6/13/13	0835

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

L12660 Chain of Custody

Guatemala June 11th, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

June 26, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12660

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 13, 2013. This project has been assigned to ACZ's project number, L12660. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12660. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after July 26, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

REPAD.01.06.05.02

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. June 26, 2013

Project ID: Escobal
ACZ Project ID: L12660

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 3 miscellaneous samples from Tahoe Resources, Inc. on June 13, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12660. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses except those qualified with an ACZ 'H' flag were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic and organic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Client samples were received at a temperature outside of the acceptable range (See Sample Receipt Form).

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW5-E

ACZ Sample ID: ***L12660-01***
Date Sampled: *06/11/13 07:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/20/13 14:42	jlf
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 11:25	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 15:40	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 14:06	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 14:02	mla
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 10:47	las
Total Hot Plate Digestion	M200.2 ICP								06/20/13 14:45	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW5-E

ACZ Sample ID: ***L12660-01***
Date Sampled: *06/11/13 07:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	0.10	B		mg/L	0.03	0.2	06/20/13 4:00	aeb
Aluminum, total	M200.7 ICP	1	0.50		*	mg/L	0.03	0.2	06/22/13 1:29	jjc
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/19/13 20:24	msh
Antimony, total	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/21/13 2:32	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0016			mg/L	0.0002	0.001	06/19/13 20:24	msh
Arsenic, total	M200.8 ICP-MS	1	0.0019			mg/L	0.0002	0.001	06/21/13 2:32	pmc
Barium, dissolved	M200.7 ICP	1	0.055			mg/L	0.003	0.02	06/20/13 4:00	aeb
Barium, total	M200.7 ICP	1	0.058			mg/L	0.003	0.02	06/22/13 1:29	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:00	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:29	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 4:00	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:29	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:00	aeb
Boron, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:29	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:24	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:32	pmc
Calcium, dissolved	M200.7 ICP	1	8.6		*	mg/L	0.2	1	06/20/13 4:00	aeb
Calcium, total	M200.7 ICP	1	8.7			mg/L	0.2	1	06/22/13 1:29	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:00	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:29	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:00	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:29	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:00	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:29	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:00	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:29	jjc
Iron, dissolved	M200.7 ICP	1	0.19			mg/L	0.02	0.05	06/20/13 4:00	aeb
Iron, total	M200.7 ICP	1	0.42		*	mg/L	0.02	0.05	06/22/13 1:29	jjc
Lead, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/19/13 20:24	msh
Lead, total	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/21/13 2:32	pmc
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:00	aeb
Lithium, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:29	jjc
Magnesium, dissolved	M200.7 ICP	1	1.7			mg/L	0.2	1	06/20/13 4:00	aeb
Magnesium, total	M200.7 ICP	1	1.6			mg/L	0.2	1	06/22/13 1:29	jjc
Manganese, dissolved	M200.7 ICP	1	0.037		*	mg/L	0.005	0.03	06/20/13 4:00	aeb
Manganese, total	M200.7 ICP	1	0.041			mg/L	0.005	0.03	06/22/13 1:29	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:21	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 12:27	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:00	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:29	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:00	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:29	jjc
Potassium, dissolved	M200.7 ICP	1	3.2			mg/L	0.3	2	06/20/13 4:00	aeb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW5-E

ACZ Sample ID: ***L12660-01***
Date Sampled: *06/11/13 07:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	3.3			mg/L	0.3	2	06/22/13 1:29	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:00	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:29	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/19/13 20:24	msh
Selenium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/21/13 2:32	pmc
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/19/13 20:24	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/21/13 2:32	pmc
Sodium, dissolved	M200.7 ICP	1	5.6			mg/L	0.3	2	06/20/13 4:00	aeb
Sodium, total	M200.7 ICP	1	5.7			mg/L	0.3	2	06/22/13 1:29	jjc
Strontium, dissolved	M200.7 ICP	1	0.07		*	mg/L	0.01	0.05	06/20/13 4:00	aeb
Strontium, total	M200.7 ICP	1	0.07			mg/L	0.01	0.05	06/22/13 1:29	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:24	msh
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:32	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 4:00	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:29	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:00	aeb
Titanium, total	M200.7 ICP	1	0.013	B		mg/L	0.005	0.03	06/22/13 1:29	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:24	msh
Uranium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:32	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:00	aeb
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:29	jjc
Zinc, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/20/13 4:00	aeb
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:29	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW5-E

ACZ Sample ID: ***L12660-01***
Date Sampled: *06/11/13 07:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	27		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	27		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.5			%			06/26/13 0:00	calc
Sum of Anions			0.953			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			0.925			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1		U	*	mg/L	10	20	06/24/13 11:03	abm
Chloride	SM4500Cl-E	1	2	B	*	mg/L	1	5	06/20/13 14:56	bsu
Conductivity @25C	SM2510B	1	96		*	umhos/cm	1	10	06/18/13 4:58	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 15:59	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 14:54	jlf
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/20/13 16:05	abm
Hardness as CaCO3	SM2340B - Calculation		29			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.12		*	mg/L	0.02	0.1	06/21/13 23:11	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	06/21/13 15:05	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.1	B	*	mg/L	0.1	0.5	06/22/13 15:32	pjb
pH (lab)	SM4500H+ B									
pH		1	7.8	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	22.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus		0.03	B		mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.01	B	*	mg/L	0.01	0.05	06/21/13 23:20	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.01	BH	*	mg/L	0.01	0.05	06/13/13 18:31	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.02	B	*	mg/L	0.01	0.05	06/18/13 23:47	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	90		*	mg/L	10	20	06/15/13 9:26	mss3
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/13/13 14:44	mss3
Residue, Total (TS) @ 105C	SM2540B	1	90		*	mg/L	10	20	06/14/13 12:00	dcw
Sulfate	D516-02 - Turbidimetric	1	17		*	mg/L	1	5	06/22/13 11:18	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 15:39	abm
TDS (calculated)	Calculation		55			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.64						06/26/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW6-E

ACZ Sample ID: ***L12660-02***
Date Sampled: *06/11/13 09:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/20/13 14:48	jlf
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 11:32	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 16:00	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 14:16	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 14:10	mla
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 10:59	las
Total Hot Plate Digestion	M200.2 ICP								06/20/13 14:57	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW6-E

ACZ Sample ID: *L12660-02*
Date Sampled: *06/11/13 09:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.03	0.2	06/21/13 5:47	jjc
Aluminum, total	M200.7 ICP	1	0.53		*	mg/L	0.03	0.2	06/22/13 1:32	jjc
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/19/13 20:27	msh
Antimony, total	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/21/13 2:36	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0022			mg/L	0.0002	0.001	06/19/13 20:27	msh
Arsenic, total	M200.8 ICP-MS	1	0.0025			mg/L	0.0002	0.001	06/21/13 2:36	pmc
Barium, dissolved	M200.7 ICP	1	0.053			mg/L	0.003	0.02	06/21/13 5:47	jjc
Barium, total	M200.7 ICP	1	0.060			mg/L	0.003	0.02	06/22/13 1:32	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:47	jjc
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:32	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/21/13 5:47	jjc
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:32	jjc
Boron, dissolved	M200.7 ICP	1	0.10			mg/L	0.01	0.05	06/21/13 5:47	jjc
Boron, total	M200.7 ICP	1	0.10			mg/L	0.01	0.05	06/22/13 1:32	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:27	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:36	pmc
Calcium, dissolved	M200.7 ICP	1	12.5			mg/L	0.2	1	06/21/13 5:47	jjc
Calcium, total	M200.7 ICP	1	13.1			mg/L	0.2	1	06/22/13 1:32	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:47	jjc
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:32	jjc
Cobalt, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/21/13 5:47	jjc
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:32	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:47	jjc
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:32	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/21/13 5:47	jjc
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:32	jjc
Iron, dissolved	M200.7 ICP	1	0.08			mg/L	0.02	0.05	06/21/13 5:47	jjc
Iron, total	M200.7 ICP	1	0.52		*	mg/L	0.02	0.05	06/22/13 1:32	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:27	msh
Lead, total	M200.8 ICP-MS	1	0.0006			mg/L	0.0001	0.0005	06/21/13 2:36	pmc
Lithium, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.02	0.1	06/21/13 5:47	jjc
Lithium, total	M200.7 ICP	1	0.03	B		mg/L	0.02	0.1	06/22/13 1:32	jjc
Magnesium, dissolved	M200.7 ICP	1	2.7			mg/L	0.2	1	06/21/13 5:47	jjc
Magnesium, total	M200.7 ICP	1	2.6			mg/L	0.2	1	06/22/13 1:32	jjc
Manganese, dissolved	M200.7 ICP	1	0.054			mg/L	0.005	0.03	06/21/13 5:47	jjc
Manganese, total	M200.7 ICP	1	0.069			mg/L	0.005	0.03	06/22/13 1:32	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:23	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 12:29	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/21/13 5:47	jjc
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:32	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:47	jjc
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:32	jjc
Potassium, dissolved	M200.7 ICP	1	3.7			mg/L	0.3	2	06/21/13 5:47	jjc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW6-E

ACZ Sample ID: *L12660-02*
Date Sampled: *06/11/13 09:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	3.7			mg/L	0.3	2	06/22/13 1:32	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/21/13 5:47	jjc
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:32	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/19/13 20:27	msh
Selenium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/21/13 2:36	pmc
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/19/13 20:27	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/21/13 2:36	pmc
Sodium, dissolved	M200.7 ICP	1	13.5			mg/L	0.3	2	06/21/13 5:47	jjc
Sodium, total	M200.7 ICP	1	13.8			mg/L	0.3	2	06/22/13 1:32	jjc
Strontium, dissolved	M200.7 ICP	1	0.09			mg/L	0.01	0.05	06/21/13 5:47	jjc
Strontium, total	M200.7 ICP	1	0.10			mg/L	0.01	0.05	06/22/13 1:32	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:27	msh
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:36	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/21/13 5:47	jjc
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:32	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/21/13 5:47	jjc
Titanium, total	M200.7 ICP	1	0.019	B		mg/L	0.005	0.03	06/22/13 1:32	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:27	msh
Uranium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:36	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/21/13 5:47	jjc
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:32	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:47	jjc
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:32	jjc

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW6-E

ACZ Sample ID: ***L12660-02***
Date Sampled: *06/11/13 09:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	38		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	38		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			06/26/13 0:00	calc
Sum of Anions			1.6			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			1.6			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1		U	*	mg/L	10	20	06/24/13 11:11	abm
Chloride	SM4500CH-E	1	13		*	mg/L	1	5	06/20/13 14:56	bsu
Conductivity @25C	SM2510B	1	165		*	umhos/cm	1	10	06/18/13 5:06	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:00	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 14:55	jlf
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/20/13 16:34	abm
Hardness as CaCO3	SM2340B - Calculation		42			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/21/13 23:15	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	06/21/13 15:06	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.2	B	*	mg/L	0.1	0.5	06/22/13 15:37	pjb
pH (lab)	SM4500H+ B									
pH		1	8.0	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus		0.03	B		mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.01	B	*	mg/L	0.01	0.05	06/21/13 23:21	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.01	BH	*	mg/L	0.01	0.05	06/13/13 18:35	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.02	B	*	mg/L	0.01	0.05	06/18/13 23:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	120		*	mg/L	10	20	06/15/13 9:27	mss3
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/13/13 14:46	mss3
Residue, Total (TS) @ 105C	SM2540B	1	120		*	mg/L	10	20	06/14/13 12:01	dcw
Sulfate	D516-02 - Turbidimetric	1	22		*	mg/L	1	5	06/22/13 11:18	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 15:43	abm
TDS (calculated)	Calculation		91			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.32						06/26/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW7-E

ACZ Sample ID: ***L12660-03***
Date Sampled: *06/10/13 10:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/20/13 14:54	jlf
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 11:39	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 16:20	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 14:26	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 14:19	mla
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 11:11	las
Total Hot Plate Digestion	M200.2 ICP								06/20/13 15:08	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW7-E

ACZ Sample ID: ***L12660-03***
Date Sampled: *06/10/13 10:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/21/13 5:50	jjc
Aluminum, total	M200.7 ICP	1	0.52		*	mg/L	0.03	0.2	06/22/13 1:35	jjc
Antimony, dissolved	M200.8 ICP-MS	1	0.0007	B		mg/L	0.0004	0.002	06/19/13 20:31	msh
Antimony, total	M200.8 ICP-MS	1	0.0007	B		mg/L	0.0004	0.002	06/21/13 2:39	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0035			mg/L	0.0002	0.001	06/19/13 20:31	msh
Arsenic, total	M200.8 ICP-MS	1	0.0037			mg/L	0.0002	0.001	06/21/13 2:39	pmc
Barium, dissolved	M200.7 ICP	1	0.107			mg/L	0.003	0.02	06/21/13 5:50	jjc
Barium, total	M200.7 ICP	1	0.108			mg/L	0.003	0.02	06/22/13 1:35	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:50	jjc
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:35	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/21/13 5:50	jjc
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:35	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:50	jjc
Boron, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:35	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:31	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:39	pmc
Calcium, dissolved	M200.7 ICP	1	26.9			mg/L	0.2	1	06/21/13 5:50	jjc
Calcium, total	M200.7 ICP	1	25.6			mg/L	0.2	1	06/22/13 1:35	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:50	jjc
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:35	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:50	jjc
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:35	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:50	jjc
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:35	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/21/13 5:50	jjc
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:35	jjc
Iron, dissolved	M200.7 ICP	1	0.09			mg/L	0.02	0.05	06/21/13 5:50	jjc
Iron, total	M200.7 ICP	1	0.36		*	mg/L	0.02	0.05	06/22/13 1:35	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:31	msh
Lead, total	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/21/13 2:39	pmc
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/21/13 5:50	jjc
Lithium, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:35	jjc
Magnesium, dissolved	M200.7 ICP	1	4.7			mg/L	0.2	1	06/21/13 5:50	jjc
Magnesium, total	M200.7 ICP	1	4.5			mg/L	0.2	1	06/22/13 1:35	jjc
Manganese, dissolved	M200.7 ICP	1	0.196			mg/L	0.005	0.03	06/21/13 5:50	jjc
Manganese, total	M200.7 ICP	1	0.173			mg/L	0.005	0.03	06/22/13 1:35	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:32	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 12:35	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/21/13 5:50	jjc
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:35	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:50	jjc
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:35	jjc
Potassium, dissolved	M200.7 ICP	1	4.4			mg/L	0.3	2	06/21/13 5:50	jjc

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW7-E

ACZ Sample ID: ***L12660-03***
Date Sampled: *06/10/13 10:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	4.2			mg/L	0.3	2	06/22/13 1:35	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/21/13 5:50	jjc
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:35	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/19/13 20:31	msh
Selenium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/21/13 2:39	pmc
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/19/13 20:31	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/21/13 2:39	pmc
Sodium, dissolved	M200.7 ICP	1	10.4			mg/L	0.3	2	06/21/13 5:50	jjc
Sodium, total	M200.7 ICP	1	10.2			mg/L	0.3	2	06/22/13 1:35	jjc
Strontium, dissolved	M200.7 ICP	1	0.19			mg/L	0.01	0.05	06/21/13 5:50	jjc
Strontium, total	M200.7 ICP	1	0.18			mg/L	0.01	0.05	06/22/13 1:35	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:31	msh
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:39	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/21/13 5:50	jjc
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:35	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/21/13 5:50	jjc
Titanium, total	M200.7 ICP	1	0.015	B		mg/L	0.005	0.03	06/22/13 1:35	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 20:31	msh
Uranium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:39	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/21/13 5:50	jjc
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:35	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/21/13 5:50	jjc
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:35	jjc

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW7-E

ACZ Sample ID: ***L12660-03***
Date Sampled: *06/10/13 10:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	46		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	46		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.1			%			06/26/13 0:00	calc
Sum of Anions			2.4			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			2.3			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1		U	*	mg/L	10	20	06/24/13 11:34	abm
Chloride	SM4500Cl-E	1	4	B	*	mg/L	1	5	06/20/13 14:56	bsu
Conductivity @25C	SM2510B	1	244		*	umhos/cm	1	10	06/18/13 5:14	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:01	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 14:55	jlf
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/20/13 16:39	abm
Hardness as CaCO3	SM2340B - Calculation		87			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.14		*	mg/L	0.02	0.1	06/21/13 23:16	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	06/21/13 15:08	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/22/13 15:39	pjb
pH (lab)	SM4500H+ B									
pH		1	7.9	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus		0.09	B		mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	06/21/13 23:22	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	06/13/13 18:36	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	06/18/13 23:49	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	200		*	mg/L	10	20	06/15/13 9:28	mss3
Residue, Non-Filterable (TSS) @105C	SM2540D	1	6	B	*	mg/L	5	20	06/13/13 14:47	mss3
Residue, Total (TS) @ 105C	SM2540B	1	210		*	mg/L	10	20	06/14/13 12:04	dcw
Sulfate	D516-02 - Turbidimetric	5	66		*	mg/L	5	30	06/22/13 11:39	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 15:47	abm
TDS (calculated)	Calculation		144			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.39						06/26/13 0:00	calc

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** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualist.pdf

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12660*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12660-01	WG346138	Aluminum, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346138	Iron, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Manganese, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345790	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG345988	Strontium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	Q6	Sample was received above recommended temperature.
			M410.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346083	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346166	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346197	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12660*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345706	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345579	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12660***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12660-02	WG346138	Aluminum, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345790	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	Q6	Sample was received above recommended temperature.
			M410.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346083	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346166	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346197	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12660***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345706	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345579	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12660*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12660-03	WG346138	Aluminum, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	Q6	Sample was received above recommended temperature.
			M410.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346083	Chloride	SM4500CH-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346166	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346197	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345706	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345579	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12660*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
			SM2540B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW5-E

ACZ Sample ID: ***L12660-01***
Date Sampled: *06/11/13 7:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 15:59
Analysis Date: 06/17/13 14:02

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	85.8		1	*	%	70	130

REPOR.01.01.01.02 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW5-E

ACZ Sample ID: ***L12660-01***
Date Sampled: *06/11/13 7:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:07

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

REPOR.01.01.01.02 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW6-E

ACZ Sample ID: ***L12660-02***
Date Sampled: *06/11/13 9:15*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 16:00
Analysis Date: 06/17/13 14:54

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	94		1	*	%	70	130

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW6-E

ACZ Sample ID: L12660-02
Date Sampled: 06/11/13 9:15
Date Received: 06/13/13
Sample Matrix: Surface Water

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:08

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW7-E

ACZ Sample ID: ***L12660-03***
Date Sampled: *06/10/13 10:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 16:01
Analysis Date: 06/17/13 15:20

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	96.3		1	*	%	70	130

REPOR.01.01.01.02 ** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW7-E

ACZ Sample ID: ***L12660-03***
Date Sampled: *06/10/13 10:45*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:09

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

REPOR.01.01.01.02 ** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
LCL	Lower Control Limit
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
UCL	Upper Control Limit
Sample	Value of the Sample of Interest

QC Sample Types

SURR	Surrogate	*LFM*	Laboratory Fortified Matrix
INTS	Internal Standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
LCSS	Laboratory Control Sample - Soil	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSW	Laboratory Control Sample - Water	*PBS*	Prep Blank - Soil
LFB	Laboratory Fortified Blank	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
O	Analyte concentration is estimated due to result exceeding calibration range.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
J	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
(3)	EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Excluding Oil & Grease, solid & biological matrices for organic analyses are reported on a wet weight basis.
(3)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(4)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualist.pdf

REP002.09.12.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12660***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12660-01	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.
L12660-02	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.
L12660-03	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: *L12660*

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bismuth, dissolved	M200.7 ICP
Bismuth, total	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Gallium, total	M200.7 ICP
Scandium, dissolved	M200.7 ICP
Scandium, total	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Sulfide as S	SM4500S2-D

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12660
Date Received: 06/13/2013 08:35
Received By: ksj
Date Printed: 6/13/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3655	14.3	13	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

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ACZ Laboratories, Inc. L12660 — CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Name: Miguel Berganza	Address: Km 8.6 carretera antigua a El Salvador
Company: Tahoe Resources Inc.	Centro corporativo Muxbal Torre Oeste, Aptos 503 y 504
E-mail: mberganza@sanrafael.com.gt	Telephone: (+502) 5951 5248

Name: charlie muerhoff	E-mail: cmuerhoff@tahoeresourcesinc.com
Company: Tahoe Resources Inc.	Telephone:

Name: Miguel Berganza	Address: Km 8.6 carretera antigua a El Salvador
Company: Tahoe Resources Inc.	Centro corporativo Muxbal Torre Oeste, Aptos 503 y 504
E-mail: MBerganza@sanrafael.com.gt	Telephone: (+502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☐

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernando Ramos Sampler's site Information State Zip code Time Zone

Quote #: Water Quality

Project/PO #: Escobal

Reporting state for compliance testing:

Check box if samples include NRC licensed material?

				# of Containers	SW
SW5-E	11/06/13	07:00	SW	10	✓
SW6-E	11/06/13	09:15	SW	10	✓
SW7-E	10/06/13	10:45	SW	10	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Ronald Pacez	11/06/13 17:25	[signature]	11/06/13 17:25
		[signature] 6/13/13	0835

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

L12660 Chain of Custody

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Guatemala June 11th, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

June 26, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12661

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 13, 2013. This project has been assigned to ACZ's project number, L12661. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12661. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after July 26, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. June 26, 2013

Project ID: Escobal
ACZ Project ID: L12661

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 3 miscellaneous samples from Tahoe Resources, Inc. on June 13, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12661. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses except those qualified with an ACZ 'H' flag were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic and organic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Client samples were received at a temperature outside of the acceptable range (See Sample Receipt Form).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW1-E

ACZ Sample ID: ***L12661-01***
Date Sampled: *06/10/13 07:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/20/13 15:00	jlf
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 11:46	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 16:30	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 14:36	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 14:27	mla
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 11:23	las
Total Hot Plate Digestion	M200.2 ICP								06/20/13 15:20	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW1-E

ACZ Sample ID: ***L12661-01***
Date Sampled: *06/10/13 07:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/20/13 4:15	aeb
Aluminum, total	M200.7 ICP	1	0.05	B	*	mg/L	0.03	0.2	06/22/13 1:38	jjc
Antimony, dissolved	M200.8 ICP-MS	1	0.0006	B		mg/L	0.0004	0.002	06/18/13 19:03	msh
Antimony, total	M200.8 ICP-MS	1	0.0006	B		mg/L	0.0004	0.002	06/21/13 2:42	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0044			mg/L	0.0002	0.001	06/18/13 19:03	msh
Arsenic, total	M200.8 ICP-MS	1	0.0042			mg/L	0.0002	0.001	06/21/13 2:42	pmc
Barium, dissolved	M200.7 ICP	1	0.144			mg/L	0.003	0.02	06/20/13 4:15	aeb
Barium, total	M200.7 ICP	1	0.140			mg/L	0.003	0.02	06/22/13 1:38	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:15	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:38	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 4:15	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:38	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:15	aeb
Boron, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:38	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:03	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:42	pmc
Calcium, dissolved	M200.7 ICP	1	45.8		*	mg/L	0.2	1	06/20/13 4:15	aeb
Calcium, total	M200.7 ICP	1	44.5			mg/L	0.2	1	06/22/13 1:38	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:15	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:38	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:15	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:38	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:15	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:38	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:15	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:38	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	06/20/13 4:15	aeb
Iron, total	M200.7 ICP	1	0.02	B	*	mg/L	0.02	0.05	06/22/13 1:38	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 21:25	msh
Lead, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:42	pmc
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:15	aeb
Lithium, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:38	jjc
Magnesium, dissolved	M200.7 ICP	1	3.9			mg/L	0.2	1	06/20/13 4:15	aeb
Magnesium, total	M200.7 ICP	1	3.7			mg/L	0.2	1	06/22/13 1:38	jjc
Manganese, dissolved	M200.7 ICP	1		U	*	mg/L	0.005	0.03	06/20/13 4:15	aeb
Manganese, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:38	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:34	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 12:38	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:15	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:38	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:15	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:38	jjc
Potassium, dissolved	M200.7 ICP	1	4.6			mg/L	0.3	2	06/20/13 4:15	aeb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW1-E

ACZ Sample ID: ***L12661-01***
Date Sampled: *06/10/13 07:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	4.4			mg/L	0.3	2	06/22/13 1:38	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:15	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:38	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0003	06/18/13 19:03	msh
Selenium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/21/13 2:42	pmc
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/18/13 19:03	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/21/13 2:42	pmc
Sodium, dissolved	M200.7 ICP	1	9.5			mg/L	0.3	2	06/20/13 4:15	aeb
Sodium, total	M200.7 ICP	1	9.4			mg/L	0.3	2	06/22/13 1:38	jjc
Strontium, dissolved	M200.7 ICP	1	0.18		*	mg/L	0.01	0.05	06/20/13 4:15	aeb
Strontium, total	M200.7 ICP	1	0.17			mg/L	0.01	0.05	06/22/13 1:38	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:03	msh
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:42	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 4:15	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:38	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:15	aeb
Titanium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:38	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:03	msh
Uranium, total	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/21/13 2:42	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:15	aeb
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:38	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:15	aeb
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:38	jjc

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** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW1-E

ACZ Sample ID: ***L12661-01***
Date Sampled: *06/10/13 07:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	94		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	94		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			3.2			%			06/26/13 0:00	calc
Sum of Anions			3			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			3.2			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1	10	B	*	mg/L	10	20	06/24/13 11:42	abm
Chloride	SM4500Cl-E	1	6		*	mg/L	1	5	06/20/13 14:56	bsu
Conductivity @25C	SM2510B	1	296		*	umhos/cm	1	10	06/18/13 5:31	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:01	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 14:56	jlf
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/20/13 16:42	abm
Hardness as CaCO3	SM2340B - Calculation		131			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.23		*	mg/L	0.02	0.1	06/21/13 23:17	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	06/21/13 15:10	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.4	B	*	mg/L	0.1	0.5	06/22/13 15:40	pjb
pH (lab)	SM4500H+ B									
pH		1	8.2	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus		0.19			mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.06		*	mg/L	0.01	0.05	06/21/13 23:23	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.07	H	*	mg/L	0.01	0.05	06/13/13 18:37	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.06		*	mg/L	0.01	0.05	06/18/13 23:50	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	220		*	mg/L	10	20	06/14/13 12:49	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/13/13 14:49	mss3
Residue, Total (TS) @ 105C	SM2540B	1	220		*	mg/L	10	20	06/14/13 12:06	dcw
Sulfate	D516-02 - Turbidimetric	5	43		*	mg/L	5	30	06/22/13 11:39	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 15:51	abm
TDS (calculated)	Calculation		169			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.30						06/26/13 0:00	calc

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** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2-E

ACZ Sample ID: ***L12661-02***
Date Sampled: *06/10/13 08:20*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/21/13 10:15	bsu
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 11:54	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 16:40	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 14:45	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 14:44	mla
Total Hot Plate Digestion	M200.2 ICP								06/20/13 15:31	jjc
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 11:35	las

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2-E

ACZ Sample ID: ***L12661-02***
Date Sampled: *06/10/13 08:20*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/20/13 4:18	aeb
Aluminum, total	M200.7 ICP	1	0.15	B		mg/L	0.03	0.2	06/22/13 1:41	jjc
Antimony, dissolved	M200.8 ICP-MS	1	0.0011	B		mg/L	0.0004	0.002	06/18/13 19:06	msh
Antimony, total	M200.8 ICP-MS	1	0.0015	B		mg/L	0.0004	0.002	06/21/13 2:45	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0112			mg/L	0.0002	0.001	06/18/13 19:06	msh
Arsenic, total	M200.8 ICP-MS	1	0.0119			mg/L	0.0002	0.001	06/21/13 2:45	pmc
Barium, dissolved	M200.7 ICP	1	0.047			mg/L	0.003	0.02	06/20/13 4:18	aeb
Barium, total	M200.7 ICP	1	0.048			mg/L	0.003	0.02	06/22/13 1:41	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:18	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:41	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 4:18	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:41	jjc
Boron, dissolved	M200.7 ICP	1	0.12			mg/L	0.01	0.05	06/20/13 4:18	aeb
Boron, total	M200.7 ICP	1	0.10			mg/L	0.01	0.05	06/22/13 1:41	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:06	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:45	pmc
Calcium, dissolved	M200.7 ICP	1	320			mg/L	0.2	1	06/20/13 4:18	aeb
Calcium, total	M200.7 ICP	1	314			mg/L	0.2	1	06/22/13 1:41	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:18	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:41	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:18	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:41	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:18	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:41	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:18	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:41	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	06/20/13 4:18	aeb
Iron, total	M200.7 ICP	1	0.76			mg/L	0.02	0.05	06/22/13 1:41	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 21:35	msh
Lead, total	M200.8 ICP-MS	1	0.0004	B		mg/L	0.0001	0.0005	06/21/13 2:45	pmc
Lithium, dissolved	M200.7 ICP	1	0.08	B		mg/L	0.02	0.1	06/20/13 4:18	aeb
Lithium, total	M200.7 ICP	1	0.08	B		mg/L	0.02	0.1	06/22/13 1:41	jjc
Magnesium, dissolved	M200.7 ICP	1	26.3			mg/L	0.2	1	06/20/13 4:18	aeb
Magnesium, total	M200.7 ICP	1	26.4			mg/L	0.2	1	06/22/13 1:41	jjc
Manganese, dissolved	M200.7 ICP	1	0.389			mg/L	0.005	0.03	06/20/13 4:18	aeb
Manganese, total	M200.7 ICP	1	0.406			mg/L	0.005	0.03	06/22/13 1:41	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:36	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 12:45	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:18	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:41	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:18	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:41	jjc
Potassium, dissolved	M200.7 ICP	1	4.6			mg/L	0.3	2	06/20/13 4:18	aeb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2-E

ACZ Sample ID: *L12661-02*
Date Sampled: *06/10/13 08:20*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	4.6			mg/L	0.3	2	06/22/13 1:41	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:18	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:41	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/18/13 19:06	msh
Selenium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/21/13 2:45	pmc
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/18/13 19:06	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/21/13 2:45	pmc
Sodium, dissolved	M200.7 ICP	1	61.4			mg/L	0.3	2	06/20/13 4:18	aeb
Sodium, total	M200.7 ICP	1	57.9			mg/L	0.3	2	06/22/13 1:41	jjc
Strontium, dissolved	M200.7 ICP	1	3.49			mg/L	0.01	0.05	06/20/13 4:18	aeb
Strontium, total	M200.7 ICP	1	3.31			mg/L	0.01	0.05	06/22/13 1:41	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:06	msh
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:45	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 4:18	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:41	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:18	aeb
Titanium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:41	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/18/13 19:06	msh
Uranium, total	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/21/13 2:45	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:18	aeb
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:41	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:18	aeb
Zinc, total	M200.7 ICP	1	0.04	B		mg/L	0.01	0.05	06/22/13 1:41	jjc

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2-E

ACZ Sample ID: *L12661-02*
Date Sampled: *06/10/13 08:20*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	128		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	128		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.8			%			06/26/13 0:00	calc
Sum of Anions			22.3			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			21.1			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1		U	*	mg/L	10	20	06/24/13 12:06	abm
Chloride	SM4500Cl-E	1	43		*	mg/L	1	5	06/24/13 10:56	bsu
Conductivity @25C	SM2510B	1	1610		*	umhos/cm	1	10	06/18/13 5:40	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:11	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 14:59	jlf
Fluoride	SM4500F-C	1	1.2		*	mg/L	0.1	0.5	06/20/13 16:45	abm
Hardness as CaCO3	SM2340B - Calculation		908			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.09	B	*	mg/L	0.02	0.1	06/21/13 23:18	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	06/21/13 15:12	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/22/13 15:41	pjb
pH (lab)	SM4500H+ B									
pH		1	8.1	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/21/13 23:25	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.01	BH	*	mg/L	0.01	0.05	06/13/13 18:38	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/18/13 23:53	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1370		*	mg/L	10	20	06/14/13 12:50	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	6	B	*	mg/L	5	20	06/13/13 14:51	mss3
Residue, Total (TS) @ 105C	SM2540B	1	1380		*	mg/L	10	20	06/14/13 12:07	dcw
Sulfate	D516-02 - Turbidimetric	50	880		*	mg/L	50	300	06/22/13 12:18	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 15:55	abm
TDS (calculated)	Calculation		1420			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.96						06/26/13 0:00	calc

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** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2A-E

ACZ Sample ID: ***L12661-03***
Date Sampled: *06/10/13 09:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/21/13 10:31	bsu
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 12:01	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 16:50	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 10:59	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 15:01	mla
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 11:47	las
Total Hot Plate Digestion	M200.2 ICP								06/20/13 16:06	jjc

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** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2A-E

ACZ Sample ID: ***L12661-03***
Date Sampled: *06/10/13 09:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/20/13 4:22	aeb
Aluminum, total	M200.7 ICP	1	0.04	B		mg/L	0.03	0.2	06/22/13 1:51	jjc
Antimony, dissolved	M200.8 ICP-MS	1	0.0040			mg/L	0.0004	0.002	06/18/13 19:23	msh
Antimony, total	M200.8 ICP-MS	1	0.0050			mg/L	0.0004	0.002	06/21/13 2:48	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0091			mg/L	0.0002	0.001	06/18/13 19:23	msh
Arsenic, total	M200.8 ICP-MS	1	0.0087			mg/L	0.0002	0.001	06/21/13 2:48	pmc
Barium, dissolved	M200.7 ICP	1	0.046			mg/L	0.003	0.02	06/20/13 4:22	aeb
Barium, total	M200.7 ICP	1	0.049			mg/L	0.003	0.02	06/22/13 1:51	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:22	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:51	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 4:22	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:51	jjc
Boron, dissolved	M200.7 ICP	1	0.09			mg/L	0.01	0.05	06/20/13 4:22	aeb
Boron, total	M200.7 ICP	1	0.07			mg/L	0.01	0.05	06/22/13 1:51	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:23	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:48	pmc
Calcium, dissolved	M200.7 ICP	1	310			mg/L	0.2	1	06/20/13 4:22	aeb
Calcium, total	M200.7 ICP	1	319			mg/L	0.2	1	06/22/13 1:51	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:22	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:51	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:22	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:51	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:22	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:51	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:22	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:51	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	06/20/13 4:22	aeb
Iron, total	M200.7 ICP	1	0.04	B		mg/L	0.02	0.05	06/22/13 1:51	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 21:38	msh
Lead, total	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/21/13 2:48	pmc
Lithium, dissolved	M200.7 ICP	1	0.08	B		mg/L	0.02	0.1	06/20/13 4:22	aeb
Lithium, total	M200.7 ICP	1	0.08	B		mg/L	0.02	0.1	06/22/13 1:51	jjc
Magnesium, dissolved	M200.7 ICP	1	24.4			mg/L	0.2	1	06/20/13 4:22	aeb
Magnesium, total	M200.7 ICP	1	24.7			mg/L	0.2	1	06/22/13 1:51	jjc
Manganese, dissolved	M200.7 ICP	1	0.245			mg/L	0.005	0.03	06/20/13 4:22	aeb
Manganese, total	M200.7 ICP	1	0.240			mg/L	0.005	0.03	06/22/13 1:51	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:38	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 12:47	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:22	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:51	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:22	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:51	jjc
Potassium, dissolved	M200.7 ICP	1	6.0			mg/L	0.3	2	06/20/13 4:22	aeb

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** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2A-E

ACZ Sample ID: ***L12661-03***
Date Sampled: *06/10/13 09:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	6.8			mg/L	0.3	2	06/22/13 1:51	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:22	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:51	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	06/18/13 19:23	msh
Selenium, total	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	06/21/13 2:48	pmc
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/18/13 19:23	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/21/13 2:48	pmc
Sodium, dissolved	M200.7 ICP	1	59.4			mg/L	0.3	2	06/20/13 4:22	aeb
Sodium, total	M200.7 ICP	1	61.7			mg/L	0.3	2	06/22/13 1:51	jjc
Strontium, dissolved	M200.7 ICP	1	3.35			mg/L	0.01	0.05	06/20/13 4:22	aeb
Strontium, total	M200.7 ICP	1	3.43			mg/L	0.01	0.05	06/22/13 1:51	jjc
Thallium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/18/13 19:23	msh
Thallium, total	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/21/13 2:48	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 4:22	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:51	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:22	aeb
Titanium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:51	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/18/13 19:23	msh
Uranium, total	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/21/13 2:48	pmc
Vanadium, dissolved	M200.7 ICP	1	0.005	B		mg/L	0.005	0.03	06/20/13 4:22	aeb
Vanadium, total	M200.7 ICP	1	0.005	B		mg/L	0.005	0.03	06/22/13 1:51	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:22	aeb
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:51	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2A-E

ACZ Sample ID: ***L12661-03***
Date Sampled: *06/10/13 09:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	116		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	116		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-4.0			%			06/26/13 0:00	calc
Sum of Anions			22.1			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			20.4			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1		U	*	mg/L	10	20	06/24/13 12:13	abm
Chloride	SM4500Cl-E	1	38		*	mg/L	1	5	06/24/13 10:57	bsu
Conductivity @25C	SM2510B	1	1670		*	umhos/cm	1	10	06/18/13 5:49	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:13	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 15:00	jlf
Fluoride	SM4500F-C	1	1.2		*	mg/L	0.1	0.5	06/20/13 16:49	abm
Hardness as CaCO3	SM2340B - Calculation		875			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	1.75		*	mg/L	0.02	0.1	06/21/13 23:20	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.98		*	mg/L	0.05	0.5	06/21/13 15:16	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	1.0		*	mg/L	0.1	0.5	06/22/13 15:42	pjb
pH (lab)	SM4500H+ B									
pH		1	8.3	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/21/13 23:41	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.01	BH	*	mg/L	0.01	0.05	06/13/13 18:40	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/18/13 23:55	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1360		*	mg/L	10	20	06/14/13 12:52	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/13/13 14:52	mss3
Residue, Total (TS) @ 105C	SM2540B	1	1420		*	mg/L	10	20	06/14/13 12:09	dcw
Sulfate	D516-02 - Turbidimetric	50	890		*	mg/L	50	300	06/22/13 12:18	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 15:59	abm
TDS (calculated)	Calculation		1400			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.97						06/26/13 0:00	calc

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of Interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

REP001.09.12.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12661***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12661-01	WG346138	Aluminum, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346138	Iron, total	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345988	Manganese, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345799	Silver, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG345988	Strontium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	Q6	Sample was received above recommended temperature.
			M410.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346083	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346166	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346197	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12661***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345665	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345579	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
			SM2540B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12661***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12661-02	WG345799	Silver, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M410.4	Q6	Sample was received above recommended temperature.
	WG346247	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346167	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346197	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345665	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345579	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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Tahoe Resources, Inc. ACZ Project ID: ***L12661***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
			SM2540B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12661***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12661-03	WG345799	Silver, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M410.4	Q6	Sample was received above recommended temperature.
	WG346247	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346167	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346200	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345665	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345579	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
			SM2540B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12661***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW1-E

ACZ Sample ID: ***L12661-01***
Date Sampled: *06/10/13 7:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 16:02
Analysis Date: 06/17/13 15:47

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	93.4		1	*	%	70	130

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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW1-E

ACZ Sample ID: ***L12661-01***
Date Sampled: *06/10/13 7:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:10

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2-E

ACZ Sample ID: ***L12661-02***
Date Sampled: *06/10/13 8:20*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 16:03
Analysis Date: 06/17/13 16:13

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	91		1	*	%	70	130

ACZ Laboratories, Inc.
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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2-E

ACZ Sample ID: ***L12661-02***
Date Sampled: *06/10/13 8:20*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:11

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

REPOR.01.01.01.02 ** Please refer to Qualifier Reports for details.*

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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2A-E

ACZ Sample ID: ***L12661-03***
Date Sampled: *06/10/13 9:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 16:04
Analysis Date: 06/17/13 16:39

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	89.8		1	*	%	70	130

REPOR.01.01.01.02 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW2A-E

ACZ Sample ID: ***L12661-03***
Date Sampled: *06/10/13 9:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:12

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

REPOR.01.01.01.02 ** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
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Organic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
LCL	Lower Control Limit
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
UCL	Upper Control Limit
Sample	Value of the Sample of Interest

QC Sample Types

SURR	Surrogate	*LFM*	Laboratory Fortified Matrix
INTS	Internal Standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
LCSS	Laboratory Control Sample - Soil	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSW	Laboratory Control Sample - Water	*PBS*	Prep Blank - Soil
LFB	Laboratory Fortified Blank	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
O	Analyte concentration is estimated due to result exceeding calibration range.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
J	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
(3)	EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Excluding Oil & Grease, solid & biological matrices for organic analyses are reported on a wet weight basis.
(3)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(4)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualist.pdf

REP002.09.12.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Organic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12661***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12661-01	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.
L12661-02	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.
L12661-03	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.

ACZ Laboratories, Inc.
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Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: ***L12661***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Bismuth, dissolved	M200.7 ICP
Bismuth, total	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Gallium, total	M200.7 ICP
Scandium, dissolved	M200.7 ICP
Scandium, total	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Sulfide as S	SM4500S2-D

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID:	L12661
Date Received:	06/13/2013 08:36
Received By:	ksj
Date Printed:	6/13/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3379	13.8	13	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

REPAD LPII 2012-03

ACZ Laboratories, Inc. L12661
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador [illegible]
[illegible]
Telephone: (+502) 5457 5248

Copy of Report to:

Name: Charlie Muerhoff
Company: Tahoe Resources Inc.
E-mail: cmuerhoff@tahoeresources.com
Telephone:

Invoice to:

Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 Carretera antigua a El Salvador [illegible]
[illegible]
Telephone: (+502) 5457 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☐
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: [illegible] Sampler's site Information State Zip code Time Zone

PROJECT INFORMATION

Quote #: Water Quality
Project/PO #: Escobal
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

SAMPLE IDENTIFICATION	DATE:TIME		Matrix	# of Containers	SW
SW1-E	10/06/13	07:30	SW	10	✓
SW2-E	10/06/13	08:20	SW	10	✓
SW2A-E	10/06/13	09:30	SW	10	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE:TIME	RECEIVED BY:	DATE:TIME
Ronald Vaux	11/06/13 17:25	[illegible]	11/6/13 [illegible]
		[illegible] 6/13/13	08:36

L12661 Chain of Custody

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

Guatemala June 11th, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

June 26, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12663

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 13, 2013. This project has been assigned to ACZ's project number, L12663. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12663. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after July 26, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. June 26, 2013

Project ID: Escobal
ACZ Project ID: L12663

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 3 miscellaneous samples from Tahoe Resources, Inc. on June 13, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12663. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses except those qualified with an ACZ 'H' flag were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic and organic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Client samples were received at a temperature outside of the acceptable range (See Sample Receipt Form).

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW8-E

ACZ Sample ID: ***L12663-01***
Date Sampled: *06/10/13 11:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/21/13 10:46	bsu
Cyanide, WAD	SM4500-CN I- distillation								06/20/13 12:08	jlf
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 17:00	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 11:19	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 15:09	mla
Total Hot Plate Digestion	M200.2 ICP								06/20/13 16:18	jjc
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 11:59	las

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW8-E

ACZ Sample ID: ***L12663-01***
Date Sampled: *06/10/13 11:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/20/13 4:25	aeb
Aluminum, total	M200.7 ICP	1	0.25			mg/L	0.03	0.2	06/22/13 1:54	jjc
Antimony, dissolved	M200.8 ICP-MS	1	0.0023			mg/L	0.0004	0.002	06/18/13 19:27	msh
Antimony, total	M200.8 ICP-MS	1	0.0021			mg/L	0.0004	0.002	06/21/13 2:52	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0068			mg/L	0.0002	0.001	06/18/13 19:27	msh
Arsenic, total	M200.8 ICP-MS	1	0.0074			mg/L	0.0002	0.001	06/21/13 2:52	pmc
Barium, dissolved	M200.7 ICP	1	0.104			mg/L	0.003	0.02	06/20/13 4:25	aeb
Barium, total	M200.7 ICP	1	0.112			mg/L	0.003	0.02	06/22/13 1:54	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:25	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:54	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 4:25	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:54	jjc
Boron, dissolved	M200.7 ICP	1	0.05			mg/L	0.01	0.05	06/20/13 4:25	aeb
Boron, total	M200.7 ICP	1	0.05			mg/L	0.01	0.05	06/22/13 1:54	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:27	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:52	pmc
Calcium, dissolved	M200.7 ICP	1	160			mg/L	0.2	1	06/20/13 4:25	aeb
Calcium, total	M200.7 ICP	1	169			mg/L	0.2	1	06/22/13 1:54	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:25	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:54	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:25	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:54	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:25	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:54	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:25	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:54	jjc
Iron, dissolved	M200.7 ICP	1	0.08			mg/L	0.02	0.05	06/20/13 4:25	aeb
Iron, total	M200.7 ICP	1	0.56			mg/L	0.02	0.05	06/22/13 1:54	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 21:41	msh
Lead, total	M200.8 ICP-MS	1	0.0008			mg/L	0.0001	0.0005	06/21/13 2:52	pmc
Lithium, dissolved	M200.7 ICP	1	0.04	B		mg/L	0.02	0.1	06/20/13 4:25	aeb
Lithium, total	M200.7 ICP	1	0.04	B		mg/L	0.02	0.1	06/22/13 1:54	jjc
Magnesium, dissolved	M200.7 ICP	1	14.2			mg/L	0.2	1	06/20/13 4:25	aeb
Magnesium, total	M200.7 ICP	1	15.3			mg/L	0.2	1	06/22/13 1:54	jjc
Manganese, dissolved	M200.7 ICP	1	0.282			mg/L	0.005	0.03	06/20/13 4:25	aeb
Manganese, total	M200.7 ICP	1	0.304			mg/L	0.005	0.03	06/22/13 1:54	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:40	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 12:49	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:25	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:54	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:25	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:54	jjc
Potassium, dissolved	M200.7 ICP	1	9.9			mg/L	0.3	2	06/20/13 4:25	aeb

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW8-E

ACZ Sample ID: ***L12663-01***
Date Sampled: *06/10/13 11:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	9.6			mg/L	0.3	2	06/22/13 1:54	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:25	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:54	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0003	06/18/13 19:27	msh
Selenium, total	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0003	06/21/13 2:52	pmc
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/18/13 19:27	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/21/13 2:52	pmc
Sodium, dissolved	M200.7 ICP	1	40.0			mg/L	0.3	2	06/20/13 4:25	aeb
Sodium, total	M200.7 ICP	1	42.6			mg/L	0.3	2	06/22/13 1:54	jjc
Strontium, dissolved	M200.7 ICP	1	1.71			mg/L	0.01	0.05	06/20/13 4:25	aeb
Strontium, total	M200.7 ICP	1	1.81			mg/L	0.01	0.05	06/22/13 1:54	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:27	msh
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:52	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 4:25	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:54	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:25	aeb
Titanium, total	M200.7 ICP	1	0.008	B		mg/L	0.005	0.03	06/22/13 1:54	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/18/13 19:27	msh
Uranium, total	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/21/13 2:52	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:25	aeb
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:54	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:25	aeb
Zinc, total	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	06/22/13 1:54	jjc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW8-E

ACZ Sample ID: ***L12663-01***
Date Sampled: *06/10/13 11:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	110		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	110		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.1			%			06/26/13 0:00	calc
Sum of Anions			11.9			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			11.4			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1	30		*	mg/L	10	20	06/24/13 12:21	abm
Chloride	SM4500CI-E	1	22		*	mg/L	1	5	06/24/13 10:57	bsu
Conductivity @25C	SM2510B	1	1010		*	umhos/cm	1	10	06/18/13 5:58	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:15	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 15:01	jlf
Fluoride	SM4500F-C	1	0.5		*	mg/L	0.1	0.5	06/20/13 16:52	abm
Hardness as CaCO3	SM2340B - Calculation		458			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	2.00		*	mg/L	0.02	0.1	06/21/13 23:23	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	1.60		*	mg/L	0.05	0.5	06/21/13 15:17	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	3.3		*	mg/L	0.1	0.5	06/22/13 15:44	pjb
pH (lab)	SM4500H+ B									
pH		1	8.0	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus		0.99			mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.32		*	mg/L	0.01	0.05	06/21/13 23:44	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.27	H	*	mg/L	0.01	0.05	06/13/13 18:42	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.59		*	mg/L	0.01	0.05	06/18/13 23:56	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	780		*	mg/L	10	20	06/14/13 12:53	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	6	B	*	mg/L	5	20	06/13/13 14:54	mss3
Residue, Total (TS) @ 105C	SM2540B	1	810		*	mg/L	10	20	06/14/13 12:10	dcw
Sulfate	D516-02 - Turbidimetric	20	430		*	mg/L	20	100	06/22/13 12:06	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 16:11	abm
TDS (calculated)	Calculation		746			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.05						06/26/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW9-E

ACZ Sample ID: ***L12663-02***
Date Sampled: *06/11/13 10:10*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/21/13 10:54	bsu
Cyanide, WAD	SM4500-CN I- distillation								06/21/13 12:53	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 17:10	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 11:39	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 15:18	mla
Total Hot Plate Digestion	M200.2 ICP								06/20/13 16:29	jjc
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 12:11	las

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW9-E

ACZ Sample ID: ***L12663-02***
Date Sampled: *06/11/13 10:10*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/20/13 4:34	aeb
Aluminum, total	M200.7 ICP	1	1.20			mg/L	0.03	0.2	06/22/13 1:57	jjc
Antimony, dissolved	M200.8 ICP-MS	1	0.0008	B		mg/L	0.0004	0.002	06/18/13 19:30	msh
Antimony, total	M200.8 ICP-MS	1	0.0007	B		mg/L	0.0004	0.002	06/21/13 2:55	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0045			mg/L	0.0002	0.001	06/18/13 19:30	msh
Arsenic, total	M200.8 ICP-MS	1	0.0047			mg/L	0.0002	0.001	06/21/13 2:55	pmc
Barium, dissolved	M200.7 ICP	1	0.095			mg/L	0.003	0.02	06/20/13 4:34	aeb
Barium, total	M200.7 ICP	1	0.107			mg/L	0.003	0.02	06/22/13 1:57	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:34	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:57	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 4:34	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 1:57	jjc
Boron, dissolved	M200.7 ICP	1	0.10			mg/L	0.01	0.05	06/20/13 4:34	aeb
Boron, total	M200.7 ICP	1	0.09			mg/L	0.01	0.05	06/22/13 1:57	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:30	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:55	pmc
Calcium, dissolved	M200.7 ICP	1	67.7			mg/L	0.2	1	06/20/13 4:34	aeb
Calcium, total	M200.7 ICP	1	67.0			mg/L	0.2	1	06/22/13 1:57	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:34	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:57	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:34	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:57	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:34	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:57	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:34	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:57	jjc
Iron, dissolved	M200.7 ICP	1	0.02	B		mg/L	0.02	0.05	06/20/13 4:34	aeb
Iron, total	M200.7 ICP	1	0.89			mg/L	0.02	0.05	06/22/13 1:57	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 21:45	msh
Lead, total	M200.8 ICP-MS	1	0.0015			mg/L	0.0001	0.0005	06/21/13 2:55	pmc
Lithium, dissolved	M200.7 ICP	1	0.04	B		mg/L	0.02	0.1	06/20/13 4:34	aeb
Lithium, total	M200.7 ICP	1	0.04	B		mg/L	0.02	0.1	06/22/13 1:57	jjc
Magnesium, dissolved	M200.7 ICP	1	8.5			mg/L	0.2	1	06/20/13 4:34	aeb
Magnesium, total	M200.7 ICP	1	8.5			mg/L	0.2	1	06/22/13 1:57	jjc
Manganese, dissolved	M200.7 ICP	1	0.091			mg/L	0.005	0.03	06/20/13 4:34	aeb
Manganese, total	M200.7 ICP	1	0.159			mg/L	0.005	0.03	06/22/13 1:57	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:42	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 12:51	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:34	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 1:57	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:34	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:57	jjc
Potassium, dissolved	M200.7 ICP	1	6.4			mg/L	0.3	2	06/20/13 4:34	aeb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW9-E

ACZ Sample ID: ***L12663-02***
Date Sampled: *06/11/13 10:10*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Potassium, total	M200.7 ICP	1	6.4			mg/L	0.3	2	06/22/13 1:57	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:34	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 1:57	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/18/13 19:30	msh
Selenium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/21/13 2:55	pmc
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/18/13 19:30	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/21/13 2:55	pmc
Sodium, dissolved	M200.7 ICP	1	25.9			mg/L	0.3	2	06/20/13 4:34	aeb
Sodium, total	M200.7 ICP	1	26.2			mg/L	0.3	2	06/22/13 1:57	jjc
Strontium, dissolved	M200.7 ICP	1	0.66			mg/L	0.01	0.05	06/20/13 4:34	aeb
Strontium, total	M200.7 ICP	1	0.65			mg/L	0.01	0.05	06/22/13 1:57	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/18/13 19:30	msh
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 2:55	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 4:34	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 1:57	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:34	aeb
Titanium, total	M200.7 ICP	1	0.039			mg/L	0.005	0.03	06/22/13 1:57	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/18/13 19:30	msh
Uranium, total	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/21/13 2:55	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:34	aeb
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 1:57	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:34	aeb
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 1:57	jjc

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW9-E

ACZ Sample ID: ***L12663-02***
Date Sampled: *06/11/13 10:10*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	77		*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1	77		*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.7			%			06/26/13 0:00	calc
Sum of Anions			5.7			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations			5.4			meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1	10	B	*	mg/L	10	20	06/24/13 12:29	abm
Chloride	SM4500Cl-E	1	21		*	mg/L	1	5	06/24/13 10:57	bsu
Conductivity @25C	SM2510B	1	531		*	umhos/cm	1	10	06/18/13 6:07	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:16	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:45	jlf
Fluoride	SM4500F-C	1	0.2	B	*	mg/L	0.1	0.5	06/20/13 16:56	abm
Hardness as CaCO3	SM2340B - Calculation		204			mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	1.22		*	mg/L	0.02	0.1	06/21/13 23:24	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.05	B	*	mg/L	0.05	0.5	06/21/13 15:18	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.4	B	*	mg/L	0.1	0.5	06/22/13 15:45	pjb
pH (lab)	SM4500H+ B									
pH		1	8.2	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus		0.28			mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.09		*	mg/L	0.01	0.05	06/21/13 23:46	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.10	H	*	mg/L	0.01	0.05	06/13/13 18:44	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.15		*	mg/L	0.01	0.05	06/18/13 23:59	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	390		*	mg/L	10	20	06/14/13 12:54	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	18	B	*	mg/L	5	20	06/13/13 14:56	mss3
Residue, Total (TS) @ 105C	SM2540B	1	420		*	mg/L	10	20	06/14/13 12:12	dcw
Sulfate	D516-02 - Turbidimetric	5	167		*	mg/L	5	30	06/22/13 11:57	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 16:15	abm
TDS (calculated)	Calculation		344			mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.13						06/26/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW10-E

ACZ Sample ID: ***L12663-03***
Date Sampled: *06/11/13 13:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/21/13 11:02	bsu
Cyanide, WAD	SM4500-CN I- distillation								06/21/13 13:00	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/20/13 17:20	mpb
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/21/13 11:48	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/18/13 15:26	mla
Total Hot Plate Digestion	M200.2 ICP								06/20/13 16:41	jjc
Total Hot Plate Digestion	M200.2 ICP-MS								06/20/13 12:23	las

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW10-E

ACZ Sample ID: ***L12663-03***
Date Sampled: *06/11/13 13:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	06/20/13 4:37	aeb
Aluminum, total	M200.7 ICP	1		U		mg/L	0.03	0.2	06/22/13 2:06	jjc
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/18/13 19:34	msh
Antimony, total	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/21/13 3:04	pmc
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	06/18/13 19:34	msh
Arsenic, total	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	06/21/13 3:04	pmc
Barium, dissolved	M200.7 ICP	1		U		mg/L	0.003	0.02	06/20/13 4:37	aeb
Barium, total	M200.7 ICP	1		U		mg/L	0.003	0.02	06/22/13 2:06	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:37	aeb
Beryllium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 2:06	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/20/13 4:37	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/22/13 2:06	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:37	aeb
Boron, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 2:06	jjc
Cadmium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/18/13 19:34	msh
Cadmium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 3:04	pmc
Calcium, dissolved	M200.7 ICP	1		U		mg/L	0.2	1	06/20/13 4:37	aeb
Calcium, total	M200.7 ICP	1		U		mg/L	0.2	1	06/22/13 2:06	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:37	aeb
Chromium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 2:06	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:37	aeb
Cobalt, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 2:06	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:37	aeb
Copper, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 2:06	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:37	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 2:06	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	06/20/13 4:37	aeb
Iron, total	M200.7 ICP	1		U		mg/L	0.02	0.05	06/22/13 2:06	jjc
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/19/13 21:55	msh
Lead, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 3:04	pmc
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:37	aeb
Lithium, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 2:06	jjc
Magnesium, dissolved	M200.7 ICP	1		U		mg/L	0.2	1	06/20/13 4:37	aeb
Magnesium, total	M200.7 ICP	1		U		mg/L	0.2	1	06/22/13 2:06	jjc
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:37	aeb
Manganese, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 2:06	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 11:45	mfm
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/19/13 12:53	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/20/13 4:37	aeb
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/22/13 2:06	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:37	aeb
Nickel, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 2:06	jjc
Potassium, dissolved	M200.7 ICP	1		U		mg/L	0.3	2	06/20/13 4:37	aeb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW10-E

ACZ Sample ID: L12663-03
Date Sampled: 06/11/13 13:00
Date Received: 06/13/13
Sample Matrix: Surface Water

Potassium, total	M200.7 ICP	1		U		mg/L	0.3	2	06/22/13 2:06	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/20/13 4:37	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/22/13 2:06	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/18/13 19:34	msh
Selenium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/21/13 3:04	pmc
Silver, dissolved	M200.8 ICP-MS	1	0.00006	B		mg/L	0.00005	0.0003	06/18/13 19:34	msh
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/21/13 3:04	pmc
Sodium, dissolved	M200.7 ICP	1		U		mg/L	0.3	2	06/20/13 4:37	aeb
Sodium, total	M200.7 ICP	1		U		mg/L	0.3	2	06/22/13 2:06	jjc
Strontium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:37	aeb
Strontium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 2:06	jjc
Thallium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/18/13 19:34	msh
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 3:04	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/20/13 4:37	aeb
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/22/13 2:06	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:37	aeb
Titanium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 2:06	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/18/13 19:34	msh
Uranium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/21/13 3:04	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/20/13 4:37	aeb
Vanadium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/22/13 2:06	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/20/13 4:37	aeb
Zinc, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/22/13 2:06	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW10-E

ACZ Sample ID: ***L12663-03***
Date Sampled: *06/11/13 13:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Total Alkalinity		1		U	*	mg/L	2	20	06/18/13 0:00	ljr
Cation-Anion Balance	Calculation									
Cation-Anion Balance			n/a			%			06/26/13 0:00	calc
Sum of Anions			N/A			meq/L	0.1	0.5	06/26/13 0:00	calc
Sum of Cations				U		meq/L	0.1	0.5	06/26/13 0:00	calc
Chemical Oxygen Demand	M410.4	1		U	*	mg/L	10	20	06/24/13 12:37	abm
Chloride	SM4500Cl-E	1		U	*	mg/L	1	5	06/24/13 10:57	bsu
Conductivity @25C	SM2510B	1	1	B	*	umhos/cm	1	10	06/18/13 6:12	ljr
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:17	jlf
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/21/13 16:46	jlf
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/20/13 17:03	abm
Hardness as CaCO3	SM2340B - Calculation			U		mg/L	1	7	06/26/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/21/13 23:25	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	06/21/13 15:20	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/22/13 15:46	pjb
pH (lab)	SM4500H+ B									
pH		1	6.3	H	*	units	0.1	0.1	06/18/13 0:00	ljr
pH measured at		1	21.0		*	C	0.1	0.1	06/18/13 0:00	ljr
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	06/26/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/21/13 23:47	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1		UH	*	mg/L	0.01	0.05	06/13/13 18:45	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/19/13 0:01	pjb
Residue, Filterable (TDS) @180C	SM2540C	1		U	*	mg/L	10	20	06/14/13 12:56	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/13/13 14:58	mss3
Residue, Total (TS) @ 105C	SM2540B	1		U	*	mg/L	10	20	06/14/13 12:13	dcw
Sulfate	D516-02 - Turbidimetric	1		U	*	mg/L	1	5	06/22/13 11:51	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/17/13 16:19	abm
TDS (calculated)	Calculation			U		mg/L	10	50	06/26/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		n/a						06/26/13 0:00	calc

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** Please refer to Qualifier Reports for details.*

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Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of Interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualist.pdf

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12663***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12663-01	WG345799	Silver, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M410.4	Q6	Sample was received above recommended temperature.
	WG346247	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346167	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346165	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346200	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345665	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345579	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
			SM2540B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: L12663

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12663***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12663-02	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M410.4	Q6	Sample was received above recommended temperature.
	WG346247	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346167	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346178	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346200	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to Item C5 of ACZ's Terms & Conditions).
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345665	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345579	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
			SM2540B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12663***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12663***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12663-03	WG345784	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346232	Chemical Oxygen Demand	M410.4	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M410.4	Q6	Sample was received above recommended temperature.
	WG346247	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG345784	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346167	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346178	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346052	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346198	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346161	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346211	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346200	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG345594	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to Item C5 of ACZ's Terms & Conditions).
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345918	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345665	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG345579	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345659	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
			SM2540B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: L12663

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG346206	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG345762	Sulfide as S	SM4500S2-D	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG345784	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

REPAD.15.06.05.01

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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW8-E

ACZ Sample ID: *L12663-01*
Date Sampled: *06/10/13 11:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 16:06
Analysis Date: 06/17/13 17:05

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		0.1	J	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	81.3		1	*	%	70	130

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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW8-E

ACZ Sample ID: *L12663-01*
Date Sampled: *06/10/13 11:30*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:13

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW9-E

ACZ Sample ID: ***L12663-02***
Date Sampled: *06/11/13 10:10*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 16:07
Analysis Date: 06/17/13 17:31

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5

Surrogate Recoveries	CAS	% Recovery	Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	91.6	1	*	%	70	130

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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW9-E

ACZ Sample ID: ***L12663-02***
Date Sampled: *06/11/13 10:10*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:14

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW10-E

ACZ Sample ID: ***L12663-03***
Date Sampled: *06/11/13 13:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

Workgroup: WG345720
Analyst: jad
Extract Date: 06/13/13 16:08
Analysis Date: 06/17/13 17:58

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	1	*	mg/L	0.1	0.5
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	92.9		1	*	%	70	130

REPOR.01.01.01.02 ** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
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Organic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW10-E

ACZ Sample ID: ***L12663-03***
Date Sampled: *06/11/13 13:00*
Date Received: *06/13/13*
Sample Matrix: *Surface Water*

Oil & Grease, Total Recoverable

Analysis Method: **1664A - Gravimetric**
Extract Method:

Workgroup: WG346078
Analyst: dsg
Extract Date:
Analysis Date: 06/20/13 2:15

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Oil and Grease			U	1.01	*	mg/L	2.02	10.1

REPOR.01.01.01.02 ** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
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Organic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
LCL	Lower Control Limit
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
UCL	Upper Control Limit
Sample	Value of the Sample of Interest

QC Sample Types

SURR	Surrogate	*LFM*	Laboratory Fortified Matrix
INTS	Internal Standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
LCSS	Laboratory Control Sample - Soil	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSW	Laboratory Control Sample - Water	*PBS*	Prep Blank - Soil
LFB	Laboratory Fortified Blank	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
O	Analyte concentration is estimated due to result exceeding calibration range.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
J	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
(3) EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Excluding Oil & Grease, solid & biological matrices for organic analyses are reported on a wet weight basis.
(3) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(4) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

REP002.09.12.01

ACZ Laboratories, Inc.
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Organic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12663***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12663-01	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.
L12663-02	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.
L12663-03	WG345720	"All Compounds"	M8015D GC/FID	Q6	Sample was received above recommended temperature.
			M8015D GC/FID	Q9	Insufficient sample received to meet method QC requirements.
	WG346078	Oil and Grease	1664A - Gravimetric	Q6	Sample was received above recommended temperature.
			1664A - Gravimetric	Q9	Insufficient sample received to meet method QC requirements.
	WG345582	"All Compounds"	M3520	Q9	Insufficient sample received to meet method QC requirements.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
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Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: *L12663*

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Bismuth, dissolved	M200.7 ICP
Bismuth, total	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Gallium, total	M200.7 ICP
Scandium, dissolved	M200.7 ICP
Scandium, total	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Sulfide as S	SM4500S2-D

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12663
Date Received: 06/13/2013 08:37
Received By: ksj
Date Printed: 6/13/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2328	14.2	14	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

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ACZ Laboratories, Inc. L12663 — **CHAIN of CUSTODY**

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Miguel Berganza — Address: Km. 26 carretera antigua a El Salvador, [illegible]
Company: Tahoe Resources Inc — [illegible]
E-mail: MBerganza@sanrafael.com.gt — Telephone: (+502) 59515248

Copy of Report to:

Name: Charlie Ottenhoff — E-mail: cmeriaff@sanrafael.com.gt
Company: Tahoe Resources Inc. — Telephone:

Invoice to:

Name: Miguel Berganza — Address: Km. 26 carretera antigua a El Salvador, [illegible]
Company: Tahoe Resources Inc. — [illegible]
E-mail: MBerganza@sanrafael.com.gt — Telephone: (+502) 59515248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☐
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernando Puentes Sampler's site Information State Zip code Time Zone

PROJECT INFORMATION

Quote #: Water Security
Project/PO #: Escobal
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

SAMPLE IDENTIFICATION	DATE	TIME	Matrix	# of Containers	SW
SW8-E	10/06/13	11:30	SW	10	✓
SW9-E	11/06/13	10:10	SW	10	✓
SW10-E	11/06/13	13:00	SW	10	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME
Ronald Paez	11/06/13 17:25	Fuentes	11/6/13 17:[illegible]
		[illegible] 6/13/13 8:32	

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

L12663 Chain of Custody

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Guatemala June 11th, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 02, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12876

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 21, 2013. This project has been assigned to ACZ's project number, L12876. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12876. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 01, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. July 02, 2013

Project ID: Escobal
ACZ Project ID: L12876

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 2 miscellaneous samples from Tahoe Resources, Inc. on June 21, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12876. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Client samples were received at a temperature outside of the acceptable range (See Sample Receipt Form).

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW12

ACZ Sample ID: ***L12876-01***
Date Sampled: *06/18/13 19:00*
Date Received: *06/21/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS								06/27/13 13:17	las
Total Hot Plate Digestion	M200.2 ICP								06/27/13 18:45	aeb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total	M200.7 ICP	1	0.08	B		mg/L	0.03	0.2	06/29/13 5:57	aeb
Antimony, total	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	07/01/13 20:26	pmc
Arsenic, total	M200.8 ICP-MS	1	0.0217			mg/L	0.0002	0.001	07/01/13 20:26	pmc
Barium, total	M200.7 ICP	1		U		mg/L	0.003	0.02	06/29/13 5:57	aeb
Beryllium, total	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	06/29/13 5:57	aeb
Bismuth, total	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 5:57	aeb
Boron, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 5:57	aeb
Cadmium, total	M200.8 ICP-MS	1	0.0053			mg/L	0.0001	0.0005	07/01/13 20:26	pmc
Calcium, total	M200.7 ICP	1		U		mg/L	0.2	1	06/29/13 5:57	aeb
Chromium, total	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 5:57	aeb
Cobalt, total	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	06/29/13 5:57	aeb
Copper, total	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 5:57	aeb
Gallium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 5:57	aeb
Iron, total	M200.7 ICP	1	0.03	B		mg/L	0.02	0.05	06/29/13 5:57	aeb
Lead, total	M200.8 ICP-MS	1	0.0218			mg/L	0.0001	0.0005	07/01/13 20:26	pmc
Lithium, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 5:57	aeb
Magnesium, total	M200.7 ICP	1		U		mg/L	0.2	1	06/29/13 5:57	aeb
Manganese, total	M200.7 ICP	1	0.015	B		mg/L	0.005	0.03	06/29/13 5:57	aeb
Mercury, total	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 12:51	mfm
Molybdenum, total	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 5:57	aeb
Nickel, total	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	06/29/13 5:57	aeb
Potassium, total	M200.7 ICP	1		U		mg/L	0.3	2	06/29/13 5:57	aeb
Scandium, total	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 5:57	aeb
Selenium, total	M200.8 ICP-MS	1	0.0053			mg/L	0.0001	0.0003	07/01/13 20:26	pmc
Silver, total	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	07/01/13 20:26	pmc
Sodium, total	M200.7 ICP	1		U		mg/L	0.3	2	06/29/13 5:57	aeb
Strontium, total	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 5:57	aeb
Thallium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/01/13 20:26	pmc
Tin, total	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 5:57	aeb
Titanium, total	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 5:57	aeb
Uranium, total	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/01/13 20:26	pmc
Vanadium, total	M200.7 ICP	1	0.051			mg/L	0.005	0.03	06/29/13 5:57	aeb
Zinc, total	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	06/29/13 5:57	aeb

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SW12A

ACZ Sample ID: ***L12876-02***
Date Sampled: *06/18/13 19:15*
Date Received: *06/21/13*
Sample Matrix: *Surface Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	M245.1 CVAA	1	0.0004	B		mg/L	0.0002	0.001	06/28/13 12:54	mfm

REPIN.02.06.05.01

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of Interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of Interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

REP001.09.12.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12876***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

REPAD.15.06.05.01

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: *L12876*

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bismuth, total	M200.7 ICP
Gallium, total	M200.7 ICP
Scandium, total	M200.7 ICP

REPAD.05.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12876
Date Received: 06/21/2013 10:02
Received By: gac
Date Printed: 6/24/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

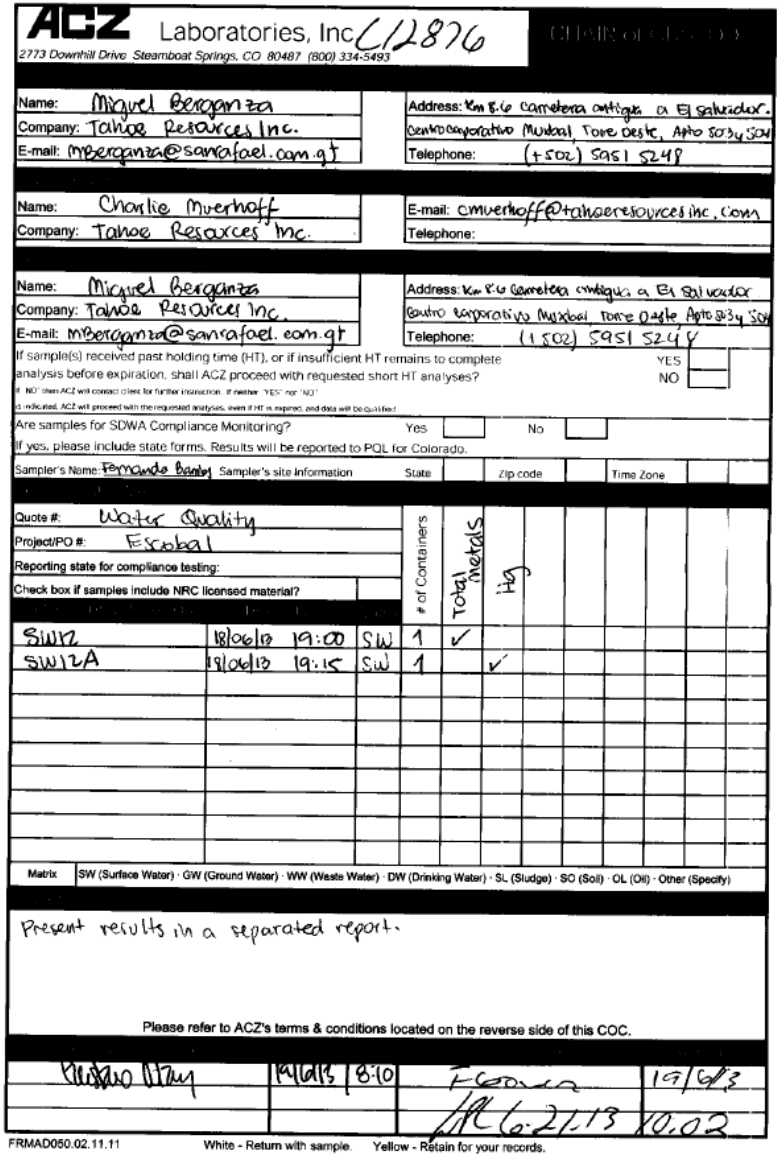
Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3279	16.8	12	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

REPAD LPII 2012-03



ACZ Laboratories, Inc L12876

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: Miguel Berganza	Address: Km 8.6 carretera antigua a El salvador.
Company: Tahoe Resources Inc.	Centro corporativo Murloal, Torre Oeste, Apto 503 y 504
E-mail: MBerganza@sanrafael.com.gt	Telephone: (+502) 5951 5248
Name: Charlie Muerhoff	E-mail: cmuerhoff@tahoeresources inc. com
Company: Tahoe Resarces Inc.	Telephone:
Name: Miguel Berganza	Address: Km 8.6 Carretera antigua a El Salvador
Company: Tahoe Resources Inc.	Centro corporativo Murloal Torre Oeste Apto 503 y 504
E-mail: MBerganza@sanrafael.com.gt	Telephone: (1502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES / NO

If 'NO' then ACZ will contact client for further instruction. If neither 'YES' nor 'NO' is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes / No

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernando Bamby Sampler's site Information State Zip code Time Zone

Quote #: Water Quality

Project/PO #: Escobal

Reporting state for compliance testing:

Check box if samples include NRC licensed material?

			# of Containers	Total metals	Hg						
SW12	18/06/13	19:00	SW	1	✓						
SW12A	19/06/13	19:15	SW	1		✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Present results in a separated report.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

[illegible]	19/06/13	8:10	19/6/13
			6.21.13 10.02

L12876 Chain of Custody

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

Page 9 of 10

Guatemala June 19th, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

Page 10 of 10

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 876-13
Pág 1/1

REG 016 Resultados de Análisis

Muestras: 7 muestras de agua
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 100613
Fecha de ingreso de muestra: 110613
Fecha de análisis: 110613-200613
Fecha del informe: 200613

Resultados:

Correlativo Ecosistemas	Identificación de la Muestra	Color Aparente (UC HZ equiv. Unid. Pt-Co)	Color Real (UC HZ equiv. Unid. Pt-Co)	Demanda Bioquímica de Oxigeno DBO_5 mg/L	* Demanda Química de Oxigeno DQO mg/L	Cromo Hexavalente Cr(VI) mg/L	** Coliformes Fecales (NMP/100ml)
1400	SW1-E	18	11	< 10	< 25	N.D.	540
1401	SW2-E	3	< 1	< 10	< 25	N.D.	23
1402	SW7-E	66	12	< 10	< 25	N.D.	1.6×10^3
1403	SW8-E	158	13	17	30	N.D.	1.7×10^3
1404	SW2A-E	7	< 1	< 10	< 25	N.D.	49
1405	SW4A-E	6	< 1	< 10	< 25	N.D.	23
1406	SW11-E	7	< 1	< 10	< 25	N.D.	94

Notas:
Captación de muestras: Las muestras fueron captadas por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigeración.
Metodología: Espectrofotométricos / SMWW: Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977.
Fotométricos Merck. NMP: Número Mas Probable.
N.D. No detectable. Debajo del límite de detección.
Límites de detección: Cromo hexavalente (0.05 mg/L)
Los resultados obtenidos corresponden únicamente a las muestras recibidas por el personal de Ecosistemas Proyectos Ambientales.

** **Análisis acreditado COGUANOR NGR/COPANT/ISO/IEC 17025 según OGA LE 006-04***
*** Análisis referidos.*

Ing. Fernando Fuentes
Gerente Técnico

teléfono / fax: (502) 2254 6156 - 2254 8268 - 5512 1821
laboratorio@ecosistemas.com.gt • info@ecosistemas.com.gt
www.ecosistemas.com.gt

laboratorio ambiental e industrial
acreditado ISO 17025 según OGA-LE 006-04

ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 878-13
Pág 1/1

REG 016 Resultados de Análisis

Muestras: 6 muestras de agua
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 110613
Fecha de ingreso de muestra: 120613
Fecha de análisis: 120613-200613
Fecha del informe: 200613

Resultados:

Correlativo Ecosistemas	Identificación de la Muestra	Color Aparente (LC HZ equiv. Unid. Pt-Co)	Color Real (UC HZ equiv. Unid. Pt-Co)	Demanda Bioquímica de Oxigeno DBO_5 mg/L	* Demanda Química de Oxigeno DQO mg/L	Cromo Hexavalente Cr(VI) mg/L	** Coliformes Fecales (NMP/100ml)
1411	SW3-E	74	14	< 10	< 25	N.D.	540
1412	SW4-E	9	< 1	< 10	< 25	N.D.	1.6×10^4
1413	SW5-E	62	19	< 10	< 25	N.D.	700
1414	SW6-E	74	21	< 10	< 25	N.D.	540
1415	SW9-E	92	13	< 10	< 25	N.D.	1.6×10^4
1416	SW10-E	< 1	< 1	< 10	< 25	N.D.	< 2

Notas:
Captación de muestras: Las muestras fueron captadas por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigeración.
Metodología: Espectrofotométricos / SMWW: Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977.
Fotométricos Merck. NMP: Número Mas Probable.
N.D. No detectable. Debajo del límite de detección.
Límites de detección: Cromo hexavalente (0.05 mg/L)
Los resultados obtenidos corresponden únicamente a las muestras recibidas por el personal de Ecosistemas Proyectos Ambientales.

** **Análisis acreditado COGUANOR NGR/COPANT/ISO/IEC 17025 según OGA LE 006-04***
*** Análisis referidos.*

Ing. Fernando Fuentes
Gerente Técnico

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acreditado ISO 17025 según OGA-LE 006-04

12.4.2. Muestras de Agua Subterranea (GW), y pozos de monitoreo (MW)

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 03, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12865

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 21, 2013. This project has been assigned to ACZ's project number, L12865. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12865. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 02, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. July 03, 2013

Project ID: Escobal
ACZ Project ID: L12865

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 2 ground water samples from Tahoe Resources, Inc. on June 21, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12865. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses except those qualified with an ACZ 'H' flag were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Client samples were received at a temperature outside of the acceptable range (See Sample Receipt Form).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW11

ACZ Sample ID: ***L12865-01***
Date Sampled: *06/17/13 10:40*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 10:09	mla
Cyanide, WAD	SM4500-CN I- distillation								06/26/13 23:30	pmc
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 4:51	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/27/13 12:06	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 11:34	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 17:07	aeb
Antimony, dissolved	M200.8 ICP-MS	1	0.0005	B		mg/L	0.0004	0.002	06/28/13 17:00	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0026			mg/L	0.0002	0.001	06/28/13 17:00	las
Barium, dissolved	M200.7 ICP	1	0.365			mg/L	0.003	0.02	06/29/13 7:02	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:02	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:02	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/01/13 17:07	aeb
Cadmium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/28/13 17:00	las
Calcium, dissolved	M200.7 ICP	1	106			mg/L	0.2	1	06/29/13 7:02	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:02	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:02	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:02	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:02	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	07/01/13 17:07	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:00	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:02	jjc
Magnesium, dissolved	M200.7 ICP	1	17.3			mg/L	0.2	1	06/29/13 7:02	jjc
Manganese, dissolved	M200.7 ICP	1	0.610			mg/L	0.005	0.03	06/29/13 7:02	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 13:57	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:02	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:02	jjc
Potassium, dissolved	M200.7 ICP	1	10.4			mg/L	0.3	2	06/29/13 7:02	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:02	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/28/13 17:00	las
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/28/13 17:00	las
Sodium, dissolved	M200.7 ICP	1	32.0			mg/L	0.3	2	06/29/13 7:02	jjc
Strontium, dissolved	M200.7 ICP	1	0.56			mg/L	0.01	0.05	06/29/13 7:02	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:00	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:02	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:02	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/28/13 17:00	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:02	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:02	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

Page 3 of 15

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW11

ACZ Sample ID: ***L12865-01***
Date Sampled: *06/17/13 10:40*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	125		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	125		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			07/03/13 15:12	calc
Sum of Anions			8.5			meq/L	0.1	0.5	07/03/13 15:12	calc
Sum of Cations			8.5			meq/L	0.1	0.5	07/03/13 15:12	calc
Chloride	SM4500Cl-E	1	5		*	mg/L	1	5	06/27/13 16:13	bsu
Conductivity @25C	SM2510B	1	748		*	umhos/cm	1	10	06/22/13 1:14	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:11	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 13:12	bsu
Fluoride	SM4500F-C	1	0.3	B	*	mg/L	0.1	0.5	06/27/13 18:32	abm
Hardness as CaCO3	SM2340B - Calculation		336			mg/L	1	7	07/03/13 15:12	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	2.51		*	mg/L	0.02	0.1	06/29/13 15:54	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 16:40	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/30/13 11:31	bsu
pH (lab)	SM4500H+ B									
pH		1	7.7	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.06	B		mg/L	0.03	0.15	07/03/13 15:12	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.02	B	*	mg/L	0.01	0.05	06/27/13 23:32	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	06/21/13 19:53	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	06/28/13 21:28	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	600		*	mg/L	10	20	06/22/13 12:54	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/21/13 16:04	mss3
Residue, Total (TS) @ 105C	SM2540B	1	620		*	mg/L	10	20	06/22/13 9:03	dcw
Sulfate	D516-02 - Turbidimetric	20	280		*	mg/L	20	100	07/01/13 9:13	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 12:11	abm
TDS (calculated)	Calculation		527			mg/L	10	50	07/03/13 15:12	calc
TDS (ratio - measured/calculated)	Calculation		1.14						07/03/13 15:12	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: PSASR

ACZ Sample ID: ***L12865-02***
Date Sampled: *06/18/13 11:10*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 10:16	mla
Cyanide, WAD	SM4500-CN I- distillation								06/28/13 12:39	mpb
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 7:02	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/27/13 12:15	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 11:46	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 17:16	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/28/13 17:03	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0128			mg/L	0.0002	0.001	06/28/13 17:03	las
Barium, dissolved	M200.7 ICP	1	0.134			mg/L	0.003	0.02	06/29/13 7:05	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:05	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:05	jjc
Boron, dissolved	M200.7 ICP	1	0.11			mg/L	0.01	0.05	07/01/13 17:16	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:03	las
Calcium, dissolved	M200.7 ICP	1	126			mg/L	0.2	1	06/29/13 7:05	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:05	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:05	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:05	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:05	jjc
Iron, dissolved	M200.7 ICP	1	0.34			mg/L	0.02	0.05	07/01/13 17:16	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:03	las
Lithium, dissolved	M200.7 ICP	1	0.17			mg/L	0.02	0.1	06/29/13 7:05	jjc
Magnesium, dissolved	M200.7 ICP	1	9.0			mg/L	0.2	1	06/29/13 7:05	jjc
Manganese, dissolved	M200.7 ICP	1	0.069			mg/L	0.005	0.03	06/29/13 7:05	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 13:59	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:05	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:05	jjc
Potassium, dissolved	M200.7 ICP	1	2.9			mg/L	0.3	2	06/29/13 7:05	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:05	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/28/13 17:03	las
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/28/13 17:03	las
Sodium, dissolved	M200.7 ICP	1	93.9			mg/L	0.3	2	06/29/13 7:05	jjc
Strontium, dissolved	M200.7 ICP	1	5.40			mg/L	0.01	0.05	06/29/13 7:05	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:03	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:05	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:05	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/28/13 17:03	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:05	jjc
Zinc, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.01	0.05	06/29/13 7:05	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: PSASR

ACZ Sample ID: ***L12865-02***
Date Sampled: *06/18/13 11:10*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	179		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	179		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.3			%			07/03/13 15:12	calc
Sum of Anions			11.7			meq/L	0.1	0.5	07/03/13 15:12	calc
Sum of Cations			11.4			meq/L	0.1	0.5	07/03/13 15:12	calc
Chloride	SM4500Cl-E	1	4	B	*	mg/L	1	5	06/27/13 16:08	bsu
Conductivity @25C	SM2510B	1	986		*	umhos/cm	1	10	06/22/13 1:24	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:12	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 16:01	bsu
Fluoride	SM4500F-C	1	0.7		*	mg/L	0.1	0.5	06/27/13 18:36	abm
Hardness as CaCO3	SM2340B - Calculation		352			mg/L	1	7	07/03/13 15:12	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/29/13 15:56	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 16:44	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/30/13 11:34	bsu
pH (lab)	SM4500H+ B									
pH		1	8.1	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	07/03/13 15:12	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/27/13 23:35	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.02	BH	*	mg/L	0.01	0.05	06/21/13 19:54	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.01	B	*	mg/L	0.01	0.05	06/28/13 21:29	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	720		*	mg/L	10	20	06/22/13 12:55	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/21/13 16:06	mss3
Residue, Total (TS) @ 105C	SM2540B	1	730		*	mg/L	10	20	06/22/13 9:04	dcw
Sulfate	D516-02 - Turbidimetric	20	380		*	mg/L	20	100	07/01/13 9:14	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 12:18	abm
TDS (calculated)	Calculation		730			mg/L	10	50	07/03/13 15:12	calc
TDS (ratio - measured/calculated)	Calculation		0.99						07/03/13 15:12	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of Interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of Interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

REP001.09.12.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12865*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12865-01	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346682	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346681	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346805	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346634	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346171	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346746	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12865***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12865***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12865-02	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346682	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346703	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346805	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346634	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346171	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346746	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12865*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: *L12865*

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bismuth, dissolved	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Scandium, dissolved	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Sulfide as S	SM4500S2-D

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12865
Date Received: 06/21/2013 10:11
Received By: gac
Date Printed: 6/23/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?		X	

L12865-01 Container B1349855: Added 1 mls 5N sodium hydroxide and 1 mls zinc acetate to the sub-sample to adjust the pH to the appropriate range.

12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3422	19.4	13	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12865
Date Received: 06/21/2013 10:11
Received By: gac
Date Printed: 6/23/2013

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ACZ Laboratories, Inc. L12865

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador Centro corporativo Nimbal, Torre Oeste, Apto 503, Gt
Telephone: (502) 59515248

Name: Charlie Muerhoff
Company: Tahoe Resources Inc.
E-mail: cmuerhoff@tahoeresourcesinc.com
Telephone:

Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador Centro corporativo Nimbal, Torre Oeste, Apto 503, Gt
Telephone: (502) 59515248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instructions. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☐

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernanda Ramos | Sampler's site Information | State | Zip code | Time Zone

Quote #: Water Quality
Project/PO #: Escobal
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

				# of Containers	GW							
GW11	17/06/13	10:40	GW	8	✓							
PSAS2	18/06/13	11:10	GW	8	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Fernanda Ramos	18/6/13 8:10		
		6-21-13	10:14

Chain of Custody L12865

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 05, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12866

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 21, 2013. This project has been assigned to ACZ's project number, L12866. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12866. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 04, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

REPAD.01.06.05.02

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. July 05, 2013

Project ID: Escobal
ACZ Project ID: L12866

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 4 ground water samples from Tahoe Resources, Inc. on June 21, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12866. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses except those qualified with an ACZ 'H' flag were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Client samples were received at a temperature outside of the acceptable range (See Sample Receipt Form).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW5

ACZ Sample ID: ***L12866-01***
Date Sampled: *06/17/13 09:55*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 10:24	mla
Cyanide, WAD	SM4500-CN I- distillation								06/27/13 14:06	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 8:29	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/27/13 12:24	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 11:57	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	0.25			mg/L	0.03	0.2	07/01/13 17:19	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/28/13 17:06	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0007	B		mg/L	0.0002	0.001	06/28/13 17:06	las
Barium, dissolved	M200.7 ICP	1	0.063			mg/L	0.003	0.02	06/29/13 7:09	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:09	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:09	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/01/13 17:19	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:06	las
Calcium, dissolved	M200.7 ICP	1	4.3			mg/L	0.2	1	06/29/13 7:09	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:09	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:09	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:09	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:09	jjc
Iron, dissolved	M200.7 ICP	1	0.10			mg/L	0.02	0.05	07/01/13 17:19	aeb
Lead, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/28/13 17:06	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:09	jjc
Magnesium, dissolved	M200.7 ICP	1	2.8			mg/L	0.2	1	06/29/13 7:09	jjc
Manganese, dissolved	M200.7 ICP	1	0.047			mg/L	0.005	0.03	06/29/13 7:09	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:01	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:09	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:09	jjc
Potassium, dissolved	M200.7 ICP	1	6.5			mg/L	0.3	2	06/29/13 7:09	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:09	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	06/28/13 17:06	las
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/28/13 17:06	las
Sodium, dissolved	M200.7 ICP	1	12.1			mg/L	0.3	2	06/29/13 7:09	jjc
Strontium, dissolved	M200.7 ICP	1	0.04	B		mg/L	0.01	0.05	06/29/13 7:09	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:06	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:09	jjc
Titanium, dissolved	M200.7 ICP	1	0.007	B		mg/L	0.005	0.03	06/29/13 7:09	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:06	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:09	jjc
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:09	jjc

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW5

ACZ Sample ID: ***L12866-01***
Date Sampled: *06/17/13 09:55*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	38		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	38		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			4.3			%			07/05/13 10:09	calc
Sum of Anions			1.1			meq/L	0.1	0.5	07/05/13 10:09	calc
Sum of Cations			1.2			meq/L	0.1	0.5	07/05/13 10:09	calc
Chloride	SM4500Cl-E	1	4	B	*	mg/L	1	5	06/27/13 16:08	bsu
Conductivity @25C	SM2510B	1	114		*	umhos/cm	1	10	06/22/13 2:01	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:14	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:52	bsu
Fluoride	SM4500F-C	1	0.2	B	*	mg/L	0.1	0.5	06/27/13 18:41	abm
Hardness as CaCO3	SM2340B - Calculation		22			mg/L	1	7	07/05/13 10:09	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.75		*	mg/L	0.02	0.1	06/29/13 15:57	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.13	B	*	mg/L	0.05	0.5	07/01/13 16:45	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.2	B	*	mg/L	0.1	0.5	06/30/13 12:35	bsu
pH (lab)	SM4500H+ B									
pH		1	7.5	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.03	B		mg/L	0.03	0.15	07/05/13 10:09	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.01	B	*	mg/L	0.01	0.05	06/27/13 23:37	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.04	BH	*	mg/L	0.01	0.05	06/21/13 19:55	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.04	B	*	mg/L	0.01	0.05	06/28/13 21:30	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	160		*	mg/L	10	20	06/22/13 12:56	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/21/13 16:07	mss3
Residue, Total (TS) @ 105C	SM2540B	1	280		*	mg/L	10	20	06/22/13 9:06	dcw
Sulfate	D516-02 - Turbidimetric	1	10		*	mg/L	1	5	07/01/13 8:55	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 12:24	abm
TDS (calculated)	Calculation		63			mg/L	10	50	07/05/13 10:09	calc
TDS (ratio - measured/calculated)	Calculation		2.54						07/05/13 10:09	calc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW6

ACZ Sample ID: ***L12866-02***
Date Sampled: *06/17/13 15:45*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 10:31	mla
Cyanide, WAD	SM4500-CN I- distillation								06/27/13 14:12	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 9:55	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/27/13 12:33	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 12:09	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	0.04	B		mg/L	0.03	0.2	07/01/13 17:22	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/28/13 17:10	las
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	06/28/13 17:10	las
Barium, dissolved	M200.7 ICP	1	0.047			mg/L	0.003	0.02	06/29/13 7:12	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:12	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:12	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/01/13 17:22	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:10	las
Calcium, dissolved	M200.7 ICP	1	5.5			mg/L	0.2	1	06/29/13 7:12	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:12	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:12	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:12	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:12	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	07/01/13 17:22	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:10	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:12	jjc
Magnesium, dissolved	M200.7 ICP	1	2.9			mg/L	0.2	1	06/29/13 7:12	jjc
Manganese, dissolved	M200.7 ICP	1	0.030			mg/L	0.005	0.03	06/29/13 7:12	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:03	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:12	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:12	jjc
Potassium, dissolved	M200.7 ICP	1	5.3			mg/L	0.3	2	06/29/13 7:12	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:12	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	07/02/13 23:34	msh
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/28/13 17:10	las
Sodium, dissolved	M200.7 ICP	1	8.8			mg/L	0.3	2	06/29/13 7:12	jjc
Strontium, dissolved	M200.7 ICP	1	0.06			mg/L	0.01	0.05	06/29/13 7:12	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:10	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:12	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:12	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:10	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:12	jjc
Zinc, dissolved	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	06/29/13 7:12	jjc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW6

ACZ Sample ID: ***L12866-02***
Date Sampled: *06/17/13 15:45*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	26		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			19.8			%			07/05/13 10:09	calc
Sum of Anions			0.737			meq/L	0.1	0.5	07/05/13 10:09	calc
Sum of Cations			1.1			meq/L	0.1	0.5	07/05/13 10:09	calc
Chloride	SM4500Cl-E	1	4	B	*	mg/L	1	5	06/27/13 16:08	bsu
Conductivity @25C	SM2510B	1	110		*	umhos/cm	1	10	06/22/13 2:09	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:15	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:53	bsu
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/27/13 18:45	abm
Hardness as CaCO3	SM2340B - Calculation		26			mg/L	1	7	07/05/13 10:09	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	3.73		*	mg/L	0.02	0.1	06/29/13 15:58	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.07	B	*	mg/L	0.05	0.5	07/01/13 16:46	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.2	B	*	mg/L	0.1	0.5	06/30/13 12:38	bsu
pH (lab)	SM4500H+ B									
pH		1	7.4	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	07/05/13 10:09	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/27/13 23:38	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	06/21/13 19:56	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.01	B	*	mg/L	0.01	0.05	06/28/13 21:33	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	160		*	mg/L	10	20	06/22/13 12:58	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/21/13 16:08	mss3
Residue, Total (TS) @ 105C	SM2540B	1	180		*	mg/L	10	20	06/22/13 9:07	dcw
Sulfate	D516-02 - Turbidimetric	1	5		*	mg/L	1	5	07/01/13 8:55	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 12:31	abm
TDS (calculated)	Calculation		47	B		mg/L	10	50	07/05/13 10:09	calc
TDS (ratio - measured/calculated)	Calculation		3.40						07/05/13 10:09	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW7

ACZ Sample ID: ***L12866-03***
Date Sampled: *06/17/13 16:40*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 10:38	mla
Cyanide, WAD	SM4500-CN I- distillation								06/27/13 14:19	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 10:39	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/27/13 12:42	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 12:20	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 17:25	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/28/13 17:20	las
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	06/28/13 17:20	las
Barium, dissolved	M200.7 ICP	1	0.088			mg/L	0.003	0.02	06/29/13 7:15	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:15	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:15	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/01/13 17:25	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:20	las
Calcium, dissolved	M200.7 ICP	1	19.7			mg/L	0.2	1	06/29/13 7:15	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:15	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:15	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:15	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:15	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	07/01/13 17:25	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:20	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:15	jjc
Magnesium, dissolved	M200.7 ICP	1	4.7			mg/L	0.2	1	06/29/13 7:15	jjc
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:15	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:05	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:15	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:15	jjc
Potassium, dissolved	M200.7 ICP	1	3.6			mg/L	0.3	2	06/29/13 7:15	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:15	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	07/02/13 23:37	msh
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/28/13 17:20	las
Sodium, dissolved	M200.7 ICP	1	12.9			mg/L	0.3	2	06/29/13 7:15	jjc
Strontium, dissolved	M200.7 ICP	1	0.18			mg/L	0.01	0.05	06/29/13 7:15	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:20	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:15	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:15	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:20	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:15	jjc
Zinc, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 7:15	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW7

ACZ Sample ID: ***L12866-03***
Date Sampled: *06/17/13 16:40*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	76		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	76		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			07/05/13 10:09	calc
Sum of Anions			2			meq/L	0.1	0.5	07/05/13 10:09	calc
Sum of Cations			2.0			meq/L	0.1	0.5	07/05/13 10:09	calc
Chloride	SM4500Cl-E	1	5		*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	193		*	umhos/cm	1	10	06/22/13 2:18	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:16	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:54	bsu
Fluoride	SM4500F-C	1	0.1	B	*	mg/L	0.1	0.5	06/27/13 19:04	abm
Hardness as CaCO3	SM2340B - Calculation		69			mg/L	1	7	07/05/13 10:09	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.17		*	mg/L	0.02	0.1	06/29/13 15:59	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 16:47	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/30/13 12:39	bsu
pH (lab)	SM4500H+ B									
pH		1	8.0	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	22.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	07/05/13 10:09	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/27/13 23:39	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	06/21/13 19:57	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.01	B	*	mg/L	0.01	0.05	06/28/13 21:34	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	160		*	mg/L	10	20	06/22/13 12:59	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	7	B	*	mg/L	5	20	06/24/13 10:55	mss3
Residue, Total (TS) @ 105C	SM2540B	1	180		*	mg/L	10	20	06/22/13 9:09	dcw
Sulfate	D516-02 - Turbidimetric	1	14		*	mg/L	1	5	07/01/13 8:55	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 12:37	abm
TDS (calculated)	Calculation		106			mg/L	10	50	07/05/13 10:09	calc
TDS (ratio - measured/calculated)	Calculation		1.51						07/05/13 10:09	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW10

ACZ Sample ID: ***L12866-04***
Date Sampled: *06/17/13 13:10*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 10:45	mla
Cyanide, WAD	SM4500-CN I- distillation								06/27/13 14:25	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 11:22	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/27/13 12:51	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 12:31	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 17:34	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/28/13 17:23	las
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	07/02/13 23:47	msh
Barium, dissolved	M200.7 ICP	1		U		mg/L	0.003	0.02	06/29/13 7:24	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:24	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:24	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/01/13 17:34	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:23	las
Calcium, dissolved	M200.7 ICP	1		U		mg/L	0.2	1	06/29/13 7:24	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:24	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:24	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:24	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:24	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	07/01/13 17:34	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:23	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:24	jjc
Magnesium, dissolved	M200.7 ICP	1		U		mg/L	0.2	1	06/29/13 7:24	jjc
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:24	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:07	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:24	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:24	jjc
Potassium, dissolved	M200.7 ICP	1		U		mg/L	0.3	2	06/29/13 7:24	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:24	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	07/02/13 23:47	msh
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/28/13 17:23	las
Sodium, dissolved	M200.7 ICP	1		U		mg/L	0.3	2	06/29/13 7:24	jjc
Strontium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:24	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:23	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:24	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:24	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:23	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:24	jjc
Zinc, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.01	0.05	06/29/13 7:24	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW10

ACZ Sample ID: ***L12866-04***
Date Sampled: *06/17/13 13:10*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			n/a			%			07/05/13 10:09	calc
Sum of Anions			N/A			meq/L	0.1	0.5	07/05/13 10:09	calc
Sum of Cations				U		meq/L	0.1	0.5	07/05/13 10:09	calc
Chloride	SM4500Cl-E	1		U	*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	1	B	*	umhos/cm	1	10	06/22/13 2:24	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:17	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:54	bsu
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/27/13 19:25	abm
Hardness as CaCO3	SM2340B - Calculation			U		mg/L	1	7	07/05/13 10:09	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/29/13 16:03	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 16:48	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/30/13 12:40	bsu
pH (lab)	SM4500H+ B									
pH		1	6.1	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	22.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.09	B		mg/L	0.03	0.15	07/05/13 10:09	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	06/27/13 23:40	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1		UH	*	mg/L	0.01	0.05	06/21/13 20:00	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/28/13 21:35	pjb
Residue, Filterable (TDS) @180C	SM2540C	1		U	*	mg/L	10	20	06/22/13 13:01	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/24/13 10:56	mss3
Residue, Total (TS) @ 105C	SM2540B	1	180		*	mg/L	10	20	06/22/13 9:10	dcw
Sulfate	D516-02 - Turbidimetric	1		U	*	mg/L	1	5	07/01/13 8:55	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 12:44	abm
TDS (calculated)	Calculation			U		mg/L	10	50	07/05/13 10:09	calc
TDS (ratio - measured/calculated)	Calculation		n/a						07/05/13 10:09	calc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualslist.pdf

REP001.09.12.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12866***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12866-01	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346682	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346687	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346805	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346634	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346171	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346746	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	QD	Reported value is the background-corrected concentration, as described by the method.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12866*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12866-02	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500CI-E	Q6	Sample was received above recommended temperature.
			SM4500CI-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346682	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346687	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346805	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346634	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346171	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346746	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12866-03	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500CI-E	Q6	Sample was received above recommended temperature.
			SM4500CI-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346682	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346687	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346805	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346634	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346746	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12866-04	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346682	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346687	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346805	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346634	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346746	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: ***L12866***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bismuth, dissolved	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Scandium, dissolved	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Sulfide as S	SM4500S2-D

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Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12866
Date Received: 06/21/2013 10:02
Received By: gac
Date Printed: 6/23/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3279	16.8	12	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

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ACZ Laboratories, Inc. L12866

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Name: Miguel Berganza	Address: Km 8.6 carretera antigua a El Salvador
Company: Tahoe Resources Inc.	Centro corporativo Muxbal, Torre Oeste, Apto 503 y 504
E-mail: MBerganza@sanrafael.com.gt	Telephone: (502) 5951 5248

Name: Charlie Muerhoff	E-mail: cmuerhoff@tahoeresourcesinc.com
Company: Tahoe Resources Inc.	Telephone:

Name: Miguel Berganza	Address: Km 8.6 carretera antigua a El Salvador
Company: Tahoe Resources Inc.	Centro Corporativo Muxbal, Torre Oeste, Apto 503 y 504
E-mail: MBerganza@sanrafael.com.gt	Telephone: (502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [ ] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [ ]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Emanuela Barrera Sampler's site Information State ___ Zip code ___ Time Zone ___

Quote #: Water Quality

Project/PO #: Escobal

Reporting state for compliance testing:

Check box if samples include NRC licensed material?

				# of Containers	GW
GW5	17/06/13	09:55	GW	8	✓
GW6	17/06/13	15:45	GW	8	✓
GW7	17/06/13	16:40	GW	8	✓
GW10	17/06/13	13:10	GW	8	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Gustavo Díaz	17/6/13 8:10	LRC	6-21-13 10:02

L12866 Chain of Custody

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

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ACZ Laboratories, Inc.

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Analytical Report

July 09, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12868

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 21, 2013. This project has been assigned to ACZ's project number, L12868. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12868. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 08, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber

Sue Webber has reviewed and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

REPAD.01.06.05.02

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW6

ACZ Sample ID: ***L12868-01***
Date Sampled: *06/18/13 17:05*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 10:52	mla
Cyanide, WAD	SM4500-CN I- distillation								06/28/13 12:48	mpb
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 12:06	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/27/13 13:00	mla
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 12:43	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 17:38	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/28/13 17:26	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0014			mg/L	0.0002	0.001	06/28/13 17:26	las
Barium, dissolved	M200.7 ICP	1	0.182			mg/L	0.003	0.02	06/29/13 7:27	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:27	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:27	jjc
Boron, dissolved	M200.7 ICP	1	0.11			mg/L	0.01	0.05	07/01/13 17:38	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:26	las
Calcium, dissolved	M200.7 ICP	1	357			mg/L	0.2	1	06/29/13 7:27	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:27	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:27	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:27	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:27	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	07/01/13 17:38	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:26	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:27	jjc
Magnesium, dissolved	M200.7 ICP	1	44.4			mg/L	0.2	1	06/29/13 7:27	jjc
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:27	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:09	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:27	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:27	jjc
Potassium, dissolved	M200.7 ICP	1	14.8			mg/L	0.3	2	06/29/13 7:27	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:27	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0004			mg/L	0.0001	0.0003	07/03/13 16:59	msh
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/28/13 17:26	las
Sodium, dissolved	M200.7 ICP	1	68.9			mg/L	0.3	2	06/29/13 7:27	jjc
Strontium, dissolved	M200.7 ICP	1	1.11			mg/L	0.01	0.05	06/29/13 7:27	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:26	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:27	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:27	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0008			mg/L	0.0001	0.0005	06/28/13 17:26	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:27	jjc
Zinc, dissolved	M200.7 ICP	1	0.06			mg/L	0.01	0.05	06/29/13 7:27	jjc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW6

ACZ Sample ID: ***L12868-01***
Date Sampled: *06/18/13 17:05*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	90		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	90		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.2			%			07/09/13 0:00	calc
Sum of Anions			26.0			meq/L	0.1	0.5	07/09/13 0:00	calc
Sum of Cations			24.9			meq/L	0.1	0.5	07/09/13 0:00	calc
Chloride	SM4500Cl-E	1	83		*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	1900		*	umhos/cm	1	10	06/22/13 2:33	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:18	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 16:03	bsu
Fluoride	SM4500F-C	1	0.1	B	*	mg/L	0.1	0.5	06/27/13 19:29	abm
Hardness as CaCO3	SM2340B - Calculation		1070			mg/L	1	7	07/09/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.89		*	mg/L	0.02	0.1	06/29/13 16:04	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 16:50	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/30/13 12:41	bsu
pH (lab)	SM4500H+ B									
pH		1	7.6	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	22.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	07/09/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/27/13 23:41	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.09	H	*	mg/L	0.01	0.05	06/21/13 20:02	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	06/28/13 21:37	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1690		*	mg/L	10	20	06/22/13 13:03	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/24/13 10:58	mss3
Residue, Total (TS) @ 105C	SM2540B	1	1660		*	mg/L	10	20	06/22/13 9:11	dcw
Sulfate	D516-02 - Turbidimetric	50	1040		*	mg/L	50	300	07/01/13 9:14	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 12:51	abm
TDS (calculated)	Calculation		1660			mg/L	10	50	07/09/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.02						07/09/13 0:00	calc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW7

ACZ Sample ID: ***L12868-02***
Date Sampled: *06/18/13 08:05*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 11:00	mla
Cyanide, WAD	SM4500-CN I- distillation								06/28/13 12:56	mpb
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 12:49	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 12:12	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 12:54	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 17:41	aeb
Antimony, dissolved	M200.8 ICP-MS	1	0.0006	B		mg/L	0.0004	0.002	06/28/13 17:30	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0017			mg/L	0.0002	0.001	06/28/13 17:30	las
Barium, dissolved	M200.7 ICP	1	0.317			mg/L	0.003	0.02	06/29/13 7:30	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:30	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:30	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/01/13 17:41	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:30	las
Calcium, dissolved	M200.7 ICP	1	22.5			mg/L	0.2	1	06/29/13 7:30	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:30	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:30	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:30	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:30	jjc
Iron, dissolved	M200.7 ICP	1	0.06			mg/L	0.02	0.05	07/01/13 17:41	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:30	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:30	jjc
Magnesium, dissolved	M200.7 ICP	1	6.6			mg/L	0.2	1	06/29/13 7:30	jjc
Manganese, dissolved	M200.7 ICP	1	0.023	B		mg/L	0.005	0.03	06/29/13 7:30	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:11	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:30	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:30	jjc
Potassium, dissolved	M200.7 ICP	1	8.0			mg/L	0.3	2	06/29/13 7:30	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:30	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0003	07/03/13 0:00	msh
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/28/13 17:30	las
Sodium, dissolved	M200.7 ICP	1	16.9			mg/L	0.3	2	06/29/13 7:30	jjc
Strontium, dissolved	M200.7 ICP	1	0.16			mg/L	0.01	0.05	06/29/13 7:30	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:30	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:30	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:30	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:30	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:30	jjc
Zinc, dissolved	M200.7 ICP	1	0.43			mg/L	0.01	0.05	06/29/13 7:30	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW7

ACZ Sample ID: *L12868-02*
Date Sampled: *06/18/13 08:05*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	82		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	82		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			4.0			%			07/09/13 0:00	calc
Sum of Anions			2.4			meq/L	0.1	0.5	07/09/13 0:00	calc
Sum of Cations			2.6			meq/L	0.1	0.5	07/09/13 0:00	calc
Chloride	SM4500Cl-E	1	10		*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	249		*	umhos/cm	1	10	06/22/13 2:41	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:19	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 16:04	bsu
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/27/13 19:34	abm
Hardness as CaCO3	SM2340B - Calculation		83			mg/L	1	7	07/09/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	1.65		*	mg/L	0.02	0.1	06/29/13 16:05	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 16:51	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/30/13 12:42	bsu
pH (lab)	SM4500H+ B									
pH		1	7.0	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.06	B		mg/L	0.03	0.15	07/09/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.02	B	*	mg/L	0.01	0.05	07/02/13 10:48	tod
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	06/21/13 20:03	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.02	B	*	mg/L	0.01	0.05	06/28/13 21:38	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	250		*	mg/L	10	20	06/22/13 13:04	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	6	B	*	mg/L	5	20	06/24/13 10:59	mss3
Residue, Total (TS) @ 105C	SM2540B	1	260		*	mg/L	10	20	06/22/13 9:13	dcw
Sulfate	D516-02 - Turbidimetric	1	21		*	mg/L	1	5	07/01/13 8:56	bsu
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 12:57	abm
TDS (calculated)	Calculation		135			mg/L	10	50	07/09/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.85						07/09/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW8

ACZ Sample ID: ***L12868-03***
Date Sampled: *06/17/13 11:40*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 8:44	mla
Cyanide, WAD	SM4500-CN I- distillation								06/27/13 14:32	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 13:33	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 12:24	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 13:17	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 17:44	aeb
Antimony, dissolved	M200.8 ICP-MS	1	0.0009	B	*	mg/L	0.0004	0.002	06/28/13 17:33	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0009	B		mg/L	0.0002	0.001	06/28/13 17:33	las
Barium, dissolved	M200.7 ICP	1	0.223			mg/L	0.003	0.02	06/29/13 7:33	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:33	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:33	jjc
Boron, dissolved	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	07/01/13 17:44	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:33	las
Calcium, dissolved	M200.7 ICP	1	90.6			mg/L	0.2	1	06/29/13 7:33	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:33	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:33	jjc
Copper, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 7:33	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:33	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	07/01/13 17:44	aeb
Lead, dissolved	M200.8 ICP-MS	1	0.0009			mg/L	0.0001	0.0005	06/28/13 17:33	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:33	jjc
Magnesium, dissolved	M200.7 ICP	1	16.0			mg/L	0.2	1	06/29/13 7:33	jjc
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:33	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:15	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:33	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:33	jjc
Potassium, dissolved	M200.7 ICP	1	6.7			mg/L	0.3	2	06/29/13 7:33	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:33	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0003			mg/L	0.0001	0.0003	07/03/13 17:01	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 17:33	las
Sodium, dissolved	M200.7 ICP	1	22.3			mg/L	0.3	2	06/29/13 7:33	jjc
Strontium, dissolved	M200.7 ICP	1	0.55			mg/L	0.01	0.05	06/29/13 7:33	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:33	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:33	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:33	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/28/13 17:33	las
Vanadium, dissolved	M200.7 ICP	1	0.005	B		mg/L	0.005	0.03	06/29/13 7:33	jjc
Zinc, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.01	0.05	06/29/13 7:33	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW8

ACZ Sample ID: ***L12868-03***
Date Sampled: *06/17/13 11:40*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	73		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	73		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			2.2			%			07/09/13 0:00	calc
Sum of Anions			6.7			meq/L	0.1	0.5	07/09/13 0:00	calc
Sum of Cations			7.0			meq/L	0.1	0.5	07/09/13 0:00	calc
Chloride	SM4500Cl-E	1	15		*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	642		*	umhos/cm	1	10	06/22/13 2:50	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 15:26	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:55	bsu
Fluoride	SM4500F-C	1	0.1	B	*	mg/L	0.1	0.5	06/27/13 19:38	abm
Hardness as CaCO3	SM2340B - Calculation		292			mg/L	1	7	07/09/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	3	2.89		*	mg/L	0.06	0.3	06/29/13 16:33	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 16:52	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/30/13 13:06	bsu
pH (lab)	SM4500H+ B									
pH		1	7.7	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.16			mg/L	0.03	0.15	07/09/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.05		*	mg/L	0.01	0.05	07/02/13 10:50	tod
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.08	H	*	mg/L	0.01	0.05	06/21/13 20:04	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.05		*	mg/L	0.01	0.05	06/28/13 21:40	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	530		*	mg/L	10	20	06/22/13 13:05	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/24/13 11:01	mss3
Residue, Total (TS) @ 105C	SM2540B	1	530		*	mg/L	10	20	06/22/13 9:15	dcw
Sulfate	D516-02 - Turbidimetric	20	230		*	mg/L	20	100	07/02/13 14:20	tod
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 13:17	abm
TDS (calculated)	Calculation		425			mg/L	10	50	07/09/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.25						07/09/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW9

ACZ Sample ID: ***L12868-04***
Date Sampled: *06/18/13 12:40*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/30/13 9:16	mla
Cyanide, WAD	SM4500-CN I- distillation								06/28/13 13:05	mpb
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 14:16	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 12:36	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 13:40	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 17:47	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0004	0.002	06/28/13 17:37	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0024			mg/L	0.0002	0.001	06/28/13 17:37	las
Barium, dissolved	M200.7 ICP	1	0.056			mg/L	0.003	0.02	06/29/13 7:43	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:43	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:43	jjc
Boron, dissolved	M200.7 ICP	1	0.06			mg/L	0.01	0.05	07/01/13 17:47	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:37	las
Calcium, dissolved	M200.7 ICP	1	124			mg/L	0.2	1	06/29/13 7:43	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:43	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:43	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:43	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:43	jjc
Iron, dissolved	M200.7 ICP	1	5.36			mg/L	0.02	0.05	07/01/13 17:47	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:37	las
Lithium, dissolved	M200.7 ICP	1	0.04	B		mg/L	0.02	0.1	06/29/13 7:43	jjc
Magnesium, dissolved	M200.7 ICP	1	23.7			mg/L	0.2	1	06/29/13 7:43	jjc
Manganese, dissolved	M200.7 ICP	1	0.481			mg/L	0.005	0.03	06/29/13 7:43	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:26	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:43	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:43	jjc
Potassium, dissolved	M200.7 ICP	1	5.3			mg/L	0.3	2	06/29/13 7:43	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:43	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0003	07/03/13 0:07	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 17:37	las
Sodium, dissolved	M200.7 ICP	1	39.8			mg/L	0.3	2	06/29/13 7:43	jjc
Strontium, dissolved	M200.7 ICP	1	1.13			mg/L	0.01	0.05	06/29/13 7:43	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:37	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:43	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:43	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/28/13 17:37	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:43	jjc
Zinc, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 7:43	jjc

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW9

ACZ Sample ID: L12868-04
Date Sampled: 06/18/13 12:40
Date Received: 06/21/13
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	138		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	138		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.5			%			07/09/13 0:00	calc
Sum of Anions			10.1			meq/L	0.1	0.5	07/09/13 0:00	calc
Sum of Cations			10.4			meq/L	0.1	0.5	07/09/13 0:00	calc
Chloride	SM4500Cl-E	1	26		*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	876		*	umhos/cm	1	10	06/22/13 2:58	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 13:40	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 16:05	bsu
Fluoride	SM4500F-C	1	1.5		*	mg/L	0.1	0.5	06/27/13 19:41	abm
Hardness as CaCO3	SM2340B - Calculation		407			mg/L	1	7	07/09/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/29/13 16:08	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:19	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/30/13 13:07	bsu
pH (lab)	SM4500H+ B									
pH		1	8.0	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	22.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.06	B		mg/L	0.03	0.15	07/09/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.02	B	*	mg/L	0.01	0.05	07/02/13 10:53	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	06/21/13 20:06	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.04	B	*	mg/L	0.01	0.05	06/28/13 21:42	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	650		*	mg/L	10	20	06/22/13 13:07	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	10	B	*	mg/L	5	20	06/24/13 11:03	mss3
Residue, Total (TS) @ 105C	SM2540B	1	670		*	mg/L	10	20	06/22/13 9:17	dcw
Sulfate	D516-02 - Turbidimetric	20	310		*	mg/L	20	100	07/02/13 14:20	tcd
Sulfide as S	SM4500S2-D	1	0.20		*	mg/L	0.02	0.1	06/24/13 13:37	abm
TDS (calculated)	Calculation		620			mg/L	10	50	07/09/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.05						07/09/13 0:00	calc

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12868***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12868-01	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346682	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346703	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG346805	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346634	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346746	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12868***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12868*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12868*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12868-03	WG346652	Antimony, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346517	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346691	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346687	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346805	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12868***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12868***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12868-04	WG346652	Antimony, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346885	Selenium, dissolved	M200.8 ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG346652	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346872	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346703	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12868***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: ***L12868***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bismuth, dissolved	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Scandium, dissolved	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Sulfide as S	SM4500S2-D

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12868
Date Received: 06/21/2013 10:03
Received By: gac
Date Printed: 6/23/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?		X	

L12868-01 Container B1349926: Added 1 mls 5N sodium hydroxide and 1 mls zinc acetate to the sub-sample to adjust the pH to the appropriate range.

L12868-02 Container B1349935: Added 1 mls 5N sodium hydroxide and 1 mls zinc acetate to the sub-sample to adjust the pH to the appropriate range.

L12868-03 Container B1349943: Added 1 mls 5N sodium hydroxide and 1 mls zinc acetate to the sub-sample to adjust the pH to the appropriate range.

L12868-04 Container B1349951: Added 1 mls 5N sodium hydroxide and 1 mls zinc acetate to the sub-sample to adjust the pH to the appropriate range.

12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

REPAD LPII 2012-03

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12868
Date Received: 06/21/2013 10:03
Received By: gac
Date Printed: 6/23/2013

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3673	17.6	13	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

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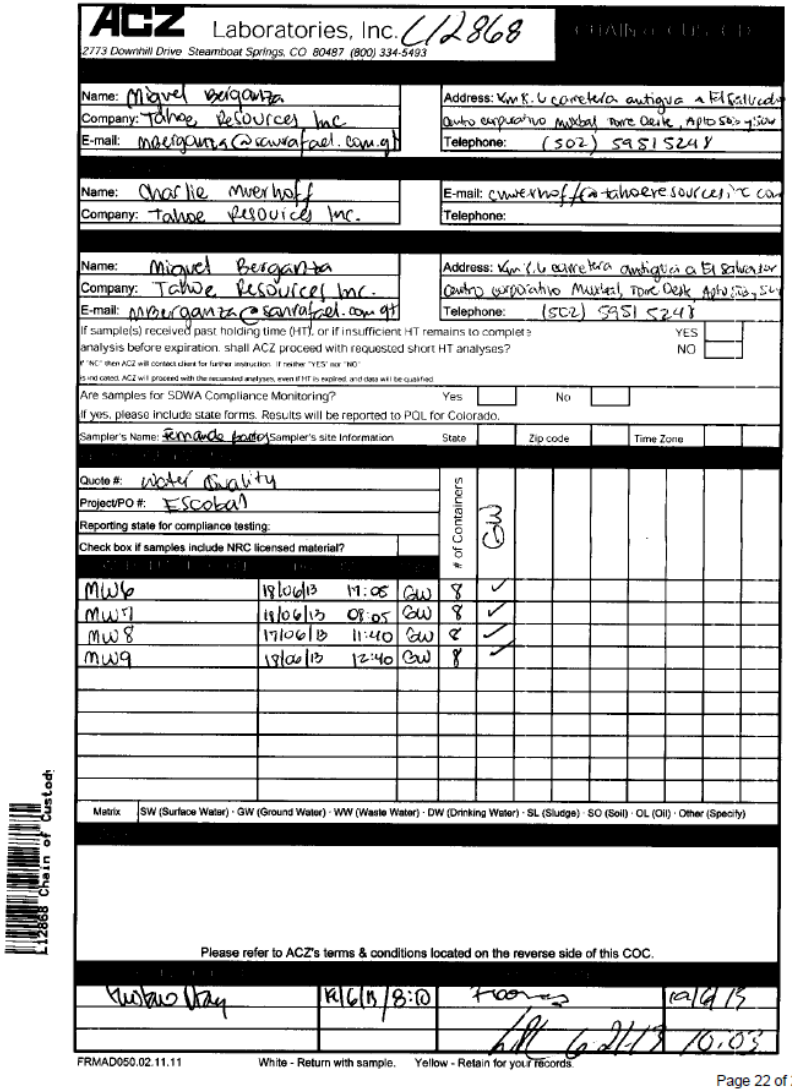

ACZ Laboratories, Inc. L12868
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Name: Miguel Berganza
Company: Tahoe Resources Inc
E-mail: maberganza@cnwrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador
Centro corporativo Murbal Torre Oeste, Apto 503 y 504
Telephone: (502) 5951 5248

Name: Charlie Muerhoff
Company: Tahoe Resources Inc.
E-mail: cmuerhoff@tahoeresources.com
Telephone:

Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MAberganza@cnwrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador
Centro corporativo Murbal, Torre Oeste, Apto 503, 504
Telephone: (502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes No
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernando Prado Sampler's site Information: State Zip code Time Zone

Quote #: water quality
Project/PO #: Escobal
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

			# of Containers	GW
MW6	18/06/13	17:05 GW	8	✓
MW7	19/06/13	08:05 GW	8	✓
MW8	17/06/13	11:40 GW	8	✓
MW9	18/06/13	12:40 GW	8	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Gustavo Diaz	18/6/13 8:10	[illegible]	18/6/13
		[illegible] 6-21-13	10:05

L12868 Chain of Custody

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

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Guatemala June 19th, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 12, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12869

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 21, 2013. This project has been assigned to ACZ's project number, L12869. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12869. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 11, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW10

ACZ Sample ID: ***L12869-01***
Date Sampled: *06/18/13 08:50*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/30/13 9:32	mla
Cyanide, WAD	SM4500-CN I- distillation								06/28/13 13:14	mpb
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								06/28/13 15:00	bsu
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 12:42	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 13:51	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	0.08	B		mg/L	0.03	0.2	07/01/13 17:50	aeb
Antimony, dissolved	M200.8 ICP-MS	2	0.0479			mg/L	0.0008	0.004	07/03/13 0:10	msh
Arsenic, dissolved	M200.8 ICP-MS	1	0.0072			mg/L	0.0002	0.001	06/28/13 17:40	las
Barium, dissolved	M200.7 ICP	1	0.091			mg/L	0.003	0.02	06/29/13 7:46	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:46	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:46	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/01/13 17:50	aeb
Cadmium, dissolved	M200.8 ICP-MS	1	0.0005			mg/L	0.0001	0.0005	06/28/13 17:40	las
Calcium, dissolved	M200.7 ICP	1	252			mg/L	0.2	1	06/29/13 7:46	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:46	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:46	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:46	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:46	jjc
Iron, dissolved	M200.7 ICP	1	3.57			mg/L	0.02	0.05	07/01/13 17:50	aeb
Lead, dissolved	M200.8 ICP-MS	1	0.0247			mg/L	0.0001	0.0005	06/28/13 17:40	las
Lithium, dissolved	M200.7 ICP	1	0.05	B		mg/L	0.02	0.1	06/29/13 7:46	jjc
Magnesium, dissolved	M200.7 ICP	1	25.2			mg/L	0.2	1	06/29/13 7:46	jjc
Manganese, dissolved	M200.7 ICP	1	0.402			mg/L	0.005	0.03	06/29/13 7:46	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:28	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:46	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:46	jjc
Potassium, dissolved	M200.7 ICP	1	4.2			mg/L	0.3	2	06/29/13 7:46	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:46	jjc
Selenium, dissolved	M200.8 ICP-MS	2		U	*	mg/L	0.0002	0.0005	07/03/13 0:10	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 17:40	las
Sodium, dissolved	M200.7 ICP	1	26.5			mg/L	0.3	2	06/29/13 7:46	jjc
Strontium, dissolved	M200.7 ICP	1	2.30			mg/L	0.01	0.05	06/29/13 7:46	jjc
Thallium, dissolved	M200.8 ICP-MS	1	0.0008			mg/L	0.0001	0.0005	06/28/13 17:40	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:46	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:46	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:40	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:46	jjc
Zinc, dissolved	M200.7 ICP	1	1.37			mg/L	0.01	0.05	06/29/13 7:46	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW10

ACZ Sample ID: L12869-01
Date Sampled: 06/18/13 08:50
Date Received: 06/21/13
Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	171		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	171		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.9			%			07/12/13 0:00	calc
Sum of Anions			15.7			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			16.3			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	3	B	*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	1260		*	umhos/cm	1	10	06/22/13 3:07	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 13:42	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 16:06	bsu
Fluoride	SM4500F-C	1	0.9		*	mg/L	0.1	0.5	06/27/13 19:45	abm
Hardness as CaCO3	SM2340B - Calculation		734			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/29/13 16:11	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:21	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	06/30/13 12:48	bsu
pH (lab)	SM4500H+ B									
pH		1	8.1	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.22			mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.07		*	mg/L	0.01	0.05	07/02/13 10:54	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.02	BH	*	mg/L	0.01	0.05	06/21/13 20:08	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.44		*	mg/L	0.01	0.05	06/28/13 21:43	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1010		*	mg/L	10	20	06/22/13 13:08	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	2	50		*	mg/L	10	40	06/24/13 11:04	mss3
Residue, Total (TS) @ 105C	SM2540B	1	1060		*	mg/L	10	20	06/22/13 9:18	dcw
Sulfate	D516-02 - Turbidimetric	20	580		*	mg/L	20	100	07/02/13 14:20	tcd
Sulfide as S	SM4500S2-D	3.75	1.62		*	mg/L	0.08	0.4	06/24/13 13:43	abm
TDS (calculated)	Calculation		1000			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.01						07/12/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW11

ACZ Sample ID: ***L12869-02***
Date Sampled: *06/17/13 11:15*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 8:49	mla
Cyanide, WAD	SM4500-CN I- distillation								06/27/13 14:39	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 9:03	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 12:48	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 14:03	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 17:59	aeb
Antimony, dissolved	M200.8 ICP-MS	1	0.0007	B	*	mg/L	0.0004	0.002	06/28/13 17:50	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0010			mg/L	0.0002	0.001	06/28/13 17:50	las
Barium, dissolved	M200.7 ICP	1	0.028			mg/L	0.003	0.02	06/29/13 7:49	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:49	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:49	jjc
Boron, dissolved	M200.7 ICP	1	0.17			mg/L	0.01	0.05	07/01/13 17:59	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:50	las
Calcium, dissolved	M200.7 ICP	1	278			mg/L	0.2	1	06/29/13 7:49	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:49	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:49	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:49	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:49	jjc
Iron, dissolved	M200.7 ICP	1	2.05			mg/L	0.02	0.05	07/01/13 17:59	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:50	las
Lithium, dissolved	M200.7 ICP	1	0.08	B		mg/L	0.02	0.1	06/29/13 7:49	jjc
Magnesium, dissolved	M200.7 ICP	1	41.0			mg/L	0.2	1	06/29/13 7:49	jjc
Manganese, dissolved	M200.7 ICP	1	0.041			mg/L	0.005	0.03	06/29/13 7:49	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:30	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:49	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:49	jjc
Potassium, dissolved	M200.7 ICP	1	5.0			mg/L	0.3	2	06/29/13 7:49	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:49	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	07/03/13 0:14	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 17:50	las
Sodium, dissolved	M200.7 ICP	1	79.6			mg/L	0.3	2	06/29/13 7:49	jjc
Strontium, dissolved	M200.7 ICP	1	2.56			mg/L	0.01	0.05	06/29/13 7:49	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 17:50	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:49	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:49	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0004	B		mg/L	0.0001	0.0005	06/28/13 17:50	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:49	jjc
Zinc, dissolved	M200.7 ICP	1	0.04	B		mg/L	0.01	0.05	06/29/13 7:49	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW11

ACZ Sample ID: ***L12869-02***
Date Sampled: *06/17/13 11:15*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	121		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	121		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.2			%			07/12/13 0:00	calc
Sum of Anions			21.6			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			21.1			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	71		*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	1720		*	umhos/cm	1	10	06/22/13 3:16	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 15:27	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:56	bsu
Fluoride	SM4500F-C	1	2.6		*	mg/L	0.1	0.5	06/27/13 19:48	abm
Hardness as CaCO3	SM2340B - Calculation		864			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/29/13 16:12	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:23	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	07/06/13 17:04	pjb
pH (lab)	SM4500H+ B									
pH		1	8.1	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	07/02/13 10:55	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.02	BH	*	mg/L	0.01	0.05	06/21/13 20:09	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/28/13 21:47	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1390		*	mg/L	10	20	06/22/13 13:09	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/24/13 11:05	mss3
Residue, Total (TS) @ 105C	SM2540B	1	1410		*	mg/L	10	20	06/22/13 9:20	dcw
Sulfate	D516-02 - Turbidimetric	50	810		*	mg/L	50	300	07/02/13 14:28	tcd
Sulfide as S	SM4500S2-D	1	0.10		*	mg/L	0.02	0.1	06/24/13 13:50	abm
TDS (calculated)	Calculation		1360			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.02						07/12/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW20

ACZ Sample ID: ***L12869-03***
Date Sampled: *06/18/13 13:00*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/30/13 9:49	mla
Cyanide, WAD	SM4500-CN I- distillation								06/28/13 13:23	mpb
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 9:37	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 12:54	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 14:14	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 18:02	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0004	0.002	06/28/13 18:00	las
Arsenic, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0002	0.001	07/03/13 0:24	msh
Barium, dissolved	M200.7 ICP	1		U		mg/L	0.003	0.02	06/29/13 7:52	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:52	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 7:52	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/01/13 18:02	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:00	las
Calcium, dissolved	M200.7 ICP	1		U		mg/L	0.2	1	06/29/13 7:52	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:52	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:52	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:52	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:52	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	07/01/13 18:02	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:00	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:52	jjc
Magnesium, dissolved	M200.7 ICP	1		U		mg/L	0.2	1	06/29/13 7:52	jjc
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:52	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:32	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 7:52	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:52	jjc
Potassium, dissolved	M200.7 ICP	1		U		mg/L	0.3	2	06/29/13 7:52	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 7:52	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0003	07/03/13 0:24	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 18:00	las
Sodium, dissolved	M200.7 ICP	1		U		mg/L	0.3	2	06/29/13 7:52	jjc
Strontium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 7:52	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:00	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 7:52	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:52	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:00	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 7:52	jjc
Zinc, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 7:52	jjc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW20

ACZ Sample ID: ***L12869-03***
Date Sampled: *06/18/13 13:00*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			n/a			%			07/12/13 0:00	calc
Sum of Anions				U		meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations				U		meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1		U	*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	2	B	*	umhos/cm	1	10	06/22/13 3:30	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 13:44	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 16:07	bsu
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/27/13 20:06	abm
Hardness as CaCO3	SM2340B - Calculation			U		mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/29/13 16:13	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:24	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	07/08/13 17:06	pjb
pH (lab)	SM4500H+ B									
pH		1	5.8	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	07/02/13 10:56	tod
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1		UH	*	mg/L	0.01	0.05	06/21/13 20:11	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	06/28/13 21:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	1		U	*	mg/L	10	20	06/22/13 13:11	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/24/13 11:07	mss3
Residue, Total (TS) @ 105C	SM2540B	1		U	*	mg/L	10	20	06/22/13 9:21	dcw
Sulfate	D516-02 - Turbidimetric	1	3.0	B	*	mg/L	1	5	07/02/13 14:05	tod
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 13:57	abm
TDS (calculated)	Calculation			U		mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		n/a						07/12/13 0:00	calc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW21

ACZ Sample ID: ***L12869-04***
Date Sampled: *06/18/13 12:55*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/30/13 9:57	mla
Cyanide, WAD	SM4500-CN I- distillation								06/28/13 13:40	mpb
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 10:10	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 13:00	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 14:25	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 18:12	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0004	0.002	06/28/13 18:03	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0019			mg/L	0.0002	0.001	06/28/13 18:03	las
Barium, dissolved	M200.7 ICP	1	0.056			mg/L	0.003	0.02	06/29/13 8:01	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:01	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 8:01	jjc
Boron, dissolved	M200.7 ICP	1	0.06			mg/L	0.01	0.05	07/01/13 18:12	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:03	las
Calcium, dissolved	M200.7 ICP	1	124			mg/L	0.2	1	06/29/13 8:01	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:01	jjc
Cobalt, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 8:01	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:01	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:01	jjc
Iron, dissolved	M200.7 ICP	1	5.37			mg/L	0.02	0.05	07/01/13 18:12	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:03	las
Lithium, dissolved	M200.7 ICP	1	0.04	B		mg/L	0.02	0.1	06/29/13 8:01	jjc
Magnesium, dissolved	M200.7 ICP	1	23.6			mg/L	0.2	1	06/29/13 8:01	jjc
Manganese, dissolved	M200.7 ICP	1	0.482			mg/L	0.005	0.03	06/29/13 8:01	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 14:34	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:01	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:01	jjc
Potassium, dissolved	M200.7 ICP	1	5.2			mg/L	0.3	2	06/29/13 8:01	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:01	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0003	07/03/13 0:27	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 18:03	las
Sodium, dissolved	M200.7 ICP	1	39.6			mg/L	0.3	2	06/29/13 8:01	jjc
Strontium, dissolved	M200.7 ICP	1	1.13			mg/L	0.01	0.05	06/29/13 8:01	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:03	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 8:01	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:01	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/28/13 18:03	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:01	jjc
Zinc, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 8:01	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW21

ACZ Sample ID: ***L12869-04***
Date Sampled: *06/18/13 12:55*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	138		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	138		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.5			%			07/12/13 0:00	calc
Sum of Anions			10.1			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			10.4			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	26		*	mg/L	1	5	06/27/13 16:23	bsu
Conductivity @25C	SM2510B	1	872		*	umhos/cm	1	10	06/22/13 3:39	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 13:45	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 16:08	bsu
Fluoride	SM4500F-C	1	1.5		*	mg/L	0.1	0.5	06/27/13 20:09	abm
Hardness as CaCO3	SM2340B - Calculation		407			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/29/13 16:17	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:25	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.3	B	*	mg/L	0.1	0.5	07/06/13 17:36	pjb
pH (lab)	SM4500H+ B									
pH		1	8.0	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	22.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.06	B		mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.02	B	*	mg/L	0.01	0.05	07/02/13 10:59	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.02	BH	*	mg/L	0.01	0.05	06/21/13 20:14	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	06/28/13 21:49	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	640		*	mg/L	10	20	06/22/13 13:12	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	13	B	*	mg/L	5	20	06/24/13 11:08	mss3
Residue, Total (TS) @ 105C	SM2540B	1	660		*	mg/L	10	20	06/22/13 9:22	dcw
Sulfate	D516-02 - Turbidimetric	20	310		*	mg/L	20	100	07/02/13 14:27	tcd
Sulfide as S	SM4500S2-D	1	0.25		*	mg/L	0.02	0.1	06/24/13 14:03	abm
TDS (calculated)	Calculation		620			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.03						07/12/13 0:00	calc

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ACZ Laboratories, Inc.

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Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of Interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of Interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

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ACZ Laboratories, Inc.

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12869***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12869-01	WG346885	Selenium, dissolved	M200.8 ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG346652	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Peroent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346872	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346703	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346734	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Peroent Difference (RPD) was not used for data validation because the sample concentration is too low for

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12869***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12869***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12869-02	WG346652	Antimony, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346691	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346687	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12869***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12869***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12869-03	WG346652	Antimony, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346885	Arsenic, dissolved	M200.8 ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
		Selenium, dissolved	M200.8 ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
			M200.8 ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG346652	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346872	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346703	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12869***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			Acid		
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346682	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12869***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12869-04	WG346652	Antimony, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346885	Selenium, dissolved	M200.8 ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG346652	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346872	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346703	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346596	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12869***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346206	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: ***L12869***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Bismuth, dissolved	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Scandium, dissolved	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Sulfide as S	SM4500S2-D

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12869
Date Received: 06/21/2013 10:12
Received By: gac
Date Printed: 6/23/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?		X	

```
L12869-01 Container B1349967: Added 1 mls 5N sodium hydroxide
and 1 mls zinc acetate to the sub-sample.  The pH is 8

L12869-02 Container B1349976: Added 1 mls 5N sodium hydroxide
and 1 mls zinc acetate to the sub-sample to adjust the pH to
the appropriate range.

L12869-03 Container B1349984: Added 1 mls 5N sodium hydroxide
and 1 mls zinc acetate to the sub-sample to adjust the pH to
the appropriate range.

L12869-04 Container B1349992: Added 1 mls 5N sodium hydroxide
and 1 mls zinc acetate to the sub-sample to adjust the pH to
the appropriate range.
```

12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

```
Some parameters were received past hold time.
```

Chain of Custody Related Remarks

Client Contact Remarks

REPAD LPII 2012-03

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12869
Date Received: 06/21/2013 10:12
Received By: gac
Date Printed: 6/23/2013

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3077	17.4	13	N/A

Was ice present in the shipment container(s)?

```
Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

REPAD LPII 2012-03

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ACZ Laboratories, Inc. L12869

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: Miguel Berganza	Address: Km 8.6 carretera antigua a El Salvador
Company: Tahoe Resources Inc.	Centro corporativo Murdock, Torre Oeste, Apto 503 y 504
E-mail: mberganza@sanrafael.com.gt	Telephone: (+502) 5951 5248
Name: charlie muehoff	E-mail: cmuehoff@tahoeresources.com
Company: Tahoe Resources Inc.	Telephone:
Name: Miguel Berganza	Address: Km 8.6 carretera antigua a El Salvador
Company: Tahoe Resources Inc.	Centro corporativo Murdock, Torre Oeste, Apto 503 y 504
E-mail: mberganza@sanrafael.com.gt	Telephone: (+502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES / NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes / No

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernando Contreras Sampler's site Information | State | Zip code | Time Zone

Quote #: Water Quality

Project/PO #: Escobal

Reporting state for compliance testing:

Check box if samples include NRC licensed material?

				# of Containers	GW							
MW10	18/06/13	08:50	GW	8	✓							
MW11	18/06/13	11:15	GW	8	✓							
MW20	18/06/13	13:00	GW	8	✓							
MW21	18/06/13	12:55	GW	8	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Gustavo Diaz	18/6/13 8:10	6-21-13	10:12

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

L12869 Chain of Custody

Page 22 of 23

Guatemala June 19th, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 12, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12870

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 21, 2013. This project has been assigned to ACZ's project number, L12870. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12870. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 11, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. July 12, 2013

Project ID: Escobal
ACZ Project ID: L12870

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 4 ground water samples from Tahoe Resources, Inc. on June 21, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12870. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with an "H3" or a "C4". See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following anomaly required further explanation not provided by the Extended Qualifier Report:

1. The TDS values for sample L12870-01 was verified by re-analysis with no significant change.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW2

ACZ Sample ID: ***L12870-01***
Date Sampled: *06/18/13 10:35*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/30/13 10:05	mla
Cyanide, WAD	SM4500-CN I- distillation		-						06/30/13 13:25	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 10:27	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 13:06	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 14:37	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 18:15	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0004	0.002	06/28/13 18:07	las
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	06/28/13 18:07	las
Barium, dissolved	M200.7 ICP	1	0.031			mg/L	0.003	0.02	06/29/13 8:04	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:04	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 8:04	jjc
Boron, dissolved	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	07/01/13 18:15	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:07	las
Calcium, dissolved	M200.7 ICP	1	7.6			mg/L	0.2	1	06/29/13 8:04	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:04	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:04	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:04	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:04	jjc
Iron, dissolved	M200.7 ICP	1	0.02	B		mg/L	0.02	0.05	07/01/13 18:15	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:07	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:04	jjc
Magnesium, dissolved	M200.7 ICP	1	2.7			mg/L	0.2	1	06/29/13 8:04	jjc
Manganese, dissolved	M200.7 ICP	1	0.035			mg/L	0.005	0.03	06/29/13 8:04	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 15:40	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:04	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:04	jjc
Potassium, dissolved	M200.7 ICP	1	3.4			mg/L	0.3	2	06/29/13 8:04	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:04	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	07/03/13 17:02	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 18:07	las
Sodium, dissolved	M200.7 ICP	1	15.6			mg/L	0.3	2	06/29/13 8:04	jjc
Strontium, dissolved	M200.7 ICP	1	0.06			mg/L	0.01	0.05	06/29/13 8:04	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:07	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 8:04	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:04	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:07	las
Vanadium, dissolved	M200.7 ICP	1	0.009	B		mg/L	0.005	0.03	06/29/13 8:04	jjc
Zinc, dissolved	M200.7 ICP	1	0.16			mg/L	0.01	0.05	06/29/13 8:04	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW2

ACZ Sample ID: ***L12870-01***
Date Sampled: *06/18/13 10:35*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	44		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	44		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			7.7			%			07/12/13 0:00	calc
Sum of Anions			1.2			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			1.4			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	4	B	*	mg/L	1	5	06/27/13 16:31	bsu
Conductivity @25C	SM2510B	1	136		*	umhos/cm	1	10	06/22/13 3:47	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 13:46	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 14:29	mpb
Fluoride	SM4500F-C	1	0.5		*	mg/L	0.1	0.5	06/28/13 10:55	abm
Hardness as CaCO3	SM2340B - Calculation		30			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	2.66		*	mg/L	0.02	0.1	06/29/13 16:18	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.05	B	*	mg/L	0.05	0.5	07/01/13 17:26	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	07/06/13 17:10	pjb
pH (lab)	SM4500H+ B									
pH		1	7.6	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.19			mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.06		*	mg/L	0.01	0.05	07/02/13 11:00	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.08	H	*	mg/L	0.01	0.05	06/21/13 20:15	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.10		*	mg/L	0.01	0.05	06/28/13 21:50	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	190	H	*	mg/L	10	20	07/08/13 16:03	abm
Residue, Non-Filterable (TSS) @105C	SM2540D	1	280		*	mg/L	5	20	06/25/13 11:50	mss3
Residue, Total (TS) @ 105C	SM2540B	1	450		*	mg/L	10	20	06/25/13 17:43	abm
Sulfate	D516-02 - Turbidimetric	1	7.0		*	mg/L	1	5	07/02/13 14:06	tcd
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 14:09	abm
TDS (calculated)	Calculation		68			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		2.79						07/12/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW3

ACZ Sample ID: ***L12870-02***
Date Sampled: *06/18/13 11:35*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/30/13 10:14	mla
Cyanide, WAD	SM4500-CN I- distillation								06/30/13 15:20	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 10:44	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 13:12	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 14:48	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 18:18	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0004	0.002	06/28/13 18:10	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0016			mg/L	0.0002	0.001	06/28/13 18:10	las
Barium, dissolved	M200.7 ICP	1	0.034			mg/L	0.003	0.02	06/29/13 8:07	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:07	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 8:07	jjc
Boron, dissolved	M200.7 ICP	1	0.05			mg/L	0.01	0.05	07/01/13 18:18	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:10	las
Calcium, dissolved	M200.7 ICP	1	63.2			mg/L	0.2	1	06/29/13 8:07	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:07	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:07	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:07	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:07	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	07/01/13 18:18	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:10	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:07	jjc
Magnesium, dissolved	M200.7 ICP	1	7.9			mg/L	0.2	1	06/29/13 8:07	jjc
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:07	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 15:42	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:07	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:07	jjc
Potassium, dissolved	M200.7 ICP	1	3.8			mg/L	0.3	2	06/29/13 8:07	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:07	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	07/03/13 17:07	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 18:10	las
Sodium, dissolved	M200.7 ICP	1	25.6			mg/L	0.3	2	06/29/13 8:07	jjc
Strontium, dissolved	M200.7 ICP	1	0.60			mg/L	0.01	0.05	06/29/13 8:07	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:10	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 8:07	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:07	jjc
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:10	las
Vanadium, dissolved	M200.7 ICP	1	0.008	B		mg/L	0.005	0.03	06/29/13 8:07	jjc
Zinc, dissolved	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	06/29/13 8:07	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW3

ACZ Sample ID: ***L12870-02***
Date Sampled: *06/18/13 11:35*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	77		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	77		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			3.0			%			07/12/13 0:00	calc
Sum of Anions			4.8			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			5.1			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	13		*	mg/L	1	5	06/27/13 16:31	bsu
Conductivity @25C	SM2510B	1	477		*	umhos/cm	1	10	06/22/13 3:55	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 13:46	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 14:31	mpb
Fluoride	SM4500F-C	1	0.8		*	mg/L	0.1	0.5	06/28/13 11:09	abm
Hardness as CaCO3	SM2340B - Calculation		190			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	2.37		*	mg/L	0.02	0.1	06/29/13 16:19	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:27	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.2	B	*	mg/L	0.1	0.5	07/06/13 17:11	pjb
pH (lab)	SM4500H+ B									
pH		1	7.8	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	22.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.25			mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.08		*	mg/L	0.01	0.05	07/02/13 11:01	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.12	H	*	mg/L	0.01	0.05	06/21/13 20:16	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.08		*	mg/L	0.01	0.05	06/28/13 21:51	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	400		*	mg/L	10	20	06/22/13 13:37	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/25/13 11:51	mss3
Residue, Total (TS) @ 105C	SM2540B	1	390		*	mg/L	10	20	06/25/13 17:45	abm
Sulfate	D516-02 - Turbidimetric	5	137		*	mg/L	5	30	07/02/13 14:13	tcd
Sulfide as S	SM4500S2-D	3.75		U	*	mg/L	0.08	0.4	06/24/13 14:16	abm
TDS (calculated)	Calculation		298			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.34						07/12/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW4

ACZ Sample ID: ***L12870-03***
Date Sampled: *06/18/13 17:45*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/30/13 10:22	mla
Cyanide, WAD	SM4500-CN I- distillation								06/30/13 17:15	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 11:01	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 13:18	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 15:00	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 18:21	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0004	0.002	06/28/13 18:13	las
Arsenic, dissolved	M200.8 ICP-MS	1	0.0013			mg/L	0.0002	0.001	06/28/13 18:13	las
Barium, dissolved	M200.7 ICP	1	0.043			mg/L	0.003	0.02	06/29/13 8:11	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:11	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 8:11	jjc
Boron, dissolved	M200.7 ICP	1	0.07			mg/L	0.01	0.05	07/01/13 18:21	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:13	las
Calcium, dissolved	M200.7 ICP	1	99.0			mg/L	0.2	1	06/29/13 8:11	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:11	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:11	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:11	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:11	jjc
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	07/01/13 18:21	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:13	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:11	jjc
Magnesium, dissolved	M200.7 ICP	1	10.9			mg/L	0.2	1	06/29/13 8:11	jjc
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:11	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 15:44	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:11	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:11	jjc
Potassium, dissolved	M200.7 ICP	1	4.8			mg/L	0.3	2	06/29/13 8:11	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:11	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0003			mg/L	0.0001	0.0003	07/03/13 17:09	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 18:13	las
Sodium, dissolved	M200.7 ICP	1	31.6			mg/L	0.3	2	06/29/13 8:11	jjc
Strontium, dissolved	M200.7 ICP	1	0.92			mg/L	0.01	0.05	06/29/13 8:11	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:13	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 8:11	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:11	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	06/28/13 18:13	las
Vanadium, dissolved	M200.7 ICP	1	0.006	B		mg/L	0.005	0.03	06/29/13 8:11	jjc
Zinc, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 8:11	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW4

ACZ Sample ID: ***L12870-03***
Date Sampled: *06/18/13 17:45*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	85		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	85		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			2.1			%			07/12/13 0:00	calc
Sum of Anions			7.1			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			7.4			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	20		*	mg/L	1	5	06/27/13 16:31	bsu
Conductivity @25C	SM2510B	1	668		*	umhos/cm	1	10	06/22/13 4:04	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 13:49	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 14:32	mpb
Fluoride	SM4500F-C	1	0.9		*	mg/L	0.1	0.5	06/28/13 11:13	abm
Hardness as CaCO3	SM2340B - Calculation		992			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	2.15		*	mg/L	0.02	0.1	06/29/13 16:20	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:31	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	07/06/13 17:12	pjb
pH (lab)	SM4500H+ B									
pH		1	7.8	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	22.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.19			mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.06		*	mg/L	0.01	0.05	07/02/13 11:02	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.09	H	*	mg/L	0.01	0.05	06/21/13 20:17	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.06		*	mg/L	0.01	0.05	06/28/13 21:52	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	530		*	mg/L	10	20	06/22/13 13:38	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1		U	*	mg/L	5	20	06/25/13 11:53	mss3
Residue, Total (TS) @ 105C	SM2540B	1	530		*	mg/L	10	20	06/25/13 17:46	abm
Sulfate	D516-02 - Turbidimetric	20	230		*	mg/L	20	100	07/02/13 14:27	tcd
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 14:35	abm
TDS (calculated)	Calculation		449			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.18						07/12/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW5

ACZ Sample ID: ***L12870-04***
Date Sampled: *06/18/13 16:25*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/30/13 10:30	mla
Cyanide, WAD	SM4500-CN I- distillation								06/30/13 18:13	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 11:18	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 13:24	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 10:37	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 18:24	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0004	0.002	06/28/13 18:17	las
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	06/28/13 18:17	las
Barium, dissolved	M200.7 ICP	1	0.140			mg/L	0.003	0.02	06/29/13 8:14	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:14	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 8:14	jjc
Boron, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.01	0.05	07/01/13 18:24	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:17	las
Calcium, dissolved	M200.7 ICP	1	144			mg/L	0.2	1	06/29/13 8:14	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:14	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:14	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:14	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:14	jjc
Iron, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.02	0.05	07/01/13 18:24	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:17	las
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:14	jjc
Magnesium, dissolved	M200.7 ICP	1	20.8			mg/L	0.2	1	06/29/13 8:14	jjc
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:14	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 15:47	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:14	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:14	jjc
Potassium, dissolved	M200.7 ICP	1	9.0			mg/L	0.3	2	06/29/13 8:14	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:14	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0003			mg/L	0.0001	0.0003	07/03/13 17:10	msh
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.00005	0.0003	06/28/13 18:17	las
Sodium, dissolved	M200.7 ICP	1	27.8			mg/L	0.3	2	06/29/13 8:14	jjc
Strontium, dissolved	M200.7 ICP	1	0.73			mg/L	0.01	0.05	06/29/13 8:14	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/28/13 18:17	las
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 8:14	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:14	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	06/28/13 18:17	las
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:14	jjc
Zinc, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.01	0.05	06/29/13 8:14	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW5

ACZ Sample ID: ***L12870-04***
Date Sampled: *06/18/13 16:25*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	101		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	101		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			07/12/13 0:00	calc
Sum of Anions			10.4			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			10.4			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	23		*	mg/L	1	5	06/27/13 16:31	bsu
Conductivity @25C	SM2510B	1	903		*	umhos/cm	1	10	06/22/13 4:13	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 13:50	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 14:33	mpb
Fluoride	SM4500F-C	1	0.2	B	*	mg/L	0.1	0.5	06/28/13 11:19	abm
Hardness as CaCO3	SM2340B - Calculation		445			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	2.64		*	mg/L	0.02	0.1	06/29/13 16:22	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:32	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.2	B	*	mg/L	0.1	0.5	07/06/13 17:15	pjb
pH (lab)	SM4500H+ B									
pH		1	7.7	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	22.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.09	B		mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	07/02/13 11:03	tod
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.07	H	*	mg/L	0.01	0.05	06/21/13 20:18	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.04	B	*	mg/L	0.01	0.05	06/28/13 22:05	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	740		*	mg/L	10	20	06/22/13 13:39	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	5	B	*	mg/L	5	20	06/25/13 11:55	mss3
Residue, Total (TS) @ 105C	SM2540B	1	750		*	mg/L	10	20	06/25/13 17:48	abm
Sulfate	D516-02 - Turbidimetric	20	370		*	mg/L	20	100	07/02/13 14:27	tod
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 14:42	abm
TDS (calculated)	Calculation		656			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.13						07/12/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of Interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of Interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualist.pdf

REP001.09.12.01

ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12870***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12870-01	WG346652	Antimony, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346872	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346875	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346650	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12870***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG347160	Residue, Filterable (TDS) @180C	SM2540C	C4	Confirmatory analysis was past holding time.
			SM2540C	Q6	Sample was received above recommended temperature.
	WG346354	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346401	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346256	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12870***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12870-02	WG346652	Antimony, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346872	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346875	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346650	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12870*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG346209	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346354	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346401	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346256	Sulfide as S	SM4500S2-D	D1	Sample required dilution due to matrix.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12870*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12870-03	WG346652	Antimony, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346872	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346875	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346650	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346714	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12870***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG346209	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346354	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346401	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346256	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12870***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12870-04	WG346652	Antimony, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346872	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346875	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346650	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346717	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12870***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG346209	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346354	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346401	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346256	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
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Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: ***L12870***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bismuth, dissolved	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Scandium, dissolved	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Sulfide as S	SM4500S2-D

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12870
Date Received: 06/21/2013 10:06
Received By: gac
Date Printed: 6/23/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?		X	

L12870-01 Container B1350008: Added 1 mls 5N sodium hydroxide and 1 mls zinc acetate to the sub-sample to adjust the pH to the appropriate range.

L12870-02 Container B1350017: Added 1 mls 5N sodium hydroxide and 1 mls zinc acetate to the sub-sample to adjust the pH to the appropriate range.

L12870-03 Container B1350025: Added 1 mls 5N sodium hydroxide and 1 mls zinc acetate to the sub-sample to adjust the pH to the appropriate range.

L12870-04 Container B1350033: Added 1 mls 5N sodium hydroxide and 1 mls zinc acetate to the sub-sample to adjust the pH to the appropriate range.

12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12870
Date Received: 06/21/2013 10:06
Received By: gac
Date Printed: 6/23/2013

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2214	17.3	13	Yes

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

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ACZ Laboratories, Inc L12870

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: Miguel Berganza	Address: Km 8.5 carretera antigua a El Salvador
Company: Tahoe Resources Inc.	Centro corporativo Muxbal, Torre Oeste, Apdos 502 y 504
E-mail: MBerganza@sanrafael.com.gt	Telephone: (502) 5951 5248
Name: Charlie Muerhoff	E-mail: CMuerhoff@sanrafael.com.gt
Company: Tahoe Resources Inc.	Telephone:
Name: Miguel Berganza	Address: Km 8.5 carretera antigua a El Salvador
Company: Tahoe Resources Inc	Centro corporativo Muxbal, Torre Oeste Apdos 502 y 504
E-mail: MBerganza@sanrafael.com.gt	Telephone: (502) 5951524 Y

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☐

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernanda Perez Sampler's site Information State Zip code Time Zone

Quote #: Water Quality

Project/PO #: Escobal

Reporting state for compliance testing:

Check box if samples include NRC licensed material? ☐

				# of Containers	GW							
MW2	18/06/13	10:35	GW	8	✓							
MW3	18/06/13	11:35	GW	8	✓							
MW4	18/06/13	19.45	GW	8	✓							
MW5	18/06/13	16:25	GW	8	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Fernanda Perez	18/6/13 8:10	Fedex	19/6/13
		MC 6-21-13 15:06	

L12870 Chain of Custody

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

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Guatemala June 19th, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 12, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12871

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 21, 2013. This project has been assigned to ACZ's project number, L12871. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12871. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 11, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. July 12, 2013

Project ID: Escobal
ACZ Project ID: L12871

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 4 ground water samples from Tahoe Resources, Inc. on June 21, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12871. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with an "H3", received after the hold time expired.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following anomaly required further explanation not provided by the Extended Qualifier Report:

1. The TDS values for samples L12871-01 and -04 were verified by re-analysis with no significant change.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW1-A

ACZ Sample ID: ***L12871-01***
Date Sampled: *06/18/13 05:00*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/30/13 10:38	mla
Cyanide, WAD	SM4500-CN I- distillation								06/30/13 10:10	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 11:34	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 13:36	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 11:00	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 15:38	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	07/02/13 4:11	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0024			mg/L	0.0002	0.001	07/02/13 4:11	pmc
Barium, dissolved	M200.7 ICP	1	0.034			mg/L	0.003	0.02	06/29/13 8:57	aeb
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:57	aeb
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 8:57	aeb
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:57	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/02/13 4:11	pmc
Calcium, dissolved	M200.7 ICP	1	5.5			mg/L	0.2	1	06/29/13 8:57	aeb
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:57	aeb
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:57	aeb
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:57	aeb
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:57	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	06/29/13 8:57	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/02/13 4:11	pmc
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:57	aeb
Magnesium, dissolved	M200.7 ICP	1	2.3			mg/L	0.2	1	06/29/13 8:57	aeb
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:57	aeb
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 15:49	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 8:57	aeb
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 8:57	aeb
Potassium, dissolved	M200.7 ICP	1	4.3			mg/L	0.3	2	06/29/13 8:57	aeb
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 8:57	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0003	07/02/13 4:11	pmc
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	07/02/13 4:11	pmc
Sodium, dissolved	M200.7 ICP	1	8.6			mg/L	0.3	2	06/29/13 8:57	aeb
Strontium, dissolved	M200.7 ICP	1	0.05			mg/L	0.01	0.05	06/29/13 8:57	aeb
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/02/13 4:11	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 8:57	aeb
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:57	aeb
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/02/13 4:11	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 8:57	aeb
Zinc, dissolved	M200.7 ICP	1	0.12			mg/L	0.01	0.05	06/29/13 8:57	aeb

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW1-A

ACZ Sample ID: ***L12871-01***
Date Sampled: *06/18/13 05:00*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	31		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	31		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			5.6			%			07/12/13 0:00	calc
Sum of Anions			0.863			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			0.965			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	4	B	*	mg/L	1	5	06/27/13 16:31	bsu
Conductivity @25C	SM2510B	1	98		*	umhos/cm	1	10	06/22/13 4:21	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 13:51	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/02/13 14:34	mpb
Fluoride	SM4500F-C	1	0.1	B	*	mg/L	0.1	0.5	06/28/13 11:24	abm
Hardness as CaCO3	SM2340B - Calculation		23			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	1.54		*	mg/L	0.02	0.1	06/29/13 16:24	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.09	B	*	mg/L	0.05	0.5	07/01/13 17:33	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.7		*	mg/L	0.1	0.5	07/08/13 17:16	pjb
pH (lab)	SM4500H+ B									
pH		1	7.8	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus			U		mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1		U	*	mg/L	0.01	0.05	07/02/13 11:06	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	06/21/13 20:21	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.06		*	mg/L	0.01	0.05	06/28/13 22:07	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	130		*	mg/L	10	20	06/22/13 13:13	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	7	B	*	mg/L	5	20	06/24/13 11:09	mss3
Residue, Total (TS) @ 105C	SM2540B	1	290		*	mg/L	10	20	06/22/13 9:24	dcw
Sulfate	D516-02 - Turbidimetric	1	6.0		*	mg/L	1	5	07/02/13 14:17	tcd
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 14:10	abm
TDS (calculated)	Calculation		50			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		2.60						07/12/13 0:00	calc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW2

ACZ Sample ID: ***L12871-02***
Date Sampled: *06/17/13 08:30*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 8:55	mla
Cyanide, WAD	SM4500-CN I- distillation								06/27/13 14:45	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 11:51	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 13:48	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 11:23	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	0.09	B		mg/L	0.03	0.2	07/01/13 15:42	aeb
Antimony, dissolved	M200.8 ICP-MS	1	0.0008	B		mg/L	0.0004	0.002	07/02/13 4:14	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0209			mg/L	0.0002	0.001	07/02/13 4:14	pmc
Barium, dissolved	M200.7 ICP	1	0.139			mg/L	0.003	0.02	06/29/13 9:01	aeb
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:01	aeb
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 9:01	aeb
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:01	aeb
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/02/13 4:14	pmc
Calcium, dissolved	M200.7 ICP	1	17.2			mg/L	0.2	1	06/29/13 9:01	aeb
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:01	aeb
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:01	aeb
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:01	aeb
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 9:01	aeb
Iron, dissolved	M200.7 ICP	1	0.49			mg/L	0.02	0.05	06/29/13 9:01	aeb
Lead, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	07/02/13 4:14	pmc
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 9:01	aeb
Magnesium, dissolved	M200.7 ICP	1	3.1			mg/L	0.2	1	06/29/13 9:01	aeb
Manganese, dissolved	M200.7 ICP	1	0.190			mg/L	0.005	0.03	06/29/13 9:01	aeb
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 15:51	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 9:01	aeb
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:01	aeb
Potassium, dissolved	M200.7 ICP	1	2.1			mg/L	0.3	2	06/29/13 9:01	aeb
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 9:01	aeb
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	07/02/13 4:14	pmc
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	07/02/13 4:14	pmc
Sodium, dissolved	M200.7 ICP	1	9.2			mg/L	0.3	2	06/29/13 9:01	aeb
Strontium, dissolved	M200.7 ICP	1	0.15			mg/L	0.01	0.05	06/29/13 9:01	aeb
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/02/13 4:14	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 9:01	aeb
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 9:01	aeb
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/02/13 4:14	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 9:01	aeb
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:01	aeb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW2

ACZ Sample ID: ***L12871-02***
Date Sampled: *06/17/13 08:30*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	51		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	51		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			07/12/13 0:00	calc
Sum of Anions			1.6			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			1.6			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	5		*	mg/L	1	5	06/27/13 16:31	bsu
Conductivity @25C	SM2510B	1	154		*	umhos/cm	1	10	06/22/13 4:29	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 15:28	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:57	bsu
Fluoride	SM4500F-C	1	0.2	B	*	mg/L	0.1	0.5	06/28/13 11:31	abm
Hardness as CaCO3	SM2340B - Calculation		56			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	06/29/13 16:26	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:34	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.3	B	*	mg/L	0.1	0.5	07/08/13 17:17	pjb
pH (lab)	SM4500H+ B									
pH		1	7.7	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.31			mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.10		*	mg/L	0.01	0.05	07/02/13 11:08	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.07	H	*	mg/L	0.01	0.05	06/21/13 20:23	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.15		*	mg/L	0.01	0.05	06/28/13 22:09	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	160		*	mg/L	10	20	06/22/13 13:41	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	10	B	*	mg/L	5	20	06/24/13 11:11	mss3
Residue, Total (TS) @ 105C	SM2540B	1	160		*	mg/L	10	20	06/22/13 9:25	dcw
Sulfate	D516-02 - Turbidimetric	1	19.0		*	mg/L	1	5	07/02/13 14:17	tcd
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 14:16	abm
TDS (calculated)	Calculation		87			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.84						07/12/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW3

ACZ Sample ID: ***L12871-03***
Date Sampled: *06/17/13 10:20*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 9:00	mla
Cyanide, WAD	SM4500-CN I- distillation								06/27/13 14:52	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 12:08	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 13:54	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 11:34	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.2	07/01/13 15:45	aeb
Antimony, dissolved	M200.8 ICP-MS	1	0.0005	B		mg/L	0.0004	0.002	07/02/13 4:18	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0028			mg/L	0.0002	0.001	07/02/13 4:18	pmc
Barium, dissolved	M200.7 ICP	1	0.360			mg/L	0.003	0.02	06/29/13 9:04	aeb
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:04	aeb
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 9:04	aeb
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:04	aeb
Cadmium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	07/02/13 4:18	pmc
Calcium, dissolved	M200.7 ICP	1	106			mg/L	0.2	1	06/29/13 9:04	aeb
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:04	aeb
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:04	aeb
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:04	aeb
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 9:04	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	06/29/13 9:04	aeb
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/02/13 4:18	pmc
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 9:04	aeb
Magnesium, dissolved	M200.7 ICP	1	17.5			mg/L	0.2	1	06/29/13 9:04	aeb
Manganese, dissolved	M200.7 ICP	1	0.608			mg/L	0.005	0.03	06/29/13 9:04	aeb
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 15:57	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 9:04	aeb
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:04	aeb
Potassium, dissolved	M200.7 ICP	1	10.4			mg/L	0.3	2	06/29/13 9:04	aeb
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 9:04	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	07/02/13 4:18	pmc
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	07/02/13 4:18	pmc
Sodium, dissolved	M200.7 ICP	1	32.2			mg/L	0.3	2	06/29/13 9:04	aeb
Strontium, dissolved	M200.7 ICP	1	0.55			mg/L	0.01	0.05	06/29/13 9:04	aeb
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/02/13 4:18	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 9:04	aeb
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 9:04	aeb
Uranium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	07/02/13 4:18	pmc
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/29/13 9:04	aeb
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:04	aeb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW3

ACZ Sample ID: ***L12871-03***
Date Sampled: *06/17/13 10:20*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	125		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	125		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.2			%			07/12/13 0:00	calc
Sum of Anions			8.3			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			8.5			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	1	5		*	mg/L	1	5	06/27/13 16:31	bsu
Conductivity @25C	SM2510B	1	757		*	umhos/cm	1	10	06/22/13 4:38	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 15:29	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:58	bsu
Fluoride	SM4500F-C	1	0.3	B	*	mg/L	0.1	0.5	06/28/13 11:35	abm
Hardness as CaCO3	SM2340B - Calculation		337			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	2.46		*	mg/L	0.02	0.1	06/29/13 16:31	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/01/13 17:36	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.3	B	*	mg/L	0.1	0.5	07/08/13 17:19	pjb
pH (lab)	SM4500H+ B									
pH		1	7.8	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	23.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.06	B		mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.02	B	*	mg/L	0.01	0.05	07/02/13 11:09	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	06/21/13 20:27	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.02	B	*	mg/L	0.01	0.05	06/28/13 22:10	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	600		*	mg/L	10	20	06/22/13 13:42	khw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	5	B	*	mg/L	5	20	06/24/13 11:12	mss3
Residue, Total (TS) @ 105C	SM2540B	1	610		*	mg/L	10	20	06/22/13 9:27	dcw
Sulfate	D516-02 - Turbidimetric	20	270		*	mg/L	20	100	07/02/13 14:32	tcd
Sulfide as S	SM4500S2-D	1		U	*	mg/L	0.02	0.1	06/24/13 14:36	abm
TDS (calculated)	Calculation		518			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.16						07/12/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW4

ACZ Sample ID: ***L12871-04***
Date Sampled: *06/17/13 09:25*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/27/13 9:11	mla
Cyanide, WAD	SM4500-CN I- distillation								06/27/13 14:58	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/02/13 12:25	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								06/29/13 14:00	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								06/28/13 11:46	mpb/mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	3.14			mg/L	0.03	0.2	07/01/13 15:48	aeb
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	07/02/13 4:27	pmc
Arsenic, dissolved	M200.8 ICP-MS	1	0.0022			mg/L	0.0002	0.001	07/02/13 4:27	pmc
Barium, dissolved	M200.7 ICP	1	0.253			mg/L	0.003	0.02	06/29/13 9:13	aeb
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:13	aeb
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	06/29/13 9:13	aeb
Boron, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 9:13	aeb
Cadmium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0005	07/02/13 4:27	pmc
Calcium, dissolved	M200.7 ICP	1	6.8			mg/L	0.2	1	06/29/13 9:13	aeb
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:13	aeb
Cobalt, dissolved	M200.7 ICP	1	0.02	B		mg/L	0.01	0.05	06/29/13 9:13	aeb
Copper, dissolved	M200.7 ICP	1	0.01	B		mg/L	0.01	0.05	06/29/13 9:13	aeb
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 9:13	aeb
Iron, dissolved	M200.7 ICP	1	4.52			mg/L	0.02	0.05	06/29/13 9:13	aeb
Lead, dissolved	M200.8 ICP-MS	1	0.0081			mg/L	0.0001	0.0005	07/02/13 4:27	pmc
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 9:13	aeb
Magnesium, dissolved	M200.7 ICP	1	3.0			mg/L	0.2	1	06/29/13 9:13	aeb
Manganese, dissolved	M200.7 ICP	1	1.090			mg/L	0.005	0.03	06/29/13 9:13	aeb
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	06/28/13 16:03	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/29/13 9:13	aeb
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/29/13 9:13	aeb
Potassium, dissolved	M200.7 ICP	1	7.4			mg/L	0.3	2	06/29/13 9:13	aeb
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	06/29/13 9:13	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0003	07/02/13 4:27	pmc
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	07/02/13 4:27	pmc
Sodium, dissolved	M200.7 ICP	1	10.2			mg/L	0.3	2	06/29/13 9:13	aeb
Strontium, dissolved	M200.7 ICP	1	0.06			mg/L	0.01	0.05	06/29/13 9:13	aeb
Thallium, dissolved	M200.8 ICP-MS	1	0.0003	B		mg/L	0.0001	0.0005	07/02/13 4:27	pmc
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/29/13 9:13	aeb
Titanium, dissolved	M200.7 ICP	1	0.146			mg/L	0.005	0.03	06/29/13 9:13	aeb
Uranium, dissolved	M200.8 ICP-MS	1	0.0011			mg/L	0.0001	0.0005	07/02/13 4:27	pmc
Vanadium, dissolved	M200.7 ICP	1	0.030			mg/L	0.005	0.03	06/29/13 9:13	aeb
Zinc, dissolved	M200.7 ICP	1	0.07			mg/L	0.01	0.05	06/29/13 9:13	aeb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: GW4

ACZ Sample ID: ***L12871-04***
Date Sampled: *06/17/13 09:25*
Date Received: *06/21/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	22		*	mg/L	2	20	06/22/13 0:00	khw
Carbonate as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Hydroxide as CaCO3		1		U	*	mg/L	2	20	06/22/13 0:00	khw
Total Alkalinity		1	22		*	mg/L	2	20	06/22/13 0:00	khw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			15.2			%			07/12/13 0:00	calc
Sum of Anions			1.4			meq/L	0.1	0.5	07/12/13 0:00	calc
Sum of Cations			1.9			meq/L	0.1	0.5	07/12/13 0:00	calc
Chloride	SM4500Cl-E	5	19	B	*	mg/L	5	30	06/27/13 16:32	bsu
Conductivity @25C	SM2510B	1	126		*	umhos/cm	1	10	06/22/13 4:46	khw
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 15:30	bsu
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	06/28/13 14:59	bsu
Fluoride	SM4500F-C	1		U	*	mg/L	0.1	0.5	06/28/13 11:53	abm
Hardness as CaCO3	SM2340B - Calculation		29			mg/L	1	7	07/12/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.04	B	*	mg/L	0.02	0.1	06/29/13 16:32	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.16	B	*	mg/L	0.05	0.5	07/01/13 17:38	mpb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	2.7		*	mg/L	0.1	0.5	07/06/13 17:20	pjb
pH (lab)	SM4500H+ B									
pH		1	7.0	H	*	units	0.1	0.1	06/22/13 0:00	khw
pH measured at		1	22.0		*	C	0.1	0.1	06/22/13 0:00	khw
Phosphate	Calculation based on dissolved Phosphorus		0.16			mg/L	0.03	0.15	07/12/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.05		*	mg/L	0.01	0.05	07/02/13 11:12	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.06	H	*	mg/L	0.01	0.05	06/21/13 20:29	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.23		*	mg/L	0.01	0.05	06/28/13 22:11	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	920	H	*	mg/L	10	20	07/08/13 16:07	abm
Residue, Non-Filterable (TSS) @105C	SM2540D	2	110		*	mg/L	10	40	06/24/13 11:13	mss3
Residue, Total (TS) @ 105C	SM2540B	1	1380		*	mg/L	10	20	06/22/13 9:28	dcw
Sulfate	D516-02 - Turbidimetric	1	19.0		*	mg/L	1	5	07/02/13 14:17	tcd
Sulfide as S	SM4500S2-D	7.5		U	*	mg/L	0.2	0.8	06/24/13 14:43	abm
TDS (calculated)	Calculation		88			mg/L	10	50	07/12/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		10.45						07/12/13 0:00	calc

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ACZ Laboratories, Inc.
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Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of Interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of Interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualist.pdf

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L12871*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12871-01	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500CH-E	Q6	Sample was received above recommended temperature.
			SM4500CH-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346872	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346875	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346650	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346717	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346208	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12871***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12871***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12871-02	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346691	Cyanide, total	M335.4 - Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346687	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346650	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346717	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346209	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12871***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12871***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12871-03	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346691	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346687	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346650	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346717	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346209	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12871***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG346255	Sulfide as S	SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: L12871

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12871-04	WG346176	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346617	Chloride	SM4500Cl-E	DD	Sample required dilution due to matrix color or odor.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG346691	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346687	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346650	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG346731	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346814	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347098	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG346848	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346192	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346717	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347160	Residue, Filterable (TDS) @180C	SM2540C	C4	Confirmatory analysis was past holding time.
			SM2540C	Q6	Sample was received above recommended temperature.
	WG346235	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
	WG346202	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG346882	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12871***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG346255	Sulfide as S	SM4500S2-D	DD	Sample required dilution due to matrix color or odor.
			SM4500S2-D	DF	Sample required dilution due to high sediment.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	QD	Reported value is the background-corrected concentration, as described by the method.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346176	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

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ACZ Laboratories, Inc.
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Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: ***L12871***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bismuth, dissolved	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Scandium, dissolved	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Sulfide as S	SM4500S2-D

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12871
Date Received: 06/21/2013 10:07
Received By: gac
Date Printed: 6/23/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?		X	

```
L12871-01 Container B1350049: Added 1 mls 5N sodium hydroxide
and 1 mls zinc acetate to the sub-sample.  The pH is 8

L12871-02 Container B1350058: Added 1 mls 5N sodium hydroxide
and 1 mls zinc acetate to the sub-sample to adjust the pH to
the appropriate range.

L12871-03 Container B1350066: Added 1 mls 5N sodium hydroxide
and 1 mls zinc acetate to the sub-sample to adjust the pH to
the appropriate range.

L12871-04 Container B1350074: Added 1 mls 5N sodium hydroxide
and 1 mls zinc acetate to the sub-sample to adjust the pH to
the appropriate range.
```

12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

```
Some parameters were received past hold time.
```

Chain of Custody Related Remarks

Client Contact Remarks

REPAD LPII 2012-03

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L12871
Date Received: 06/21/2013 10:07
Received By: gac
Date Printed: 6/23/2013

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2793	19.7	13	N/A

Was ice present in the shipment container(s)?

```
Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.
```

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

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ACZ Laboratories, Inc L12871

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: mberganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador centro corporativo muxbal Torre Oeste, Aptos 503y504
Telephone: (502) 5951 5248

Name: Charlie Muerhoff
Company: Tahoe Resources Inc.
E-mail: cmuerhoff@tahoeresourcesinc.com
Telephone:

Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: mberganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador centro corporativo muxbal Torre Oeste Aptos 503y504
Telephone: (502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☐
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernanda Barrera Sampler's site Information State Zip code Time Zone

PROJECT INFORMATION

Quote #: Water Quality
Project/PO #: Escobal
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

SAMPLE IDENTIFICATION	DATE	TIME	Matrix	# of Containers	GW
GW1-A	18/06/13	05:00	GW	8	✓
GW2	17/06/13	08:30	GW	8	✓
GW3	17/06/13	10:20	GW	8	✓
GW4	17/06/13	09:25	GW	8	✓

COPY

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME
Gustavo Oroy	20/06/13 8:10	6-21-13	10:02
		6-21-13	

L12871 Chain of Custody

FRMAD050.02.11.11 · White - Return with sample. Yellow - Retain for your records.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 17, 2013

Report to:	Bill to:
Miguel Berganza	Miguel Berganza
Tahoe Resources, Inc.	Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor	5190 Neil Road #310
Torre Oeste.Apto 503y504 Guatemala, GT	Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L13079

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 03, 2013. This project has been assigned to ACZ's project number, L13079. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L13079. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 16, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber

Sue Webber has reviewed and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

REPAD.01.06.05.02

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW1

ACZ Sample ID: ***L13079-01***
Date Sampled: *06/30/13 14:15*
Date Received: *07/03/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								07/11/13 13:25	mla
Cyanide, WAD	SM4500-CN I- distillation		-						07/11/13 7:49	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/11/13 14:19	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								07/05/13 20:09	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								07/08/13 16:22	mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	0.20			mg/L	0.03	0.2	07/09/13 3:00	jjc
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	07/12/13 0:58	msh
Arsenic, dissolved	M200.8 ICP-MS	1	0.0041			mg/L	0.0002	0.001	07/12/13 0:58	msh
Barium, dissolved	M200.7 ICP	1	0.173			mg/L	0.003	0.02	07/09/13 3:00	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:00	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	07/09/13 3:00	jjc
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:00	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/12/13 0:58	msh
Calcium, dissolved	M200.7 ICP	1	36.4			mg/L	0.2	1	07/09/13 3:00	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:00	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:00	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:00	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	07/09/13 3:00	jjc
Iron, dissolved	M200.7 ICP	1	0.32			mg/L	0.02	0.05	07/09/13 3:00	jjc
Lead, dissolved	M200.8 ICP-MS	1	0.0011			mg/L	0.0001	0.0005	07/12/13 0:58	msh
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	07/09/13 3:00	jjc
Magnesium, dissolved	M200.7 ICP	1	10.9			mg/L	0.2	1	07/09/13 3:00	jjc
Manganese, dissolved	M200.7 ICP	1	0.033			mg/L	0.005	0.03	07/09/13 3:00	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	07/09/13 11:32	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	07/09/13 3:00	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:00	jjc
Potassium, dissolved	M200.7 ICP	1	5.6			mg/L	0.3	2	07/09/13 3:00	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	07/09/13 3:00	jjc
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	07/12/13 0:58	msh
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	07/12/13 0:58	msh
Sodium, dissolved	M200.7 ICP	1	17.3			mg/L	0.3	2	07/09/13 3:00	jjc
Strontium, dissolved	M200.7 ICP	1	0.20		*	mg/L	0.01	0.05	07/09/13 3:00	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/12/13 0:58	msh
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	07/09/13 3:00	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	07/09/13 3:00	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	07/12/13 0:58	msh
Vanadium, dissolved	M200.7 ICP	1	0.007	B		mg/L	0.005	0.03	07/09/13 3:00	jjc
Zinc, dissolved	M200.7 ICP	1	0.18			mg/L	0.01	0.05	07/09/13 3:00	jjc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: MW1

ACZ Sample ID: ***L13079-01***
Date Sampled: *06/30/13 14:15*
Date Received: *07/03/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	61		*	mg/L	2	20	07/04/13 0:00	abm
Carbonate as CaCO3		1		U	*	mg/L	2	20	07/04/13 0:00	abm
Hydroxide as CaCO3		1		U	*	mg/L	2	20	07/04/13 0:00	abm
Total Alkalinity		1	61		*	mg/L	2	20	07/04/13 0:00	abm
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.4			%			07/17/13 0:00	calc
Sum of Anions			3.6			meq/L	0.1	0.5	07/17/13 0:00	calc
Sum of Cations			3.7			meq/L	0.1	0.5	07/17/13 0:00	calc
Chloride	SM4500Cl-E	1	5		*	mg/L	1	5	07/10/13 12:04	mpb
Conductivity @25C	SM2510B	1	378		*	umhos/cm	1	10	07/04/13 4:57	abm
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/11/13 15:09	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/11/13 14:30	mpb
Fluoride	SM4500F-C	1	0.1	B	*	mg/L	0.1	0.5	07/09/13 17:18	abm
Hardness as CaCO3	SM2340B - Calculation		136			mg/L	1	7	07/17/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	3.23		*	mg/L	0.02	0.1	07/11/13 0:38	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1	0.06	B	*	mg/L	0.05	0.5	07/10/13 13:01	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1		U	*	mg/L	0.1	0.5	07/11/13 23:58	pjb
pH (lab)	SM4500H+ B									
pH		1	7.7	H	*	units	0.1	0.1	07/04/13 0:00	abm
pH measured at		1	22.0		*	C	0.1	0.1	07/04/13 0:00	abm
Phosphate	Calculation based on dissolved Phosphorus		0.25			mg/L	0.03	0.15	07/17/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.08		*	mg/L	0.01	0.05	07/08/13 15:40	tod
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.07	H	*	mg/L	0.01	0.05	07/03/13 19:31	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.09		*	mg/L	0.01	0.05	07/09/13 15:26	mpb
Residue, Filterable (TDS) @180C	SM2540C	1	320		*	mg/L	10	20	07/03/13 16:24	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	54		*	mg/L	5	20	07/03/13 14:23	mss3
Residue, Total (TS) @ 105C	SM2540B	1	440		*	mg/L	10	20	07/05/13 12:44	dcw
Sulfate	D516-02 - Turbidimetric	5	105		*	mg/L	5	25	07/10/13 13:38	mpb
Sulfide as S	SM4500S2-D	1		UH	*	mg/L	0.02	0.1	07/11/13 14:20	abm
TDS (calculated)	Calculation		218			mg/L	10	50	07/17/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.47						07/17/13 0:00	calc

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: RW-1

ACZ Sample ID: ***L13079-02***
Date Sampled: *06/30/13 15:00*
Date Received: *07/03/13*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								07/11/13 13:39	mla
Cyanide, WAD	SM4500-CN I- distillation								07/11/13 8:39	mla
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								07/11/13 14:30	mla
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid Digestion								07/05/13 20:30	bsu
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								07/08/13 16:30	mla

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	0.09	B		mg/L	0.03	0.2	07/09/13 3:04	jjc
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	07/12/13 1:02	msh
Arsenic, dissolved	M200.8 ICP-MS	1	0.0028			mg/L	0.0002	0.001	07/12/13 1:02	msh
Barium, dissolved	M200.7 ICP	1	0.093			mg/L	0.003	0.02	07/09/13 3:04	jjc
Beryllium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:04	jjc
Bismuth, dissolved	M200.7 ICP	1		U	*	mg/L	0.04	0.2	07/09/13 3:04	jjc
Boron, dissolved	M200.7 ICP	1	0.03	B		mg/L	0.01	0.05	07/09/13 3:04	jjc
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/12/13 1:02	msh
Calcium, dissolved	M200.7 ICP	1	126			mg/L	0.2	1	07/09/13 3:04	jjc
Chromium, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:04	jjc
Cobalt, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:04	jjc
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:04	jjc
Gallium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	07/09/13 3:04	jjc
Iron, dissolved	M200.7 ICP	1	0.24			mg/L	0.02	0.05	07/09/13 3:04	jjc
Lead, dissolved	M200.8 ICP-MS	1	0.0006			mg/L	0.0001	0.0005	07/12/13 1:02	msh
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	07/09/13 3:04	jjc
Magnesium, dissolved	M200.7 ICP	1	23.8			mg/L	0.2	1	07/09/13 3:04	jjc
Manganese, dissolved	M200.7 ICP	1	0.015	B		mg/L	0.005	0.03	07/09/13 3:04	jjc
Mercury, dissolved	M245.1 CVAA	1		U		mg/L	0.0002	0.001	07/09/13 11:34	mfm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	07/09/13 3:04	jjc
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	07/09/13 3:04	jjc
Potassium, dissolved	M200.7 ICP	1	16.5			mg/L	0.3	2	07/09/13 3:04	jjc
Scandium, dissolved	M200.7 ICP	1		U	*	mg/L	0.1	0.5	07/09/13 3:04	jjc
Selenium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0003	07/12/13 1:02	msh
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	07/12/13 1:02	msh
Sodium, dissolved	M200.7 ICP	1	32.4			mg/L	0.3	2	07/09/13 3:04	jjc
Strontium, dissolved	M200.7 ICP	1	0.85		*	mg/L	0.01	0.05	07/09/13 3:04	jjc
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	07/12/13 1:02	msh
Tin, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	07/09/13 3:04	jjc
Titanium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	07/09/13 3:04	jjc
Uranium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	07/12/13 1:02	msh
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	07/09/13 3:04	jjc
Zinc, dissolved	M200.7 ICP	1	0.04	B		mg/L	0.01	0.05	07/09/13 3:04	jjc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: RW-1

ACZ Sample ID: ***L13079-02***
Date Sampled: *06/30/13 15:00*
Date Received: *07/03/13*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	71		*	mg/L	2	20	07/04/13 0:00	abm
Carbonate as CaCO3		1		U	*	mg/L	2	20	07/04/13 0:00	abm
Hydroxide as CaCO3		1		U	*	mg/L	2	20	07/04/13 0:00	abm
Total Alkalinity		1	71		*	mg/L	2	20	07/04/13 0:00	abm
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.5			%			07/17/13 0:00	calc
Sum of Anions			10.1			meq/L	0.1	0.5	07/17/13 0:00	calc
Sum of Cations			10.2			meq/L	0.1	0.5	07/17/13 0:00	calc
Chloride	SM4500Cl-E	1	41		*	mg/L	1	5	07/10/13 12:04	mpb
Conductivity @25C	SM2510B	1	953		*	umhos/cm	1	10	07/04/13 5:05	abm
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/11/13 15:11	mpb
Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/11/13 14:31	mpb
Fluoride	SM4500F-C	1	0.4	B	*	mg/L	0.1	0.5	07/12/13 13:10	abm
Hardness as CaCO3	SM2340B - Calculation		413			mg/L	1	7	07/17/13 0:00	calc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	4	6.65		*	mg/L	0.08	0.4	07/11/13 0:46	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate	1		U	*	mg/L	0.05	0.5	07/10/13 13:02	bsu
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	2	1.0		*	mg/L	0.2	1	07/12/13 0:21	pjb
pH (lab)	SM4500H+ B									
pH		1	7.9	H	*	units	0.1	0.1	07/04/13 0:00	abm
pH measured at		1	22.0		*	C	0.1	0.1	07/04/13 0:00	abm
Phosphate	Calculation based on dissolved Phosphorus		0.09	B		mg/L	0.03	0.15	07/17/13 0:00	calc
Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	07/08/13 15:44	tcd
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.04	BH	*	mg/L	0.01	0.05	07/03/13 19:33	pjb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	0.03	B	*	mg/L	0.01	0.05	07/09/13 15:27	mpb
Residue, Filterable (TDS) @180C	SM2540C	1	770		*	mg/L	10	20	07/03/13 16:27	dcw
Residue, Non-Filterable (TSS) @105C	SM2540D	1	6	B	*	mg/L	5	20	07/03/13 14:24	mss3
Residue, Total (TS) @ 105C	SM2540B	1	800		*	mg/L	10	20	07/05/13 12:52	dcw
Sulfate	D516-02 - Turbidimetric	20	358		*	mg/L	20	100	07/10/13 13:45	mpb
Sulfide as S	SM4500S2-D	1		UH	*	mg/L	0.02	0.1	07/11/13 14:24	abm
TDS (calculated)	Calculation		642			mg/L	10	50	07/17/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.20						07/17/13 0:00	calc

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of Interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of Interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualist.pdf

REP001.09.12.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L13079*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13079-01	WG347153	Strontium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346995	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG347319	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346995	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG347426	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347421	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347197	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346995	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG347371	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG347305	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347450	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346995	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG347147	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347003	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347250	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346991	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346974	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for

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ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L13079*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					accurate evaluation (< 10x MDL).
	WG347048	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG347334	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG347423	Sulfide as S	SM4500S2-D	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	QD	Reported value is the background-corrected concentration, as described by the method.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346995	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.
			SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L13079*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13079-02	WG347153	Strontium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG346995	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG347319	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500Cl-E	Q6	Sample was received above recommended temperature.
			SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346995	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG347426	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347421	Cyanide, WAD	SM4500-CN I-Colorimetric w/ distillation	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500-CN I-Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			SM4500-CN I-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347470	Fluoride	SM4500F-C	Q6	Sample was received above recommended temperature.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346995	Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG347371	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG347305	Nitrogen, ammonia	M350.1 - Automated Phenate	Q6	Sample was received above recommended temperature.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347450	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	DB	Sample required dilution due to low bias result.
			M351.2 - TKN by Block Digester	Q6	Sample was received above recommended temperature.
			M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346995	pH	SM4500H+ B	Q6	Sample was received above recommended temperature.
		pH measured at	SM4500H+ B	Q6	Sample was received above recommended temperature.
	WG347147	Phosphorus, dissolved	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347003	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347250	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	Q6	Sample was received above recommended temperature.
			M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346991	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG346974	Residue, Non-Filterable (TSS) @105C	SM2540D	Q6	Sample was received above recommended temperature.
			SM2540D	RA	Relative Percent Difference (RPD) was not used for data

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L13079***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG347048	Residue, Total (TS) @ 105C	SM2540B	Q6	Sample was received above recommended temperature.
	WG347334	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG347423	Sulfide as S	SM4500S2-D	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			SM4500S2-D	Q6	Sample was received above recommended temperature.
			SM4500S2-D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG346995	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.
			SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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ACZ Laboratories, Inc.
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Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: ***L13079***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Bismuth, dissolved	M200.7 ICP
Gallium, dissolved	M200.7 ICP
Scandium, dissolved	M200.7 ICP

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Sulfide as S	SM4500S2-D

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L13079
Date Received: 07/03/2013 10:09
Received By: gac
Date Printed: 7/5/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
2293	13.4	13	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s) but was thawed by receipt at ACZ.

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

REPAD LPII 2012-03

ACZ Laboratories, Inc. L13079
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:
Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador
Centro corporativo Mixtal, Torre Oeste, Of 503, 5to
Telephone: (+502) 5951 5248

Copy of Report to:
Name: Charlie Moorhoff
Company: Tahoe Resources Inc.
E-mail: cmoorhoff@tahoeresourcesinc.com
Telephone:

Invoice to:
Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador
Centro corporativo Mixtal, Torre Oeste, Of 503, 5to
Telephone: (+502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes / No
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernanda Ramos Sampler's site information: State / Zip code / Time Zone

PROJECT INFORMATION
Quote #: Water Quality
Project/PO #: Escobal
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	GW
MW1	30/06/13 14:15	GW	8	✓
RW-1	30/06/13 15:00	GW	8	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Fernanda Ramos	01/07/13 0800	FRamos LBR.	1/7/13 8:00 7/3/13 10:09

L13079 Chain of Custody

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

Guatemala July 1st, 2013

To whom it may concern:

Minera San Rafael, S.A is sending a case with samples of water, which is not contaminated, that are going to be analyzed by the ACZ Laboratories in Steamboat Springs, Colorado, USA.

If you have any question or doubt, please contact Miguel Berganza at Minera San Rafael, S.A. (502 – 5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

Miguel Berganza
Environment Department.
Proyecto Escobal, S. A.

ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 908-13
REG 016 Resultados de Análisis Pág 1/1

Muestras: 8 muestras de agua
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 170613
Fecha de ingreso de muestras: 180613
Fecha de análisis: 180613-260613
Fecha de informe: 260613

Resultados:

Correlativo Ecosistemas	Identificación de la Muestra	Color Aparente (UC HZ equiv. Unid. Pt-Co)	Color Real (UC HZ equiv. Unid. Pt-Co)	Cromo Hexavalente Cr(VI) mg/L	* Coliformes Fecales (NMP/100ml)
1508	MW8	< 1	< 1	N.D.	< 2
1509	MW11	504	< 1	N.D.	< 2
1510	GW2	114	12	N.D.	23
1511	GW3	< 1	< 1	N.D.	< 2
1512	GW4	4220	687	N.D.	94
1513	GW5	303	192	N.D.	1.6×10^3
1514	GW11	1	< 1	N.D.	< 2
1515	GW10	< 1	< 1	N.D.	< 2

Notas:
Captación de muestras: Las muestras fueron captadas por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigeración.
Metodología: Espectrofotométricos / SMWW: Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977 .
Fotométricos Merck. NMP: Número Mas Probable.
Se trabajaron diluciones.
N.D. No detectable. Debajo del límite de detección.
Límites de detección: Cromo hexavalente (0.05 mg/L)
Los resultados obtenidos corresponden únicamente a las muestras recibidas por el personal de Ecosistemas Proyectos Ambientales.
Se prohibe la reproducción parcial de este informe sin la autorización escrita de Ecosistemas Proyectos Ambientales.
** Análisis referidos.*

Ing. Fernando Fuentes
Gerente Técnico

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 923-13
Pág 1/1

REG 016 Resultados de Análisis

Muestras: 13 muestras de agua
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 180613
Fecha de ingreso de muestras: 190613
Fecha de análisis: 190613-010713
Fecha de informe: 010713

Resultados:

Correlativo Ecosistemas	Identificación de la Muestra	Color Aparente (UC HZ equiv. Unid. Pt-Co)	Color Real (UC HZ equiv. Unid. Pt-Co)	Cromo Hexavalente Cr(VI) mg/L	* Coliformes Fecales (NMP/100ml)
1528	SW20	107	< 1	N.D.	9.2×10^3
1529	GW1-A	123	38	N.D.	2.4×10^3
1532	MW2	66	< 1	N.D.	23
1533	MW3	< 1	< 1	N.D.	5.4×10^3
1534	MW4	< 1	< 1	N.D.	2.8×10^3
1535	MW5	< 1	< 1	N.D.	5.4×10^3
1536	MW6	< 1	< 1	N.D.	9.2×10^3
1537	MW7	14	< 1	N.D.	120
1538	MW9	441	2	N.D.	2.4×10^3
1539	MW10	835	< 1	N.D.	4.5
1540	MW20	< 1	< 1	N.D.	< 2
1541	MW21	418	13	N.D.	2.4×10^3
1542	PSASR	12	< 1	N.D.	700

Notas:
Captación de muestras: Las muestras fueron captadas por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigeración.
Metodología: Espectrofotométricos / SMWW: Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977 .
Fotométricos Merck. NMP: Número Mas Probable.
Se trabajaron diluciones.
N.D. No detectable. Debajo del límite de detección.
Límites de detección: Cromo hexavalente (0.05 mg/L)
Los resultados obtenidos corresponden únicamente a las muestras recibidas por el personal de Ecosistemas Proyectos Ambientales.
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** Análisis referidos.*

Ing. Fernando Fuentes
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acreditado ISO 17025 según OGA-LE 006-04

ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 986-13
Pág 1/1

REG 016 Resultados de Análisis

Muestras: 2 muestras de agua
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 300613
Fecha de ingreso de muestra: 010713
Fecha de análisis: 010713-100713
Fecha del informe: 100713

Resultados:

Correlativo Ecosistemas	Identificación de la Muestra	Color Aparente (UC HZ equiv. Unid. Pt-Co)	Color Real (UC HZ equiv. Unid. Pt-Co)	Cromo Hexavalente Cr(VI) mg/L	* Coliformes Fecales (NMP/100ml)
1652	MW1	438	1	N.D.	9.2×10^3
1653	RW-1	66	< 1	N.D.	< 2

Notas:
Captación de muestras: Las muestras fueron captadas por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigeración.
Metodología: Espectrofotométricos / SMWW: Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977 .
Fotométricos Merck. NMP: Número Mas Probable.
N.D. No detectable. Debajo del límite de detección.
Límites de detección: Cromo hexavalente (0.05 mg/L)
Los resultados obtenidos corresponden únicamente a las muestras recibidas por el personal de Ecosistemas Proyectos Ambientales.
Se prohibe la reproducción parcial de este informe sin la autorización escrita de Ecosistemas Proyectos Ambientales.
** Análisis referidos.*

Ing. Fernando Fuentes
Gerente Técnico

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12.5 Informes Originales de los Resultados Analíticos Obtenidos del muestreo de sedimentos, junio 2013.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 14, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L13312

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 15, 2013. This project has been assigned to ACZ's project number, L13312. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L13312. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 13, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

REPAD.01.06.05.02

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-1

ACZ Sample ID: ***L13312-01***
Date Sampled: *06/10/13 07:30*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:01	tod
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 11:45	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	10000	7740		*	mg/Kg	10	50	08/08/13 0:31	pmc
Antimony, total (3050)	M6020 ICP-MS	500	0.8	B	*	mg/Kg	0.2	1	07/30/13 19:36	msh
Arsenic, total (3050)	M6020 ICP-MS	500	13.1			mg/Kg	0.1	0.5	08/06/13 23:32	pmc
Barium, total (3050)	M6020 ICP-MS	500	135		*	mg/Kg	0.3	1	07/30/13 19:36	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 12:58	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.15	B	*	mg/Kg	0.05	0.3	07/30/13 19:36	msh
Calcium, total (3050)	M6010B ICP	100	2970		*	mg/Kg	20	100	07/24/13 12:58	jjc
Chromium, total (3050)	M6020 ICP-MS	500	2.9			mg/Kg	0.3	1	07/30/13 19:36	msh
Copper, total (3050)	M6020 ICP-MS	500	9.4			mg/Kg	0.3	1	07/30/13 19:36	msh
Iron, total (3050)	M6010B ICP	100	12700		*	mg/Kg	2	5	07/24/13 12:58	jjc
Lead, total (3050)	M6020 ICP-MS	500	11.20			mg/Kg	0.05	0.3	07/30/13 19:36	msh
Magnesium, total (3050)	M6010B ICP	100	1030			mg/Kg	20	100	07/24/13 12:58	jjc
Manganese, total (3050)	M6020 ICP-MS	5000	349		*	mg/Kg	3	10	07/31/13 18:36	msh
Mercury, total	M7471A CVAA	245		UH	*	mg/Kg	0.05	0.2	07/16/13 14:28	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 12:58	jjc
Nickel, total (3050)	M6020 ICP-MS	500	4.7			mg/Kg	0.3	2	07/30/13 19:36	msh
Potassium, total (3050)	M6010B ICP	100	1860			mg/Kg	30	200	07/24/13 12:58	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 18:36	msh
Silver, total (3050)	M6020 ICP-MS	500	0.05	B	*	mg/Kg	0.03	0.1	07/30/13 19:36	msh
Zinc, total (3050)	M6020 ICP-MS	500	35		*	mg/Kg	1	3	07/30/13 19:36	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	79.8		*	%	0.1	0.5	07/17/13 13:00	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 9:35	kpd
Digestion - Hot Plate	M3050B ICP								07/19/13 17:34	kpd/brd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 11:07	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

REPIN.02.06.05.01

** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-1

ACZ Sample ID: ***L13312-01***
Date Sampled: *06/10/13 07:30*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	29.17		UH	*	mg/Kg	0.1	0.7	07/19/13 17:52	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	80	0.0106	H	*	%	0.0008	0.004	08/06/13 12:53	mpb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-2

ACZ Sample ID: ***L13312-02***
Date Sampled: *06/10/13 08:20*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:02	tod
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 12:30	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	20000	10800		*	mg/Kg	20	100	08/08/13 0:33	pmc
Antimony, total (3050)	M6020 ICP-MS	500	2.2		*	mg/Kg	0.2	1	07/30/13 19:39	msh
Arsenic, total (3050)	M6020 ICP-MS	500	46.4			mg/Kg	0.1	0.5	08/06/13 23:34	pmc
Barium, total (3050)	M6020 ICP-MS	500	204		*	mg/Kg	0.3	1	07/30/13 19:39	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:04	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.75		*	mg/Kg	0.05	0.3	07/30/13 19:39	msh
Calcium, total (3050)	M6010B ICP	100	60800		*	mg/Kg	20	100	07/24/13 13:04	jjc
Chromium, total (3050)	M6020 ICP-MS	500	5.3			mg/Kg	0.3	1	07/30/13 19:39	msh
Copper, total (3050)	M6020 ICP-MS	500	12.2			mg/Kg	0.3	1	07/30/13 19:39	msh
Iron, total (3050)	M6010B ICP	100	18000		*	mg/Kg	2	5	07/24/13 13:04	jjc
Lead, total (3050)	M6020 ICP-MS	500	31.50			mg/Kg	0.05	0.3	07/30/13 19:39	msh
Magnesium, total (3050)	M6010B ICP	100	3160			mg/Kg	20	100	07/24/13 13:04	jjc
Manganese, total (3050)	M6020 ICP-MS	20000	1780		*	mg/Kg	10	50	08/08/13 0:33	pmc
Mercury, total	M7471A CVAA	240		UH	*	mg/Kg	0.05	0.2	07/16/13 14:30	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:04	jjc
Nickel, total (3050)	M6020 ICP-MS	500	5.1			mg/Kg	0.3	2	07/30/13 19:39	msh
Potassium, total (3050)	M6010B ICP	100	1640			mg/Kg	30	200	07/24/13 13:04	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 18:39	msh
Silver, total (3050)	M6020 ICP-MS	500	2.60		*	mg/Kg	0.03	0.1	07/30/13 19:39	msh
Zinc, total (3050)	M6020 ICP-MS	500	119		*	mg/Kg	1	3	07/30/13 19:39	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	72.8		*	%	0.1	0.5	07/17/13 14:45	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 9:40	kpd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 11:28	mss2
Digestion - Hot Plate	M3050B ICP								07/19/13 18:50	kpd/brd
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-2

ACZ Sample ID: ***L13312-02***
Date Sampled: *06/10/13 08:20*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	29.102		UH	*	mg/Kg	0.1	0.7	07/19/13 17:53	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	100	0.021	H	*	%	0.001	0.005	08/06/13 12:35	mpb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-3

ACZ Sample ID: ***L13312-03***
Date Sampled: *06/11/13 11:15*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:02	tod
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 13:15	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	10000	7040		*	mg/Kg	10	50	08/08/13 0:35	pmc
Antimony, total (3050)	M6020 ICP-MS	500	1.3		*	mg/Kg	0.2	1	07/30/13 19:49	msh
Arsenic, total (3050)	M6020 ICP-MS	500	14.3			mg/Kg	0.1	0.5	08/06/13 23:37	pmc
Barium, total (3050)	M6020 ICP-MS	500	123		*	mg/Kg	0.3	1	07/30/13 19:49	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:08	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.20	B	*	mg/Kg	0.05	0.3	07/30/13 19:49	msh
Calcium, total (3050)	M6010B ICP	100	2070		*	mg/Kg	20	100	07/24/13 13:08	jjc
Chromium, total (3050)	M6020 ICP-MS	500	2.7			mg/Kg	0.3	1	07/30/13 19:49	msh
Copper, total (3050)	M6020 ICP-MS	500	4.1			mg/Kg	0.3	1	07/30/13 19:49	msh
Iron, total (3050)	M6010B ICP	100	8400		*	mg/Kg	2	5	07/24/13 13:08	jjc
Lead, total (3050)	M6020 ICP-MS	500	7.66			mg/Kg	0.05	0.3	07/30/13 19:49	msh
Magnesium, total (3050)	M6010B ICP	100	710			mg/Kg	20	100	07/24/13 13:08	jjc
Manganese, total (3050)	M6020 ICP-MS	5000	422		*	mg/Kg	3	10	07/31/13 18:49	msh
Mercury, total	M7471A CVAA	249		UH	*	mg/Kg	0.05	0.2	07/16/13 14:32	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:08	jjc
Nickel, total (3050)	M6020 ICP-MS	500	2.0			mg/Kg	0.3	2	07/30/13 19:49	msh
Potassium, total (3050)	M6010B ICP	100	1810			mg/Kg	30	200	07/24/13 13:08	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 18:49	msh
Silver, total (3050)	M6020 ICP-MS	500	0.03	B	*	mg/Kg	0.03	0.1	07/30/13 19:49	msh
Zinc, total (3050)	M6020 ICP-MS	500	25		*	mg/Kg	1	3	07/30/13 19:49	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	74.8		*	%	0.1	0.5	07/17/13 16:30	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 9:45	kpd
Digestion - Hot Plate	M3050B ICP								07/19/13 22:37	kpd/brd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 11:49	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-3

ACZ Sample ID: ***L13312-03***
Date Sampled: *06/11/13 11:15*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	32.354		UH	*	mg/Kg	0.2	0.8	07/19/13 17:54	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	80	0.0165	H	*	%	0.0008	0.004	08/06/13 12:37	mpb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-4

ACZ Sample ID: ***L13312-04***
Date Sampled: *06/11/13 11:45*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:02	tod
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 13:37	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	20000	11700		*	mg/Kg	20	100	08/08/13 0:40	pmc
Antimony, total (3050)	M6020 ICP-MS	500	1.5		*	mg/Kg	0.2	1	07/30/13 19:59	msh
Arsenic, total (3050)	M6020 ICP-MS	500	14.6			mg/Kg	0.1	0.5	08/06/13 23:45	pmc
Barium, total (3050)	M6020 ICP-MS	500	162		*	mg/Kg	0.3	1	07/30/13 19:59	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:17	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.42		*	mg/Kg	0.05	0.3	07/30/13 19:59	msh
Calcium, total (3050)	M6010B ICP	100	7730		*	mg/Kg	20	100	07/24/13 13:17	jjc
Chromium, total (3050)	M6020 ICP-MS	500	3.7			mg/Kg	0.3	1	07/30/13 19:59	msh
Copper, total (3050)	M6020 ICP-MS	500	8.3			mg/Kg	0.3	1	07/30/13 19:59	msh
Iron, total (3050)	M6010B ICP	100	12400		*	mg/Kg	2	5	07/24/13 13:17	jjc
Lead, total (3050)	M6020 ICP-MS	500	15.80			mg/Kg	0.05	0.3	07/30/13 19:59	msh
Magnesium, total (3050)	M6010B ICP	100	1270			mg/Kg	20	100	07/24/13 13:17	jjc
Manganese, total (3050)	M6020 ICP-MS	5000	833		*	mg/Kg	3	10	07/31/13 18:59	msh
Mercury, total	M7471A CVAA	262	0.08	BH	*	mg/Kg	0.05	0.3	07/16/13 14:35	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:17	jjc
Nickel, total (3050)	M6020 ICP-MS	500	3.6			mg/Kg	0.3	2	07/30/13 19:59	msh
Potassium, total (3050)	M6010B ICP	100	1670			mg/Kg	30	200	07/24/13 13:17	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 18:59	msh
Silver, total (3050)	M6020 ICP-MS	500	0.44		*	mg/Kg	0.03	0.1	07/30/13 19:59	msh
Zinc, total (3050)	M6020 ICP-MS	500	58		*	mg/Kg	1	3	07/30/13 19:59	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	67.7		*	%	0.1	0.5	07/17/13 18:15	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 9:50	kpd
Digestion - Hot Plate	M3050B ICP								07/19/13 23:53	kpd/brd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 12:10	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-4

ACZ Sample ID: ***L13312-04***
Date Sampled: *06/11/13 11:45*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	34.224		UH	*	mg/Kg	0.2	0.9	07/19/13 17:56	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	120	0.015	H	*	%	0.001	0.006	08/06/13 12:38	mpb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-5

ACZ Sample ID: ***L13312-05***
Date Sampled: *06/11/13 07:00*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:03	tcd
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 14:00	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	10000	6990		*	mg/Kg	10	50	08/08/13 0:42	pmc
Antimony, total (3050)	M6020 ICP-MS	500	0.5	B	*	mg/Kg	0.2	1	07/30/13 20:02	msh
Arsenic, total (3050)	M6020 ICP-MS	500	5.7			mg/Kg	0.1	0.5	08/06/13 23:48	pmc
Barium, total (3050)	M6020 ICP-MS	500	111		*	mg/Kg	0.3	1	07/30/13 20:02	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:20	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.18	B	*	mg/Kg	0.05	0.3	07/30/13 20:02	msh
Calcium, total (3050)	M6010B ICP	100	980		*	mg/Kg	20	100	07/24/13 13:20	jjc
Chromium, total (3050)	M6020 ICP-MS	500	3.9			mg/Kg	0.3	1	07/30/13 20:02	msh
Copper, total (3050)	M6020 ICP-MS	500	5.0			mg/Kg	0.3	1	07/30/13 20:02	msh
Iron, total (3050)	M6010B ICP	100	10500		*	mg/Kg	2	5	07/24/13 13:20	jjc
Lead, total (3050)	M6020 ICP-MS	500	7.00			mg/Kg	0.05	0.3	07/30/13 20:02	msh
Magnesium, total (3050)	M6010B ICP	100	720			mg/Kg	20	100	07/24/13 13:20	jjc
Manganese, total (3050)	M6020 ICP-MS	5000	391		*	mg/Kg	3	10	07/31/13 19:02	msh
Mercury, total	M7471A CVAA	213	0.17	BH	*	mg/Kg	0.04	0.2	07/16/13 14:41	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:20	jjc
Nickel, total (3050)	M6020 ICP-MS	500	2.8			mg/Kg	0.3	2	07/30/13 20:02	msh
Potassium, total (3050)	M6010B ICP	100	1280			mg/Kg	30	200	07/24/13 13:20	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 19:02	msh
Silver, total (3050)	M6020 ICP-MS	500	0.04	B	*	mg/Kg	0.03	0.1	07/30/13 20:02	msh
Zinc, total (3050)	M6020 ICP-MS	500	19		*	mg/Kg	1	3	07/30/13 20:02	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	83.4		*	%	0.1	0.5	07/17/13 20:00	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 9:55	kpd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 12:31	mss2
Digestion - Hot Plate	M3050B ICP								07/20/13 1:09	kpd/brd
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-5

ACZ Sample ID: ***L13312-05***
Date Sampled: *06/11/13 07:00*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	26.112		UH	*	mg/Kg	0.1	0.7	07/19/13 17:57	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	110	0.003	BH	*	%	0.001	0.006	08/06/13 12:39	mpb

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-6

ACZ Sample ID: ***L13312-06***
Date Sampled: *06/11/13 09:15*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:03	tod
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 14:22	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	10000	4680		*	mg/Kg	10	50	08/08/13 0:44	pmc
Antimony, total (3050)	M6020 ICP-MS	500	0.6	B	*	mg/Kg	0.2	1	07/30/13 20:06	msh
Arsenic, total (3050)	M6020 ICP-MS	500	21.8			mg/Kg	0.1	0.5	08/06/13 23:50	pmc
Barium, total (3050)	M6020 ICP-MS	500	45.2		*	mg/Kg	0.3	1	07/30/13 20:06	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:23	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.10	B	*	mg/Kg	0.05	0.3	07/30/13 20:06	msh
Calcium, total (3050)	M6010B ICP	100	1140		*	mg/Kg	20	100	07/24/13 13:23	jjc
Chromium, total (3050)	M6020 ICP-MS	500	8.0			mg/Kg	0.3	1	07/30/13 20:06	msh
Copper, total (3050)	M6020 ICP-MS	500	4.9			mg/Kg	0.3	1	07/30/13 20:06	msh
Iron, total (3050)	M6010B ICP	100	12700		*	mg/Kg	2	5	07/24/13 13:23	jjc
Lead, total (3050)	M6020 ICP-MS	500	3.56			mg/Kg	0.05	0.3	07/30/13 20:06	msh
Magnesium, total (3050)	M6010B ICP	100	790			mg/Kg	20	100	07/24/13 13:23	jjc
Manganese, total (3050)	M6020 ICP-MS	5000	179		*	mg/Kg	3	10	07/31/13 19:06	msh
Mercury, total	M7471A CVAA	216		UH	*	mg/Kg	0.04	0.2	07/16/13 14:43	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:23	jjc
Nickel, total (3050)	M6020 ICP-MS	500	2.3			mg/Kg	0.3	2	07/30/13 20:06	msh
Potassium, total (3050)	M6010B ICP	100	1180			mg/Kg	30	200	07/24/13 13:23	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 19:06	msh
Silver, total (3050)	M6020 ICP-MS	500	0.03	B	*	mg/Kg	0.03	0.1	07/30/13 20:06	msh
Zinc, total (3050)	M6020 ICP-MS	500	22		*	mg/Kg	1	3	07/30/13 20:06	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	77.4		*	%	0.1	0.5	07/17/13 21:45	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 10:00	kpd
Digestion - Hot Plate	M3050B ICP								07/20/13 2:25	kpd/brd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 12:53	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-6

ACZ Sample ID: ***L13312-06***
Date Sampled: *06/11/13 09:15*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	27.257		UH	*	mg/Kg	0.1	0.7	07/19/13 17:58	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	70	0.0125	H	*	%	0.0007	0.004	08/06/13 12:39	mpb

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-7

ACZ Sample ID: ***L13312-07***
Date Sampled: *06/10/13 10:45*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:03	tcd
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 14:45	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	10000	6400		*	mg/Kg	10	50	08/08/13 0:46	pmc
Antimony, total (3050)	M6020 ICP-MS	500	0.8	B	*	mg/Kg	0.2	1	07/30/13 20:09	msh
Arsenic, total (3050)	M6020 ICP-MS	500	5.4			mg/Kg	0.1	0.5	08/06/13 23:53	pmc
Barium, total (3050)	M6020 ICP-MS	500	80.0		*	mg/Kg	0.3	1	07/30/13 20:09	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:26	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.18	B	*	mg/Kg	0.05	0.3	07/30/13 20:09	msh
Calcium, total (3050)	M6010B ICP	100	1230		*	mg/Kg	20	100	07/24/13 13:26	jjc
Chromium, total (3050)	M6020 ICP-MS	500	1.2			mg/Kg	0.3	1	07/30/13 20:09	msh
Copper, total (3050)	M6020 ICP-MS	500	3.7			mg/Kg	0.3	1	07/30/13 20:09	msh
Iron, total (3050)	M6010B ICP	100	7730		*	mg/Kg	2	5	07/24/13 13:26	jjc
Lead, total (3050)	M6020 ICP-MS	500	7.73			mg/Kg	0.05	0.3	07/30/13 20:09	msh
Magnesium, total (3050)	M6010B ICP	100	700			mg/Kg	20	100	07/24/13 13:26	jjc
Manganese, total (3050)	M6020 ICP-MS	5000	325		*	mg/Kg	3	10	07/31/13 19:09	msh
Mercury, total	M7471A CVAA	239		UH	*	mg/Kg	0.05	0.2	07/16/13 14:45	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:26	jjc
Nickel, total (3050)	M6020 ICP-MS	500	1.3	B		mg/Kg	0.3	2	07/30/13 20:09	msh
Potassium, total (3050)	M6010B ICP	100	1960			mg/Kg	30	200	07/24/13 13:26	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 19:09	msh
Silver, total (3050)	M6020 ICP-MS	500		U	*	mg/Kg	0.03	0.1	07/30/13 20:09	msh
Zinc, total (3050)	M6020 ICP-MS	500	23		*	mg/Kg	1	3	07/30/13 20:09	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	77.0		*	%	0.1	0.5	07/17/13 23:30	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 10:05	kpd
Digestion - Hot Plate	M3050B ICP								07/20/13 3:40	kpd/brd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 13:14	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-7

ACZ Sample ID: ***L13312-07***
Date Sampled: *06/10/13 10:45*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	31.249		UH	*	mg/Kg	0.2	0.8	07/19/13 17:59	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	110	0.005	BH	*	%	0.001	0.006	08/06/13 12:42	mpb

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-8

ACZ Sample ID: ***L13312-08***
Date Sampled: *06/10/13 11:30*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:03	tcd
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 15:07	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	10000	7290		*	mg/Kg	10	50	08/08/13 0:47	pmc
Antimony, total (3050)	M6020 ICP-MS	500	2.9		*	mg/Kg	0.2	1	07/30/13 20:13	msh
Arsenic, total (3050)	M6020 ICP-MS	500	12.7			mg/Kg	0.1	0.5	08/06/13 23:56	pmc
Barium, total (3050)	M6020 ICP-MS	500	154		*	mg/Kg	0.3	1	07/30/13 20:13	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:29	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.25	B	*	mg/Kg	0.05	0.3	07/30/13 20:13	msh
Calcium, total (3050)	M6010B ICP	100	3050		*	mg/Kg	20	100	07/24/13 13:29	jjc
Chromium, total (3050)	M6020 ICP-MS	500	4.1			mg/Kg	0.3	1	07/30/13 20:13	msh
Copper, total (3050)	M6020 ICP-MS	500	6.8			mg/Kg	0.3	1	07/30/13 20:13	msh
Iron, total (3050)	M6010B ICP	100	12500		*	mg/Kg	2	5	07/24/13 13:29	jjc
Lead, total (3050)	M6020 ICP-MS	500	9.33			mg/Kg	0.05	0.3	07/30/13 20:13	msh
Magnesium, total (3050)	M6010B ICP	100	1010			mg/Kg	20	100	07/24/13 13:29	jjc
Manganese, total (3050)	M6020 ICP-MS	5000	476		*	mg/Kg	3	10	07/31/13 19:13	msh
Mercury, total	M7471A CVAA	206	0.05	BH	*	mg/Kg	0.04	0.2	07/16/13 14:47	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:29	jjc
Nickel, total (3050)	M6020 ICP-MS	500	2.8			mg/Kg	0.3	2	07/30/13 20:13	msh
Potassium, total (3050)	M6010B ICP	100	1580			mg/Kg	30	200	07/24/13 13:29	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 19:13	msh
Silver, total (3050)	M6020 ICP-MS	500	0.15		*	mg/Kg	0.03	0.1	07/30/13 20:13	msh
Zinc, total (3050)	M6020 ICP-MS	500	39		*	mg/Kg	1	3	07/30/13 20:13	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	82.1		*	%	0.1	0.5	07/18/13 1:15	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 10:10	kpd
Digestion - Hot Plate	M3050B ICP								08/06/13 13:35	mss2
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 13:35	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-8

ACZ Sample ID: ***L13312-08***
Date Sampled: *06/10/13 11:30*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	27.212		UH	*	mg/Kg	0.1	0.7	07/19/13 18:00	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	90	0.0136	H	*	%	0.0009	0.005	08/06/13 12:43	mpb

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-9

ACZ Sample ID: ***L13312-09***
Date Sampled: *06/11/13 10:10*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:04	tcd
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 15:30	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	20000	10700		*	mg/Kg	20	100	08/08/13 0:49	pmc
Antimony, total (3050)	M6020 ICP-MS	500	4.0		*	mg/Kg	0.2	1	07/30/13 20:16	msh
Arsenic, total (3050)	M6020 ICP-MS	500	7.0			mg/Kg	0.1	0.5	08/06/13 23:58	pmc
Barium, total (3050)	M6020 ICP-MS	500	149		*	mg/Kg	0.3	1	07/30/13 20:16	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:32	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.37		*	mg/Kg	0.05	0.3	07/30/13 20:16	msh
Calcium, total (3050)	M6010B ICP	100	3250		*	mg/Kg	20	100	07/24/13 13:32	jjc
Chromium, total (3050)	M6020 ICP-MS	500	3.5			mg/Kg	0.3	1	07/30/13 20:16	msh
Copper, total (3050)	M6020 ICP-MS	500	8.4			mg/Kg	0.3	1	07/30/13 20:16	msh
Iron, total (3050)	M6010B ICP	100	12600		*	mg/Kg	2	5	07/24/13 13:32	jjc
Lead, total (3050)	M6020 ICP-MS	500	9.86			mg/Kg	0.05	0.3	07/30/13 20:16	msh
Magnesium, total (3050)	M6010B ICP	100	1200			mg/Kg	20	100	07/24/13 13:32	jjc
Manganese, total (3050)	M6020 ICP-MS	5000	621		*	mg/Kg	3	10	07/31/13 19:19	msh
Mercury, total	M7471A CVAA	257	0.06	BH	*	mg/Kg	0.05	0.3	07/16/13 14:50	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:32	jjc
Nickel, total (3050)	M6020 ICP-MS	500	2.3			mg/Kg	0.3	2	07/30/13 20:16	msh
Potassium, total (3050)	M6010B ICP	100	1510			mg/Kg	30	200	07/24/13 13:32	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 19:19	msh
Silver, total (3050)	M6020 ICP-MS	500	0.19		*	mg/Kg	0.03	0.1	07/30/13 20:16	msh
Zinc, total (3050)	M6020 ICP-MS	500	49		*	mg/Kg	1	3	07/30/13 20:16	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	66.0		*	%	0.1	0.5	07/18/13 3:00	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 10:15	kpd
Digestion - Hot Plate	M3050B ICP								07/20/13 6:12	kpd/brd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 13:56	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-9

ACZ Sample ID: ***L13312-09***
Date Sampled: *06/11/13 10:10*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	35.368		UH	*	mg/Kg	0.2	0.9	07/19/13 18:01	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	100	0.017	H	*	%	0.001	0.005	08/06/13 12:43	mpb

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-11

ACZ Sample ID: ***L13312-10***
Date Sampled: *06/10/13 09:00*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:04	tcd
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 15:52	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	20000	13000		*	mg/Kg	20	100	08/08/13 0:53	pmc
Antimony, total (3050)	M6020 ICP-MS	500	1.7		*	mg/Kg	0.2	1	07/30/13 20:19	msh
Arsenic, total (3050)	M6020 ICP-MS	500	25.2			mg/Kg	0.1	0.5	08/07/13 0:01	pmc
Barium, total (3050)	M6020 ICP-MS	500	214		*	mg/Kg	0.3	1	07/30/13 20:19	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:35	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	1.07		*	mg/Kg	0.05	0.3	07/30/13 20:19	msh
Calcium, total (3050)	M6010B ICP	100	40200		*	mg/Kg	20	100	07/24/13 13:35	jjc
Chromium, total (3050)	M6020 ICP-MS	500	5.2			mg/Kg	0.3	1	07/30/13 20:19	msh
Copper, total (3050)	M6020 ICP-MS	500	11.7			mg/Kg	0.3	1	07/30/13 20:19	msh
Iron, total (3050)	M6010B ICP	100	13900		*	mg/Kg	2	5	07/24/13 13:35	jjc
Lead, total (3050)	M6020 ICP-MS	500	42.10			mg/Kg	0.05	0.3	07/30/13 20:19	msh
Magnesium, total (3050)	M6010B ICP	100	2500			mg/Kg	20	100	07/24/13 13:35	jjc
Manganese, total (3050)	M6020 ICP-MS	20000	1080		*	mg/Kg	10	50	08/08/13 0:53	pmc
Mercury, total	M7471A CVAA	283		UH	*	mg/Kg	0.06	0.3	07/16/13 14:53	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:35	jjc
Nickel, total (3050)	M6020 ICP-MS	500	4.6			mg/Kg	0.3	2	07/30/13 20:19	msh
Potassium, total (3050)	M6010B ICP	100	1790			mg/Kg	30	200	07/24/13 13:35	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 19:23	msh
Silver, total (3050)	M6020 ICP-MS	500	3.88		*	mg/Kg	0.03	0.1	07/30/13 20:19	msh
Zinc, total (3050)	M6020 ICP-MS	500	133		*	mg/Kg	1	3	07/30/13 20:19	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	59.8		*	%	0.1	0.5	07/18/13 4:45	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 10:20	kpd
Digestion - Hot Plate	M3050B ICP								07/20/13 7:28	kpd/brd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 14:17	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-11

ACZ Sample ID: ***L13312-10***
Date Sampled: *06/10/13 09:00*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	37.834		UH	*	mg/Kg	0.2	0.9	07/19/13 18:01	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	60	0.0190	H	*	%	0.0006	0.003	08/06/13 12:44	mpb

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-2A

ACZ Sample ID: ***L13312-11***
Date Sampled: *06/10/13 09:30*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:04	tod
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 16:15	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	20000	13100		*	mg/Kg	20	100	08/08/13 0:55	pmc
Antimony, total (3050)	M6020 ICP-MS	500	1.3		*	mg/Kg	0.2	1	07/30/13 20:23	msh
Arsenic, total (3050)	M6020 ICP-MS	500	22.4			mg/Kg	0.1	0.5	08/07/13 0:04	pmc
Barium, total (3050)	M6020 ICP-MS	500	202		*	mg/Kg	0.3	1	07/30/13 20:23	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:38	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.81		*	mg/Kg	0.05	0.3	07/30/13 20:23	msh
Calcium, total (3050)	M6010B ICP	100	45600		*	mg/Kg	20	100	07/24/13 13:38	jjc
Chromium, total (3050)	M6020 ICP-MS	500	5.7			mg/Kg	0.3	1	07/30/13 20:23	msh
Copper, total (3050)	M6020 ICP-MS	500	11.7			mg/Kg	0.3	1	07/30/13 20:23	msh
Iron, total (3050)	M6010B ICP	100	13900		*	mg/Kg	2	5	07/24/13 13:38	jjc
Lead, total (3050)	M6020 ICP-MS	500	36.00			mg/Kg	0.05	0.3	07/30/13 20:23	msh
Magnesium, total (3050)	M6010B ICP	100	2580			mg/Kg	20	100	07/24/13 13:38	jjc
Manganese, total (3050)	M6020 ICP-MS	20000	1100		*	mg/Kg	10	50	08/08/13 0:55	pmc
Mercury, total	M7471A CVAA	310		UH	*	mg/Kg	0.06	0.3	07/16/13 14:55	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:38	jjc
Nickel, total (3050)	M6020 ICP-MS	500	4.6			mg/Kg	0.3	2	07/30/13 20:23	msh
Potassium, total (3050)	M6010B ICP	100	1700			mg/Kg	30	200	07/24/13 13:38	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 19:26	msh
Silver, total (3050)	M6020 ICP-MS	500	2.01		*	mg/Kg	0.03	0.1	07/30/13 20:23	msh
Zinc, total (3050)	M6020 ICP-MS	500	107		*	mg/Kg	1	3	07/30/13 20:23	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	54.2		*	%	0.1	0.5	07/18/13 6:30	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 10:25	kpd
Digestion - Hot Plate	M3050B ICP								07/20/13 8:44	kpd/brd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 14:38	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:17	kpd

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-2A

ACZ Sample ID: ***L13312-11***
Date Sampled: *06/10/13 09:30*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	43.474		UH	*	mg/Kg	0.2	1	07/19/13 18:02	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	130	0.019	H	*	%	0.001	0.007	08/06/13 12:45	mpb

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-4A

ACZ Sample ID: ***L13312-12***
Date Sampled: *06/10/13 10:15*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9013 - Manual Distillation								07/19/13 11:05	tod
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								08/05/13 16:37	mpb

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6020 ICP-MS	20000	9230		*	mg/Kg	20	100	08/08/13 0:57	pmc
Antimony, total (3050)	M6020 ICP-MS	500	1.7		*	mg/Kg	0.2	1	07/30/13 20:26	msh
Arsenic, total (3050)	M6020 ICP-MS	500	18.3			mg/Kg	0.1	0.5	08/07/13 0:06	pmc
Barium, total (3050)	M6020 ICP-MS	500	114		*	mg/Kg	0.3	1	07/30/13 20:26	msh
Boron, total (3050)	M6010B ICP	100		U		mg/Kg	1	5	07/24/13 13:41	jjc
Cadmium, total (3050)	M6020 ICP-MS	500	0.28	B	*	mg/Kg	0.05	0.3	07/30/13 20:26	msh
Calcium, total (3050)	M6010B ICP	100	4840		*	mg/Kg	20	100	07/24/13 13:41	jjc
Chromium, total (3050)	M6020 ICP-MS	500	4.2			mg/Kg	0.3	1	07/30/13 20:26	msh
Copper, total (3050)	M6020 ICP-MS	500	7.3			mg/Kg	0.3	1	07/30/13 20:26	msh
Iron, total (3050)	M6010B ICP	100	13300		*	mg/Kg	2	5	07/24/13 13:41	jjc
Lead, total (3050)	M6020 ICP-MS	500	11.10			mg/Kg	0.05	0.3	07/30/13 20:26	msh
Magnesium, total (3050)	M6010B ICP	100	1570			mg/Kg	20	100	07/24/13 13:41	jjc
Manganese, total (3050)	M6020 ICP-MS	5000	754		*	mg/Kg	3	10	07/31/13 19:29	msh
Mercury, total	M7471A CVAA	244		UH	*	mg/Kg	0.05	0.2	07/16/13 14:58	mfm
Molybdenum, total (3050)	M6010B ICP	100		U		mg/Kg	2	10	07/24/13 13:41	jjc
Nickel, total (3050)	M6020 ICP-MS	500	3.6			mg/Kg	0.3	2	07/30/13 20:26	msh
Potassium, total (3050)	M6010B ICP	100	1520			mg/Kg	30	200	07/24/13 13:41	jjc
Selenium, total (3050)	M6020 ICP-MS	5000		U	*	mg/Kg	0.5	1	07/31/13 19:29	msh
Silver, total (3050)	M6020 ICP-MS	500	0.34		*	mg/Kg	0.03	0.1	07/30/13 20:26	msh
Zinc, total (3050)	M6020 ICP-MS	500	42		*	mg/Kg	1	3	07/30/13 20:26	msh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	1	72.8		*	%	0.1	0.5	07/18/13 8:15	kpd

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								07/17/13 10:30	kpd
Digestion - Hot Plate	M3050B ICP-MS								08/06/13 15:00	mss2
Digestion - Hot Plate	M3050B ICP								07/20/13 9:59	kpd/brd
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								07/19/13 9:18	kpd

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Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: SED-4A

ACZ Sample ID: *L13312-12*
Date Sampled: *06/10/13 10:15*
Date Received: *07/15/13*
Sample Matrix: *Sediment*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M9012B - Automated Colorimetric	33.438		UH	*	mg/Kg	0.2	0.8	07/19/13 18:03	mpb
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	100	0.016	H	*	%	0.001	0.005	08/06/13 12:46	mpb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4)	EPA SW-846. Test Methods for Evaluating Solid Waste.
(5)	Standard Methods for the Examination of Water and Wastewater.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for inorganic analyses are reported on an "as received" basis.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5)	If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extqualifier.pdf

REP001.09.12.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L13312***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-01	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348608	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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Tahoe Resources, Inc. ACZ Project ID: L13312

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-02	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG349066	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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Tahoe Resources, Inc. ACZ Project ID: *L13312*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-03	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348608	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-04	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348608	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-05	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348608	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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Tahoe Resources, Inc. ACZ Project ID: L13312

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-06	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348608	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-07	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348608	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-08	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348608	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L13312*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-09	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348608	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L13312*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-10	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG349066	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

REPAD.15.06.05.01

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L13312*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-11	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG349066	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L13312*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13312-12	WG349066	Aluminum, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348098	Antimony, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Barium, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG348144	Calcium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG348608	Manganese, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG347601	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
	WG348608	Selenium, total (3050)	M6020 ICP-MS	LA	Recovery for target analyte in the control sample (LCS or LFB) exceeded the acceptance criteria. Target analyte was not detected in the sample [< MDL].
	WG348098	Silver, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6020 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020 ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020 ICP-MS	ZB	The ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 100 times the MDL.
	WG347932	Cyanide, total	M9012B - Automated Colorimetric	H3	Sample was received and analyzed past holding time.
			M9012B - Automated Colorimetric	Q6	Sample was received above recommended temperature.
			M9012B - Automated Colorimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG348913	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	H3	Sample was received and analyzed past holding time.

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Tahoe Resources, Inc. ACZ Project ID: ***L13312***

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	CLPSOW390, PART F, D-98

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Tahoe Resources, Inc.
Escobal

ACZ Project ID: L13312
Date Received: 07/15/2013 10:41
Received By: mtb
Date Printed: 7/16/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?	X		
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	

Some parameters were received past hold time.

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA17990	18.9	16	N/A

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

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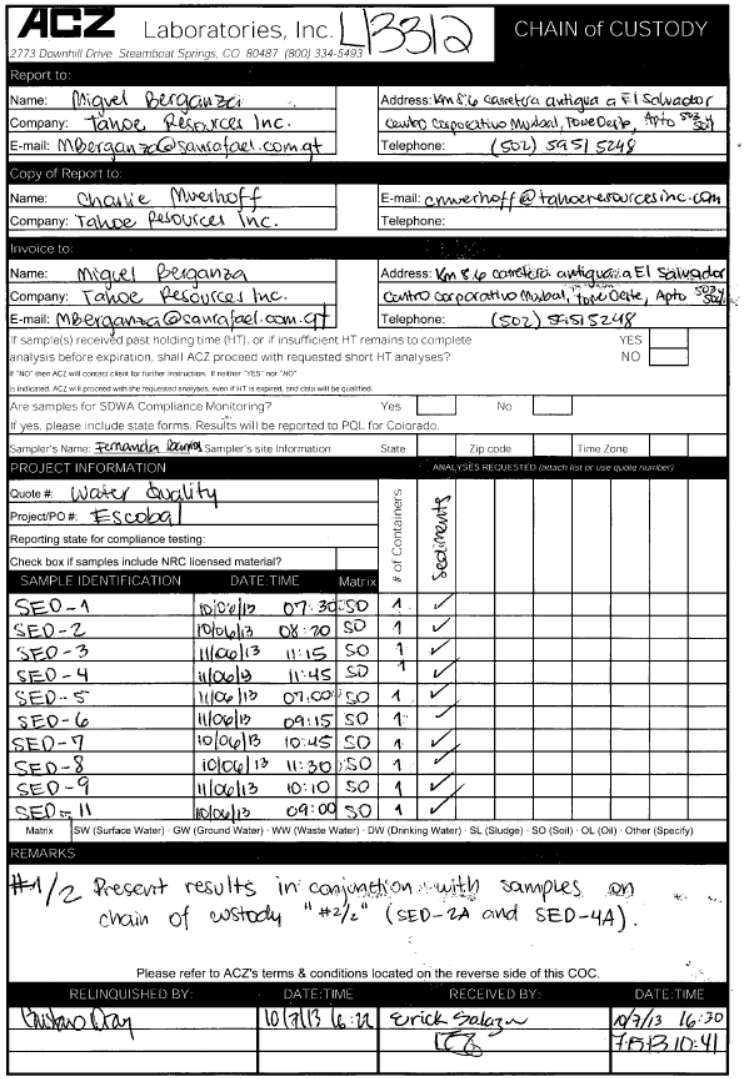

ACZ Laboratories, Inc. L13312 CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:
Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador Centro Corporativo Murbal, Torre Oeste, Apto 502, 5to Nivel
Telephone: (502) 5951 5248

Copy of Report to:
Name: Charlie Meyerhoff
Company: Tahoe Resources Inc.
E-mail: cmeyerhoff@tahoeresourcesinc.com
Telephone:

Invoice to:
Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador Centro Corporativo Murbal, Torre Oeste, Apto 502, 5to Nivel
Telephone: (502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes / No
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernanda Ramos Sampler's site Information: State / Zip code / Time Zone

PROJECT INFORMATION
Quote #: Water Quality
Project/PO #: Escobal
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Sediments
SED-1	10/06/13 07:30	SO	1	✓
SED-2	10/06/13 08:20	SO	1	✓
SED-3	11/06/13 11:15	SO	1	✓
SED-4	11/06/13 11:45	SO	1	✓
SED-5	11/06/13 07:00	SO	1	✓
SED-6	11/06/13 09:15	SO	1	✓
SED-7	10/06/13 10:45	SO	1	✓
SED-8	10/06/13 11:30	SO	1	✓
SED-9	11/06/13 10:10	SO	1	✓
SED-11	10/06/13 09:00	SO	1	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS
#1/2 Present results in conjunction with samples on chain of custody "#2/2" (SED-2A and SED-4A).

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Cristiano Diaz	10/9/13 16:22	Erick Salazar	10/7/13 16:30
			7/15/13 10:41

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

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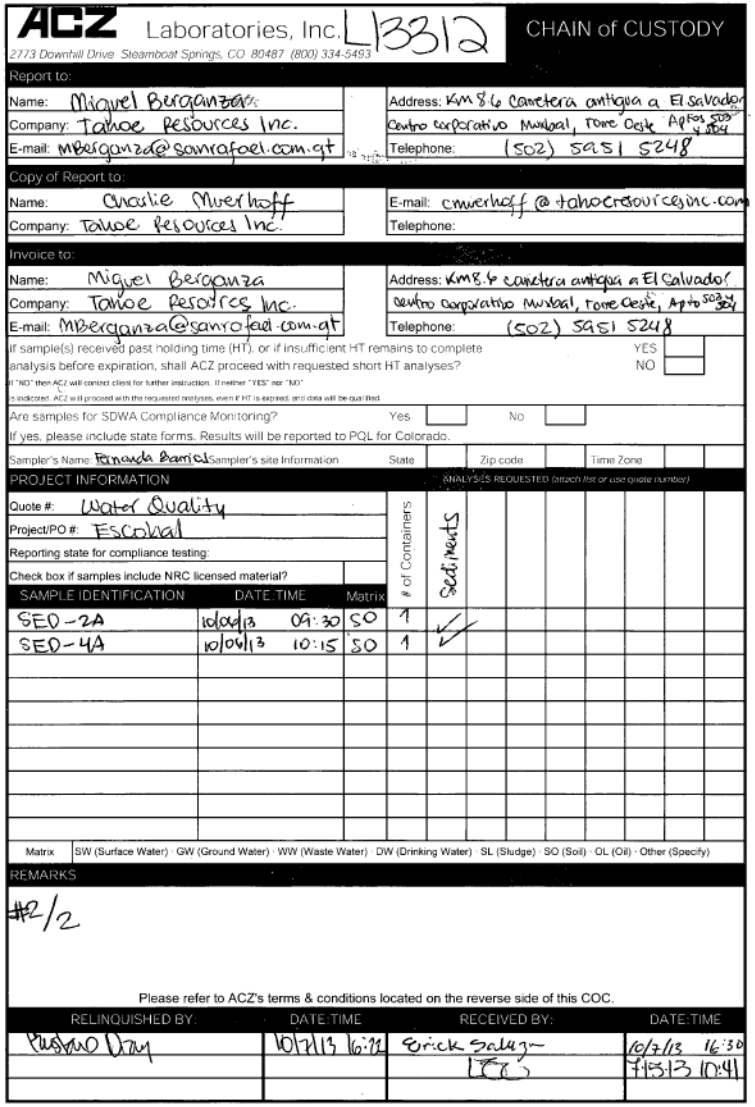

ACZ Laboratories, Inc. L13312 CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:
Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador Centro Corporativo Murbal, Torre Oeste, Apto 502, 5to Nivel
Telephone: (502) 5951 5248

Copy of Report to:
Name: Charlie Meyerhoff
Company: Tahoe Resources Inc.
E-mail: cmeyerhoff@tahoeresourcesinc.com
Telephone:

Invoice to:
Name: Miguel Berganza
Company: Tahoe Resources Inc.
E-mail: MBerganza@sanrafael.com.gt
Address: Km 8.6 carretera antigua a El Salvador Centro Corporativo Murbal, Torre Oeste, Apto 502, 5to Nivel
Telephone: (502) 5951 5248

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes / No
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Fernanda Ramos Sampler's site Information: State / Zip code / Time Zone

PROJECT INFORMATION
Quote #: Water Quality
Project/PO #: Escobal
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Sediments
SED-2A	10/06/13 09:30	SO	1	✓
SED-4A	10/06/13 10:15	SO	1	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS
#2/2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Cristiano Diaz	10/7/13 16:22	Erick Salazar	10/7/13 16:30
			7/15/13 10:41

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

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Guatemala July 10th, 2013

QUARANTINE STATEMENT

To whom it may concern:

Minera San Rafael, S.A is sending a case of sediment samples, which require quarantine and documentation due to organic content. These samples will be analyzed by ACZ Laboratories Inc. in Steamboat Springs, Colorado, USA.

If you have any questions, please contact Miguel Berganza at Minera San Rafael, S.A. (502-5951-5248) or Tony Antalek at ACZ Laboratories (970-879-6590).

Best regards,

COPY

Miguel Berganza
Environment Department
Proyecto Escobal, S. A.

APHIS Animal and Plant Health Inspection Service

Plant Protection & Quarantine

United States Department of Agriculture
Animal and Plant Health Inspection Service
4700 River Road
Riverdale, MD 20737

Permit to Receive Soil
Regulated by 7 CFR 330

This permit was generated electronically via the ePermits system.

PERMITTEE NAME:	Ms. Audrey J Stover	**PERMIT NUMBER:**	P330-13-00153
COMPANY:	ACZ Laboratories, Inc.	**APPLICATION NUMBER:**	P525-130418-001
RECEIVING ADDRESS:	2773 Downhill Drive Steamboat Springs, CO 80487	**DATE ISSUED:**	05/22/2013
MAILING ADDRESS:	2773 Downhill Drive Steamboat Springs, CO 80487		
PHONE:	(970) 879-6590 Ext. 515		
FAX:	(815) 301-3857	**EXPIRES:**	**05/22/2016**

PORTS OF ARRIVAL/PLANT INSPECTION STATIONS: AK, Anchorage; AL, Huntsville; AL, Mobile; AZ, Douglas; AZ, Lukeville; AZ, Naco; AZ, Nogales; AZ, Phoenix; AZ, San Luis; AZ, Tucson; CA, Calexico; CA, Fresno; CA, Hawthorne; CA, Hawthorne; CA, Long Beach; CA, Oakland; CA, Ontario; CA, Otay Mesa; CA, Port Hueneme; CA, Sacramento; CA, San Diego; CA, San Francisco; CA, San Jose; CA, San Ysidro; CA, Tecate; CO, Denver; CT, Hartford; CT, New Haven; DE, Dover; DE, Wilmington; FL, Ft. Lauderdale; FL, Ft. Myers; FL, Ft. Pierce; FL, Jacksonville; FL, Key West; FL, Miami; FL, Orlando; FL, Pensacola; FL, Port Canaveral; FL, Port Everglades; FL, Sanford; FL, Tampa; FL, West Palm Beach; GA, Atlanta; GA, Savannah; GU, Agana; HI, Hilo; HI, Honolulu; HI, Kahului; HI, Kailua-Kona; HI, Lihue; ID, Eastport; IL, Chicago; IN, Indianapolis; KY, Louisville; MA, South Boston; MD, Baltimore; MD, Beltsville; ME, Bangor; ME, Calais; ME, Houlton; ME, Portland; MI, Detroit; MI, Port Huron; MI, Romulus; MI, Sault Saint Marie; MN, Duluth; MN, Grand Portage; MN, International Falls; MN, Minneapolis; MO, Kansas City; MO, St. Louis; MP, Commonwealth of the Northern Mariana Islands; MS, Gulfport; MS, Port Bienville; MT, Raymond; MT, Roosville; MT, Sweetgrass; NC, Raleigh; NC, Wilmington; ND, Dunseith; ND, Pembina; ND, Portal; NJ, Linden; NJ, Newark; NM, Albuquerque; NM, Columbus; NM, SantaTeresa; NV, Las Vegas; NY, Albany; NY, Alexandria Bay; NY, Brooklyn; NY, Buffalo; NY, Champlain, Rouses Point; NY, Jamaica; NY, Jamaica; NY, Newburgh; OH, Ashtabula; OH, Cincinnati; OH, Cleveland; OH, Columbus; OH, Toledo; OH, Wilmington; OK, Oklahoma City; OR, Portland; PA, Allentown; PA, Harrisburg; PA, Philadelphia; PA, Pittsburgh; PA, Scranton; PR, Aguadilla; PR, Carolina; PR, Fajardo; PR, Mayaguez; PR, Ponce; RI, Warwick/Providence; SC, Charleston; TN, Memphis; TN, Nashville; TX, Austin; TX, Brownsville; TX, Corpus Christi; TX, Dallas; TX, Del Rio; TX, Eagle Pass; TX, El Paso; TX, Fabens; TX, Falcon; TX, Fort Hancock; TX, Galveston; TX, Hidalgo; TX, Humble; TX, Laredo; TX, Los Indios; TX, Pharr; TX, Port Arthur; TX, Presidio; TX, Progresso; TX, Rio Grande City; TX, Roma; TX, San Antonio; TX, Victoria; UT, Salt Lake City; VA, Dulles; VA, Norfolk; VI, St. Croix; VI, St. Thomas; VT, Berlin; WA, Blaine; WA, Oroville; WA, Port Angeles; WA, SeaTac; WA, Sumas; WI, Green Bay; WI, Milwaukee

HAND CARRY: No

Under the conditions specified, this permit authorizes the following:
Quantity of Soil per Shipment and Treatment
Over 3 lbs - Your facility MUST be inspected and approved to receive this soil

SPECIAL INSTRUCTIONS TO INSPECTORS
See permit conditions below

COPY

Permit Number P330-13-00153

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS. Osmond Baron	DATE 05/22/2013

WARNING: Any alteration, forgery, or unauthorized use of this Federal Form is subject to civil penalties of up to $250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)

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12.5. Certificado de referencia de estándares de mercurio y metales.

SPEXertificate®

Certificate of Reference Material

ACCREDITED Reference Materials Producer CERT #2495.01 Chemical Testing CERT #2495.02

Catalog Number: PLHG2-1AX **Lot No.** 18-77HGX

Description: 10 mg/L Mercury

Matrix: 5% HNO_3

This **ASSURANCE®** Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for inorganic spectroscopic instrumentation such as ICP-OES, DCP, AA, ICP-MS, and XRF. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

Certified Value: 10.0 mg/L

Uncertainty Associated with Measurement: ±0.03 mg/L

Certified Value is Traceable to: 3133*

* - indicates NIST SRM † - indicates SPEX CertiPrep CRM (when NIST SRM is not available)

The CRM is prepared gravimetrically using high purity Mercury Metal, Lot# 03841R. The certified value listed is the average of values obtained by classical wet assay and ICP spectrometer analysis.

Refer to side 2 for details of measurement uncertainties.

Classical Wet Assay: 10.0 mg/L

Method: This value was derived from dilution calculations of a Titrimetry analysis result of a Mercury concentrate. The concentrate was analyzed by EDTA titration using Ammonium Thiocyanate with Ferric Nitrate as indicator.

Instrumental Analysis by ICP Spectrometer: 10.0 mg/L

Uncertified Properties

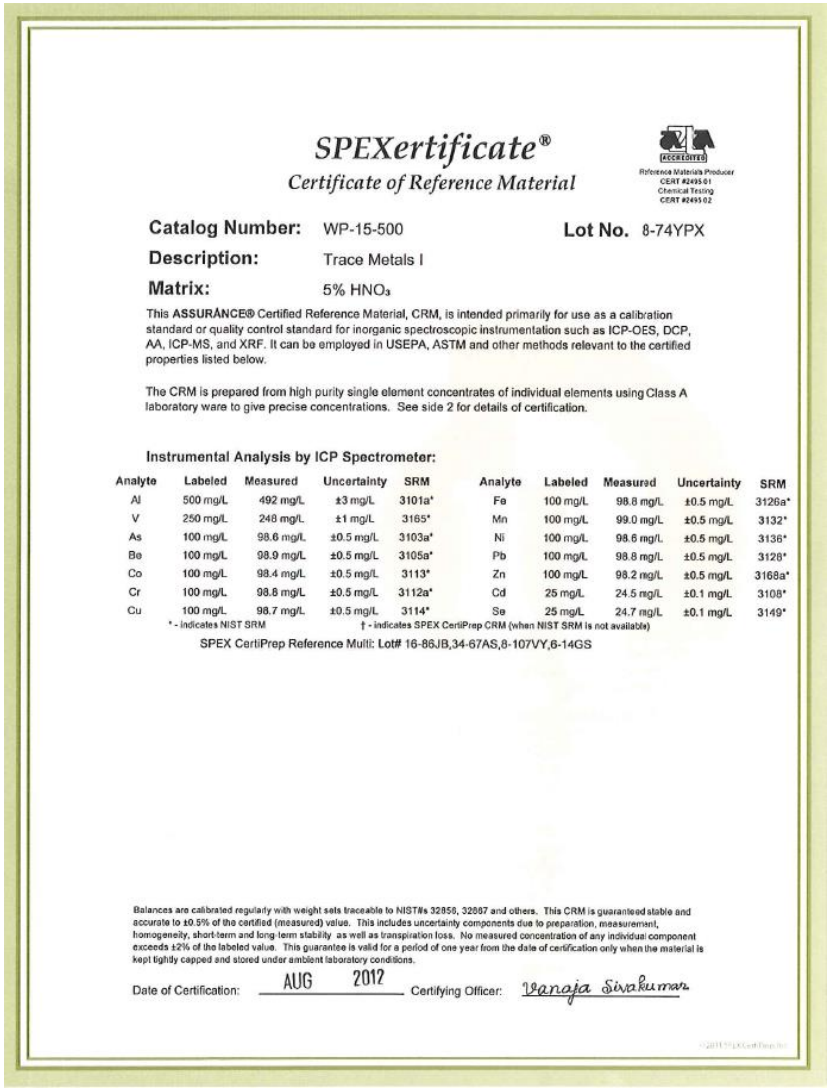
Density: 1.024 g/mL @ 20.0°C

Trace Metallic Impurities in the Actual Solution via ICP/ICP-MS Analysis:

Element	mg/L	Element	mg/L	Element	mg/L	Element	mg/L	Element	mg/L	Element	mg/L
Ag	<0.001	Bi	<0.001	Fe	0.006	Mn	<0.001	Rb	<0.001	Tl	<0.001
Al	0.003	Ca	<0.05	Ga	<0.001	Mo	<0.001	Re	<0.001	Tl	<0.001
As	<0.001	Cd	<0.001	In	<0.001	Na	<0.01	Sb	<0.001	V	<0.001
B	0.001	Co	<0.001	K	<0.3	Nl	<0.02	Si	<0.1	Zn	0.02
Ba	<0.001	Cr	0.001	Li	<0.001	Pb	0.001	Sr	<0.001	Zr	<0.001
Be	<0.001	Cu	<0.001	Mg	<0.001						

Balances are calibrated regularly with weight sets traceable to NIST #32856, #32867 and others. This CRM is guaranteed stable and accurate to +/- 0.5% of the certified value. This includes uncertainty components due to preparation, homogeneity by the most precise method, short term and long term stability as well as transpiration loss. This guarantee is valid for a period of one year from the date of certification only when the material is kept tightly closed and stored under ambient laboratory conditions.

Date of Certification: AUG 2012 Certifying Officer: Vanaja Sivakumar



SPEXertificate®

Certificate of Reference Material

ACCREDITED Reference Materials Producer CERT #2495.01 Chemical Testing CERT #2495.02

Catalog Number: WP-15-500 **Lot No.** 8-74YPX

Description: Trace Metals I

Matrix: 5% HNO_3

This **ASSURANCE®** Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for inorganic spectroscopic instrumentation such as ICP-OES, DCP, AA, ICP-MS, and XRF. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

The CRM is prepared from high purity single element concentrates of individual elements using Class A laboratory ware to give precise concentrations. See side 2 for details of certification.

Instrumental Analysis by ICP Spectrometer:

Analyte	Labeled	Measured	Uncertainty	SRM	Analyte	Labeled	Measured	Uncertainty	SRM
Al	500 mg/L	492 mg/L	±3 mg/L	3101a*	Fe	100 mg/L	98.8 mg/L	±0.5 mg/L	3126a*
V	250 mg/L	248 mg/L	±1 mg/L	3165*	Mn	100 mg/L	99.0 mg/L	±0.5 mg/L	3132*
As	100 mg/L	98.6 mg/L	±0.5 mg/L	3103a*	Ni	100 mg/L	98.6 mg/L	±0.5 mg/L	3136*
Be	100 mg/L	98.9 mg/L	±0.5 mg/L	3105a*	Pb	100 mg/L	98.8 mg/L	±0.5 mg/L	3128*
Co	100 mg/L	98.4 mg/L	±0.5 mg/L	3113*	Zn	100 mg/L	98.2 mg/L	±0.5 mg/L	3168a*
Cr	100 mg/L	98.8 mg/L	±0.5 mg/L	3112a*	Cd	25 mg/L	24.5 mg/L	±0.1 mg/L	3108*
Cu	100 mg/L	98.7 mg/L	±0.5 mg/L	3114*	Se	25 mg/L	24.7 mg/L	±0.1 mg/L	3149*

* - indicates NIST SRM † - indicates SPEX CertiPrep CRM (when NIST SRM is not available)

SPEX CertiPrep Reference Multi: Lot# 16-86JB,34-67AS,8-107VY,6-14GS

Balances are calibrated regularly with weight sets traceable to NIST#s 32856, 32867 and others. This CRM is guaranteed stable and accurate to ±0.5% of the certified (measured) value. This includes uncertainty components due to preparation, measurement, homogeneity, short-term and long-term stability as well as transpiration loss. No measured concentration of any individual component exceeds ±2% of the labeled value. This guarantee is valid for a period of one year from the date of certification only when the material is kept tightly capped and stored under ambient laboratory conditions.

Date of Certification: AUG 2012 Certifying Officer: Vanaja Sivakumar

12.6. Informes Originales de los Resultados Analíticos Obtenidos del Efluente de la Planta de Tratamiento en los meses de mayo a julio 2013.

ECOSISTEMAS
PROYECTOS AMBIENTALES

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REG 016 Resultados de Análisis

Muestra: 1 muestra de agua simple
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 150513
Fecha de ingreso de muestra: 160513
Fecha de análisis: 160513-270513
Fecha del informe: 270513

Identificación de la muestra: WW9
Correlativo Ecosistemas: 1227

Acuerdo Gubernativo 236-2006 (excepto cianuros)

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Potencial de Hidrogeno pH (Laboratorio)	unidades	1	9.67	SMWW 4500H-B	6 a 9
* Aceites y Grasas	mg/L	5	N.D.	EPA 1664	10
Materia Flotante	---	---	ausente	Visual	ausente
Demanda Bioquimica de Oxigeno DBO$_5$	mg/L	10	< 10	Oxitop-Merck Análogo SMWW 5210D	ver nota
* Demanda Química de Oxigeno DQO	mg/L	25	< 25	Reflujo Cerrado, Merck, análogo SMWW 5220D	no especificado
Relación DBO$_5$/DQO	---	---	-----	---	---
Relación DQO/DBO$_5$	---	---	-----	---	---
* Sólidos Suspendidos	mg/L	10	< 10	SMWW 2540D	100
* Sólidos Sedimentables	ml/L	0.1	< 0.1	SMWW 2540F	no especificado
Nitrógeno Total	mg/L	1	4.5	Digestión alcalina persulfato colorimétrico HACH	20
Fósforo Total	mg/L	0.05	0.06	Spectroquant Merck Análogo EPA 365.2+3, SMWW 4500-P E, ISO 6878/1, DIN EN 1189 D11	10
* Arsénico As	mg/L	0.002	0.003	UNICAM AN40177_E10/03C	0.1
* Cadmio Cd	mg/L	0.02	N.D.	SMWW 3111B	0.1
* Cobre Cu	mg/L	0.03	N.D.	SMWW 3111B	3
Cromo Hexavalente Cr(VI)	mg/L	0.05	0.06	Colorimétrico Merck, análogo SMWW 3500-Cr-D	0.1
* Mercurio Hg	mg/L	0.004	N.D.	UNICAM AN40181_E10/03C	0.01
* Niquel Ni	mg/L	0.05	N.D.	SMWW 3111B	2

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acreditado ISO 17025 según OGA-LE 006-04

ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 758-13
Pag 2/2

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Plomo Pb	mg/L	0.05	N.D.	SMWW 3111B	0.4
* Zinc Zn	mg/L	0.01	N.D.	SMWW 3111B	10
Color Aparente	UC HZ equiv. Unid. Pt-Co	1	13	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	500
Color Real	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	
** Coliformes Fecales	NMP/100mL	2	< 2	NMP	< 1 x 10^4

Notas:
Captación de muestras: La muestra fue captada por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigeración. pH < 2 en muestra para análisis de metales y Aceites y Grasas
Metodología: Espectrofotométricos / Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977. EPA 1664
N.D. No detectable. Debajo del limite de detección.
NMP: Número mas probable
El valor DQO/DBO$_5$ y DBO$_5$/DQO no se ha determinado porque el resultado se encuentra abajo de nuestros límites de detección.
Respecto a la DBO el acuerdo 236-2006 la relaciona como "carga" junto al caudal y como meta de cumplimiento un valor de DBO de 200 mg/L (ver Acuerdo Artículo 21).
Los resultados obtenidos corresponden únicamente a la muestra recibida por el personal de Ecosistemas Proyectos Ambientales.

* **Análisis acreditado COGUANOR NTG/ISO/IEC 17025:2005 según OGA LE 006-04**
** *Análisis referido.*

Ing. Fernando Fuentes
Gerente Técnico

LUIS FERNANDO FUENTES MÉNDEZ
INGENIERO QUIMICO
COLEGIADO No. 876

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acreditado ISO 17025 según OGA-LE 006-04

ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 763-13
Pág 1/2

REG 016 Resultados de Análisis

Muestra: 1 muestra de agua simple
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 150513
Fecha de ingreso de muestra: 160513
Fecha de análisis: 160513-270513
Fecha del informe: 270513

Identificación de la muestra: WW10
Correlativo Ecosistemas: 1232

Acuerdo Gubernativo 236-2006 (excepto cianuros)

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Potencial de Hidrogeno pH (Laboratorio)	unidades	1	7.52	SMWW 4500H-B	6 a 9
* Aceites y Grasas	mg/L	5	N.D.	EPA 1664	10
Materia Flotante	---	---	ausente	Visual	ausente
Demanda Bioquimica de Oxigeno DBO_5	mg/L	10	< 10	Oxitop-Merck Análogo SMWW 5210D	ver nota
* Demanda Química de Oxígeno DQO	mg/L	25	< 25	Reflujo Cerrado, Merck, análogo SMWW 5220D	no especificado
Relación DBO_5/DQO	---	---	-----	---	---
Relación DQO/DBO_5	---	---	-----	---	---
* Sólidos Suspendidos	mg/L	10	< 10	SMWW 2540D	100
* Sólidos Sedimentables	ml/L	0.1	< 0.1	SMWW 2540F	no especificado
Nitrógeno Total	mg/L	1	N.D.	Digestión alcalina persulfato colorimétrico HACH	20
Fósforo Total	mg/L	0.05	N.D.	Spectroquant Merck Análogo EPA 365.2+3, SMWW 4500-P E, ISO 6978/1, DIN EN 1189 D11	10
* Arsénico As	mg/L	0.002	N.D.	UNICAM AN40177_E10/03C	0.1
* Cadmio Cd	mg/L	0.02	N.D.	SMWW 3111B	0.1
* Cobre Cu	mg/L	0.03	N.D.	SMWW 3111B	3
Cromo Hexavalente Cr(VI)	mg/L	0.05	N.D.	Colorimétrico Merck, análogo SMWW 3500-Cr-D	0.1
* Mercurio Hg	mg/L	0.004	N.D.	UNICAM AN40181_E10/03C	0.01
* Niquel Ni	mg/L	0.05	N.D.	SMWW 3111B	2

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PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Plomo Pb	mg/L	0.05	N.D.	SMWW 3111B	0.4
* Zinc Zn	mg/L	0.01	N.D.	SMWW 3111B	10
Color Aparente	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	500
Color Real	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	
** Coliformes Fecales	NMP/100mL	2	< 2	NMP	< 1 x 10^4

Notas:
Captación de muestras: La muestra fue captada por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigeración. pH < 2 en muestra para análisis de metales y Aceites y Grasas
Metodología: Espectrofotométricos / Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977. EPA 1664
N.D. No detectable. Debajo del limite de detección.
NMP: Número mas probable
El valor DQO/DBO_5 y DBO_5/DQO no se ha determinado porque el resultado se encuentra abajo de nuestros limites de detección.
Respecto a la DBO el acuerdo 236-2006 la relaciona como "carga" junto al caudal y como meta de cumplimiento un valor de DBO de 200 mg/L (ver Acuerdo Artículo 21).
Los resultados obtenidos corresponden únicamente a la muestra recibida por el personal de Ecosistemas Proyectos Ambientales.

* **Análisis acreditado COGUANOR NTG/ISO/IEC 17025:2005 según OGA LE 006-04**
*** Análisis referido.*

Ing. Fernando Fuentes
Gerente Técnico

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acreditado ISO 17025 según OGA-LE 006-04

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

June 10, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L12348

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 30, 2013. This project has been assigned to ACZ's project number, L12348. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L12348. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after July 10, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Tahoe Resources, Inc. June 10, 2013

Project ID: Escobal
ACZ Project ID: L12348

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 6 miscellaneous samples from Tahoe Resources, Inc. on May 30, 2013. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L12348. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses except those qualified with an ACZ 'H' flag were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Client samples were received at a temperature outside of the acceptable range (See Sample Receipt Form).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: WW9

ACZ Sample ID: ***L12348-05***
Date Sampled: *05/15/13 08:50*
Date Received: *05/30/13*
Sample Matrix: *Waste Water*

300

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								06/06/13 14:12	mla

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		UH	*	mg/L	0.003	0.01	06/06/13 22:49	pjb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L12348***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L12348-01	WG345160	Cyanide, total	M335.4 - Colorimetric w/ distillation	H3	Sample was received and analyzed past holding time.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L12348-02	WG345160	Cyanide, total	M335.4 - Colorimetric w/ distillation	H3	Sample was received and analyzed past holding time.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L12348-03	WG345160	Cyanide, total	M335.4 - Colorimetric w/ distillation	H3	Sample was received and analyzed past holding time.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L12348-04	WG345163	Cyanide, total	M335.4 - Colorimetric w/ distillation	H3	Sample was received and analyzed past holding time.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L12348-05	WG345163	Cyanide, total	M335.4 - Colorimetric w/ distillation	H3	Sample was received and analyzed past holding time.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L12348-06	WG345163	Cyanide, total	M335.4 - Colorimetric w/ distillation	H3	Sample was received and analyzed past holding time.
			M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

REPAD.15.06.05.01

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Ref 956-13
Pág 1/2

REG 016 Resultados de Análisis

Muestra: 1 muestra de agua simple
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 260613
Fecha de ingreso de muestra: 270613
Fecha de análisis: 270613-090713
Fecha del informe: 090713

Identificación de la muestra: WW9
Correlativo Ecosistemas: 1580

Acuerdo Gubernativo 236-2006 (excepto cianuros)

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Potencial de Hidrogeno pH (Laboratorio)	unidades	1	8.23	SMWW 4500H-B	6 a 9
* Aceites y Grasas	mg/L	5	N.D.	EPA 1664	10
Materia Flotante	---	---	ausente	Visual	ausente
Demanda Bioquímica de Oxigeno DBO_5	mg/L	10	< 10	Oxitop-Merck Análogo SMWW 5210D	ver nota
* Demanda Química de Oxígeno DQO	mg/L	25	< 25	Reflujo Cerrado, Merck, análogo SMWW 5220D	no especificado
Relación DBO_5/DQO	---	---	-----	---	---
Relación DQO/DBO_5	---	---	-----	---	---
* Sólidos Suspendidos	mg/L	10	< 10	SMWW 2540D	100
* Sólidos Sedimentables	ml/L	0.1	< 0.1	SMWW 2540F	no especificado
Nitrógeno Total	mg/L	1	17.6	Digestión alcalina persulfato colorimétrico HACH	20
Fósforo Total	mg/L	0.05	0.05	Spectroquant Merck Análogo EPA 365.2+3, SMWW 4500-P E. ISO 6978/1, DIN EN 1189 D11	10
* Arsénico As	mg/L	0.002	0.005	UNICAM AN40177_E10/03C	0.1
* Cadmio Cd	mg/L	0.02	N.D.	SMWW 3111B	0.1
* Cobre Cu	mg/L	0.03	N.D.	SMWW 3111B	3
Cromo Hexavalente Cr(VI)	mg/L	0.05	N.D.	Colorimétrico Merck, análogo SMWW 3500-Cr-D	0.1
* Mercurio Hg	mg/L	0.004	N.D.	UNICAM AN40181_E10/03C	0.01
* Niquel Ni	mg/L	0.05	N.D.	SMWW 3111B	2

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 956-13
Pag 2/2

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Plomo Pb	mg/L	0.05	N.D.	SMWW 3111B	0.4
* Zinc Zn	mg/L	0.01	N.D.	SMWW 3111B	10
Color Aparente	UC HZ equiv. Unid. Pt-Co	1	24	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	500
Color Real	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	
** Coliformes Fecales	NMP/100mL	2	49	NMP	$< 1 \times 10^4$

Notas:
Captación de muestras: La muestra fue captada por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigeración. pH < 2 en muestra para análisis de metales y Aceites y Grasas
Metodología: Espectrofotométricos / Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977. EPA 1664
N.D. No detectable. Debajo del limite de detección.
NMP: Número mas probable
El valor DQO/DBO_5 y DBO_5/DQO no se ha determinado porque el resultado se encuentra abajo de nuestros limites de detección.
Respecto a la DBO el acuerdo 236-2006 la relaciona como "carga" junto al caudal y como meta de cumplimiento un valor de DBO de 200 mg/L (ver Acuerdo Artículo 21).
Los resultados obtenidos corresponden únicamente a la muestra recibida por el personal de Ecosistemas Proyectos Ambientales.

* **Análisis acreditado COGUANOR NTG/ISO/IEC 17025:2005 según OGA LE 006-04**
*** Análisis referido.*

Ing. Fernando Fuentes
Gerente Técnico

LUIS FERNANDO FUENTES MÉNDEZ
INGENIERO QUIMICO
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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 957-13
Pág 1/2

REG 016 Resultados de Análisis

Muestra: 1 muestra de agua simple
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 260613
Fecha de ingreso de muestra: 270613
Fecha de análisis: 270613-090713
Fecha del informe: 090713

Identificación de la muestra: WW11
Correlativo Ecosistemas: 1581

Acuerdo Gubernativo 236-2006 (excepto cianuros)

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Potencial de Hidrogeno pH (Laboratorio)	unidades	1	8.02	SMWW 4500H-B	6 a 9
* Aceites y Grasas	mg/L	5	N.D.	EPA 1664	10
Materia Flotante	---	---	ausente	Visual	ausente
Demanda Bioquimica de Oxigeno DBO_5	mg/L	10	< 10	Oxitop-Merck Análogo SMWW 5210D	ver nota
* Demanda Química de Oxígeno DQO	mg/L	25	< 25	Reflujo Cerrado, Merck, análogo SMWW 5220D	no especificado
Relación DBO_5/DQO	---	---	-----	---	---
Relación DQO/DBO_5	---	---	-----	---	---
* Sólidos Suspendidos	mg/L	10	< 10	SMWW 2540D	100
* Sólidos Sedimentables	ml/L	0.1	< 0.1	SMWW 2540F	no especificado
Nitrógeno Total	mg/L	1	11.2	Digestión alcalina persulfato colorimétrico HACH	20
Fósforo Total	mg/L	0.05	0.06	Spectroquant Merck Análogo EPA 365.2+3, SMWW 4500-P E, ISO 6978/1, DIN EN 1189 D11	10
* Arsénico As	mg/L	0.002	0.005	UNICAM AN40177_E10/03C	0.1
* Cadmio Cd	mg/L	0.02	N.D.	SMWW 3111B	0.1
* Cobre Cu	mg/L	0.03	N.D.	SMWW 3111B	3
Cromo Hexavalente Cr(VI)	mg/L	0.05	N.D.	Colorimétrico Merck, análogo SMWW 3500-Cr-D	0.1
* Mercurio Hg	mg/L	0.004	N.D.	UNICAM AN40181_E10/03C	0.01
* Niquel Ni	mg/L	0.05	N.D.	SMWW 3111B	2

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ECOSISTEMAS
PROYECTOS AMBIENTALES

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Plomo Pb	mg/L	0.05	N.D.	SMWW 3111B	0.4
* Zinc Zn	mg/L	0.01	N.D.	SMWW 3111B	10
Color Aparente	UC HZ equiv. Unid. Pt-Co	1	24	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	500
Color Real	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	
** Coliformes Fecales	NMP/100mL	2	49	NMP	< 1 x 10^4

Notas:
Captación de muestras: La muestra fue captada por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigoración. pH < 2 en muestra para análisis de metales y Aceites y Grasas
Metodologia: Espectrofotométricos / Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977. EPA 1664
N.D. No detectable. Debajo del limite de detección.
NMP: Número mas probable
El valor DQO/DBO_5 y DBO_5/DQO no se ha determinado porque el resultado se encuentra abajo de nuestros limites de detección.
Respecto a la DBO el acuerdo 236-2006 la relaciona como "carga" junto al caudal y como meta de cumplimiento un valor de DBO de 200 mg/L (ver Acuerdo Articulo 21).
Los resultados obtenidos corresponden únicamente a la muestra recibida por el personal de Ecosistemas Proyectos Ambientales.

* **Análisis acreditado COGUANOR NTG/ISO/IEC 17025:2005 según OGA LE 006-04**
** *Análisis referido.*

Ing. Fernando Fuentes
Gerente Técnico

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 963-13
Pág 1/2

REG 016 Resultados de Análisis

Muestra: 1 muestra de agua simple
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 260613
Fecha de ingreso de muestra: 270613
Fecha de análisis: 270613-090713
Fecha del informe: 090713

Identificación de la muestra: WW10
Correlativo Ecosistemas: 1587

Acuerdo Gubernativo 236-2006 (excepto cianuros)

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Potencial de Hidrogeno pH (Laboratorio)	unidades	1	6.82	SMWW 4500H-B	6 a 9
* Aceites y Grasas	mg/L	5	N.D.	EPA 1664	10
Materia Flotante	---	---	ausente	Visual	ausente
Demanda Bioquímica de Oxigeno DBO_5	mg/L	10	< 10	Oxitop-Merck Análogo SMWW 5210D	ver nota
* Demanda Química de Oxígeno DQO	mg/L	25	< 25	Reflujo Cerrado, Merck, análogo SMWW 5220D	no especificado
Relación DBO_5/DQO	---	---	-----	---	---
Relación DQO/DBO_5	---	---	-----	---	---
* Sólidos Suspendidos	mg/L	10	< 10	SMWW 2540D	100
* Sólidos Sedimentables	ml/L	0.1	< 0.1	SMWW 2540F	no especificado
Nitrógeno Total	mg/L	1	N.D.	Digestión alcalina persulfato colorimétrico HACH	20
Fósforo Total	mg/L	0.05	N.D.	Spectroquant Merck Análogo EPA 365.2+3, SMWW 4500-P E, ISO 6978/1, DIN EN 1189 D11	10
* Arsénico As	mg/L	0.002	N.D.	UNICAM AN40177_E10/03C	0.1
* Cadmio Cd	mg/L	0.02	N.D.	SMWW 3111B	0.1
* Cobre Cu	mg/L	0.03	N.D.	SMWW 3111B	3
Cromo Hexavalente Cr(VI)	mg/L	0.05	N.D.	Colorimétrico Merck, análogo SMWW 3500-Cr-D	0.1
* Mercurio Hg	mg/L	0.004	N.D.	UNICAM AN40181_E10/03C	0.01
* Níquel Ni	mg/L	0.05	N.D.	SMWW 3111B	2

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 963-13
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PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Plomo Pb	mg/L	0.05	N.D.	SMWW 3111B	0.4
* Zinc Zn	mg/L	0.01	N.D.	SMWW 3111B	10
Color Aparente	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	500
Color Real	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	
** Coliformes Fecales	NMP/100mL	2	< 2	NMP	$< 1 \times 10^4$

Notas:
Captación de muestras: La muestra fue captada por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Refrigeración. pH < 2 en muestra para análisis de metales y Aceites y Grasas
Metodología: Espectrofotométricos / Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977. EPA 1664
N.D. No detectable. Debajo del límite de detección.
NMP: Número mas probable
El valor DQO/DBO_5 y DBO_5/DQO no se ha determinado porque el resultado se encuentra abajo de nuestros límites de detección.
Respecto a la DBO el acuerdo 236-2006 la relaciona como "carga" junto al caudal y como meta de cumplimiento un valor de DBO de 200 mg/L (ver Acuerdo Artículo 21).
Los resultados obtenidos corresponden únicamente a la muestra recibida por el personal de Ecosistemas Proyectos Ambientales.

* **Análisis acreditado COGUANOR NTG/ISO/IEC 17025:2005 según OGA LE 006-04**
*** Análisis referido.*

Ing. Fernando Fuentes
Gerente Técnico

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 12, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L13004

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 28, 2013. This project has been assigned to ACZ's project number, L13004. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L13004. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 11, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: WW0

ACZ Sample ID: ***L13004-01***
Date Sampled: *06/26/13 09:00*
Date Received: *06/28/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								07/09/13 9:20	mla

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/09/13 13:13	bsu

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: WW9

ACZ Sample ID: ***L13004-03***
Date Sampled: *06/26/13 12:15*
Date Received: *06/28/13*
Sample Matrix: *Waste Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								07/09/13 9:45	mla

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/09/13 13:16	bsu

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: WW11

ACZ Sample ID: ***L13004-04***
Date Sampled: *06/26/13 12:25*
Date Received: *06/28/13*
Sample Matrix: *Waste Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								07/10/13 10:50	mla

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/10/13 22:52	pjb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: ***L13004***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13004-01	WG347231	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13004-02	WG347231	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13004-03	WG347231	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13004-04	WG347370	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13004-05	WG347370	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13004-06	WG347370	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13004-07	WG347370	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13004-08	WG347370	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13004-09	WG347370	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

REPAD.15.06.05.01

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 1114-13
Pág 1/2

REG 016 Resultados de Análisis

Muestra: 1 muestra de agua compuesta (según información del cliente)
Alicuota 1: 04:00 horas
Alicuota 2: 07:00 horas
Alicuota 3: 10:00 horas
Alicuota 4: 13:00 horas
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 170713
Fecha de ingreso de muestra: 180713
Fecha de análisis: 180713-290713
Fecha del informe: 290713

Identificación de la muestra: WW9
Correlativo Ecosistemas: 1848

Acuerdo Gubernativo 236-2006 (excepto cianuros)

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Potencial de Hidrogeno pH (Laboratorio)	unidades	1	8.06	SMWW 4500H-B	6 a 9
* Aceites y Grasas	mg/L	5	N.D.	EPA 1664	10
Materia Flotante	---	---	ausente	Visual	ausente
Demanda Bioquímica de Oxigeno DBO_5	mg/L	10	< 10	Oxitop-Merck Análogo SMWW 5210D	ver nota
* Demanda Química de Oxígeno DQO	mg/L	25	< 25	Reflujo Cerrado, Merck, análogo SMWW 5220D	no especificado
Relación DBO_5/DQO	---	---	-----	---	---
Relación DQO/DBO_5	---	---	-----	---	---
* Sólidos Suspendidos	mg/L	10	< 10	SMWW 2540D	100
* Sólidos Sedimentables	ml/L	0.1	< 0.1	SMWW 2540F	no especificado
Nitrógeno Total	mg/L	1	9.4	Digestión alcalina persulfato colorimétrico HACH	20
Fósforo Total	mg/L	0.05	0.05	Spectroquant Merck Análogo EPA 365.2+3, SMWW 4500-P E, ISO 6978/1, DIN EN 1189 D11	10
* Arsénico As	mg/L	0.002	0.006	UNICAM AN40177_E10/03C	0.1
* Cadmio Cd	mg/L	0.02	N.D.	SMWW 3111B	0.1
* Cobre Cu	mg/L	0.03	N.D.	SMWW 3111B	3
Cromo Hexavalente Cr(VI)	mg/L	0.05	N.D.	Colorimétrico Merck, análogo SMWW 3500-Cr-D	0.1
* Mercurio Hg	mg/L	0.004	N.D.	UNICAM AN40181_E10/03C	0.01
* Niquel Ni	mg/L	0.05	N.D.	SMWW 3111B	2

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 1114-13
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PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Limites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Plomo Pb	mg/L	0.05	N.D.	SMWW 3111B	0.4
* Zinc Zn	mg/L	0.01	N.D.	SMWW 3111B	10
Color Aparente	UC HZ equiv. Unid. Pt-Co	1	51	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	no especificado
Color Real	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	500
** Coliformes Fecales	NMP/100mL	2	23	NMP	$< 1 \times 10^4$

Notas:
Captación de muestras: La muestra fue captada por personal ajeno a Ecosistemas. Es una muestra compuesta.
Transporte y preservación de la muestra: Refrigeración. pH < 2 en muestra para análisis de metales y Aceites y Grasas
Metodología: Espectrofotométricos / Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977. EPA 1664
N.D. No detectable. Debajo del límite de detección.
NMP: Número mas probable
El valor DQO/DBO$_5$ y DBO$_5$/DQO no se ha determinado porque el resultado se encuentra abajo de nuestros límites de detección.
Respecto a la DBO el acuerdo 236-2006 la relaciona como "carga" junto al caudal y como meta de cumplimiento un valor de DBO de 200 mg/L (ver Acuerdo Artículo 21).
Los resultados obtenidos corresponden únicamente a la muestra recibida por el personal de Ecosistemas Proyectos Ambientales.
Se prohibe la reproducción parcial de este informe sin la autorización escrita de Ecosistemas Proyectos Ambientales.
* **Análisis acreditado COGUANOR NTG/ISO/IEC 17025:2005 según OGA LE 006-04**
*** Análisis referido.*

Ing. Fernando Fuentes
Gerente Técnico

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 1120-13
Pág 1/2

REG 016 Resultados de Análisis

Muestra: 1 muestra de agua simple
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 170713
Fecha de ingreso de muestra: 180713
Fecha de análisis: 180713-290713
Fecha del informe: 290713

Identificación de la muestra: WW10
Correlativo Ecosistemas: 1854

Acuerdo Gubernativo 236-2006 (excepto cianuros)

PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Limites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Potencial de Hidrogeno pH (Laboratorio)	unidades	1	7.90	SMWW 4500H-B	6 a 9
* Aceites y Grasas	mg/L	5	N.D.	EPA 1664	10
Materia Flotante	---	---	ausente	Visual	ausente
Demanda Bioquímica de Oxigeno DBO$_5$	mg/L	10	< 10	Oxitop-Merck Análogo SMWW 5210D	ver nota
* Demanda Química de Oxígeno DQO	mg/L	25	< 25	Reflujo Cerrado, Merck, análogo SMWW 5220D	no especificado
Relación DBO$_5$/DQO	---	---	-----	---	---
Relación DQO/DBO$_5$	---	---	-----	---	---
* Sólidos Suspendidos	mg/L	10	< 10	SMWW 2540D	100
* Sólidos Sedimentables	ml/L	0.1	< 0.1	SMWW 2540F	no especificado
Nitrógeno Total	mg/L	1	N.D.	Digestión alcalina persulfato colorimétrico HACH	20
Fósforo Total	mg/L	0.05	N.D.	Spectroquant Merck Análogo EPA 365.2+3, SMWW 4500-P E, ISO 6978/1, DIN EN 1189 D11	10
* Arsénico As	mg/L	0.002	N.D.	UNICAM AN40177_E10/03C	0.1
* Cadmio Cd	mg/L	0.02	N.D.	SMWW 3111B	0.1
* Cobre Cu	mg/L	0.03	N.D.	SMWW 3111B	3
Cromo Hexavalente Cr(VI)	mg/L	0.05	N.D.	Colorimétrico Merck, análogo SMWW 3500-Cr-D	0.1
* Mercurio Hg	mg/L	0.004	N.D.	UNICAM AN40181_E10/03C	0.01
* Niquel Ni	mg/L	0.05	N.D.	SMWW 3111B	2

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 1120-13
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PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	Límites Máximos Permisibles Entes Generadores Nuevos Acuerdo 236-2006 descarga a cuerpo receptor
* Plomo Pb	mg/L	0.05	N.D.	SMWW 3111B	0.4
* Zinc Zn	mg/L	0.01	N.D.	SMWW 3111B	10
Color Aparente	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	500
Color Real	UC HZ equiv. Unid. Pt-Co	1	< 1	Colorimétrico Merck, análogo APHA 2120B, DIN 53409	
** Coliformes Fecales	NMP/100mL	2	< 2	NMP	$< 1 \times 10^4$

Notas:
Captación de muestras: La muestra fue captada por personal ajeno a Ecosistemas Proyectos Ambientales.
Transporte y preservación de la muestra: Refrigeración. pH < 2 en muestra para análisis de metales y Aceites y Grasas
Metodología: Espectrofotométricos / Standard Methods for water and wastewater APHA, AWWA, 22 edic.
Organic Reagents for Trace Analysis. J.Fries/H. Getrost. E. Merck Darmstadt. 1977. EPA 1664
N.D. No detectable. Debajo del límite de detección.
NMP: Número mas probable
El valor DQO/DBO$_5$ y DBO$_5$/DQO no se ha determinado porque el resultado se encuentra abajo de nuestros límites de detección.
Respecto a la DBO el acuerdo 236-2006 la relaciona como "carga" junto al caudal y como meta de cumplimiento un valor de DBO de 200 mg/L (ver Acuerdo Artículo 21).
Los resultados obtenidos corresponden únicamente a la muestra recibida por el personal de Ecosistemas Proyectos Ambientales.

** *Análisis referido.*

Ing. Fernando Fuentes
Gerente Técnico

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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 06, 2013

Report to:
Miguel Berganza
Tahoe Resources, Inc.
Km 8.6 carrtera Antigua a El Salvador Centro cor
Torre Oeste.Apto 503y504 Guatemala, GT

Bill to:
Miguel Berganza
Tahoe Resources, Inc.
5190 Neil Road #310
Reno, NV 89502

cc: Charlie Muerhoff

Project ID: Escobal
ACZ Project ID: L13452

Miguel Berganza:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 24, 2013. This project has been assigned to ACZ's project number, L13452. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L13452. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 05, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: WW0

ACZ Sample ID: ***L13452-01***
Date Sampled: *07/17/13 10:00*
Date Received: *07/24/13*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								07/31/13 10:36	mla

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/31/13 14:35	mpb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

Page 2 of 14

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Tahoe Resources, Inc.
Project ID: Escobal
Sample ID: WW9

ACZ Sample ID: ***L13452-03***
Date Sampled: *07/17/13 04:00*
Date Received: *07/24/13*
Sample Matrix: *Waste Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								07/31/13 11:06	mla

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5		U	*	mg/L	0.003	0.01	07/31/13 14:26	mpb

REPIN.02.06.05.01 ** Please refer to Qualifier Reports for details.*

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12.7. Informes Originales de los Resultados Analíticos Obtenidos de los lodos del clarificador en el mes de julio 2013.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Tahoe Resources, Inc. ACZ Project ID: *L13452*

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L13452-01	WG348594	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13452-02	WG348594	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13452-03	WG348594	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13452-04	WG348594	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13452-05	WG348594	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13452-06	WG348594	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13452-07	WG348594	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L13452-08	WG348594	Cyanide, total	M335.4 - Colorimetric w/ distillation	Q6	Sample was received above recommended temperature.
			M335.4 - Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

REPAD.15.06.05.01

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ECOSISTEMAS
PROYECTOS AMBIENTALES

Ref 1121-13
REG 016 Resultados de Análisis Pág 1/1

Muestra: 1 muestra de lodo
Análisis solicitado por: Ing. Miguel Berganza
Dirección: Km. 97.5 carretera Mataquescuintla, Aldea Sabana Redonda, San Rafael Las Flores. Santa Rosa
Procedencia de la muestra: Proyecto Escobal
Fecha de muestreo: 050713
Fecha de ingreso de muestra: 180713
Fecha de análisis: 180713-290713
Fecha del informe: 290713

Identificación de la muestra: SED-WW7
Correlativo Ecosistemas: 1855

Acuerdo Gubernativo 236-2006					Parámetros y límites máximos permisibles para lodos (Acuerdo 236-2006) según disposición final		
PARAMETRO	DIMENSIONAL	LIMITE DE DETECCION	RESULTADO	METODOLOGIA	aplicación al suelo mg/kg	relleno sanitario mg/Kg	confinamiento o aislamiento mg/Kg
* Arsénico As	mg/kg	2	17.5	EPA 3051A. UNICAM AN40177_E10/03C	50	100	> 100
* Cadmio Cd	mg/kg	4	N.D.	EPA 3051A. SMWW 3111B	50	100	> 100
* Mercurio Hg	mg/kg	2	N.D.	EPA 3051A. UNICAM AN40181_E10/03C	25	50	> 50
* Plomo Pb	mg/kg	10	492	EPA 3051A. SMWW 3111B	500	1000	> 1000
* Cromo Cr	mg/kg	6	N.D.	EPA 3051A. SMWW 3111 D	1500	3000	> 3000

Notas:
Captación de muestras: La muestra fue captada por personal ajeno a Ecosistemas.
Transporte y preservación de la muestra: Temperatura ambiente.
Metodología base: Espectrofotometría de Absorción Atómica. Standard Methods for the examination of water and wastewater APHA, AWWA, WEF 22 Ed. / EPA 3051A
N.D. No detectable. Debajo del límite de detección.
Los resultados se determinaron en base seca.
Los resultados obtenidos corresponden únicamente a las muestras recibidas por el personal de Ecosistemas Proyectos Ambientales.

^ **Análisis acreditado COGUANOR NTG/ISO/IEC 17025:2005 según OGA LE 006-04**

Ing. Fernando Fuentes
Gerente Técnico
LUIS FERNANDO FUENTES MÉNDEZ
INGENIERO QUIMICO
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