KUMTOR
КУМТОР

centerra GOLD

2013 **ENVIRONMENT** AND **SUSTAINABILITY** REPORT

About Kumtor Mine

Kumtor Mine is the largest western-operated gold mine in Central Asia and has been operating since 1997, having produced approximately 9.3 million ounces of gold by the end of 2013. Kumtor Gold Company (KGC) is the license holder for the Kumtor deposit. The Kumtor open pit mine is located approximately 350 kilometres southeast of the capital Bishkek and 60 kilometres north of the border with the People's Republic of China. It is at an altitude of 4,000 metres above sea level in a partially glaciated permafrost zone in the Central Tian Shan Mountains. 2013 marked the seventeenth year of the Kumtor Mine operation in the Kyrgyz Republic, and the tenth year under the parent company Centerra Gold Inc. (Centerra). The estimated end of the life of the Kumtor mine is 2026.

About Centerra

Centerra is the parent company owning 100 percent of Kumtor Gold Company and Kumtor Operating Company. Centerra is a Canadian-based and publicly listed gold mining company engaged in operating, developing, acquiring, and exploring gold properties primarily in Asia, the former Soviet Union, and other emerging markets worldwide. The Company is the largest Western-based gold producer in Central Asia. Centerra has two producing gold mines, in the Kyrgyz Republic and Mongolia. The Company also owns the Gatsuurt development project in Mongolia, the Öksüt Gold Project in Turkey, and has interests in the promising exploration properties in Mongolia, Turkey, Russia, Cyprus, and Western Canada. The Kyrgyz Republic, through the state owned Kyrgyzaltyn Open-End Joint Stock Company, is Centerra's largest shareholder, owning 77,401,766 common shares, representing 32.74 percent of the outstanding shares. Additional information on Centerra is available at SEDAR (www.sedar.com) and on the company website (www.centerragold.com).

About this Report

This document is the Kumtor Annual Environment and Sustainability (AESR) Report for the 2013 financial year (ending 31 December 2013). This report is focused on the Kumtor Mine in the Kyrgyz Republic. Kumtor's performance data include only Kumtor's own operations, unless noted otherwise, although the policies of Centerra and Kumtor apply to both employees and contractors. Financial amounts are reported in US dollars (US$) unless otherwise stated.

This report follows the format of the Global Reporting Initiative (GRI), third generation (G3) Sustainability Reporting Guidelines and GRI Mining and Metals Sector Supplement (see www.globalreporting.org). This is in addition to addressing the key reporting requirements contained in Kumtor's Environmental Management Action Plan.

In determining the scope, content, and boundaries of this report, we considered a materiality assessment process described inside the back cover of this report. We self-declare this report at GRI G3 B-level. A GRI Standard Disclosure Index is available on our website, www.kumtor.kg. Please see our Cautionary Note Regarding Forward-Looking Statements also on the inside back cover. This report will also be available in the Russian and Kyrgyz languages.

As we continue to further improve our systems and approaches, we welcome your comments and suggestions on how we can further improve our annual environmental and social reporting and practices. You can find contact details on the back cover of this report.

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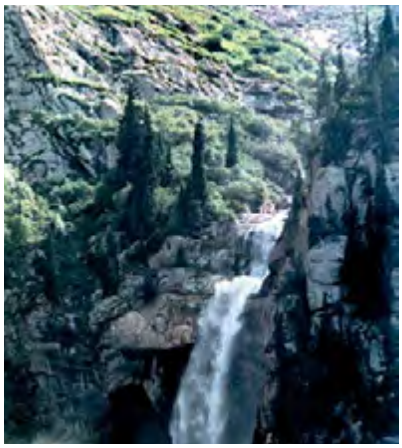

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"We expect to continue to generate substantial and sustainable benefits for all our stakeholders."

Message from the President

In 2013, we successfully addressed the challenges associated with ice and rock movements experienced during 2012. As a result, we recorded gold production of 600,402 ounces (18,674.6 kg) for the full year 2013, which was up 90% on 2012. Our key contributions, accomplishments, and challenges are highlighted below. Negotiations with the Kyrgyz government on a new operational agreement are ongoing at the time of writing. Starting in 2012, and continuing into 2014, the negotiations have created significant uncertainty for our business, shareholders, employees, our supply chain, and the Kyrgyz public at large. Along with a series of environmental claims from the government, we continue to work cooperatively towards amicable resolution.

Generating economic benefits

Kumtor remains a major contributor to the Kyrgyz economy. In 2013 our activities represented 24% of industrial output and 7.7% of GDP of the Kyrgyz Republic. Payments made within the Kyrgyz Republic in 2013 were $270.4 million, bringing the total since 1994 to $2.42 billion.

Largest private sector employer

In addition to being the largest private sector tax payer, we are also the largest private sector employee in the Kyrgyz Republic. By the end of 2013, we had a workforce of 3,311. Kyrgyz nationals make up 96 percent of full time staff. Payments made within the Kyrgyz Republic in 2013 included over $115 million in net wages.

Increasing local procurement

I particularly wish to highlight our efforts to boost local procurement, on which we spent over $68 million in 2013. While specialist operational equipment and certain supplies can only be sourced internationally, we work to continuously increase our local procurement. Nearly 600 Kyrgyz enterprises now supply almost 11,000 items for our day-to-day operations. We have highlighted several examples in this report. We acknowledge the important contributions our suppliers make, not only to the success of Kumtor, but also to their local communities through job creation and other benefits.

Stakeholder engagement

Structured stakeholder engagement forms an important part of our social responsibility program. We work with three Regional Committees, comprising community leaders, youth representatives, and local NGOs. We also operate five community information centers where we can locally and directly respond to citizens' questions and concerns, and provide advice on employment at Kumtor, general business advice, and advice on our community supportprograms. In 2013, we also became a founding and supporting member of the Aid Coordination Platform in Issyk-Kul, a network to help coordinate donors engaged in development activities in the Issyk-Kul region.

Community investments

We bring significant benefit to local communities through our strategic social responsibility programs. In 2013, these included $6.8 million for sustainable development projects and other community contributions. We highlight several voluntary activities and outcomes in this report.

Since 2009, we have contributed 1 percent of Kumtor's gross revenues to the Issyk-Kul Regional Development Fund, which amounted to $8.1 million in 2013.

The Issyk Kul Development Fund is independently managed under the Governor of Issyk-Kul Oblast with the objective to apply resources to support developing the region's economic potential and social infrastructure.

Geotechnical safety

Maintaining safe operations and ensuring responsible mining practices remain our top priorities. This is also why removal of ice and associated materials has been part of approved mining activities since the start of Kumtor's operation in 1994. Ice removal is required for ore access and safe working conditions, and remains very small compared to the nearly 1/3 of glaciers lost in Central Asia since the 1930s due to climatic reasons.

As detailed further in this report, we employ leading local and international experts, and advanced technology, to monitor and assess the geotechnical safety and implement actions needed to provide appropriate safeguard for Kumtor's facilities, including the tailings management facility, waste rock dumps, and also Petrov Lake's natural moraine dam.

Health and safety

In 2013, we allocated a budget of $2.0 million for occupational health and safety and invested over 50,000 person-hours in related training. Our statistics, such as a recordable injury frequency rate of 0.20 in 2013, are a reflection of the importance we put on the health and safety of our workers, including communication and training programs to improve performance. These statistics rate favorably when compared to other mining operations in other parts of the developed world. Our focus on reducing vehicle incidents has also been very successful. We recorded a 43% reduction of such incidents in 2013 compared to 2012.

Environment and biodiversity

Independent scientific studies have shown that wildlife numbers have increased locally since the Kumtor operation started.

We also continue to work with and through our conservation partners, such as Fauna and Flora International, to promote nature conservation and support our neighbor, the Sarychat-Eertash Nature Reserve. We carry out surveys and studies of flora and fauna around the operational site, including aquatic life and soils, providing knowledge we will use to plan mine closure activities.

Environmental claims

Between December 2012 and January 2014, Kumtor received a series of claims or directives from state agencies exceeding $470 million, focusing on allegations relating to land use, water use, waste management, and waste rock disposal practices. At the time of writing this report these claims remain unresolved. In addition, the Green Party submitted a claim in October 2013 for 'Compensation of damage caused to the environment and land' totaling approximately $9.4 billion.

As previously disclosed, we dispute the allegations made in these claims and consider them to be exaggerated and without merit.

Life of mine

As detailed further in our website, Kumtor's proven and probable mineral reserves total 8.51 million ounces of contained gold as of December 31, 2013 after processing 766,000 contained ounces in 2013. The current life of mine is for open pit mining to end in 2023 and for milling operations to conclude in 2026.

Looking forward

We face a number of short and long term sustainability challenges. We need to remain vigilant to maintain our occupational health and safety record. We need to be able to continue to remove ice and associated materials to safely access the ore in order to produce gold. Movement of ice and waste rock, and large quantities of meltwater relating to our main pit, will require careful management. We continue to improve and integrate our waste management strategy to further avoid, reduce and recycle our domestic and other waste streams.

We also need to continue with our structured engagement, better communicate significant benefits created through Kumtor, and maximize community investments using a strategic and partnership-based approach. In addition, we need to continue to work with the Kyrgyz government to resolve outstanding claims and directives.

We continue to update Kumtor's conceptual closure plan. The latest version considered also post-closure water quality, revisions to waste rock dump management, and biodiversity. We also carried out initial re-vegetation trials.

Our long term vision is to continue to adapt and evolve both our mining operation and our environmental and sustainability programs in an ethical and responsible way. We expect to continue to generate substantial and sustainable project benefits for all of our stakeholders.

We welcome feedback on this report and encourage comments on how we can further improve our environmental and social performance in the future.

Michael Fischer
President, Kumtor Gold Company

ENVIRONMENTAL AND SUSTAINABILITY SNAPSHOT

Pillar	2013 Target and Comment if Applicable	Target Outcome	2013 Challenges and Additional Achievements	2014 Targets
Project Benefits	• Return to normal operations and gold production by end of 2013	●	• 90% increase in gold production • 96% of full time staff Kyrgyz nationals • $270.4 million in payments within Kyrgyzstan, including $6.8 million for sustainable development projects and $8.1 million to Issyk-Kul Regional Development Fund	• Maintain steady gold production • Continue to increase Local Procurement
Health & Safety	• No lost time injuries (LTI) • Recordable injury frequency rate of not more than 0.36	○ ●	• No fatalities, commendable recordable injury frequency (RIF) of 0.20	• No lost time injuries • Recordable injury frequency rate of 0.36 or lower
Environment	• Improve landfilling and waste management practices • Review water quality compliance standards for ammonia and sulfate • Update Conceptual Closure Plan • Implement Biodiversity Management Strategy and Plan • Develop and implement early warning and engineering solutions to minimize Petrov Lake outburst flood risk • Evaluate options to mitigate tailings dam dust emissions • Improve environmental data management and reporting systems	● ● ◒ ● ◒ ◒ ●	• No significant environmental incidents or spills • $6.5 million spent on environmental assessment and management • Claims from government agencies totalling over $470 million remain under negotiation • An additional claim from the Green Party for $9.4 billion remains unresolved • Improved landfill management • Completed an integrated waste management plan • Developed brochures (Kygyrz, Russian and English) on environmental topics relating to biodiversity, water management, environmental monitoring, water treatment, and glaciers	• Finalise and implement waste management strategy • Finalise 2013 Conceptual Closure Plan • Complete installation of Petrov Lake outburst early warning system
Community	• Conduct socio-economic baseline study in Issyk-Kul region • Implement a web based system to support management of stakeholder engagement and community investment	◒ ◒	• Conducted socio-economic baseline study in Issyk-Kul region and presented to local businesses • Established six Youth Banks to promote young citizen participation • Established an aid coordination platform to harmonize work of Issyk-Kul donors • With aid agencies USAID and KAED, we restored land back to agricultural production, and improved irrigation capacities	• Continue to improve transparency and openness in our funding programs and how we choose to allocate funding • Continue to address grievances as amicably as possible • Complete economic impact assessment
Governance & Standards	• Develop standards to encourage development of local business through procurement	◒	• Provided training on ethical conduct to selected management staff	• Work towards Cyanide Code certification for our operations (to add to transport/storage certification)

○ NOT ACHIEVED ◒ PARTIALLY ACHIEVED ● ACHIEVED

GOVERNANCE AND STANDARDS

We believe that the way we conduct our business and the way employees act in fulfilling their job responsibilities are fundamental to achieving our business objectives.

Our approach

Kumtor operates under the governance and standards set by Centerra, whose board of directors and management believe that sound and effective corporate governance is essential to our performance. Details relating to corporate social responsibility, the health and safety policy, and environmental policy are detailed in other sections of this report, and are posted on Kumtor's and Centerra's websites www.kumtor.kg/en and www.centerragold.com

We have adopted practices and procedures to ensure that these governance practices are followed. We expect all directors, officers, and employees to conduct themselves in accordance with the highest ethical standards.

These are detailed in three key policies:

a) Code of Ethics for officers and employees;

b) Code of Ethics for directors; and

c) International Business Conduct Policy for all directors, officers and employees.

Kumtor also has a "whistle-blower" program, which provides directors, officers, and employees a means to anonymously file complaints or submissions in good faith regarding potential ethical obligations by other directors, officers, and employees. Directors, officers and employees are also encouraged to speak to in-house legal counsel, human resources, or their managers if they have any concerns or questions. We provide on-going training on these policies for all of our directors, officers, and employees. To date, this training has been provided to over 100 individuals, focused primarily on top management, steering committee members, and trainers.

The Code of Ethics for employees addresses, among other things, avoidance of conflicts of interest, protection of confidential information, compliance with applicable laws, rules and regulations, adherence to good disclosure practices, and procedures for employees and third parties to report concerns with respect to accounting and auditing matters.

Employees with such concerns may report these directly or confidentially or anonymously. We also initiated additional training at Kumtor related to our Code of Conduct, and introduced a phone "hot line" to provide support to staff with related questions.

Code of ethics for directors

The Code of Ethics for directors requires Centerra's directors to promptly report all actual, potential, or perceived conflicts of interest to the corporate secretary, who is in turn required to bring such conflicts to the attention of the Nominating and Corporate Governance Committee. Directors may not participate in discussions, deliberations, or decision-making for matters in which they have a conflict of interest. All new directors are required to review and accept the Code of Ethics for Directors. We reviewed the Code with Mr. Kylychbeck Shakirov when he was appointed to the Board of Directors in July 2013.

International Business Conduct Policy

The International Business Conduct Policy is our anti-corruption policy and is an important component of Centerra's and Kumtor's commitment to conduct business in an ethical and lawful manner, wherever we work. The International Business Conduct Policy prohibits directors, officers, and employees from making, offering, or promising, "anything of value" to a "Government Official" for an improper purpose such as (without limitation) obtaining preferential treatment, obtaining business, or securing or amending mining permits, licenses and concessions.

In our policy and the accompanying training, we highlight the broad definitions of "anything of value," which is not restricted to monetary payments, and of "Government Officials" which can include individuals which people do not consider to be Government workers, such as candidates for political parties, and directors on government-owned companies.

We take the International Business Conduct Policy very seriously, and as described above, in late 2012 we initiated additional training at Kumtor related to the International Business Conduct Policy, and introduced the phone "hot-line" to provide support to staff. In 2013, we strengthened our supplier background-check process and introduced anti-corruption clauses into our standard supplier contracts.

Environmental management systems

To understand, evaluate, and manage our environmental footprint, we take a systematic "plan-act-monitor-improve" approach, which is aligned with the International Organization for Standardization's ISO 14001 and Occupational Health & Safety Advisory Services' OHSAS 18000 models. This approach began with an environmental impact assessment at the early planning stage of the Kumtor Project, continues with the implementation of our environmental management program, and also incorporates mine closure planning for the future. We follow an Environmental Management Action Plan (EMAP) designed to address the effects of operations on the environment and to monitor material compliance with permits and other requirements. The system provides for scheduled monitoring, engineering controls, performance requirements in line with good international mining practice and local regulations, and reporting. The system and its key elements are also subject to corporate and external audits and approval by relevant Kyrgyz authorities.

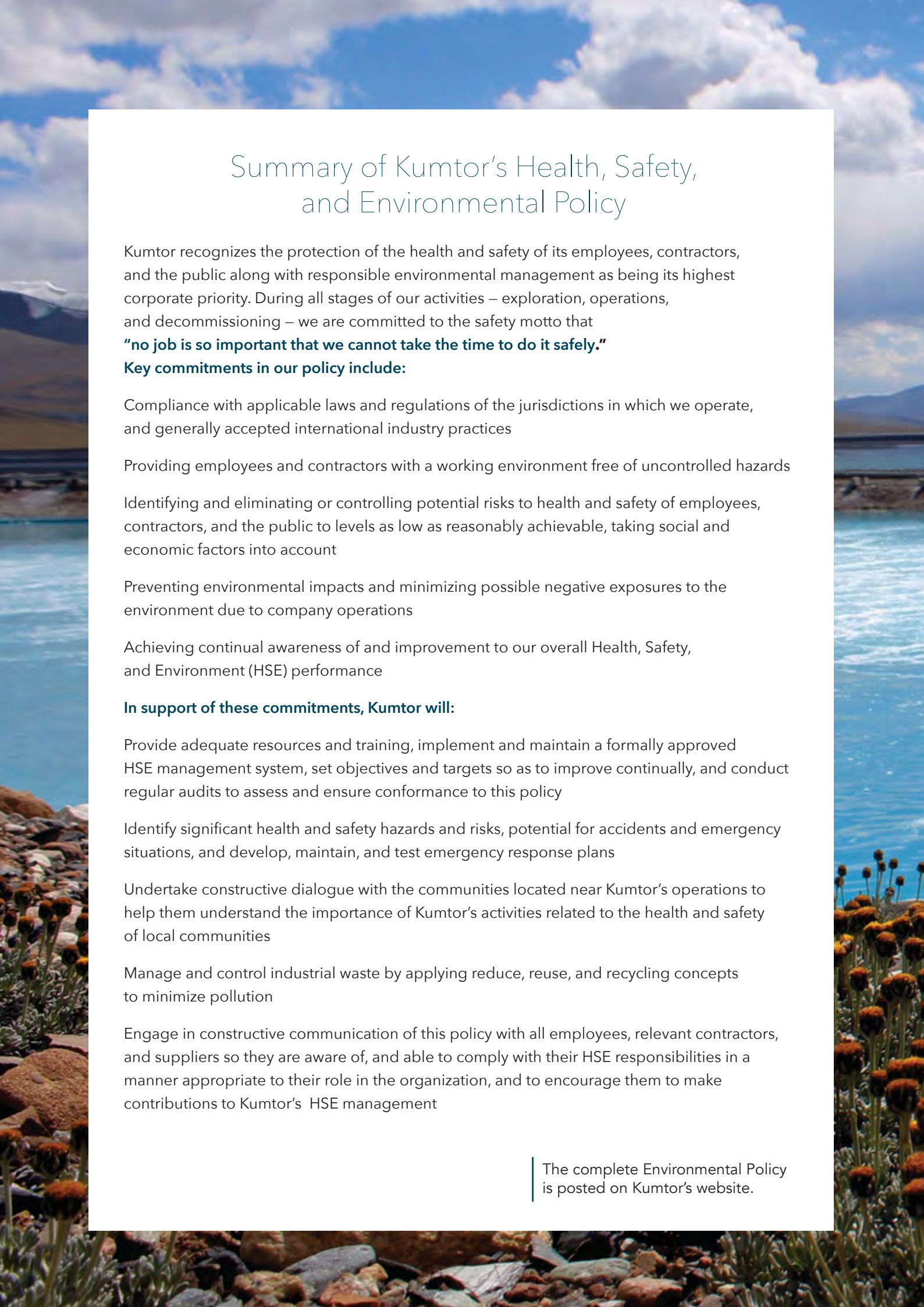
We also maintain a corrective preventive action ledger tracking system. This allows the safety and environmental departments to enter corrective action items and responsibilities. It also allows responsible departments to address and close out required activities.

The EMAP, originally developed as part of the multilateral project financing for the Kumtor Project, also defines reporting requirements to lenders such as the European Bank for Reconstruction and Development. These reporting requirements cover the following:

- Monitoring results as a monthly average on a station-by-station basis
- Material exceedences and non-compliance with an explanation of corrective action
- Details of reportable spills and corrective actions
- Changes to monitoring protocols or stations
- Status of the closure plan and costs
- Update on data related to acid-rock drainage, waste rock piles, and glaciers
- Yearly estimates of fresh-water usage, tailings storage, and discharges
- Studies related to the site's environmental affairs
- Outline of the activities, studies and surveys planned for the next reporting period
- Worker health protection and safety initiatives

Aspects Covered by the Environmental Management Action Plan (EMAP):

- Handling of hazardous materials and emergency response
- Environment protection, including wildlife conservation
- Containment, control, and elimination of seepage and spills
- Policies, programs, training, regulating documents, and reporting procedures
- Mine closure requirements



Summary of Kumtor's Health, Safety, and Environmental Policy

Kumtor recognizes the protection of the health and safety of its employees, contractors, and the public along with responsible environmental management as being its highest corporate priority. During all stages of our activities – exploration, operations, and decommissioning – we are committed to the safety motto that **"no job is so important that we cannot take the time to do it safely."**

Key commitments in our policy include:

Compliance with applicable laws and regulations of the jurisdictions in which we operate, and generally accepted international industry practices

Providing employees and contractors with a working environment free of uncontrolled hazards

Identifying and eliminating or controlling potential risks to health and safety of employees, contractors, and the public to levels as low as reasonably achievable, taking social and economic factors into account

Preventing environmental impacts and minimizing possible negative exposures to the environment due to company operations

Achieving continual awareness of and improvement to our overall Health, Safety, and Environment (HSE) performance

In support of these commitments, Kumtor will:

Provide adequate resources and training, implement and maintain a formally approved HSE management system, set objectives and targets so as to improve continually, and conduct regular audits to assess and ensure conformance to this policy

Identify significant health and safety hazards and risks, potential for accidents and emergency situations, and develop, maintain, and test emergency response plans

Undertake constructive dialogue with the communities located near Kumtor's operations to help them understand the importance of Kumtor's activities related to the health and safety of local communities

Manage and control industrial waste by applying reduce, reuse, and recycling concepts to minimize pollution

Engage in constructive communication of this policy with all employees, relevant contractors, and suppliers so they are aware of, and able to comply with their HSE responsibilities in a manner appropriate to their role in the organization, and to encourage them to make contributions to Kumtor's HSE management

> The complete Environmental Policy is posted on Kumtor's website.

ECONOMIC RESPONSIBILITY

Gold production over 600,000 oz, up 90% from 2012

Total 2013 payments within Kyrgyz Republic were $270 million

In 2013, Kumtor's activities represented 7.7% of the country's GDP

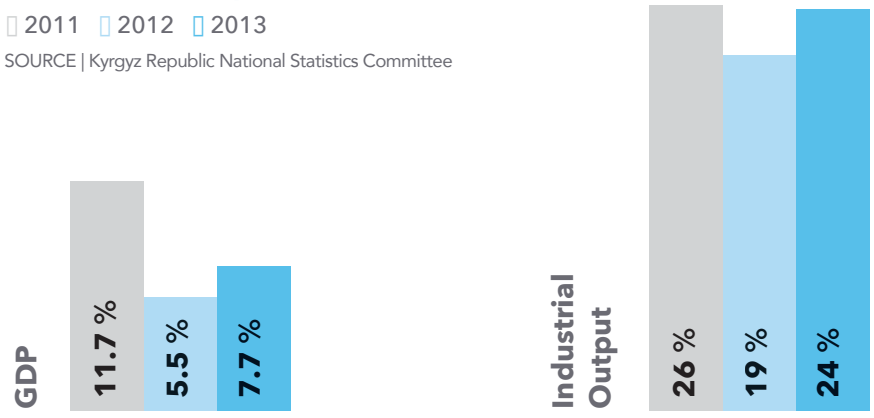
By the end of 2013, Kumtor employed 3,311 people, including contractors, with Kyrgyz nationals making up more than 96 percent of full time staff, which is detailed further in the section on Commitment to People. In 2013, gold production achieved approximately 600,000 ounces, as we continued to gain access to higher grade ores during the fourth quarter of 2013.

Payments made within the Kyrgyz Republic in 2013 were $270.4 million, including over $113.5 million in direct and indirect taxes and mandatory payments, $115 million in Kumtor employee net wages, and over $68 million in local procurement.

In addition, the Company recovered $20 million of prepaid taxes, and as such, the Company's contribution for the reporting period was $290.4 million before consideration of this recovery. Total payments within the Kyrgyz Republic since 1994 have now reached $2.42 billion. Our strategic community investment programs in 2013, described in the social responsibility section, was $6.8 million.

We continue to contribute 1% of gross revenue to the Issyk-Kul Development Fund for support of social and community projects.

Kumtor's Macroeconomic Impact in the Kyrgyz Republic



SOURCE | Kyrgyz Republic National Statistics Committee

The Fund is government-controlled with local oversight, and whose aim is to develop social infrastructure such as schools, clinics and kindergartens, in Issyk-Kul Oblast. In addition, the Kyrgyz government, through the state owned mining company Kyrgyzaltyn JSC, remains the largest single shareholder of Centerra Gold, owner of Kumtor Gold.

Kumtor continues to have a significant positive impact on the Kyrgyz economy, in 2013 contributing 7.7% to GDP and 24.0% to national industrial output.

Consumption of materials

Mining operations are large consumers of supplies and materials for both the operations and the working community. Efficient use of materials is essential for both economic and environmental reasons.

The major raw materials consumed include cement and lime, reagents and chemicals (including cyanide) used in the milling and leaching processes, and grinding balls to crush the ore. We also consume substantial quantities of other non-renewable materials such as fuel, lubricants, grease and explosives. Gold mining operations do not provide many opportunities for using recycled materials, although we seek to maximize recycling of waste streams where feasible. For example, we deliver scrap metal for use in local production of metal grinding balls. We are reviewing how we could use waste oils as fuel, for heating the mine camp for example. We are also reviewing how to prolong the life of industrial tires by re-treading, and converting scrap tires to fuel.

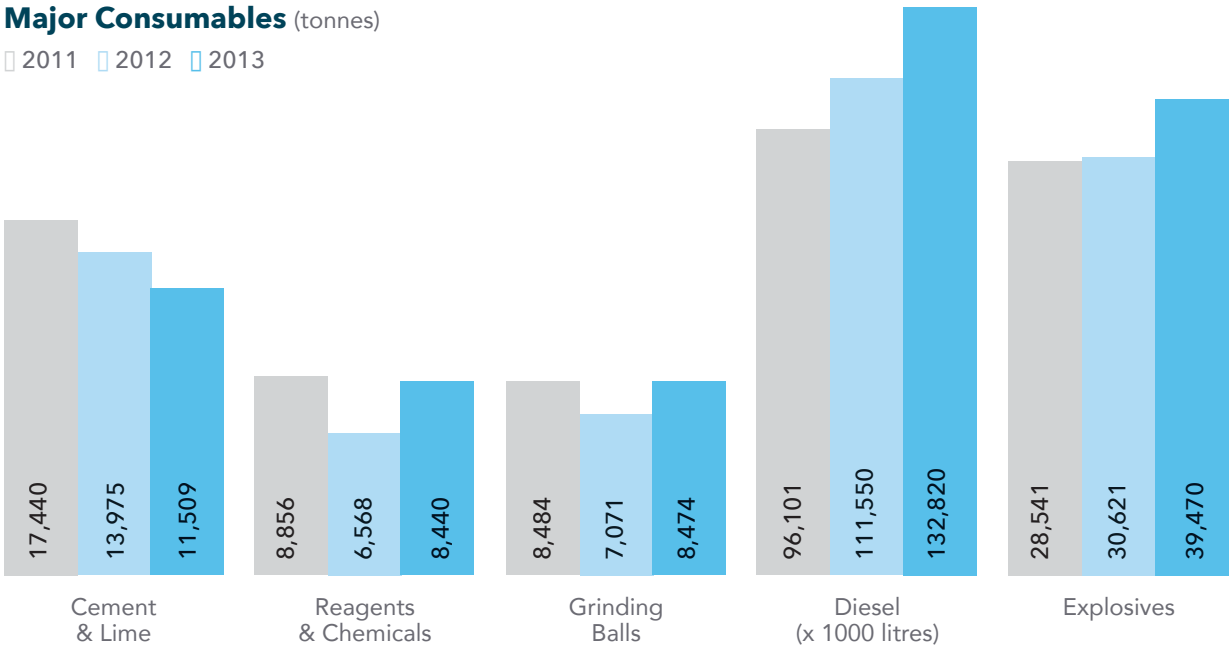
1% of gross revenue paid directly to the Issyk-Kul Development Fund

Direct Economic Value Generated and Distributed (US$)[a]

Indicator	2011	2012	2013
Revenues from gold sales	$941,072,769	$533,553,407	$810,943,801
Other income	$528,532	$274,040	$1,060,620
Operating costs (Goods and services) [b], [c], [d], [e]	$225,537,528	$212,653,080	$293,540,903
Corporate administration costs	–	–	–
Exploration costs	$13,635,847	$11,772,443	$6,111,584
Capital expenditure [b], [f]	$127,274,581	$217,238,279	$88,826,803
Other operating costs	$3,787,847	$29,138,251	$2,868,852
Employee and contractor wages and benefits	$96,902,394	$104,476,687	$115,142,726
Payments to providers of funds	$125,000,000	–	$200,000,000
Taxes and royalties	$146,637,113	$74,697,477	$113,532,132
Community donations and investments	$11,494,808	$23,954,691	$6,240,535
Economic value retained	$191,331,183	($140,103,461)	($14,259,114)

a) Data have been prepared on an accrual basis and non-cash costs have been ignored
b) The 2012 comparative period was restated as a result of the adoption of IFRIC 20
c) Other income includes income from financial investments, sale of assets, and other services
d) 2011 Operating Costs (Goods & services) were not adjusted in accordance to the IFRIC20 transitional rules
e) Includes capitalized stripping costs
f) Excludes capitalized stripping costs

Major Consumables (tonnes)



The mine camp, accommodating approximately 1700 people at any one time, is six hours' drive from the capital Bishkek, and far from any large towns, and therefore, operates as a self-contained community, with all the facilities and services it requires. This includes supplying and preparing all food, living accommodation, leisure facilities, medical care, cleaning and washing services, and office facilities.

A significant and highly visible component of consumption is associated with our transportation. People and supplies are transported to and from site every day, with around 25 supply trucks and 7 buses travelling daily. We also maintain around 30 on-site service vehicles, in addition to more than 175 heavy-duty vehicles, including 103 large haulage trucks, drills, cranes and bulldozers, and other vehicles.

We regularly review our vehicular-related consumption looking for efficiencies. For example:

- Fuel-efficient engines. In 2013 we started replacing our large delivery trucks with more fuel efficient automatic transmission versions, replacing initially 7 of 51 trucks.
- Reducing the running of engines on parked vehicles to reduce pollution and extend the life of the engines and associated consumables. In very cold conditions, it is common to keep engines running when parked to maintain cabin and engine warmth. We have addressed this through: communicating to drivers to 'switch off,' installing electric cabin heaters and establishing electric points for engine heaters in designated parking areas.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The haulage truck tires are a significant and costly consumable. In 2013, we introduced a new Tire Management System, which is designed to further extend tire life through improving and maintaining road surfaces, and driving style training. We also started piloting an advanced satellite-based remote tire monitoring system on 10 percent of haulage trucks in 2013. Linked to sensors on every tire, this tells us when pressures are too low and correction is required. The truck can then immediately be called in for maintenance.

We invested $250,000 on building a modern laboratory to analyse engine oils (on both mobile and stationary machinery) to enable us to optimise when we replace oil, thus prolonging its usable lifetime and reducing wastage.









LOCAL PROCUREMENT



Local procurement spending over $68 million in 2013

Our timely payment and ethical conduct help make Kumtor a preferred purchaser

In the Kyrgyz Republic, Kumtor is known as a 'budget enterprise,' which refers to the scale of our diverse contributions to the Kyrgyz economy, as outlined in the Economic Responsibility section of this report. Our impact, as the largest private sector purchaser of goods and services in the Kyrgyz Republic, is detailed in this current section. Our contributions to support the local economy more broadly through a national micro-credit program for low income farmers and $6.8 million on sustainable development investments, are detailed in the Social Responsibility section.

It is important to note that, as with any gold mine, the only thing we can control is our costs. Therefore, it is important we consider sustainability, quality, and price when we procure goods and services. Although it is one of Kumtor's priorities to procure goods locally where possible, it is important that our local suppliers meet these criteria. To improve on local procurement we have several initiatives in place, which includes, for example: advertising our requirements in local newspapers and on our website; procurement presentations; and identifying items currently procured internationally for possible local procurement

Some of our stakeholders may be surprised to learn that nearly 600 Kyrgyz enterprises supply our operations with almost 11,000 items needed for

Nearly 600 Kyrgyz enterprises supply almost 11,000 items for our operations

our day-to-day operations. As examples, we highlight three case studies (and detailed further on our social media sites), ranging from a farm supplying eggs for the mine camp, to a clothing manufacturer of PPE, and to steel grinding balls produced locally for our mills to process the ore and extract the gold.

Throughout the calendar year, Kumtor continuously provides work places for 250 to more than 500 contracted personnel of various trades and qualifications. Various jobs are intermittently contracted to approximately 15 long-term partners and alternating organizations, which in turn retain about 1200 employees. Our most recent survey showed that the contracted labor predominantly originates from the Issyk-Kul oblast – about 92 per cent – including the major contributions of 43 percent from the Jety-Oguz region, 16 percent from Karakol, and 9 percent from Ton region. In view of the relatively constant seasonal work scopes for currently contracted organizations, and the well-established labor and equipment sourcing processes from nearby towns and villagers, then potential new providers of the same services must be well equipped, very experienced, and competitive.

Jitnitza Farm – Supplier of Eggs

The Kumtor mine maintains a high altitude mine camp for approximately 1500 workers (on site at any one time) operating around the clock. Kumtor's operation is situated at 4,000m above sea level with temperatures ranging from +15 °C to -38 °C. The workers need abundant, nutritious, quality food to keep them going in what is often physical work in challenging conditions. 100 percent of food for the mine site is purchased from companies within the Kyrgyz Republic. Eggs, an important staple food, are supplied by Jitnitza Farming, a business based in Chuy Province, and run by enthusiastic entrepreneurial farmer, Alexander Shtanko.

Following the collapse of the Soviet collective farming system, a group of farmers led by Mr. Shtanko established a new farming business in 2001. The farm started with seven employees, producing 400,000 eggs a year from 1,000 chickens. Jitnitza Farm secured Kumtor's business in 2005.

Mr Shtanko said: "We feel our business is a part of the Kumtor project, and we are proud of that. Kumtor is an excellent customer, paying our invoices in as little as five days."

Two years ago Jitnitza Farm started to expand and diversify its customer base with new customers now representing 50% of its business. This has allowed the farm to expand to 12,000 chickens producing 3 million eggs per year, and employing 20 workers on average. Jitnitza also grows its own chicken feed on approximately 500 hectares of land leased from about 100 families, and thus passing on some of the economic benefit.

Building on this base, we continue our efforts to further expand the number of local suppliers. We proactively inform and communicate our requirements, and advise potential suppliers what they need to achieve to have the best chance of becoming a Kumtor supplier.

We participated in a World Bank study on Domestic Procurement, to review the organizational maturity of our procurement practices and to identify opportunities for improvement. As part of this exercise, a ranking was carried out of goods and service categories for which a competitive local market already exists, or where there is potential to develop one. This will allow us – and others, such as international donors - to focus interventions on the most promising categories for developing local procurement. In 2013, we switched more than 20 services and catagories from international to local suppliers, including a range of tools, clothing, vehicle service agreements, and winter tires.

In July of 2014, we invited 'Engineers Without Borders,' an international NGO, to assist in the identification of further opportunities and improvement in local procurement and sustainable development.

Like most international mining companies operating in regions with a limited history of large scale or modern mining practices, we face a number of barriers to sourcing more goods and services locally. These include Kyrgyz suppliers not being familiar with standard procurement processes, not initially meeting the high quality standards the industry demands, and a lack of financial resources or support to develop and sustain the quality and volumes of goods and services required for a major and long-term industrial operation. The level of interest from local suppliers seeking to deal with Kumtor is on the increase. However, many suppliers copy successful ideas of other suppliers, and in doing so, try to displace current suppliers.

We support existing and potential local suppliers to help them overcome these barriers. We encourage local businesses and entrepreneurs to think 'outside the box' and come up with new ideas, products, and services. In doing so, their business will be more sustainable and will create jobs and opportunities for the local community. Understanding their need for working capital, we pay suppliers quickly, often within days, and provide advance payment in appropriate cases involving long-lead items.

Aiko Seiko – Supplier of safety clothing

Our approximately 2,700 workers at Kumtor need safety garments suitable for the challenging climatic conditions and working environment, ranging from workshop mechanics to kitchen staff. Many of these garments are supplied by the local company Aiko Seiko LLC, based in Karakol (Yssyk-kul district), and led by female entrepreneur, Nurbubu Sultanbaeva, an alumni of a capacity building program offered by Japan International Cooperation Agency (JICA). Aiko Seiko has demonstrated it can consistently meet our quality, quantity, and safety requirements, becoming a preferred supplier.

Aiko Seiko was established in 2003, moving into an old Soviet-period factory in 2004. The company now employs approximately 120 people. Aiko Seiko finds Kumtor a very desirable and reliable customer. Late payment of invoices is a common problem among both private and public sector businesses in the Kyrgyz Republic. This can be very damaging to small businesses. Mrs Sultanbaevo said: "With many customers, we wait months to be paid following our supply of goods. With Kumtor, we are paid quickly." She also highlighted that: "A contract with Kumtor is a mark of quality for other potential suppliers." This has helped the company to expand its customer base, so that other customers now represent 70 percent of its business.

Aiko Seiko's success enables it to contribute to the Kyrgyz economy and society in a number of ways. In addition to providing local employment, it supports sport, youth, deprived communities, and environmental projects. It has received a quality award, and, in January 2014, received a Presidential award for 'benefitting the development of the country.'

Local Procurement in Context

	Uniits	2011	2012	2013
Total Payments for Goods and Services	US$	$394,470,965	$455,527,463	$410,022,696
Local Payments for Goods and Services	US$	$90,439,335	$67,186,303	$68,069,353
Local Payments for Goods and Services as % of Total	Percent	22.9	14.8	16.6
Local Payments for Goods and Services as % of Adjusted Gross*	Percent	50.2	49.8	57.6

*Excluding original equipment manufacturer (OEM) capital equipment and parts, major consumables, and reagents that are not available for purchase in the Kyrgyz Republic and fuel import from Russia. This is slightly different to the figures included in the Direct Economic Value Generated and Distributed Table because it is based on actual invoices paid (including advance payments) and does not differentiate between operating costs and capital expenditure.

We also cooperate with the EBRD, on a cost-sharing basis, to offer its TurnAround Management (TAM) and Business Advisory Services (BAS) programs to existing and prospective local suppliers.

Despite our continuous efforts for improvement, there remains a significant part of our procurement needs which are not produced or readily available in the Kyrgyz Republic. Examples include specialised mining goods and services, such as large mining trucks, original equipment manufacturer (OEM) parts, tires, and major consumables and reagents. Also, as a large consumer of diesel fuel, we have to import a large portion of our fuel from Russia.

Our total expenditures on goods and services in 2013 was $410 million. This included approximately $68 million procurement within the Kyrgyz Republic. When adjusted to exclude goods with no potential for local procurement, and fuel imported from Russia as mentioned above, over 57 % of procurement expenditures remained within the Kyrgyz Republic in 2013.

We plan to carry out an economic impact assessment of our business in 2014. This will provide more detail on the impact Kumtor Gold has on the Kyrgyz economy, and will help further determine where we could improve in this area.

Vulcan Plus – Local Supplier of Grinding Balls

Kumtor needs to crush and mill each year more than 5 million tonnes of ore to fine sand to be able to liberate and process the fine gold contained in the ore. This requires the use of 8,000 tonnes of steel balls used in Kumtor's ball mills. These steel balls are an essential consumable and must meet defined specifications of hardness, chemical composition, shape, and size. Until 2012, virtually all of Kumtor's grinding balls were procured internationally.

Local company Vulcan Plus was established in 2012 with the primary purpose of supplying Kumtor with a portion of its grinding balls.

Kumtor purchased approximately $1.7 million of goods from Vulcan Plus by the end of 2013 ($2.1M Feb/14). This is a clear demonstration of our commitment to supporting and encouraging local procurement. Vulcan Plus employs approximately 120 workers.

Balykchy Marshalling Yard

Balykchy Marshalling Yard (BMY) is the central consolidation hub for all materials and products destined for the mine site. They are received by rail and road at BMY and dispatched to the mine site using our own and contracted transport.

- An average of 300 rail cars are received per month.
- BMY dispatches an average 27 truckloads of goods and products to the mine site per day. These typically consist of 13 trucks of fuel, 5 trucks of ammonium nitrate, 3 trucks of lime, and others containing grinding balls and consolidated containers containing equipment and reagents.
- Our self-owned fleet of trucks consists of 55 trucks, and we use an average of 4 contracted trucks per day.
- The distance from BMY to the mine site is 250 km, which means distances of 450,000 km are travelled monthly, transporting an average 14,000 tonnes of goods.

BMY consists of a fuel farm with a storage capacity of 12,000 tonnes, warehouses, mechanical workshops, administration facilities and 5 guest houses, including 2 for senior management. 240 people are employed at BMY and the strategy is to employ people from local communities in and around Balykchy. We also make use of suppliers in Balykchy for material and product purchases, and maintenance work required for the day-to-day operational needs for BMY and its guesthouses.

Leaving a positive legacy

The current projected lifetime of the Kumtor Gold mine is until 2026. We want our positive impact on the Kyrgyz economy to continue long after this time. Therefore, we encourage our suppliers to not be over-dependent on our business, but to use it as a catalyst to diversification of product and customer base. Many of our suppliers highlight that a contract to supply Kumtor is a mark of quality making their products more attractive to other potential customers.

Case studies

In our case studies, we describe two examples of local entrepreneurial companies – an egg supplier and a technical garment manufacturer - that have become successful and valued suppliers to Kumtor. We also describe our efforts to support a local grinding ball manufacturing company in becoming a supplier of this critical component to our milling process.

Local economic development

Business development activities outside our supply chain include micro-finance schemes (described further in the social responsibility section) and a capacity building partnership with the European Bank of Reconstruction and Development (EBRD). A number of complimentary seminars were held in early 2013 to inform local businesses on the results of a study we commissioned to map businesses of the Issyk-Kul Oblast (administrative region). Over 1,000 small business owners took advantage. Those who attended were also informed about EBRD's business consulting and training services.

One of the challenges Kumtor faces is our desire to support SME development in Issyk-Kul region, but not to create dependencies on Kumtor. Looking ahead to 2026 and mine closure, we need to ensure that we do not cause greater socio-economic difficulties by having large numbers of suppliers suddenly closing once Kumtor stops operating. Therefore we place an emphasis on helping businesses grow without relying on Kumtor as a sole customer.

COMMITMENT TO PEOPLE

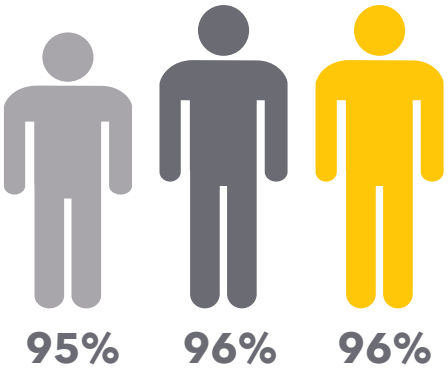
A safe and healthy workforce remains a top priority

More than 96% of full time staff are Kyrgyz nationals

Pay and benefits totalled $115 million in 2013

Kyrgyz national as % of full time staff

2011 2012 2013



At Kumtor, we maintain a high level of care and responsibility for our workforce, including contractors. We train and equip our workforce to operate safely to protect themselves and fellow employees. We provide healthy food and care to monitor and protect their health, and train them to work with respect for the natural environment around them.

Labor and local hiring

We continue to maintain a high percentage of Kyrgyz nationals among our full time employees, rising from 95% in 2011 to more than 96% in 2012 and 2013.

Worker compensation

We believe the biggest contribution we make to the well-being of local communities is through creation of long-term, well-paid employment opportunities. This helps not only the employee and his or her family, but through a filter down effect, provides wider economic benefits to their communities. Our pay rates are far above the Kyrgyz average, with the entry-level wage in 2013 fourteen times higher than the national minimum wage. The satisfaction of Kyrgyz employees is reflected in the fact that many remain working for us long term.

Our entry-level pay rate is 14 times the national minimum

As a favored employer, we receive many applications

A recruitment program during 2013 for 20 truck drivers attracted more than 1,500 applications. Approximately 100 were selected and interviewed in accordance with our standard policy. Interviews were conducted in the applicant's own region with two external observers present. The role of observers, who are selected by the local communities, is to ensure transparency and fair hiring practices.

Employee benefits

The benefits we provide to our full time employees include:

- Cash awards for significant work anniversaries, births, and child adoptions
- Home improvement loans
- Vacation and rest allowances
- Cover 100% sick pay for temporary incapacity from work related injury or illness

Kumtor also pays the equivalent of 1.5 percent of the monthly national payroll to the workers' trade union, where funds are to be directed towards the improvement of the health and welfare of the workforce.

Collective bargaining

Freedom of association is a human right defined by international declarations and conventions, and support of the principles of collective bargaining is part of a framework of responsible management at Kumtor. A collective agreement signed between the Trade Union Committee and Kumtor administration (effective from January 2013 to December 2014), covers 96 percent of employees.

Standard National Entry Level Wages and Those Paid at Kumtor

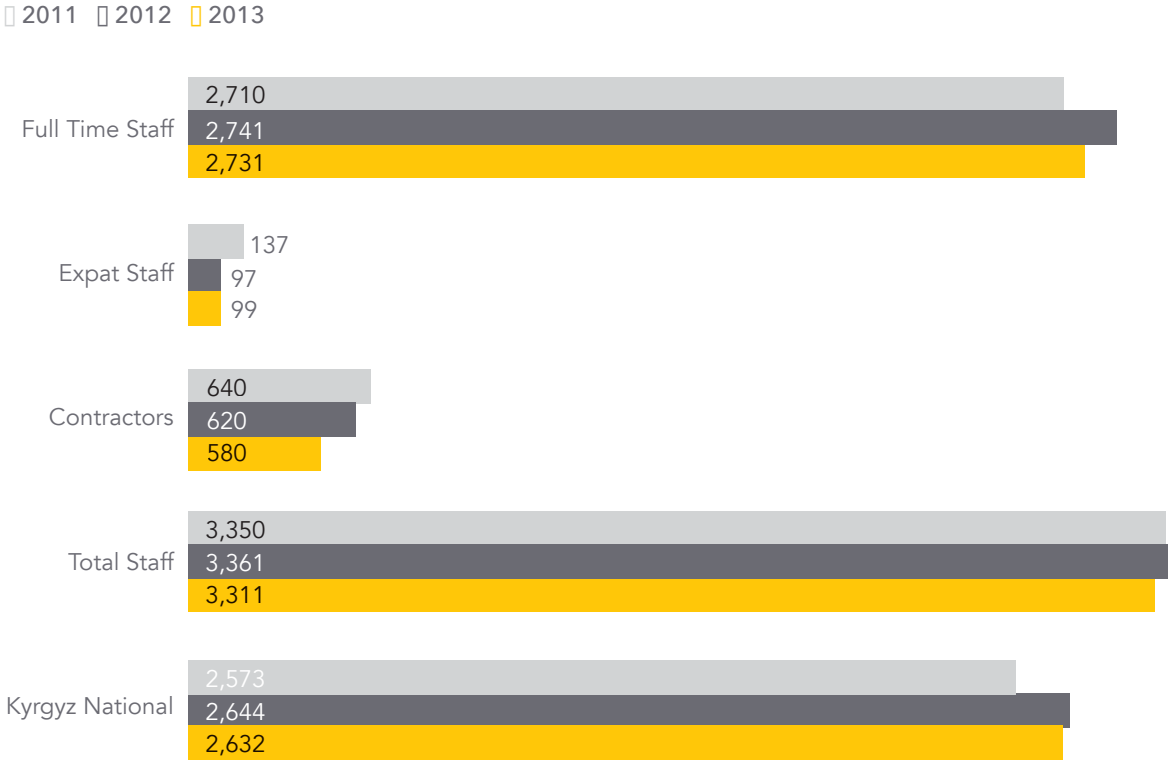
	2011	2012	2013
Kyrgyz minimum wage per hour (Kyrgyz soms)	4.13	4.55	5.18
Kumtor entry-level wage per hour (Kyrgyz soms)	57.76	60.36	70.43
Kumtor entry-level to Kyrgyz minimum wage (ratio)	14.0:1	13.3:1	14.0:1

The agreement covers a wide range of issues, including labor, compensation, schedules of work, health and safety, probation, benefits for employees and their families, and labor dispute resolution. It also includes a notice period of one month for significant operational changes.

Recruitment process

Kumtor has a policy to ensure its recruitment process is open, transparent and fair, as defined in the Policy and Procedure documents on 'National Employment' and 'Recruitment and Selection.' We have clear criteria on defining who is eligible for consideration, and we operate a clear and open recruitment process.

Staffing at the Kumtor Mine



As is standard for employment in an advanced industrial operation, we have minimum eligibility requirements. With relevance to the position applied for, candidates must meet minimum education and qualification requirements and pass appropriate medical examinations to demonstrate fitness and good health given the high altitude conditions at the mine site. Some positions require specialized state-issued certificates, for example, for drilling and blasting work.

Our recruitment process follows an approach in line with international norms, and takes account of local stakeholder concerns, to ensure fairness and openness:

- Positions are first notified internally via 'Job Opportunity' announcements on notice boards to promote progressive career development;
- In the absence of suitable internal candidates, an external recruitment campaign is initiated;
- Relevant positions are publically advertised via our website, in newspapers and via local communities where we maintain information centers;
- Anyone can apply for externally advertised positions;
- Preference is given to applications from communities located in the administrative regions hosting the mining and associated operations;
- Family or personal connections provide no bias or benefit in the selection process;
- Positions are awarded on the basis of qualification, experience and suitability for the job; and
- Recommendations are made by a committee and final approval is given by senior management

HEALTH AND SAFETY

We invested over 50,000 person-hours in health and safety training

We achieved a commendable recordable injury frequency rate of 0.20

We maintained flu vaccinations, and stop-smoking and nutrition counselling programs

When mining at the high altitude of 4,000 metres, the major challenges are living and working with the cold climate and reduced oxygen levels. Average annual temperature is minus 8°C with a minimum as low as minus 50°C. Our employees receive regular health checks and support, are provided with high quality safety clothing, and receive health and safety training to protect themselves and co-workers. We record and analyse incidents and near misses, and maintain an emergency response team which performs regular training exercises. Our motto is "no job is so important we cannot take time to do it safely."

Medical screening and wellness

Our employees receive regular health checks, in particular with respect to ensuring they are fit to travel to, and work at, the high-altitude, reduced oxygen conditions at the mine site.

In accordance with a license issued by the Ministry of Health, Kumtor maintains medical facilities and staff in Bishkek, at the Balykchy Marshalling Yard, and at the mine site, with trained staff including doctors, paramedics, nurses and first aid instructors. We opened a new medical facility in Bishkek in 2013.

Medical Screening and Visits

All new employees and contractors receive a full medical before first visiting the mine site. Employees are then checked annually thereafter, and contractors every 3-6 months. Drivers receive a blood pressure and oxygen test before each journey to/from site, and at every shift for Bishkek-based drivers. In addition, all employees and contractors receive appropriate checks and treatment in the event of any illness or symptoms of concern. A barometric chamber is available on site to help with more gradual acclimatization if needed.

We have proactive programs to protect our employees and improve their general health and wellbeing. We conduct an annual influenza immunisation program, which reached 580 people during the 2013/14 winter season. Our monitoring shows that upper respiratory tract infections remain the principal cause of work absence. We have been running a smoking cessation program since 2002, consisting of a number of parallel initiatives including individual counselling, medication (such as nicotine patches), and limiting locations where smoking is permitted. This latter action is particularly important for reducing the risks of passive smoking.

We have been conducting a nutrition-monitoring program since 2010, which includes individual counselling of employees and reviewing the nutritional balance of food, provided at the mine camp.

For every meal, a wide choice of high quality, freshly prepared food is available, providing for personal and cultural preferences, and 100 percent sourced from the Kyrgyz Republic.

Health and safety training

All new mine employees receive first aid training, and regular refresher training. We have an Emergency and First Aid team (made up of volunteers from other full time roles). During 2013, we invested $1.73 Million and over 50,000 person-hours for training of staff and contractors. Training covers safety orientation, first aid, firefighting, emergency response, workplace hazards, materials safety, transportation of dangerous goods, defensive driving, forklift truck operation, work permits, radiation hazards, vessels under pressure, working in confined spaces, handling cyanide and other chemicals, hearing protection, ultraviolet radiation, frost bite, and hypothermia.

Key Health and Safety Statistics (Kumtor Employees and Contractors)

NOTE | LTI is Lost time Injury, RIF is Recordable injury frequency, For frequency and severity definitions, see Glossary.

Year	Hours Worked	Lost Time Injuries	Medical Aid	First Aid	Days Lost	LTI Frequency	LTI Severity	RIF Man Hours	Incidents w/Property
2011	6,446,936	2	8	19	134	0.31	4.57	0.29	73
2012	5,990,024	1	5	16	23	0.17	0.77	0.20	66
2013	5,925,671	5	1	24	82	0.77	2.77	0.20	77

Accident reporting

We run a program to identify, record, assess, and control accidents and hazards. When any employee observes or identifies a hazard in an operational area, they are required to complete an industrial hazards form and submit it to the Safety Coordinator. The Coordinator then evaluates the risk and according to risk classification, implements appropriate measures to remove the hazard and reduce future risk. In 2013, there were 6 recordable accidents, including 5 lost time injuries and one where medical aid was provided. The recordable injuries frequency (RIF) remains unchanged from 2012, but improved compared to 2011. We remain vigilant and constantly communicate awareness to our employees.

Vehicle accidents reduced by half since 2011

Reducing vehicle incidents

A special focus for employee awareness remained, as for 2012, on vehicle incidents with collisions and over-turning vehicles in the mine pit considered the most significant risks. Our program has been successful in reducing vehicle accidents by half compared to 2011. The table also shows our 2013 Goals, which we post on information boards around the mine site alongside photographs of recent incidents as a regular reminder of the constant need for care when driving. We also continue to improve driver skill and awareness through job assessments and training.

Emergency prevention and response

We maintain a 24-hour emergency response team with a medical doctor, ambulance, and extensive emergency response equipment at the mine site.

Vehicle Incident Reduction Program (Total number of accidents)

Goal Description	2011 Actual	Goal	2012 Actual	Goal	2013 Actual
Reduction in overall vehicle accidents	34	Reduce by 10%	30	Reduce by 10%	17
Reduction in high-potential injury risk light vehicle accidents	5	Reduce by 10%	4	Reduce by 10%	1
In-pit heavy versus light vehicle collisions	0	0	3		1
Injuries due to vehicle accidents	0	0	0		1

We review and update our emergency response plans annually, provide training, and conduct periodic drills. Mock training exercises and an annual competition involving Boroo Gold, Centerra's gold mine in Mongolia, and other teams (such as Ministerial Emergency Services, Kyrgyzaltyn) contribute to our preparedness and emergency response capabilities.

Our training is in accordance with the Kyrgyz State Inspectorate Office for Environmental and Technical Safety. If significant events happen, we analyze and learn from them, review our emergency procedures, and improve them as appropriate. An important example is our response to a cyanide spill incident as detailed below.

Cyanide transport and handling

Cyanide is an essential chemical for gold extraction, which must therefore be transported to site. In 1998, there was a cyanide spillage incident during transportation from the Balykchy Marshalling Yard to the mine site. An independent International Scientific Commission review was carried out shortly afterwards. The report concluded there were no serious or lasting environmental impacts, including no short-or long-term damage to Lake Issyk-Kul, and there were no reported deaths that could be attributed to cyanide exposure.

Since April 2012, Kumtor is certified by the International Cyanide Management Institute (ICMI) for transportation of cyanide from the Balykchy Marshalling Yard to the mine site in accordance with the International Cyanide Management Code. Kumtor is certified to be "in full compliance" with the range of requirements including: safe transportation and storage, use of suitable equipment, safety program, tracking, and emergency response plan.


The International Cyanide Management Institute

Hereby presents this certificate in recognition that

Centerra Gold Inc.
Kumtor Operating Company

Has undergone a detailed site inspection and review of its records and documentation by an independent third-party professional auditor meeting the Institute's requirements who has determined that its cyanide management systems, plans and procedures have been developed and are being implemented in compliance with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold. This certification is effective for three years from the date of this certificate

President

April 6, 2012


HCN- СИНИЛЬНАЯ КИСЛОТА
- ЦИАНИСТЫЙ ВОДОРОД
- БЕСЦВЕТЕН
- ЗАПАХ МИНДАЛЯ
- ЛЕТУЧА ПРИ N t°C
ВЕЗДЕ ПРОНИКАЕТ
ГОРЬКИЙ ВКУС ВО РТУ
- ТОШНОТА И РВОТА
- ОДЫШКА, СУДОРОГИ
- КОЖА ЯРКО-РОЗОВАЯ
- МОЛНИЕНОСНОЕ ДЕЙСТВИ

TAILINGS MANAGEMENT

Tailings management facility (TMF) regularly surveyed for safety by external experts

TMF structures confirmed to be in good condition and safe

Effluents discharged from TMF are treated to meet designated quality criteria

Tailings refer to the water and solid materials (together called slurry) that remain after recoverable metals and minerals of economic value are removed from the crushed rock ore by milling and processing.

Kumtor's tailings are carried via 6 kilometres of pipeline from the mill to the tailings management facility (TMF) where they are deposited, settled, and contained. The liquid component is treated before discharge and the solid component retained until eventual reclamation and mine closure activities. The Kumtor TMF includes a set of twin tailings pipelines, a tailings dam, an effluent treatment plant, and two diversion ditches to direct surface water around the TMF.

In addition to general tailings management, two important issues we monitor and control include (i) cyanide containing solutions, which are securely contained within the TMF, and (ii) dam stability. These are discussed further below.

Cyanide residue management

Concentration of cyanide in the TMF is routinely monitored. In the tailings pond, there is some natural breakdown through chemical reaction and the effect of the Sun's ultraviolet light.

Tailings dam monitoring instrumentation

No. 2012	No. 2013	Type	Purpose
49	48	Inclinometers	Measures horizontal displacement
28	28	Settling plates	Identifies dam base settlement
32	31	Piezometers	Measures water levels in dam body and base
45	44	Thermistors	Dam body and base temperature

Conclusions of External Expert Reviews and Visual Inspections of Kumtor's TMF Dam

Geotechnical monitoring data are analyzed by the Institute of Rock Mechanics of the Kyrgyz National Academy of Sciences. In their report of January 2014, they concluded: "The inclinometers have indicated consistent reduction of displacement rates from the crest to the shear key. Displacement rates have practically reduced to zero values at the very end of the shear key"; and "Overall tailings dam condition is assessed as suitable for operation."

The international engineering company, Golder Associates, carries out annual inspections of the condition and safety of the TMF dam, providing recommendations for changes and improvement where appropriate. Their December 2013 report concluded:

- The visual inspections of the dams and appurtenances of the Kumtor site indicated that the structures were in good condition and were functioning as required. Some maintenance work is recommended as indicated in their report, along with continued monitoring.
- Kumtor is doing an effective job of carrying out routine inspections, preparing monitoring records, reading instrumentation, and implementing the necessary procedures or changes to operate the facility in a safe manner.


December 27, 2013

KUMTOR GOLD COMPANY

Report on October 2013 Inspection of Dams and Appurtenances

REPORT

Golder Associates


REPORT

Kumtor Tailings Dam Monitoring Report

Key Characteristics of Kumtor's Tailings Management Facility

NOTE | masl is metres above sea level

	2011	2012	2013
Free water at year end (million m^3)	3.31	2.70	4.89
Tailings added during the year (million m^3)	4.43	2.56	5.92
Total cumulative tailings (million m^3)	57.10	59.66	65.58
Elevation of TMF dam crest (masl)	3,664.0	3,664.0	3,667.0
Peak water level in tailings pond (masl)	3,658.26	3,659.12	3,659.88
Water level in pond below TMF dam crest (m)	5.74	4.88	7.12

The liquid component is further treated by the effluent treatment plant (ETP) to reduce cyanide and metals for safe discharge to the environment. More discussion of the cyanide concentrations in the external environment is given in the Water Quality and Compliance section.

The effluent treatment plant was relocated to a higher elevation and re-commissioned in 2013. This allowed for an increase of the TMF area, which can now accept additional volumes of tailings.

Geotechnical monitoring

The dam is constructed and managed to safely retain the volume of tailings. It is about 3 km long with a maximum section height of 39.0 metres and crest elevation of 3,667.0 metres. The dam is constructed primarily of compacted granular fill, sourced locally. The dam surface is covered with an HDPE liner (a strong impermeable synthetic material) from the upstream slope to the toe of the dam, and then 100 metres to the tailings pond. This liner extends into the permafrost to minimize seepage through the dam. The height of the dam is increased over time to ensure sufficient volume for tailings storage. During 2013, the crest elevation was raised by three metres, and dam length extended by 50 metres to a total of 3,050 metres. Along with the dam raise, the existing buttress is also extended on the downstream side of the dam, which helps increase the dam's strength and stability.

Arresting dam movement

Some movement of the Kumtor dam was first observed in 1999, since then, Kyrgyz specialist organizations and international engineering experts have been consulted on management and mitigation. In response, a shear key and buttress were constructed along the downstream toe to reduce, and eventually eliminate, the movement of the dam.

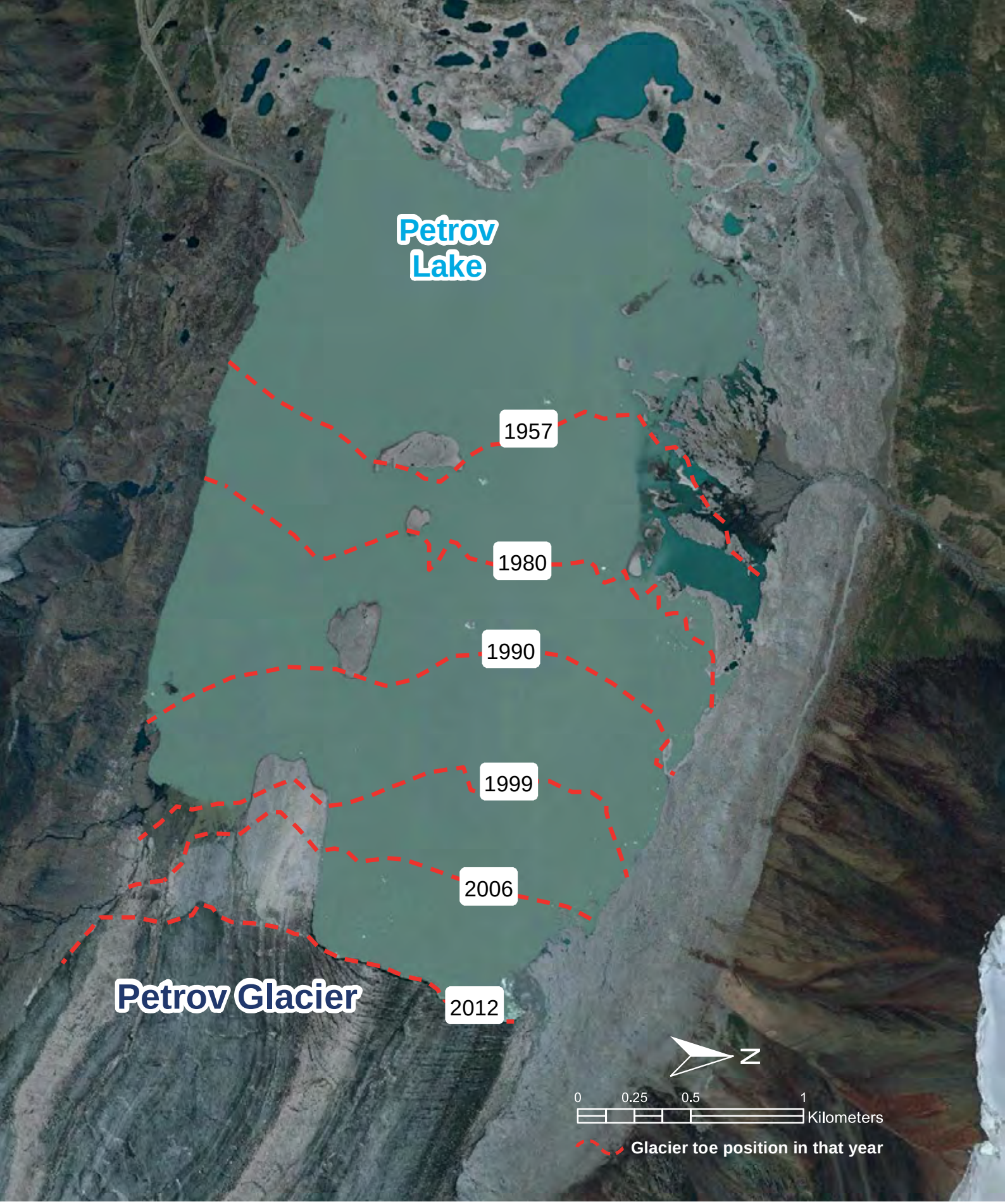
An extensive network of sensitive instrumentation is in place to detect and record any movements of the dam structure. In addition to the TMF, we monitor other features across the mine site. These include waste dumps, pit walls, dewatered glacial till, glaciers and risk areas for snow and rock avalanches, including for the Barksoon valley access road. Much of the data are discussed in web-posted technical reports (see http://www.centerragold.com/operations/kumtor).

Water Balance in TMF (m^3)

	2012	2013
Free water at start of year (January 1)	3,307,023	2,695,825
Water added in tailings	4,959,799	6,239,760
Net precipitation/runoff less evaporation	569,500	677,859
Water remaining in tailings voids	-1,417,316	-1,667,683
Water discharged via effluent treatment plant	-5,058,181	-3,056,301
Adjustment based on bathymetric survey	335,000	0
Free water at end of year (December 31)	2,695,825	4,889,461

Tailings balance

Accurate knowledge of what enters and leaves the TMF, and the volumes of liquid and solids it contains, are an important part of safe management. We survey the extent and depth of the pond, and we track the volume of tailings entering the TMF and volumes of water leaving it, via the ETP and by evaporation from the pond surface. Tailings slurry, of which 49 percent is solids, is continuously added to the TMF throughout mill operation (most of the year). Water treatment and removal (via the ETP) occurs only during summer months when the pond is not frozen – usually May to November. Therefore, TMF water volume peaks in spring and reaches its lowest level at the start of winter.



WASTE ROCK AND ICE

Annotated aereal photo showing natural retreat of Petrov Glacier over time. Kumtor's operations started in 1994.

Glacier ice removal is an approved part of mining since 1994

Ice removal is required for ore access and safe working conditions

Ice removed is small compared to natural losses

As typical for most open pit mining projects, Kumtor must remove a large volume of waste rock and other materials in order to safely access the ore. The waste rock is deposited in agreed designated locations and is routinely monitored.

Retreating Glaciers in Kyrgyzstan

(Million tonnes/year)

- Annual average climate-induced ice loss on the Ak-Shyirak mountain massif (on which Kumtor is located. See box)
- Kumtor Ice Unloading 2013

Kumtor's high altitude mining operation is in close proximity to active glaciers, with part of the ore deposit and associated infrastructure extending beneath or affected by moving glaciers. With Kyrgyz regulatory approval, our mining operation has included removal of ice and related materials since the Kumtor project started in 1994. The purpose of ice removal is to provide safe access to ore, and safeguards the open pit and workers from inundation of ice. In response to stakeholder concerns and emerging legislation seeking a ban of glacial ice removal in the Kyrgyz Republic, we describe relevant information on our practices in this section and put our impacts in the context of regional and global trends.

Retreating glaciers

Kyrgyzstan is a high elevation country with permanent ice and glaciers being a key part of its character. Approximately 94 percent of the country is more than 1000 metres above sea level, 40 percent more than 3000 metres, and 4 per cent of the country is permanently under ice and snow.

The impact of climate change has been observed in Central Asia over the past century. According to the United Nations Development Programme (UNDP), nearly 1/3 of the glacial area of Central Asia has disappeared since 1930, including the glaciers of the Kyrgyz Republic.

The Kyrgyz government's 2009 submission to the United Nations Framework Convention on Climate Change (FCCC) reports that total glacier volume in year 2000 had reduced by about 20 percent since the 1960s. The same report predicts that, for the most likely climate change scenarios, the area of glaciation will reduce by between 64 and 95 percent between years 2000 and 2100.

Glacier movement monitoring

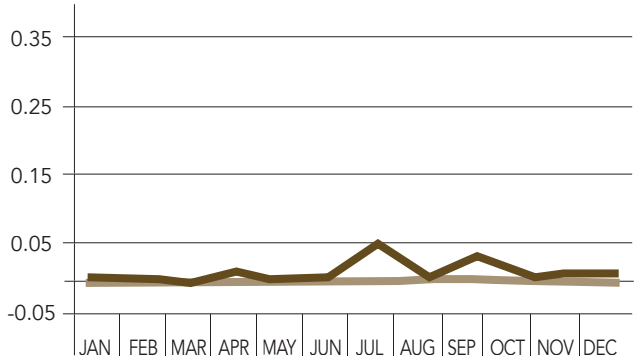
As visible in the aerial photo in the Environmental Monitoring section of this report, Kumtor is located within and surrounded by active glaciers. The nature of all glaciers is for them to move steadily downhill, much like a very slow-moving river. The Davidov Glacier moves towards the Kumtor open mine pit, requiring regular removal of ice and associated materials along the pit edge to avoid unsafe mining conditions or inundation of the open pit located downstream of the moving glacier. Such unsafe conditions occurred in 2012 and the resulting necessary changes of the mining plans reduced Kumtor's gold production by approximately 46 percent that year.

With a recovery of mining operations in 2013, the volumes of ore, waste rock, tailings and recovered gold have all increased significantly, as shown in the table, although the volume of ice removed did not increase.

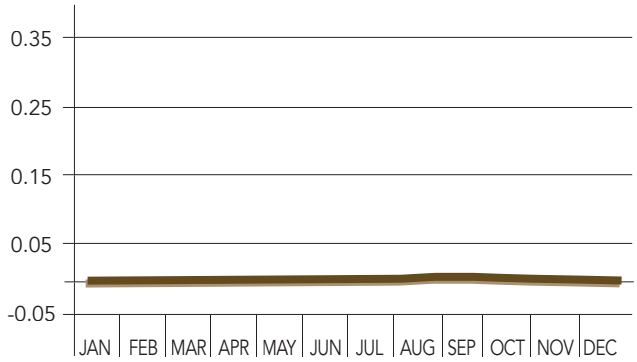
Glacier movement Average Movement (m/day)

2012 2013

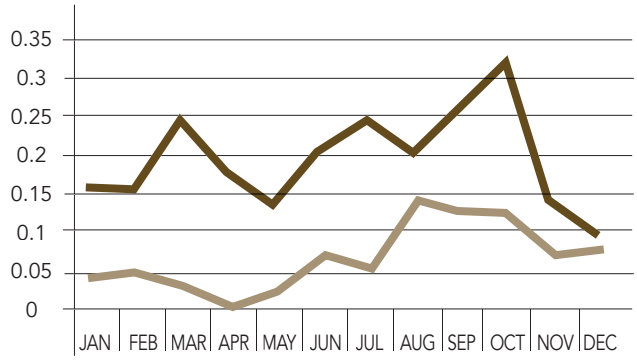
Lysyi



Sarytor



Davidov



Glacier Retreat on the Ak-Shyirak Massif

The Kumtor Gold mine lies on the western edge of the Ak-Shyirak mountain massif, which covers around 1,000 km^2 and contains many glaciers, including those adjacent to the mine. A recent scientific study of glacier retreat on the massif by Petrakov and others (2013)* provides a more accurate assessment than previous studies. The study also considered the direct and indirect impacts of mining operations on glacier loss.

The study compared historic and new satellite imagery to measure changes in glacier area.

Between 2003 and 2013, total glacier area on the massif reduced from 373.2 km^2 to 351.2 km^2, which is in line with observations across Central Asia. This is a reduction of 21.9 km^2 or 5.9 percent. Over the same period the study reports a mining-related ice loss of 1.9 km^2, representing approximately 0.5 percent of total glacier area.

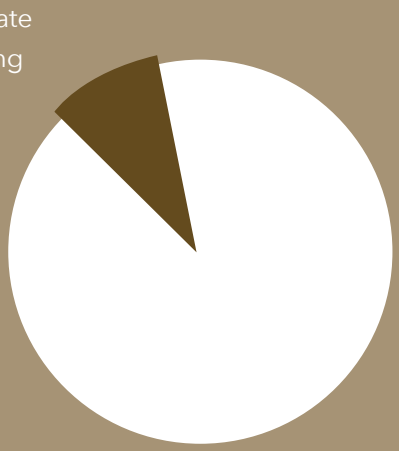
The annual volume of ice loss was evaluated to be 220 million m^3, or approximately 200 million tonnes. By comparison, active ice removal for mining was 30 million tonnes in 2013, and an average 4 million tonnes per year since the start of mining.

Some stakeholders have expressed concern that dust from mining may increase ice loss in the wider region by increasing heat absorption from the sun. If true, ice loss rates would reduce with distance from the mine. The study found that "shrinkage rates of glaciers in the Ak-Shyirak massif do not depend on distance from Kumtor mine." Similarly, other studies have confirmed that mining related dust deposition is insignificant when compared to the natural dust deposition on glaciers.

* D.A. Petrakov, A.A. Aleinikov, A.M. Shpuntova, R.A. Usubaliev, Creation of new Glacier Inventory for the Ak-Shyirak massif for 2013 and assessment of change of glacier covered area basing on remote sensing data

Scientific-technical Report on Contract No.C-3555 (Moscow) of June 17, 2013

Comparison of Ice Area Loss Due to Mining with Climate-Induced Loss on the Ak-Shyirak Massif in 2003-2013 (from the study)



Ice removal will need to continue in the future to provide ongoing safe access to the ore body as mining progresses.

Movement of the Davidov and Lysyi glaciers in the Kumtor mine vicinity has been monitored since 1995, before mining started, with Sarytor glacier included in recent years. Glacier flow rates follow a seasonal pattern, being faster in warmer months and slower in winter. Davidov glacier moves the fastest, moving a total of 45 metres in 2013, compared to Lysyi and Sarytor which each moved approximately 2 metres. These three glaciers showed an approximate doubling of their movement rates from 2012 to 2013.

These movement rates are not unusual in a global or regional context. Globally, glacier flow rates range between less than 1 metre per year and more than 10 metres per day, depending on factors such as local climate conditions, altitude, and size. A recent scientific study on the Inylchek Glacier, the largest in the Kyrgyz Republic and close to its eastern border, records an average rate of about 0.90 metres per year. While the Davidov glacier flow rate is not shown to be exceptional, an increasing movement rate is a concern we will continue to monitor.

Nearly 1/3rd of the glacial area of Central Asia has disappeared since 1930

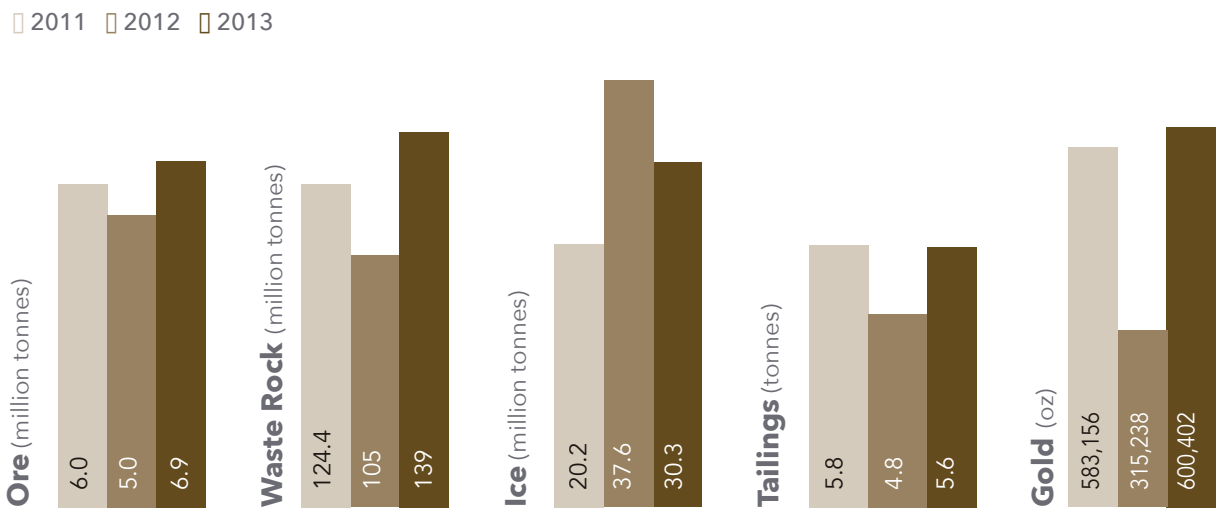
Removal of glacier ice

Parts of five active glaciers are present within the Kumtor concession area. Ice is also present in extensive ice fields in the southern and eastern part of the area, giving an estimated total ice cover of about 45 percent of the 260 km^2 concession area.

An estimated 76 million tonnes of ice were removed from Davidov and Lysyi glaciers due to the mining operation from 1995 to 2013, and in accordance with mine plans approved by Kyrgyz authorities. This is equivalent to an average 4.2 million tonnes of ice removed per year.

The volumes of ice removed by Kumtor are small compared to the ice loss due to natural retreat (attributed to climate change), representing approximately 6 percent of natural ice loss from these same glaciers. The mining impacts are even less significant when compared to the long-term regional trends as discussed in recent scientific publications (see box).

Key Production Statistics



Compared to the 200 million tonnes per year of glacier ice lost from the regional mountain massif, Kumtor has removed on average 4 million tonnes per year, or 2 percent of regional ice loss.

Changing regulations

Measures to manage glaciers and ice have been a feature of mining operations at Kumtor from the beginning of the project in 1994, and the subject of frequent Kyrgyz regulatory oversight and approval, as well as review by international technical and environmental experts.
The continuation of mining at Kumtor depends on our ability to manage and remove the ice in the vicinity of the open pit and other infrastructure throughout the life of the mine.

We have also adjusted our practices over the years. In response to concerns raised by some stakeholders, we no longer deposit waste rock on glaciers. We now segregate waste rock and ice and avoid co-disposal. Ice removed by Kumtor as part of its mining process is deposited back on other ice fields.

In late 2012, Kumtor received claims for alleged damage relating to disposal of waste rock on glaciers. We will continue to liaise with the Kyrgyz government on these and other matters.

Petrov Lake and lake out-burst risk

A related concern to that of retreating glaciers is that melting ice within natural moraine dams of high altitude lakes (normally at the foot of glaciers) could reduce dam stability and result in a sudden release of large volumes of water, known as a glacial lake out-burst. Petrov Lake, near Kumtor mine, and which is the main source of its water supply, is such a high altitude lake contained by a natural moraine dam. Petrov Lake is at the foot of Petrov Glacier, which has demonstrated significant and continuing recession over recent decades.

We have supported or commissioned independent expert studies to better understand the characteristics of the moraine dam and the risks of a lake out-burst.

In response to the findings, we monitor movements of the moraine dam, commissioned a study on how to reduce water volumes in the Petrov Lake, and have begun procurement and installation of an early warning system to detect any sudden unexpected increase in lake outflow (to be completed in 2014). We will provide additional safeguards for mine infrastructure as appropriate, and continue to inform and liaise with Kyrgyz agencies on progress.

Waste rock movement

Movement of a waste rock dump in 2012 and early 2013 has necessitated the relocation of certain infrastructure, including a planned re-siting of the mine camp in 2014.

We continue to monitor all potential land and ice movements across the site, and to manage our handling of ice, rock, and waste dumps to ensure safe mining practice and timely relocation of affected infrastructure.

Acid rock drainage testing

Acid rock drainage (ARD) describes contaminated waste water that is pumped from, or leaks from an operating or closed mine, and which is usually acidic due to reaction with sulfur-bearing rocks. It is a concern raised by some stakeholders, relevant both during mining and post closure.

Kumtor has routinely monitored for ARD risk since the initial environmental impact assessment, taking into account the ore body, waste rock, and tailings. From a number of independent assessments by international consultants, it is concluded the ARD risk from Kumtor is low due to the high carbonate content of the deposits, which neutralizes acidity. ARD evaluation will continue and be a part of closure planning.

ENVIRONMENTAL RESPONSIBILTY

$6.5 million spend in 2013 on environmental assessment and management

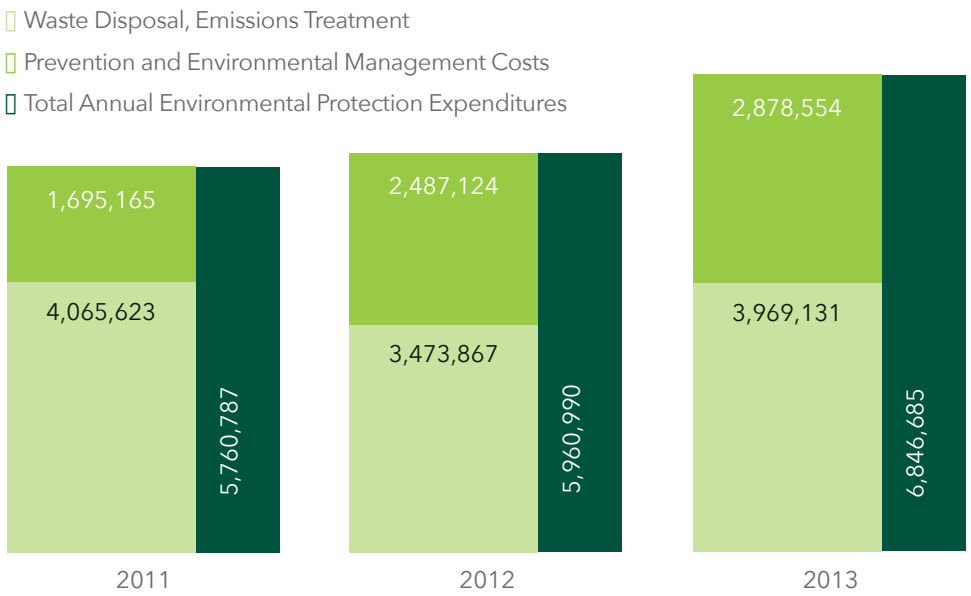
We manage our operational impacts and plan and accrue funding for closure

Some of our stakeholders voiced concerns relating to biodiversity, geotechnical and natural hazards, waste management, glaciers and water resources, and mine closure. We have discussed these aspects in this report. Pending claims and directives, and associated negotiations, are highlighted further below. We also report on other important environmental aspects related to our hydrological setting, water treatment processes, energy use, and greenhouse gas emissions.

Environmental expenditures

We operate a full time, fully staffed Environment Department of nearly 30 people, the majority of whom are based at the mine site. Our environmental expenditures exceed $6.5 million for a range of activities including monitoring, laboratory analyses, external consultants, and audits. Treatment of emissions, waste, and wastewater are also included.

Kumtor Environmental Protection Expenditures and Investments (US$)



Focused environmental studies

We continue investing in major research activities covering key subject areas summarized below. They are all intended to understand the natural environment and biodiversity, so that we can best protect them during operations, and restore natural conditions as close as possible after closure.

The research involves over 30 scientists and researchers from the Kyrgyz National Academy of Sciences, Kyrgyz National Agrarian University, Kyrgyz Biology and Soil Institute and other national scientists, postgraduates and researchers, all working in cooperation with staff of the Kumtor Environment Department.

The three study themes are:

1. Soil and plants. The study involves a detailed analysis of soils, identification of plant species and habitat types, collection of seeds for a herbarium (storage for research and future replanting), assessment of vegetation condition, and test planting as pilots for eventual reclamation.

Our Environment Department has nearly 30 dedicated full time staff

2. Animals. This is a detailed biodiversity study of birds and mammals on the Kumtor concession and adjacent areas, including observations of the snow leopard, Marco Polo sheep, mountain goats, wolves, foxes, and numerous bird species.

3. Water and its animal species. This is a hydrobiological investigation of water bodies and study of aquatic fauna, including fish, zooplankton and zoobenthos, for major habitat types on water bodies, on and near the Kumtor concession area.

Studies completed and reported on during 2013, and in line with these themes, include:

- Study of vegetative ground cover of the Kumtor mine and reclamation activity on trial plots carried out by the K.I Skryabin Kyrgyz National Agrarian University. There was an interim report in 2013 on this two-year study which is monitoring natural soils and vegetation, and running trial planting with different species and fertilizers. The results will be used for mine closure and reclamation planning.
- A study of how the tailings storage facility is used by waterfowl, by a biological sciences expert of the Institute of Biology and Soil of the KR National Academy of Sciences. The study recorded the number and species of waterfowl on and around the Tailings Management Facility (TMF) during migration periods, and assessed whether the TMF has a negative effect on migratory birds, in particular with respect to cyanide risk. The findings provide an interim record to be used in ongoing research.
- A study of vertebrate fauna in the vicinity of Kumtor Gold Mine, as an extension of the above study by the same author.

ENVIRONMENTAL MONITORING

Our monitoring programs follow Kyrgyz and international standards, and include:

- Water quality and flow
- Effluent quality and flow
- Biodiversity
- Soils and sediment analysis
- Air quality
- Radiation
- Waste disposal
- Acid rock drainage

The locations of monitoring points are detailed later in this section. Our performance status is represented in the Water Quality and Compliance section.

Meteorological monitoring

We have a mutually beneficial arrangement with the Kyrgyz hydrometeorological agency. One of our monitoring stations is a formal part of the national weather network, while the agency provides us with local weather forecasts, important for safe and efficient operation in the extreme climatic conditions we work under.

We installed a dedicated automated meteorological station, first in 1996, and an additional one in 2012. These stations collect and report data in accordance with Canadian Atmospheric Environment Services protocols. The Saskatchewan Research Council in Canada is contracted to calibrate sensors and ensure they function correctly.

Hydrological flow monitoring

We track hydrological flows of the main water bodies within the concession area. These include Kumtor River and its principal tributaries (including Chon-Sarytor, Kichi Sarytor and Lysyi Creek), Petrov Lake, and the Upper and Lower Diverstion Ditches that divert the Arabel River around the tailings management facility.

The Kumtor River flow generally peaks between June and September each year. In 2013, a peak of 26.43 m^3/s was recorded on 4th August, 2.48 m^3/s more than the peak in 2012. In 2013, the total annual flow of Kumtor River at the flume within the concession was 87.6 million m^3, 22.8 million m^3 less than in 2012. The flow at the End of Mixing Zone (also called W1.5.1), Kumtor's main water quality compliance point, was estimated to be 115.3 million m^3, 22.9 million m^3 less than 2012. These variations are not considered significant in the context of normal year-to-year fluctuations.

Legend

Concession Boundary
Water Sampling Stations
Ground Water Stations
Snow Samples
Kumtor River
Water Quality Compliance Points
Flow Measuring Points
High Volume Air Samplers
Meteorological Stations

N

0 1 2 Kilometers

Description of Key Surface Water Sampling Locations

Station	**Location** (Comments)
W1.1	Petrov Lake outflow – Kumtor River Head Waters (alpine glacier fed lake – elevated Al, Fe)
W3.1	Lysyi Glacier Toe (head water of Lysyi Creek)
W3.2	Close to waste dump area in Lysyi basin
W3.3	Combining Flow of W3.1 and W3.2 before joining Kumtor River
W1.3	Kumtor River after confluence of Lysyi Creek
T8.1	Tailings pond (feed to effluent treatment plant)
T8.4	Effluent Treatment Plant discharge point into Kumtor River (MAD limits apply)
NP1	Water from the north sump of the pit (water with elevated sulfate level is pumped to mill)
SP1	Water from the south sump of the pit (diverted to Kichi Sarytor River basin)
SSS.5, SSS.6	Snow sampling points
W1.4	Between Kumtor bridge and flume 1km downstream from ETP Discharge
W4.1	Head water of Arabel Suu diversion ditch (background level)
W4.2	Lower Diversion Ditch (LDD)
W4.3	Discharge of Upper Diversion Ditch (UDD) to sediment pond
W4.3.1	Discharge of UDD sediment pond to Kumtor River
W2.4	Chon Sary-Tor River below camp area
W2.4F	Chon Sary-Tor River just before joining Kumtor River
SWS.1	Natural overflow at glacier toe in Sary-Tor valley – SW Zone (includes stations SSS1, SSS2)
SWS.2	Kichi Sary-Tor River - mid way
SWS.3	Kichi Sary-Tor River just before joining Kumtor River
W1.5.1	Kumtor River, 8km from ETP discharge (voluntary compliance point)
W6.1	Arabel-Suu River, 7km from security check point (background level)
W1.6	Kumtor River, 17km from mine site (before confluence with Taragai River)
W1.7	Kumtor River, 40km from mine site (Taragai + Kashka Suu + Maitor Rivers)
W1.8	Naryn River in Naryn city, ca. 230km downstream from mine
P5.2, P5.3, P5.4	Camp, mill and administrative building (potable water)
SDP	Treated sewage discharge point into Kumtor River (MAD limits apply)
S1.2	Treated sewage discharge into Kumtor River
TPX	End of tailings spigot - discharge into Tailings Management Facility (TMF) pond

We also monitor water levels in Petrov Lake, which serves as the fresh water source for Kumtor. The highest recorded level in 2013 was 3,734.38 metres above sea level in April 2013 (compared to 3,734.18 metres 2012) and the lowest was 3,732.41 metres in June 2013 (compared to 3,732.38 in 2012). At the end of 2013, the level was 3,732.49 metres. Thus, we have observed an insignificant year-to-year change in lake water levels.

As Kumtor River flows downstream after leaving the concession area, it receives additional flow from many tributary streams and rivers. At the nearest town, Naryn, approximately 230 km downriver from Kumtor, the flow increases to an estimated 2,340 million m^3 per year.

Our water use at the mine site has no measurable impact on river flows at Naryn since our abstractions from Petrov Lake represent just approximately 2 parts in 1,000 (or 0.2 percent) of flow at Naryn. Treated effluent discharged to the river also helps to offset abstractions.

Water quality monitoring

We follow a comprehensive program of sampling and analyses for water quality based on a network of more than 30 stations. These are listed and described in the table in this section, with locations shown on an aerial photograph of the concession area. Water quality results and associated discussion are in a separate section of this report: 'Water Quality and Compliance.'

Quality assurance and control

Most of our analyses are contracted to a professional external laboratory, Stewart Assay and Environmental Laboratories LLC (SAEL), part of the international ALS group. SAEL is located in Kara-Balta in the Kyrgyz Republic. We also maintain an on-site laboratory to support operational control. We routinely review our sampling program and processes, updating them as appropriate.

Our monitoring program includes a formal Quality Assurance and Quality Control (QA/QC) program for collection and handling of samples. This includes duplicate samples, blind samples, and blank samples, as well as calibration and documentation of instruments and procedures.

As part of quality control, samples are sent to expert local and international laboratories including SAEL (in Kyrgyz Republic), Saskatchewan Research Council (Canada), and Lakefield Research Laboratories (Canada). Lakefield Research specializes in cyanide chemistry and analysis.

Audits, inspections and claims

Our operations are subject to regular audits by Kyrgyz and international companies and experts. We also receive inspections from relevant national agencies and audits commissioned by Centerra Gold and the European Bank for Reconstruction and Development (EBRD).

In 2013, we received 36 state inspection visits, involving 168 individuals

In 2012, the number and scope of Kyrgyz environmental inspections increased significantly as part of various Kyrgyz commission reviews. In 2013, this high intensity of inspections continued. We received 36 separate visits by state authorities (up from 28 in 2012), involving 168 individuals and a total of 584 person-days spent at the mine site. In addition, a variety of documents and records were requested.

Environmental claims

In December 2012, Kumtor received a series of claims or directives from the State Inspectorate for Environmental and Technical Safety (SIETS) and the State Agency for Environment Protection and Forestry (SAEPF) totaling approximately $152 million. These claims focused on allegations relating to land use, water use, waste management, and waste rock disposal practices. In early 2013, one of the claims for $2.8 million from SAEPF was withdrawn and replaced with an additional claim of $319 million for environmental charges. During 2013, Kumtor received an additional claim from SIETS for damage caused to land resources for an amount of $0.5 million, plus a claim by the Green Party of Kyrgyzstan for $9.4 billion for compensation for damage caused to the environment and land.

At the time of writing this report these claims remain unresolved, and an additional claim of $8.9 million has been received from SIETS for compensation for lost agricultural production and loss of profits. This brings the total in government claims to over $470 million, plus the Green Party claim.

As previously disclosed, we dispute the allegations made in these claims and consider them to be exaggerated and without merit.

The Kumtor Project has been the subject of systemic audits and investigations over the years by Kyrgyz and international experts, including by an independent, internationally recognized consulting company which carried out a due diligence review of Kumtor's performance on safety, health, and environmental matters at the request of Centerra's Safety, Health

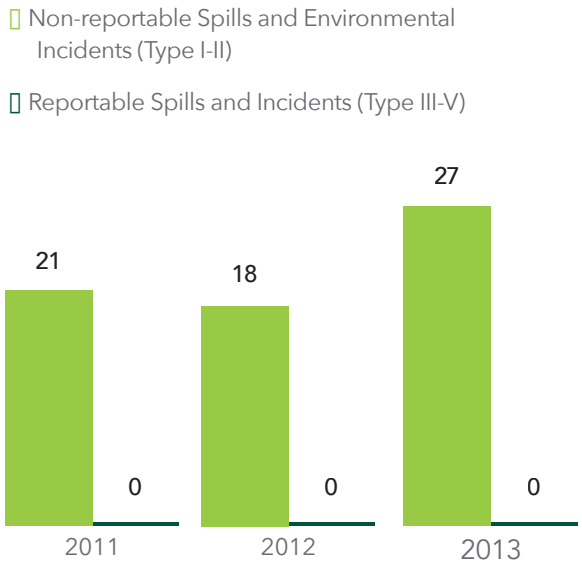
and Environmental Committee of the Board of Directors. This report was released in October 2012 and can be found on Kumtor's website: (www.kumtor.kg/en/environment-protection/otchet_ob_ohrane_okrujayushey_sredy/).

Environmental incidents

Kumtor maintains a system for reporting environmental and safety related incidents. This is based on a five point reporting system which allows us to classify reportable and non-reportable environmental incidents and spills. The classification system considers level of environmental impact, national and other regulatory compliance, and concern of local communities.

Senior environmental staff are immediately informed of all incidents and allocate the appropriate classification level. For Type I and Type II incidents, which are considered insignificant in terms of scale and severity of impact, there are no external reporting requirements. Such incidents are also not immediately reported to Kumtor's president and Centerra's board of directors.

Environmental Incidents and Spills



No reportable environmental incidents occurred during 2013

Incidents classified as III to V are reported to the board of directors and, in many cases, trigger external reporting requirements to relevant local regulatory agencies.

No reportable environmental incidents occurred at Kumtor during 2013. However, 27 non-reportable incidents were reported, up from 2012 (18). These were typically minor spills of fuels that were immediately contained and cleaned up, resulting in no significant or extended impact. This increase in reporting of minor incidents is not considered a drop in environmental performance, but an indication of improved environmental awareness on site.

BIODIVERSITY

Wildlife numbers have increased since mining started

We work with NGO partners to support nature conservation

We support the neighboring Sarychat-Eertash Nature Reserve

Our commitment

As a large opencast mine, it is inevitable Kumtor has impacts on the local natural environment. We are committed to understanding our impacts, to understanding the native biodiversity, to reducing negative impacts during the mine's operational life, and to working with our partners to pursue net biodiversity gains. We feel that a critical success factor includes consulting with, and working with local, national, and international stakeholders. Further information is available on our website via the link below, from where our full Biodiversity Management Strategy and Plan (2012) can be downloaded: www.kumtor.kg/en/environment-protection/biodiversity/

Regional context

The Tian Shan mountain range is one of the longest in Central Asia, stretching approximately 2,800 kilometres through mostly the Kyrgyz Republic and China. The region features globally important biodiversity and is home to a number of endangered species including the snow leopard, and the Marco Polo sheep (argali).

The snow leopard is an important cultural symbol in Central and South Asia and features widely in local folklore. Other species of concern include an aquatic plant in the Ranunculus family (Hedysarum kirgizorum), which is also included in the Kyrgyz Red Data book, possibly endemic species of dandelion (Taraxacum syrtorum), and a tulip (Tulpe tetraphylia).

Ecosystem services

Ecosystem services are the benefits that people and businesses derive from ecosystems. Kumtor mine is remote, with no villages close to its boundaries that could be impacted by day-to-day operations at the mine site. The nearest village, Ak-Shirak, with a population of approximately 120, is located some 80 km from the mine, and in a different valley.

Agricultural activities for the Ak-Shirak community, such as crop growing, are very limited due to the harsh high altitude climate. Their livelihood is reliant on grazing sheep, goats, and other livestock, in addition to government-funded support. There is also seasonal sheep grazing in the valleys leading to the Kumtor mine site.

Regional Fauna Species with Conservation Status Found Within the Study Area

NOTE: SCER is Sarychat-Eertash Nature Reserve; IUCN is the International Union for Conservation of Nature

Common Name	Latin Name	Kyrgyz Red Book (2006)	IUCN Red Book	Kumtor Concession	SCER
Mammals					
Snow Leopard	Uncia Uncial	Critically Endangered	Endangered	x	x
Brown Bear	Ursus Arctos	Locally Rare	Least Concern	x	x
Argali	Ovis Ammon	Vulnerable	Near Threatened	x	x
Manul	Otocolobus Manul	Near Threatened	Near Threatened		x
Birds					
Golden Eagle	Aquila Chrysaetos	Near Threatened	Least Concern	x	x
Lammergeyer	Gypaetus Barbatus	Near Threatened	Least Concern	x	x
Saker Falcon	Falco Cherrug	Endangered	Endangered		x

While there is little scope for Kumtor's operations to negatively impact on ecosystem services of Ak-Shirak, our support – alongside contributions by other key nature conservation players - for biodiversity conservation (described below) is expected to generate positive benefits for the wider region.

Glacier-fed rivers, including the Kumtor River, which originates from Petrov Lake, form part of an important ecosystem service for a broader range of communities in the Kyrgyz Republic. The Tian-Shan region also contains significant grasslands, which provide carbon storage and sequestration services.

Sarychat-Eertash Nature Reserve

At Kumtor we have worked with stakeholders concerned about nature conservation since the start of our operations in the mid-1990s. This early engagement, including involvement by European Bank for Reconstruction and Development (EBRD) and the International Finance Corporation (IFC), contributed to the creation of the Sarychat-Eertash Nature Reserve (SCER), established by a government decree in 1995.

A draft management plan for the SCER reserve was published in 2008. Its development was facilitated by Flora and Fauna International (FFI) and co-financed through the EBRD and the IFC, both multilateral lenders to the Kumtor Project. This plan has unfortunately progressed little to date due to a lack of resources and funding, but we expect this will not prevent eventual implementation.

Following a biodiversity stakeholder workshop hosted by Kumtor in October 2012, we signed a Memorandum of Understanding with FFI. Founded in 1903, FFI is the world's longest established international conservation body, operating in more than 40 countries worldwide. The Kyrgyz State Agency of Environmental Protection had previously recognized FFI's activities by awarding it with Honorary Diplomas in recognition of its conservation initiatives and achievements in Kyrgyzstan.

Funded by Kumtor, FFI continued its efforts to support the SCER by conducting workshops, fine-tuning the SCER management plan (expected to be finalized in 2014), and providing technical and financial support to mount expeditions and further baseline studies in and around the SCER.

Various surveys (including those not funded by Kumtor) added to essential regional nature conservation knowledge during 2013, including:

- Survey of snow leopards and birds of prey (USAID/WWF project)
- Provision of 20 yaks (by WWF) to help build a sustainable income source for the reserve by selling their produce
- Botanical and zoological surveys (FFI/Kumtor)
- Review of the original management plan (FFI/Kumtor)
- Snow leopard survey (by Panthera)
- Ornithological surveys (French/Belgian researchers)
- Satellite monitoring of wildlife and vegetation, provision of 4 camera traps (Shinshu University, Japan)

ENERGY USE AND CARBON EMMISIONS

Our grid electricity is mostly from renewable sources

We monitor and publicly disclose our carbon footprint

We apply energy and fuel efficiency measures

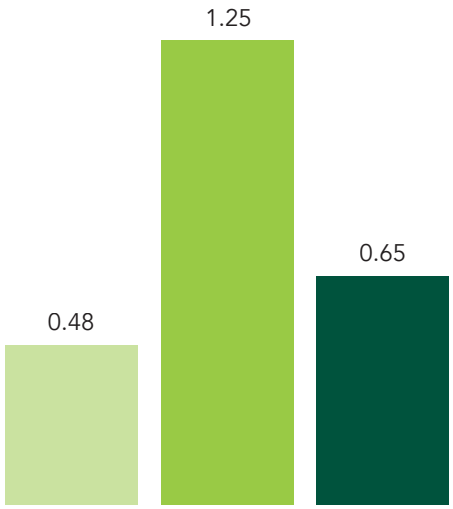
Energy Consumption

Our large-scale mining operation is a significant consumer of fuel and electricity. Fuel represents over 20 percent of our commodity and service-related purchases. Diesel and gasoline are the main options for many uses, such as vehicles and essential generators. However, wherever feasible, we use electricity. The most energy-intensive operation is the mill, representing approximately 75 percent of our electricity consumption.

Our calculations include our three main sites, the mine, Balykchy Marshalling Yard, and Bishkek head office. However, the mine represents around 98% of energy use, and is the only site using explosives.

We continue to calculate and monitor our greenhouse gas (GHG) emissions, and explore ways to reduce them as part of energy conservation measures. We completed an energy use and GHG emissions inventory in 2012. We include explosives in our GHG emission calculations as it was determined to be a significant component.

GHG Intensity Ratio



NOTE | GHG = Greenhouse Gas; Intensity Ratio calculated as Total GHG emission (tonnes of CO_2e)/Total Gold (ounces)

Access to hydropower

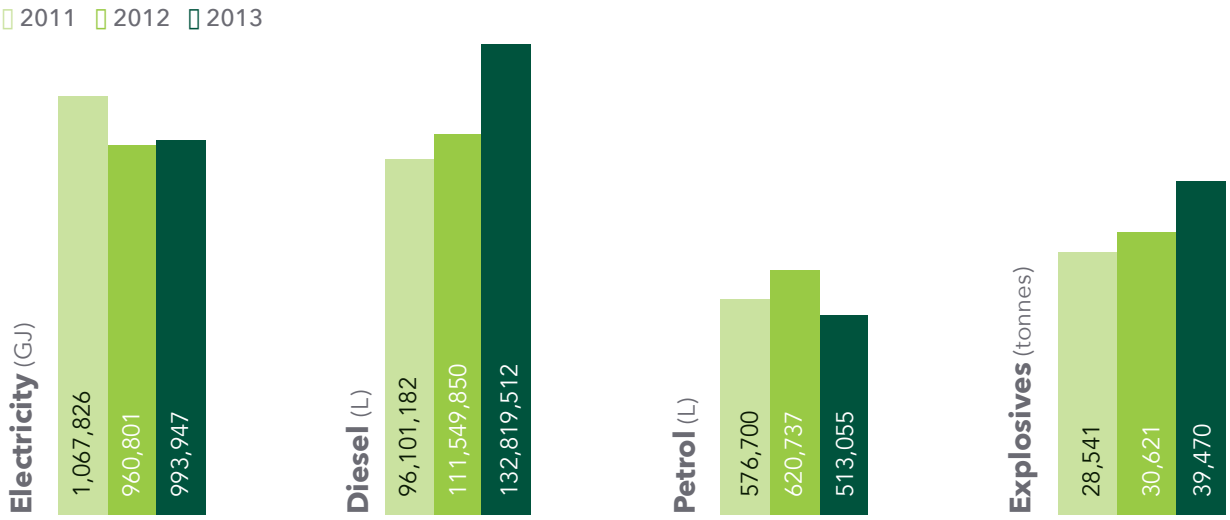
The Kyrgyz Republic generates more than 70 percent of its electricity through hydropower. In fact, the Kyrgyz Republic is a leading producer and exporter of hydroelectric energy in the Central Asia region, due to its mountainous terrain and abundant water resources.

Helping local farmers during fuel shortages

While efficiency is important for energy users, many small businesses and especially farmers cannot survive without access to a reliable fuel supply during key periods, such as planting and harvesting.

Following the 2010 revolution, a severe shortage of diesel at retail filling stations, seriously impacted farmers. However, Kumtor had access to diesel fuel stored in its tank farms and helped by providing fuel to farmers in that situation. Kumtor's provision of diesel fuel ensured that a whole agricultural season would not be at risk of leaving thousands of people without critical farming-derived income. Since then, Kumtor regularly provides subsidised diesel for farmers during the critical spring season.

Electricity, Fuel and Explosives Consumption



The major source of grid-energy supplied power to Kumtor is from the Toktogul Reservoir located on the Naryn River. This means that our specific GHG footprint generated from electricity is relatively low. It also means that efforts that reduce or replace our fuel consumption with grid power offers the greatest value in terms of reducing our GHG emissions.

GHG emissions and intensity

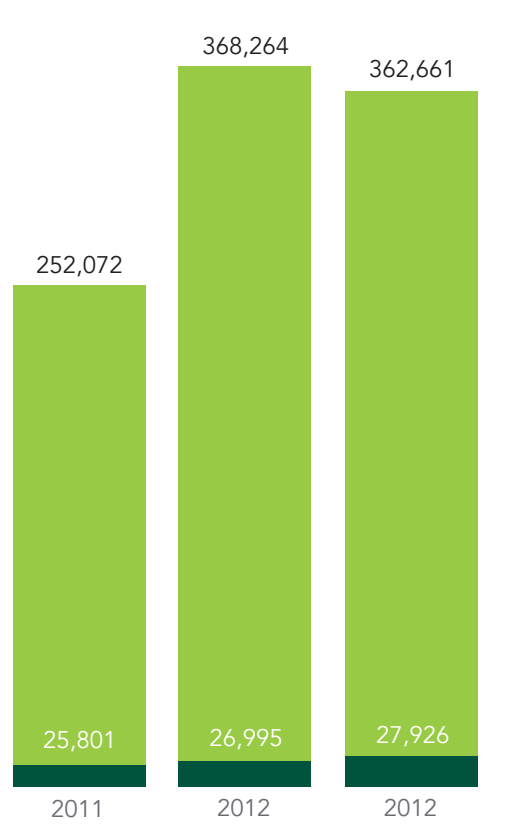
Scope 1 (direct) total GHG emissions have reduced slightly compared to 2012. Scope 2 (indirect) total emissions have remained fairly stable. Kumtor's GHG intensity, a measure which normalizes GHG emission to gold production, is markedly lower than for 2012 due to significantly increased gold production in 2013.

Energy conservation measures

We aim to reduce our GHG intensity by reducing our specific energy consumption and by increasing energy efficiency. We switch from diesel generators to grid electricity, wherever and whenever feasible, for such uses as mine-site lighting, dewatering pumps, and other equipment. This reduces both costs and our GHG footprint.

Greenhouse Gas Emissions

(tonnes CO_2e)



After the mill, our truck fleet is the largest energy consumer. Our program of reducing vehicular-related fuel consumption, as described in the section on Economic Responsibility, has the benefit of reducing use of energy and carbon-intense consumables. For example, we are transitioning to more fuel-efficient engines and have a proactive program to reduce the need for, and occurrence of, running engines on parked vehicles.

Although we have implemented energy conservation measures ranging from automated lighting to encouraging behavioral changes, such activities do not make a material difference to our GHG footprint due to the fact that these energy uses are very small compared to major operational energy use, and because electricity already has low GHG intensity.

Exploring opportunities

We continue to explore ways to reduce energy use and GHG intensity, but because electricity is already mostly from renewable sources, the scope is limited. If necessary, the most cost-effective GHG savings may need to depend on an offset concept which could be developed off-site.

We switch from diesel to low carbon electricity where feasible

External reporting

As in previous years, Kumtor's carbon footprint is reported through Centerra's participation in the Carbon Disclosure Project. This is an independent, international not-for-profit organization that tracks and reports corporate information pertaining to climate change. The data for individual companies is publicly available.

AIR EMISSIONS

We maintain mine roads and use water trucks to suppress traffic-related dust

We expanded our dust mitigation program in response to community concerns

Road dust, dispersed by the movement of light and heavy vehicles, is the principle source of observable and measurable air emissions along our access road through the Barskoon Valley. Concerns have also been raised about mine dust deposition on nearby glaciers. Regular monitoring of ambient air quality for particulate matter is a component of our environmental monitoring program. The results and our related activities are discussed in this section.

Dust in Barskoon Valley

Access to site for personnel, and for delivery of consumables and other materials, is via a technical road, maintained by Kumtor and which passes through the Barskoon Valley. This road also serves as an access road to points of touristic interest, several small communities, including Ak Shirak village, summer pastures and 'hunting farms' in the high altitude valleys, and the Sarychat-Eertash Nature Reserve. Thus, this road brings not only the supplies and people needed for mining operations, but also residents, researchers, hunters, and tourists.

Following stakeholder concerns about dust levels in the Barksoon Valley, we expanded dust mitigation – such as planting trees and watering the road – and continued monitoring of dust levels. As in previous years, three high-volume air samplers were installed during the summer of 2012 to measure the total suspended particulate (TSP) concentrations in the air. Results in Barksoon Valley for August 2013 (normally the drier and dustiest time of year) are lower than the average of recent years. However, in September 2013, two results exceeded the applicable standard of 100 micrograms per cubic metre. This is attributed to a short-term higher incidence of road traffic, including non-company vehicles, which occasionally occurs.

Concerns have been raised that dust adversely impacts some flora immediately adjacent to the road, that it is a driver of landslides originating from steep slopes (which often follow significant rain events), that is endangering a rare tulip species (Tulipa tetraphylla).

Some stakeholders from villages near the Issyk-Kul Lake, claim they are being adversely affected by dust and other air emissions emanating from the mine. However, the separation of these villages from the mine by a mountain range, and a radial distance of tens of kilometres, rules out the mine as a source of air pollution. Burning of rubbish and other uncontrolled air emissions are known to be commonplace in these village areas, and therefore, a much more likely source of emissions.

Dust Monitoring in the Barskoon Valley

NOTE: #1 sampler was located 50 metres south of the road from the upper Kamaz truck monument; #2 sampler was located 100 metres to the north of the road, in the direction of Barskoon River; #3 sampler was located 50 metres to the north of the road, opposite to Kamaz truck monument, in the direction of Barskoon River. *Recommended maximum admissible concentration (MAC) standard for populated areas.

Sampling Stations	Average Dust Level (µg/m^3)					
	June 2011	June 2012	August 2012	Sept 2012	Aug 2013	Sept 2013
#1	19	28	47	31	20	120
#2	11	63	15	22	33	93
#3	12	92	18	25	12	163
Recommended MAC*	100	100	100	100	100	100

Responding to stakeholder concerns, we expanded our fleet of watering trucks and made additional changes to further increase the frequency of road watering, in order to mitigate traffic-related dust from Kumtor and other vehicle movements in the Barksoon valley. We will continue to work with concerned stakeholders to identify suitable solutions to their concerns about dust levels and other emissions.

Air quality at the mine

We routinely monitor and report the air quality at our mine site. This effort is supported by six high-volume samplers located strategically around the mine site to measure total suspended particulate (TSP) levels. At all stations, the annual average TSP concentration has been below the Kyrgyz 24-hour TSP limit of 500 micrograms/m^3 for industrial zones.

Our analysis suggests that during spring, occasional point exceedances are related to commencement of tailing dam works, which typically start at that time. In winter, occasional point exceedances are related to exposure of dried tailings to occasional strong winds.

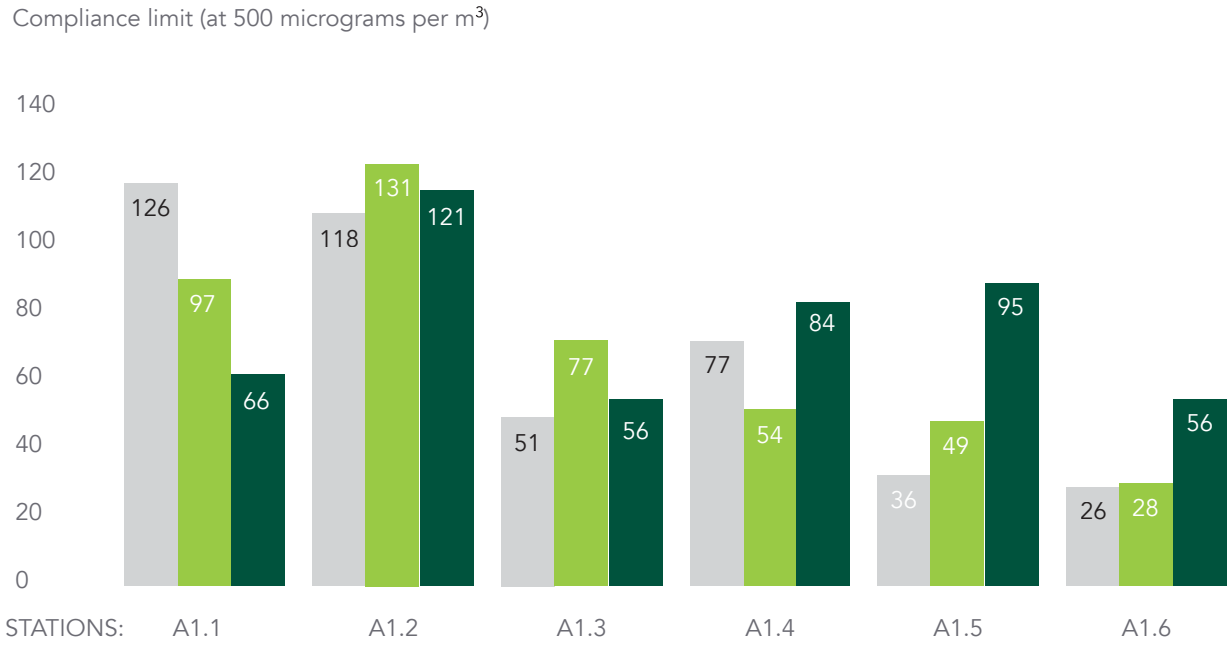
When point exceedances occur, additional dust suppression actions are taken. We continue to explore options to further reduce dust uptake from the dried tailings beaches within the tailings management facility, and ways to reduce the 'freeze dry' effect from the discharge of tailings slurry during the coldest days of the year, as this can also contribute to dust emissions.

Selected TSP samples are also analyzed for cyanide, sulfur, arsenic, nickel, selenium, zinc, uranium, radium-226, and strontium-90. Consistent with previous results, the 2013 monitoring data, which are presented in the appendix, demonstrate that the results are orders of magnitude below their relevant threshold limit values.

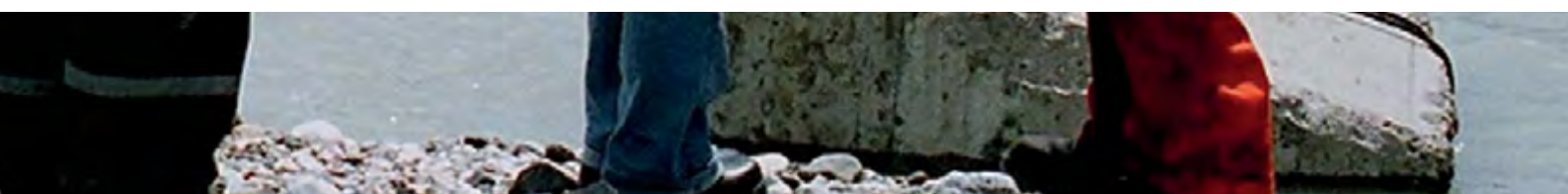
Annual Average Dust Concentrations at Mine (TSP, microgram per m^3)

NOTE: TSP is total suspended solids, should not exceed maximum 24 hour average of 500 µg/m^3 (World Bank).

2011 2012 2013



WATER USE AND TREATMENT



Water pumped from Petrov Lake has reduced by 17% since 2011

Kumtor's water intake is about 7% of natural throughflow of Petrov glacial lake

Kumtor treats its industrial and domestic effluents to meet prescribed standards prior to discharge

We use water for operational activities, mostly in the mill, and for domestic use (drinking and sanitary) in the mining camp, offices, and workshops. We must also remove water from the mine pit in order to keep the works safe and stable.

Our main water management responsibilities are:

- Providing safe drinking water for our employees
- Removing water and ice from the open pit to ensure access to ore, and stable and safe working conditions
- Ensuring water returned to the natural environment is safe and meets defined quality criteria
- Managing run-off to reduce sediment load entering surface water

An information brochure describing Water Management at Kumtor can be downloaded from our website at: www.kumtor.kg/en/environment-protection/water-management/

Water sources

We have two sources. Most of the water we use is collected from Petrov Lake. We must also pump large volumes of water from the open mine pit to maintain stable and safe working conditions, some of which we can use at the mill, thus reducing our demand from the lake.

In 2013, we extracted approximately 5.2 million m^3 of water from Petrov Lake, which was very similar to the previous year.

In 2013, we pumped a total of 11.9 million m^3 of water from the pit, including groundwater and glacier melt water. Of this, nearly 1 million m^3 was used in the mill, and the remainder of 10.9 million m^3 discharged to the environment.

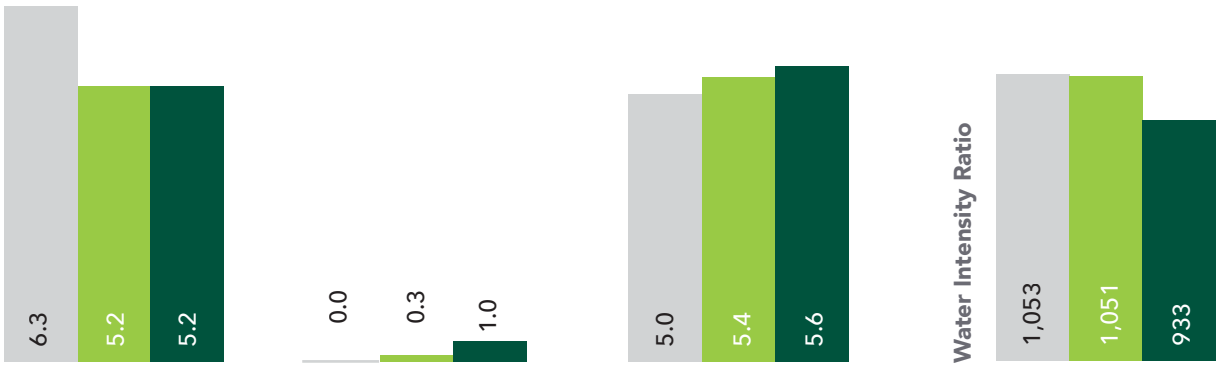
Operational water use

Our main use of water is as process water in the mill, for crushing the ore and processing it to produce gold. The mill used a total of 6.3 million m^3 of 'make-up' water in 2013, of which 5.2 million m^3 was from Petrov Lake and nearly 1 million m^3 collected from one of the mine pits.

The use of pit water, which reduces our demand on Petrov Lake, has increased significantly from zero in 2011 and 0.3 million m^3 in 2012. In addition nearly 5.6 million m^3 of water was re-used within the mill (also up on previous years), further reducing the demand for fresh water from Petrov Lake. As a result, abstractions from Petrov Lake have reduced by 17%, or more than 1 million m^3, since 2011.

Water Use and Treatment

2011 2012 2013



Volume Abstracted from Petrov Lake (Million m³ per year)

Volume of Water Pumped from Pit to Mill (Million m³ per year)

Water Re-Used at Mill (Million m³ per year)

Calculated as make-up water in mill (litres)/mill feed (tonnes)

Drinking water

We also use treated water from Petrov Lake for domestic uses (drinking and sanitary) at the mining camp, the mill, and other working buildings. Domestic water use in 2013, was about 190,000 m³, representing just 3 percent of the freshwater we collect from Petrov Lake. Drinking water quality is routinely monitored for safety and compliance.

Water Use Table (Million m³ per year)

	2011	2012	2013
Sources of Water			
Water pumped from pit to the environment	11.1	11.1	10.9
Domestic Water (= potable water)			
Domestic water for camp (from Petrov Lake)	0.2	0.2	0.2
Domestic water use at mill (from Petrov Lake)*	0.0	0.0	0.0
Total domestic water use	0.2	0.2	0.2
Process Water Use at Mill			
Fresh water for process (from Petrov Lake)	6.1	5.0	5.2
Total process water to mill	6.1	5.3	6.2
Wastewater			
Treated wastewater at ETP	5.0	5.1	3.1
Treated wastewater at STP	0.2	0.2	0.2

* Domestic water use at the mill is approximately 20,000 m³/year, and therefore less than 0.0 million m³.

Pit dewatering

We collect and discharge large quantities of water as a necessary part of our pit dewatering program to keep the pit stable and safe. Some dewatering occurs throughout the year, but most occurs during the summer period when large quantities of glacial melt water collects in the open pit. The majority of the pit water is discharged to the environment. In addition, nearly 1 million m^3 of water collected in 2013 from the North pit is pumped to the mill to supplement process water.

Water treatment

We source both industrial and drinking water from Petrov Lake, which is largely derived from glacial melt water. This means it exhibits naturally high concentrations of sediments, giving the lake a characteristic milky appearance, along with elevated background concentrations of some parameters such as iron, aluminium, and suspended solids.

Process water does not require treatment beyond settlement of sediments. However, the water quality of Petrov Lake does not meet hygienic drinking water standards without treatment.

To generate drinking water, we apply treatment methods standard for public supplies around the world. These include flocculation, filtration, chlorination, and ultra-violet treatment.
In combination, these processes remove fine sediments (which may carry metals) and disinfect the water for safe storage and use.

Sewage treatment

We have two systems to treat wastewater before safe discharge to the environment. Sanitary wastewater is treated at the sewage treatment plant (STP). This uses standard processes of biological treatment and chlorination. The biological treatment removes the 'oxygen demand' of organic matter, which would otherwise use up oxygen in the river and reduce its quality. Chlorination is provided to eliminate potentially harmful bacteria. Although challenging to operate at high altitude with low oxygen and harsh weather conditions, treatment is achieved successfully through careful design and management. During freezing winter conditions, treated effluent is stored in a holding pond prior to gradual discharge during summer. In 2013, approximately 150,000 m^3 of sewage was treated.

Industrial wastewater treatment

Industrial wastewater containing residual cyanide is a component of tailings slurry discharged by gravity flow from the mill to the tailings management facility (TMF).

The liquid component of tailings, approximately 51 percent of the slurry, is pumped to, and treated in compliance with established standards, at the effluent treatment plant (ETP) before being safely discharged to Kumtor River. Due to the freezing winter conditions, the treatment and discharge of wastewater is restricted to the warmer season, mainly May to November.

The main stakeholder concern regarding wastewater from Kumtor is for cyanide, an essential chemical used routinely in the processing of ore to recover gold. Cyanide can be toxic at higher concentrations.

Approximately 5.6 million m^3 of tailings were generated in 2013, containing residual levels of cyanide and other constituents which could be harmful to the environment if discharged untreated. The solids component is retained in the TMF, while the majority of liquid component is pumped to and treated at the ETP to reduce and remove cyanide, metals, and other elevated contaminants prior to discharge. We use the patented INCO treatment process, and operate one of the largest such plants outside of North America.

During 2013 the re-siting of the ETP was completed. In 2013, approximately 3 million m^3 of industrial wastewater was treated and discharged to the environment, 2 million m^3 less than the two previous years. This was because of a shorter treatment and discharge season in 2013 when the ETP was relocated.

Impacts on the natural environment

The quality of water discharged from the ETP is routinely monitored to confirm its quality and ensure regulatory compliance. The results are presented and discussed in the Water Quality section.

Our abstractions from Petrov Lake have no measurable impact on average annual lake water levels. The level fluctuates by about 2 metres during the year. The peak level in 2013 was 20 cm higher than 2012, and the lowest level was 3 cm higher in 2013 than 2012.

Our total abstractions from Petrov Lake of 5.2 million m^3 in 2013 represents just 6.5 percent of its natural outflow to Kumtor River. We then returned 3 million m^3 as treated wastewater (STP plus ETP). Combined with the dewatering from the pit, of 10.9 million m^3, the net impact on river flow is near neutral.

Water use intensity

Metallurgical challenges limit our ability to drive down our water use intensity by recycling effluents from our tailings pond. Studies have shown that even low levels of cyanide in the tailings pond would adversely affect our gold recovery process. However, in July 2012, we began to use water from pit dewatering in the mill. As a result, we are seeing a decreasing trend in the water use intensity of our operation, reflecting the positive impact of in-mill recycling and using an increasing proportion of water from pit dewatering.

Managing run-off

We are improving our management of run-off from snow and ice melt which collects and carries sediment from waste rock dumps. As much as possible, we divert clean meltwater from Davidov and Sarytor glaciers away from waste rock dumps, and into the Kichi Sary-Tor stream. We also constructed a number of settlement ponds along Lysyi valley to collect large sediment particles. We plan to construct additional sediment settlement basins, in 2014.

WATER QUALITY AND COMPLIANCE

Our drinking water is safe and compliant

All our wastewater is treated and is environmentally safe before discharge

Drinking water

The water we use at the mine site for standard domestic use (for drinking, food preparation, personal hygiene and general cleaning of the mine camp and offices) is routinely tested against Kyrgyz, World Health Organisation (WHO), and Canadian drinking water standards. Our drinking water is compliant with these standards, and therefore safe for all relevant uses.

Environmental water quality testing

We sample and test water quality at over 30 points across the Concession area, as listed in the Environmental Monitoring Section, which also includes a location map. Sampling points are selected from a combination of legal obligations and additional commitments related to our environmental management responsibilities and programs. Results are discussed with reference to key features in the following sub-sections.

Kumtor River Monitoring Point (W1.5.1)

Our main water quality monitoring point is where surface water converges downstream of our operations, below where treated water is discharged to the river and shortly after leaving the concession area. This point, designated W1.5.1, and also referred to as 'End of Mixing Zone', was chosen by Kumtor to be protective of the intent of the Environmental Management Action Plan (EMAP) and the Kumtor River. Any exceedance of water quality criteria at W1.5.1 triggers us to examine the data at W1.8, the monitoring point 1 km upstream of Naryn City as the nearest community downstream. Results for 2013 are presented in the bar chart, which includes the Kyrgyz maximum allowable concentration (MAC) values recommended for river basins providing public water supply.

Our results show that the majority of water quality parameters in 2013 were below the respective MAC values. This means we have been in material compliance with key water quality standards. However, we identify some areas where we fall short, and explain any planned steps to address these.

Overall, the glacial origin of surface water sources in the Kumtor project area results in them having elevated sediment loading (suspended solids), visible in the generally milky appearance of the water. This sediment loading influences the total metal concentrations, resulting in elevated results for a variety of metal parameters such as aluminium, copper, iron, and zinc. This naturally elevated background condition was documented in baseline monitoring prior to the start of mining operations.

That is also reflected in current results from Petrov Lake, the source of Kumtor River and located upstream of the mine. The presence of sediments and associated metals, is not indicative of poor environmental performance of Kumtor mine.

Kyrgyz standards refer to total metal concentrations, whereas international environmental water quality standards are more commonly based on dissolved metals, which is more indicative of impact and risk. We take these aspects into consideration when evaluating water quality.

A review of results from 2013 shows the average total aluminium and iron concentrations exceeded the MAC standards. However, they remained consistent with the naturally high background concentrations in the region, which can be of the same order or higher. Also, the average total manganese concentration marginally exceeded its MAC standard. These results do not represent a significant risk to human health or the environment, as iron and manganese effects are mainly aesthetic. These three are some of the most abundant metals in the Earth's crust, and therefore not unusual to see at these concentrations.

Of the six samples analyzed for oil & grease in 2013, all results were reported as below the laboratory detection limit of 2 mg/L. As such, the result of our annual average oil and grease concentrations for 2013 is conservatively presented as being equal to the laboratory detection limit. The applicable Kyrgyz MAC standard is 0.3 mg/L, or approximately one seventh of the laboratory detection limit for oil and grease. This results in the appearance of exceedance at our compliance point(s) even though there has been no positive detection of these substances in any of the samples analyzed in 2013. A recent investigation into this matter suggests that our previous interpretation of the MAC for Communal Use streams and resulting laboratory analysis of "oil and grease" may not have been the most appropriate. We are pursuing a more appropriate parameter and laboratory analytical method to represent oil products with a suitably sensitive detection limit for comparison to the MAC for Communal Use streams.

The results for ammonia-nitrogen is very marginally above the MAC. The main operational sources of ammonium are related to the cyanide destruction process in the effluent treatment plant and the use of explosives. Analogous to the use of total metal concentrations in Kyrgyz MAC standards described above, the use of total ammonium tends to generate an overstated environmental risk if not corrected for different speciation of ammonium (ionized and non-ionized) and corrections for pH and temperature.

In addition to reviewing our water management approach, we have proposed to work with the Kyrgyz authorities and adopt an ecological risk-based approach in line with good international industry practice and develop a more meaningful compliance standard for ammonia for Kumtor's operation.

Sulfate is a source of concern for some of our stakeholders who associate it with acid rock drainage (ARD). However, our average annual sulfate level continues to be below its MAC. ARD is a process, which can generate acid leachate and release metals into the environment. This topic is discussed further in the section on waste rock and ice in this report.

Effluent treatment plant discharge

Given the extreme climate conditions at the mine site, Kumtor's effluent treatment plant (ETP), which treats the effluents contained in the tailings management facility (TMF), generally operates between May and November each year (when water is not frozen). In 2013 after the ETP re-siting to a new area, the discharge rate was about 1,400 m^3/h, but it is planned to increase this to approximately 1700 m^3/h in 2014.

During the water treatment season, the Kumtor River, which receives treated discharge from the ETP, is not frozen and exhibits significant flow volumes. In 2013, the peak flow of the Kumtor River was recorded at 26.4 m^3/s in August, and the minimum flow during the period of discharge was 0.65 m^3/s.

The 2013 ETP discharge water quality results are presented in the following bar chart (note log scale). The results are compared to the maximum allowable discharge (MAD) standards and discussed below. The results show that effluent discharge concentration of cyanide and certain other key parameters met their respective MAD standards. However, the concentration of sodium, sulfate, manganese, and ammonia nitrogen exceeded their MAD values.

Drivers of these elevated concentrations include the use of some water from the pit through the mill (which ultimately passes through the ETP), as well as the reagents and their chemical reactions, such as sodium metabisulfate and sulfuric acid, which are required for the cyanide treatment process.

Overall, the Kyrgyz Republic's approach to developing the MAD values is based on the minimum flow of the Kumtor River over the defined period of discharge. This means that considerably higher MAD standards would apply if we adjusted our ETP discharge to coincide with the higher flow periods of the Kumtor River, an option we will explore in the future. As described further below, we have also proposed to work with the Kyrgyz regulators to apply commonly used ecological risk-based approaches and develop more site-specific standards for parameters such as ammonia nitrogen.

Sewage treatment plant discharge

In 2013, the average generation of wastewater and sewage was 421 m^3/day. The annual average STP discharge water quality met all required MAD standards with the exception of nitrate and biochemical oxygen demand (BOD), which both exceeded very marginally.

External water quality testing

Our operations are routinely subject to inspections by local government agencies, who notify us of any concerns identified. We then respond or address concerns accordingly.

Exploring risk-based approaches

In response to stakeholder concerns about sulfate levels, we have raised the profile of this aspect in our closure planning process. We commissioned international consultants to undertake a sulfate loading study. It considered all key sources of sulfate addition to the Kumtor River, including the treated discharge from the effluent treatment plant, and modeled the sulfate concentration in the Kumtor River under a variety of operational scenarios.

The results obtained in 2013 show that the model was successfully calibrated against historical measured values at W1.5.1, our surface water quality compliance point, and provide a high degree of confidence in the predictions.

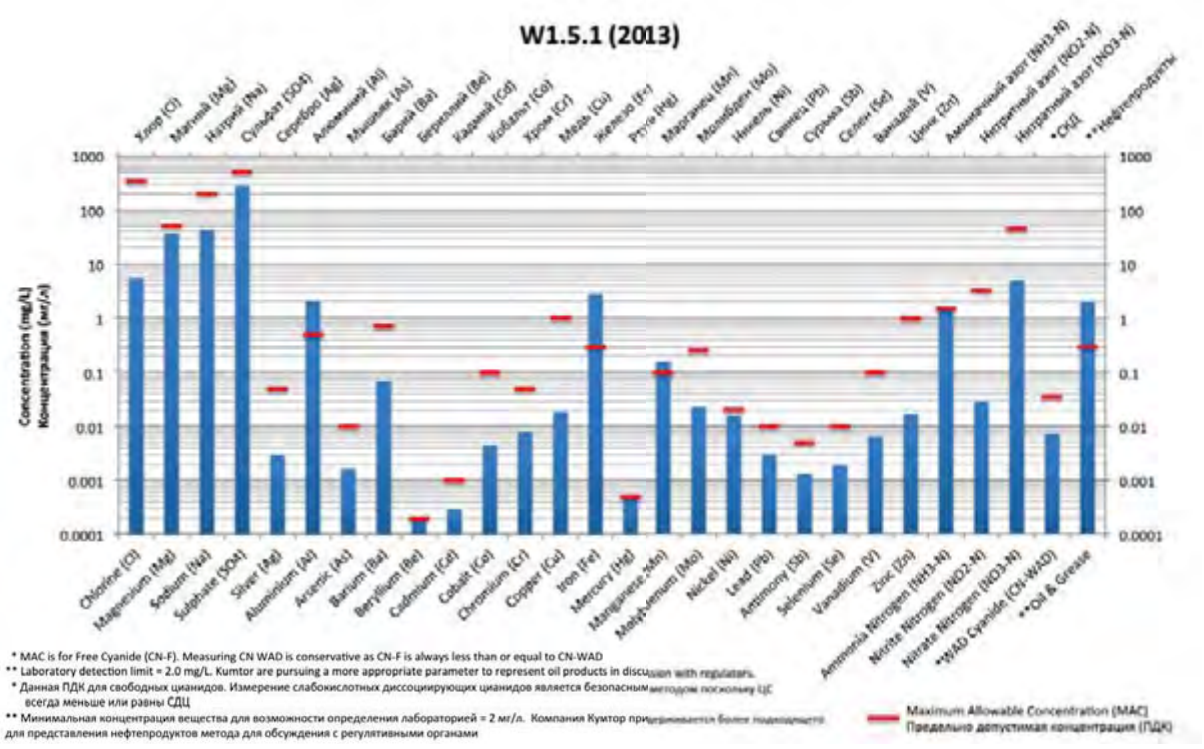
A key conclusion was that it was possible to maintain compliance with the maximum allowable concentrations of sulfate during the life of mine, provided Kumtor implements good practice water management controls (e.g. minimizing water contact with waste rock dumps).

Similarly, we plan to further evaluate the exceedance of ammonia against our maximum allowable concentration standard, which is very low compared to other international standards or ecological risk-based limits. Also, we aim to agree site-specific standards for parameters like ammonia, to take account of background concentrations, and locally relevant concerns.

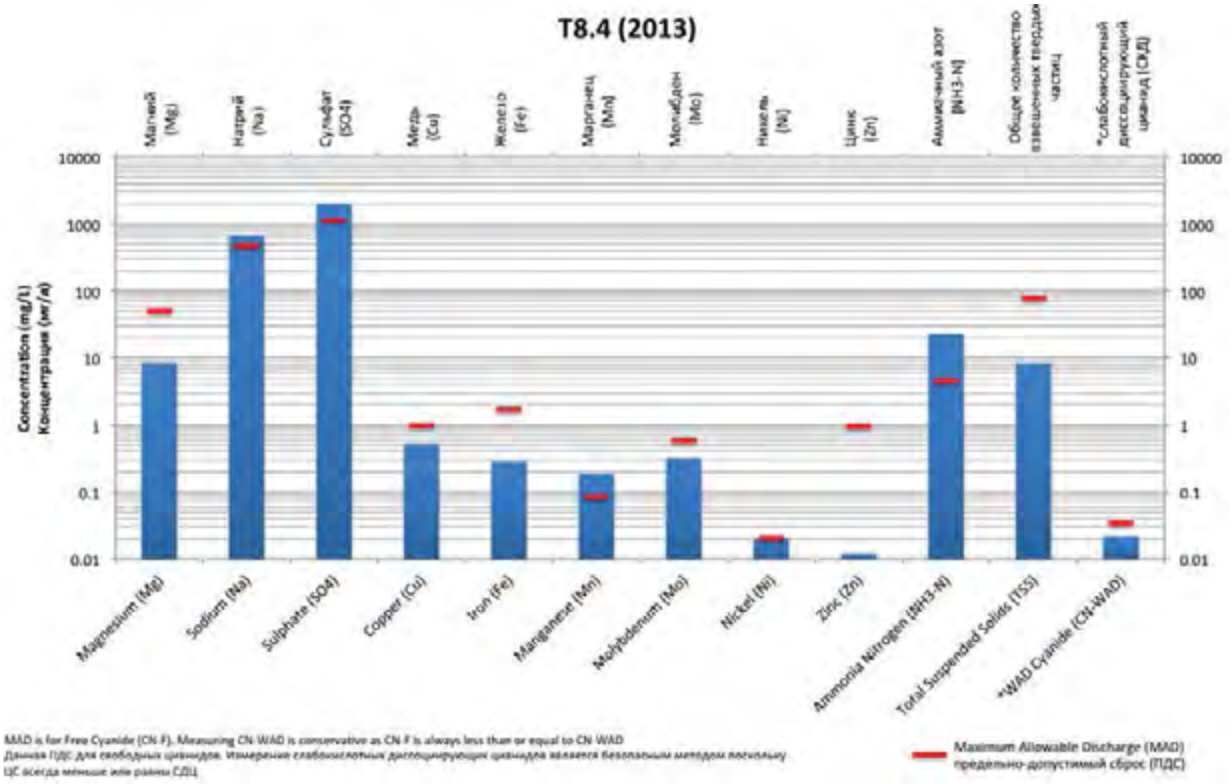
Monthly and historic results

Average monthly monitoring results are presented in the appendix. Monitoring results from previous years are presented in past annual environmental reports which are also available on Kumtor's website.

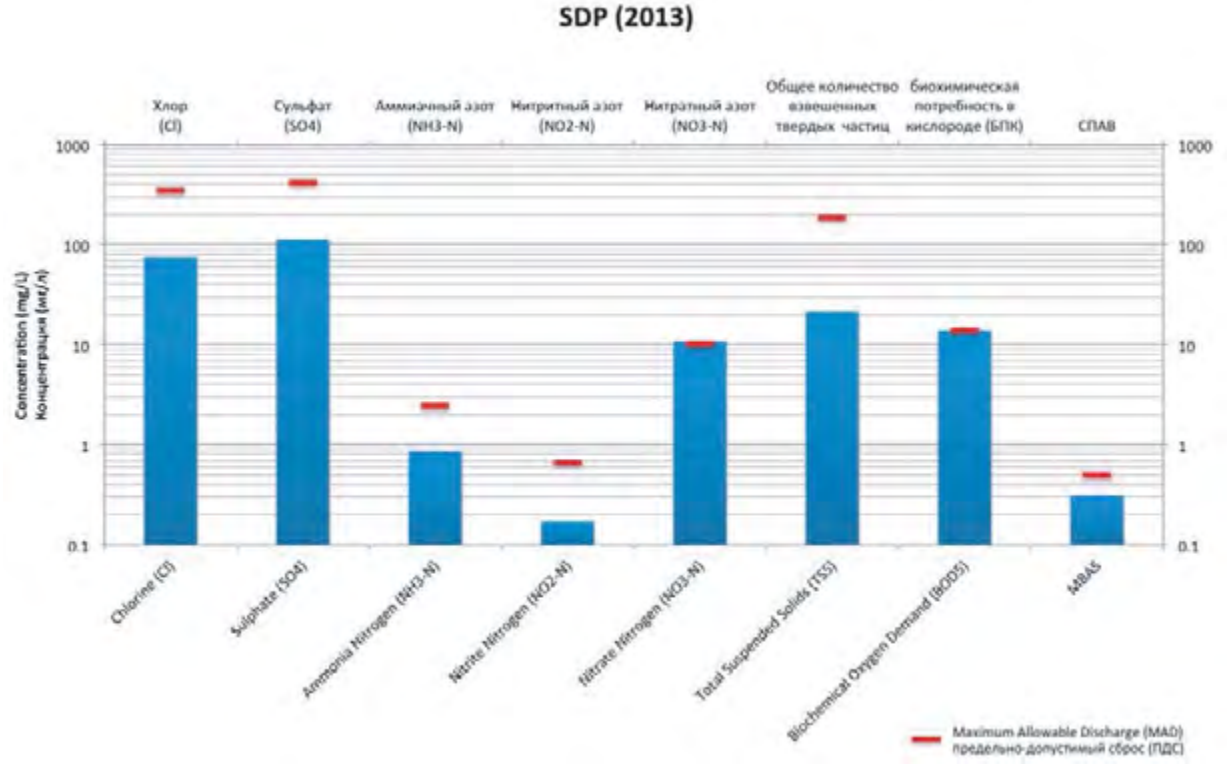
2013 Water quality data in the Kumtor River at the end of the Mixing Zone and Kumtor concession area



2013 Water quality data at the discharge point of the Effluent Treatment Plant



2013 Water quality data at the discharge point of the Sewage Treatment Plant



WASTE MANAGEMENT

We manage all mine camp waste (population 1700) and associated activities

We recycle 100 % of our scrap metal, waste oil and wood through local vendors

Recycling of tires is hampered by limited local reuse and recycling markets

We are pursuing a more integrated waste reduction and management strategy

Waste management practices

Kumtor maintains waste management plans, along with operating instructions, to cover the waste streams associated with a large scale mining operation. These instructions cover waste management, materials handling and worker safety.

We are committed to ongoing improvement of our waste management strategy. In November 2013, international consultants completed a review of our practices, and provided recommendations in an 'integrated solid waste management plan.' We are currently reviewing their recommendations with a view to implementing appropriate processes and systems to minimize the amount of wastes generated, and to more effectively manage the remaining waste stream components in accordance with good international industry practice.

Major waste streams

Our operations produce several key waste streams. These include domestic, industrial, and hazardous wastes. Domestic wastes typically include food waste and paper materials from camp facilities and offices. Industrial wastes typically include plastic containers, wood, scrap metal, and tires. Our main hazardous wastes include cyanide packaging, batteries, medical waste, and expired reagents.

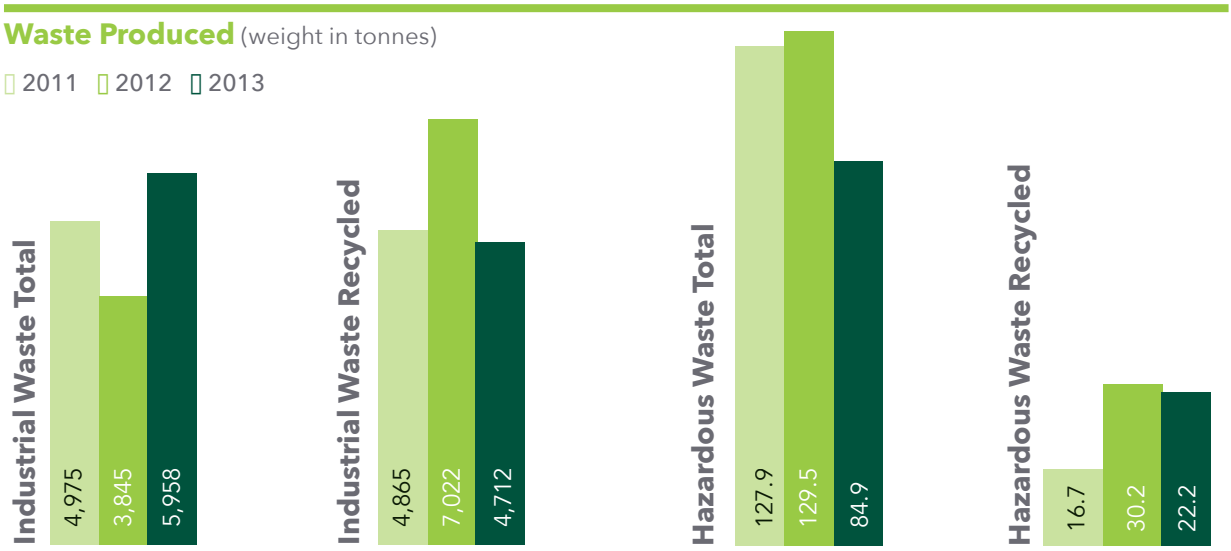
Waste handling

Our waste collection and disposal areas are currently located within the final footprint of our tailings management facility. These areas will eventually be covered by tailings and subject to mine closure.

Our waste management facilities include a sanitary landfill for domestic wastes, primarily generated by the offices and accommodation camp with a typical population of up to 1,700 people. The per capita domestic waste generation at Kumtor is approximately 1.0 kg/person/day, which compares to approximately 2.0 kg/person/day in the United States in 2012 as reported by the US Environmental Protection Agency, and 5.6 kg/person/day for a comparable copper mining camp in Mongolia. We also maintain separate lined landfill cells for oily rags and cyanide packaging.

Waste recycling

Wastes such as scrap metal, timber, and waste oil are provided to third parties. Waste materials with a potential to be recycled or reused, but with currently under developed recycling market, are temporarily stored on site if feasible options become available. This includes waste tires.



*Drop in value reflects a more accurate data collection method.

During 2013, Kumtor achieved 100 percent recycling of its scrap metal, batteries, waste oil and scrap timber through local vendors. We are also investigating the possibility to re-use scrap metal in the production of grinding balls.

Improving practices

In response to recommendations provided by Kyrgyz government-sponsored commissions and other internal and independent external reviews, Kumtor has been upgrading its waste management practices. This included increasing our removal of scrap metal for recycling, improving the storage of waste tires and transport containers, and overhauling the waste oil collection system.

We generate approximately 140 tonnes of waste motor oil each year. We are exploring opportunities to blend it with diesel fuel so it can then be used as heating fuel.

We are also continuing our efforts to develop re-use or disposal options for waste tires. In 2013, these options included: reusing or recycling; re-treading and repairing them to prolong their useable life; and converting them to fuel. We also phased out the use of incineration pits in 2011.

MINE CLOSURE

Planned Life of Mine is until 2026

Mine Closure Plan priorities are safety and minimizing environmental impacts

Life of Mine closure cost estimate is $49.2 million

Our conceptual closure plan was reviewed and updated during 2013, and the associated report was issued in early 2014. The most recent life-of-mine plan is for open-pit mining to end in 2023 and milling operations to conclude in 2026. The plan is guided by the following objectives:

- Materially comply with regulatory requirements
- Minimize residual environmental impacts
- Ensure mine site feature are geotechnically stable
- Ensure protection of public health and safety
- Return the land to suitable post-mining land use

Regular updates

We regularly update the conceptual closure plan and submit it to the relevant Kyrgyz agencies. In early 2014, the 2013 conceptual closure plan was also provided to the Government's international technical advisors involved in the ongoing negotiation to restructure Kyrgyzaltyn's ownership in Centerra and Kumtor.

Closure overview

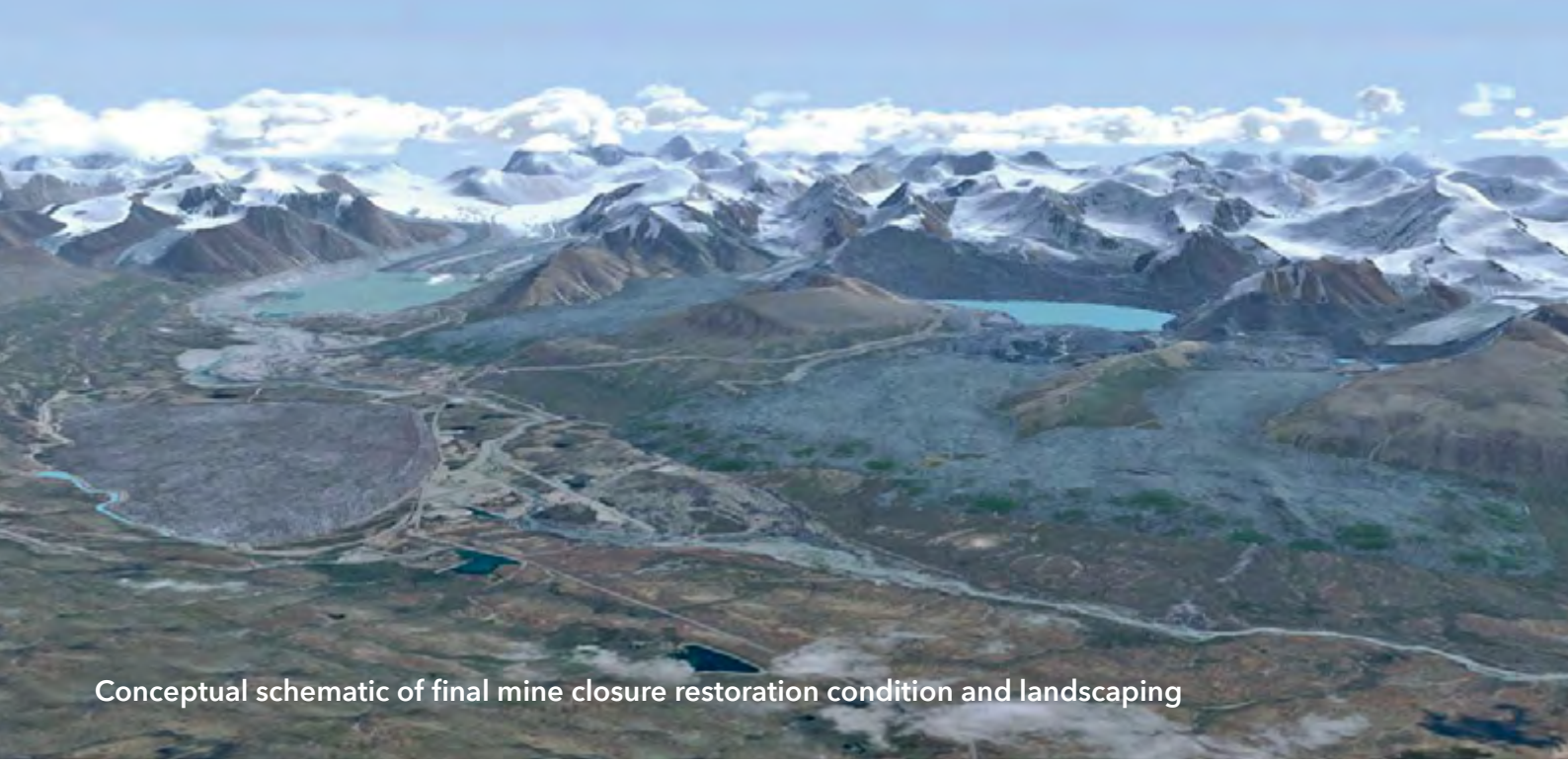
The updated conceptual closure plan covers the existing components of the Kumtor operations including the open pits, waste rock dumps, TMF and related water treatment facilities, and the mill complex and associated mine infrastructure.

The most significant modifications to the 2013 iteration of the conceptual closure plan include the prediction of post closure water quality in the central pit, using a detailed geochemical model, and revisions to waste rock dump management and reclamation in recognition that the dumps are likely to behave in a dynamic fashion during operations. In addition, and for the first time, the updated conceptual closure plan considers the biodiversity and socio-economic aspects of closure planning.

At the end of mining operations, material and equipment will be salvaged and removed where feasible. Structural foundations will be leveled, graded and covered as reasonably possible. The mine site and camp areas will be graded and contoured to blend into the surrounding landscape. Pits are expected to fill with groundwater, runoff, and ice meltwater to form a lake feature. Water flows and quality will be monitored and managed to ensure they remain safe.

Historical land use was very limited due to the remote location. The closure plan envisages a more diverse post-mining land use, to make use of some of the existing infrastructure, such as the access road and high voltage power lines.

These will support a range of activities, including ongoing environmental and wildlife monitoring and for servicing the Sarychat-Eertash Nature Reserve.



Conceptual schematic of final mine closure restoration condition and landscaping

However, these final land uses will need to be discussed and agreed with key stakeholders.

In anticipation, Kumtor began pre-stripping and stockpiling soil and alluvial materials in 2013, for which it is estimated a total of 1,450,000 m^3 will eventually be required. In 2013 Kumtor also started a scientific program on trial plots to develop the best methods for land reclamation. The work includes collecting native plants and seeds and re-planting trials in different locations and in different restored soils. The studies are performed by the K.I. Skryabin Kyrgyz National Agrarian University.

Tailings Management Facility

Closure planning for the tailings management facility (TMF) has focused on water management and ensuring that there is no risk of acid rock drainage (ARD, see also further below) from the TMF at closure. Based on the geochemical characterization of the Kumtor tailings, no special closure provisions for additional ARD prevention and control appear warranted for the TMF. A coarse, inert cover will however be placed over the final tailings surface at closure to prevent erosion and dust generation from the facility. An additional cover of stockpiled soil/alluvial material is assumed to be placed on top of the inert TMF cover and re-vegetated. Prior to the placement of the TMF cover, the effluent treatment plant will be used to treat the water remaining in the tailings pond at the end of operations.

Acid rock drainage

A number of geochemical characterization programs have been carried out to evaluate the acid rock drainage (ARD) potential of the tailings solids and to assess tailings pore water geochemistry. The ARD characterization studies have concluded that there is little to no risk of potential ARD occurring in the tailings management facility (TMF). Static and kinetic testing results have confirmed that the tailings at Kumtor contain an excess of neutralization potential that is sufficient to prevent the onset of ARD. Tailings pore water investigations also provide conclusive evidence that ARD is not occurring within the impoundment interior.

Also, numerous ARD characterization studies, including static and kinetic testing, have been performed on waste rock material generated at Kumtor. These studies have demonstrated that an overwhelming majority of the waste rock deposited at site has no ARD potential.

Moreover, the excess of neutralizing waste rock suggests that limited and localized areas of acid

generation will be neutralized within the dump. While ARD is not predicted from the waste dump facilities, sulphide oxidation is and will continue to occur and produce drainage waters that are approximately neutral in terms of pH, but potentially elevated in sulfate.

Waste rock dumps

Minimal closure activities are required for the waste dumps at Kumtor as dump regrading and contouring will be conducted throughout the life-of-mine operations. No additional reclamation of the dump areas is planned, and high-altitude climatic conditions do not support re-vegetation of the dump surfaces. Monitoring of the geotechnical stability of the waste dumps and glacier movement is envisaged for a ten-year, post-closure period.

Funding closure liabilities

As a result of the latest conceptual closure plan review, the uninflated financial estimates for life of mine closure cost increased from $29.5 million (2010) to $49.2 million, and include estimates for the closure cost obligation as at Dec 31, 2013.

Kumtor is required to re-calculate closure liability on an annual basis, in accordance with International Financial Reporting Standards, to take account of future discount and inflation rates.

In 1995, Kumtor established a reclamation trust fund to accrue cash funds for mine closure liabilities. This is funded by sales revenue, annually in arrears. On December 31, 2013 the balance in the fund was $13.5 million, with the remaining $35.7 million to be funded over the life of the mine as per the New Terms Agreement.

SOCIAL RESPONSIBILITY

We paid $8.1 million in 2013, (1% of gross revenue), directly to the independently managed Issyk-Kul Development Fund

We voluntarily contributed an additional $6.8 million in 2013 to Community Development Programs and Donations

Stakeholder Engagement

Effective stakeholder engagement is essential to managing our social responsibility. We have established structured processes to effectively listen to, and communicate with, our stakeholders, including regulators, shareholders, employees, local communities, small businesses, and the general public.

The process also includes bringing stakeholders together. Many of the projects described in this section have brought together communities, other supporting partners, the international aid community (see case study boxes), and government representatives.

For example, in March 2013, we hosted a visit by members of the Kyrgyz Parliament and local state representatives to visit institutions we have supported. These included Tamga Village Music School, new small businesses in Barksoon village, a renovated park for youth and children in Kyzyl-Suu village, and a women's football team in Karakol. Our efforts to mobilize and promote the local enterpreneurs and business community are also highlighted further below.

Engagement context

Our approach to engagement reflects our desire for respectful and meaningful dialogue within the complex social and political context of the Kyrgyz Republic. For example, we witnessed civil unrest and a government overthrow in 2010, and several further government changes since then. A third of the population lives below the national poverty line. Kyrgyzstan's Soviet past, along with uranium and other mining related environmental legacies, continue to shape perceptions of the industry today.

We have faced a series of allegations and claims regarding environmental impacts and technical aspects of the operation. We also have ongoing dialogue with the Kyrgyz government to renegotiate certain operational and financial agreements. This context means that public and media interest in Kumtor's activites remains high.

We have also been carrying out a socioeconomic and stakeholder mapping study for Issyk-Kul Oblast in 2013. The results will help us with more targeted strategic community investment planning, and strengthen partnerships with other development agencies.

Access to Water

Kumtor has established solar panels at Ton and Kok-Sai communities in Ton district to provide more continuous access to water for more than 1,000 residents. Previously, access to water was limited to as little as one hour per day. These investments of approximately $28,000 help both improve the quality of life for villagers and save on the cost of electricity bills.

Structured dialogue

Our local engagement is primarily through three Regional Committees and Regional Information Centers. Regional Committees have been established in the Ton and Jety-Oguz regions, and in the city of Balykchy, where our marshaling yard is located. Committee membership comprises the akym (head of the region) or mayor (for Balykchy) as well as local deputies, heads of villages, youth representatives, and NGOs. The regional committees, typically meeting monthly, provide opportunities for formal and structured engagement in a local context. They also help communities to prioritize and voice their funding requests.

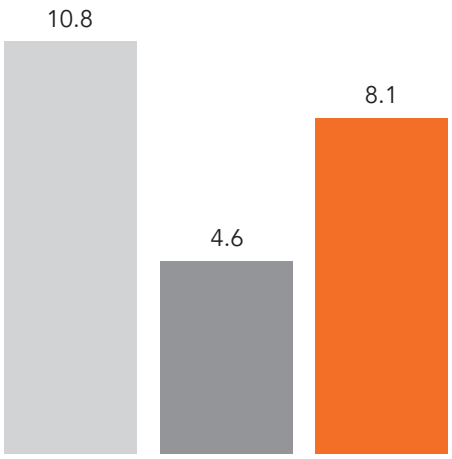
We also operate permanent Information Centers in Barksoon, Jety-Oguz, Bokonbaev, Ton, and Balykchy, each headed by a community relations officer. The main objective of the Centers is to provide information about Kumtor to local residents. This includes information related to our hiring procedures, human-resources policy, and job vacancy information. Community relations officers attend local community events, monitor the implementation of development projects funded by Kumtor, and act as a point of first contact for members of local communities. The Centers offer occasional training services related to helping small businesses.

Aid Coordination in Issyk-Kul Region

As the biggest donor and contributor to the Issyky-Kul region, we initiated and supported an aid coordination platform in 2013. The aim of this platform, which is designed to meet twice per year, is to inform and harmonize the work of the international donor community, as well as NGOs, civil society, and local government active in the Issyk-Kul region.

More details are available on the dedicated website: http://platform.kg/index.php/en/donors-of-issyk-kul

Annual Contribution to Issyk-Kul Region Development Fund (Million US$)



In addition to these structured activities, other types of formal and informal engagement occur on a regular basis across our host communities, with a range of other stakeholders such as community leaders, community organizations (eg. schools, medical centers, youth groups), local small businesses, and agricultural representatives

Public communication

In recognition of the increased interest in Kumtor's activities, we have expanded our communication efforts and channels in recent years. We maintain a comprehensive website (www.kumtor.kg) in three languages (English, Russian, and Kyrgyz), describing our business, the work we do, and our environmental and social responsibility activities. On the website, we also post news releases, downloadable reports, and media articles that feature Kumtor.

We commission films about our activities which we post on our website and through social media channels, such as Youtube and Facebook (as Kumtor Gold Company).

A series of films called 'The Four Elements' won a 'Partnership-2012' award in 2013 in the category 'Best coverage of environmental safety,' jointly awarded by The Corporate Social Responsibility Business Network and the Development Policy Institute.

We produce multi-lingual newsletters and occasional brochures on specific issues, such as Biodiversity and Water Management (all also available on our website).

In March 2013 we launched a free telephone number to allow members of the public to contact us, in order to express a concern or request information. We also have an email address for this purpose, or can be contacted via our website.

Issyk-Kul Development Fund

As part of its operating agreement, Kumtor contributes one percent of gross annual revenues to the Issyk-Kul Development Fund. This fund is managed independently of Kumtor, and is governed by an oversight and steering committee, which includes local government representatives and NGOs. This fund is designed to develop the socioeconomic infrastructure in the Issyk-Kul Region in line with local and regional government priorities. Since 2009, when the fund was started, more than $35 million from Kumtor has been spent on projects as diverse as kindergartens, schools, sports clubs, and irrigation infrastructure across the Issyk-Kul region. We understand that the Fund continues to be criticized for lack of transparency and some stakeholders are expressing their concerns about how decisions about project selections are being made, and funds are being spent. We will continue to encourage the fund to improve its transparency, and work closely with Transparency International (a global coalition against corruption) on this issue.

Land rehabilitation and irrigation

In collaboration with the U.S. Agency for International Development (USAID) and Kyrgyz Agro Enterprise Development (KAED), we responded to community requests for land rehabilitation, and improving irrigation at Lipenka and Ak-Dobo, respectively. The tangible outcomes achieved include bringing 720 hectares of largely barren land back into agricultural production. Cleaning out and expanding the Ak-Dobo run-off pond increased its capacity from 5,000 m^3 to 25,000 m^3 and can now support the irrigation of 527 ha of land. These projects are expected to materially improve the agricultural yields and generate additional income for local administrative budgets. As a result of the success of these projects in 2013, Kumtor has agreed to continue cooperation with KAED at two more sites in 2014.

Community investment projects

The current life of the Kumtor mine is expected to end in 2026. Given its size as a major employer, taxpayer, and purchaser, mine closure is expected to bring with it a negative economic impact in the Issyk-Kul region and across the country. In order to reduce this impact, the strategy of our community investments is to promote and develop a more diverse economy which will not be over-reliant on Kumtor. This approach would help lessen the effects of Kumtor's mine closure.

Our aim is for our community investments to generate sustainable local benefits. The overall budget of Kumtor's community development programs in 2013 was $6.8 Million (including administration costs).

We work in partnership with a number of international and local organisations to maximize the impact of our community investments. The partnerships focus mainly on the southern shores of Lake Issyk-Kul and the Issyk-Kul province. Projects are developed taking into account stakeholder input, community needs, company risks, and availability of an experienced partner that can deliver against expected outcomes.

Projects must fall into one of the following focus areas:

1. Support to business growth & diversity (especially small businesses and entrepreneurs)
2. Support to development of the agricultural sector
3. Youth and educational projects
4. Environmental protection projects

A key criterion for project selection is the principle of sustainability, which refers to the lasting effects of the project beyond the end of Kumtor's funding. If a project cannot be deemed to be sustainable and able to continue – or continue to generate benefits – beyond our funding period, then it will not be selected.

One example of a sustainable project is the leasing by Kumtor to small businesses of five transport containers, converted to insulated and cooled storage units for fruit and vegetables. The businesses buy local produce, which they can store and re-sell over a longer period.

This has proven a successful initiative benefiting both the supplying farmer and the intermediary business. We plan to lease 10 additional containers in 2014, and to also introduce solar-powered fruit driers.

Supporting businesses

We provide local business development support in a number of ways. One of the most important is through our policy of supporting local procurement and encouraging new local suppliers for goods and services, as described in the Local Procurement section.

We are aware, however, of the risk of individual suppliers becoming over dependent on business with Kumtor. We therefore work with suppliers to support them in improving business processes (such as quality management systems) and encourage them to seek additional customers apart from Kumtor.

Another important initiative is our micro-financing and credit program which supports and enables local microcredit agencies in Jeti-Oguz, Ton, and Balykchi by offering favorable lending rates for small enterprises and farming businesses. The loan rates of these programs are the lowest in Kyrgyzstan. Between 2006 and 2013 Kumtor invested more than $24.159 million, including $1 million in 2013.

In February 2013, we teamed up with the European Bank for Reconstruction and Development (EBRD) in co-hosting a successful series of business seminars at six locations around Issyk-Kul Province. These seminars reached more than 1000 men and women representing small businesses. The seminars presented the findings of our 'Business Map' of the province, a study developed in partnership with the EBRD in late 2012. The purpose of the mapping exercise was to provide an overview of which business sectors are most in demand, and which are over-served, thus helping new and existing businesses to improve their focus.

In partnership with the Japanese International Cooperation Agency (JICA), Kumtor has been sponsoring a project on the shores of Lake Issyk-Kul called 'One Village One Product.' Using an approach linking individuals into community-based organisations, we have been able to support the growth in small businesses, with particular focus on craftspeople, artisans and working women. One example is a small jam making enterprise in Karakol which, through training from JICA, has been able to adopt modern food safety standards. Goods produced through the 'One Village One Product' program are sold through shops in major cities, such as Bishkek and Karakol.

SUMMARY OF STAKEHOLDER CONCERNS

Stakeholders	Topic	Report Section Where Discussed
Kyrgyz Republic Government and Parliament	• Changing legal agreements • Claims and changes to the legislation (glaciers) • Project benefits	• President's Message • Economic Responsibility • Waste Rock and Ice • Social Responsibility
Various Commissions, Govenrment Agencies and Local Communities	• Economic benefits • Environmental impacts • Biodiversity impacts • Waste management • Waste rock management • Tailings dam displacement • Impacts on glaciers • Glacial lake outburst flood • Mine closure and funding • Dust in Barskoon valley • Claims	• President's Message • Economic Responsibility • Social Responsibility • Environmental Sections • Case Studies • Tailings Management • Waste Rock and Ice • Mine Closure
Local Communities, Youth, Vulnerable Groups	• Employment opportunities • Environmental impacts • Water resources • Community support, projects and donations	• President's Message • Social Responsibility • Local Procurement • Water Use and Treatment
Local Businesses	• Supplying goods and services	• President's Message • Economic Responsibility • Local Procurement • Social Responsibility
Employees and Contractors	• Employment conditions • Benefits • Health, safety and well-being	• President's Message • Commitment to People • Occupational Health & Safety
Conservation NGOs	• Environmental impacts • Biodiversity strategy • Mine closure	• President's Message • Environment sections • Mine Closure

Project Karagat +

Karagat is a popular blackcurrant berry in Kyrgyzstan. Kumtor has been partnering with a local NGO, AVEP, a Central Asian non-governmental and non-political organization, to develop local agriculture and promote participation of youth and women. This three-year project started in 2013 and will be supported by Kumtor with $900,000 over three years. Outcomes achieved include introducing more nutritious berries, applying a more efficient drip irrigation system, improving collection and storage, and formation of farmer groups (>700 farmers expected in 2014) for grassroots level training and production. A high profile component of the project includes the launch of a new annual berry festival. More information on AVEP and Project Karagat can be found at www.karagat.kg

Examples of three small businesses which have become Kumtor's suppliers are featured in the Local Procurement section.

Working with partners

Working with respected partners is an important part of our approach. Our international partners include the Kyrgyz Agro Enterprise Development (KAED), Flora and Fauna International (FFI) AVEP, a local NGO founded by Helvetas, a Swiss non-profit organization, the Japan International Cooperation Agency (JICA), the German Society for International Cooperation (GIZ), and Transparency International. In addition to others mentioned in this section, we have partnered with the following organizations and education institutions in a range of actions including training, supply of materials, and equipment

- Balykchy Regional Center of Development and Education
- American University of Central Asia
- Social Integration Center for Children
- National Mental Health Center
- Libraries of Baskoon, Tamga, and Tosor villages
- The 'Teplokluchhenka' Public Foundation

Targeting outcomes

For the projects we support, key performance indicators are identified during project development which allow us to monitor if the desired outcomes of a project are being achieved. Examples (depending on the original aims) are percentage decrease in local youth unemployment, average increase in monthly income of project participants, and increase in sales of agricultural products. Outcomes must be carefully selected to be measurable and realistic, and to minimize the effect of external factors

For 2014, we plan an Economic Impact Study which will also help us to better understand and communicate on the impacts our activities and support are having on the Kyrgyz economy, at both a local and national level.

YouthBank Project

We have supported the establishment of a network of YouthBanks in six areas across the Issyk-Kul province. The concept of YouthBank seeks to promote citizen participation and self-responsibility, and has been applied successfully in many other countries. YouthBanks provide an opportunity for young people to develop and implement their own ideas designed to benefit and involve local communities. Each YouthBank consists of 8 to 10 volunteers (ages 14 to 25) who have the responsibility of assessing local needs, reviewing applications from other young people, and selecting those which should receive funding. In 2013, the YouthBank program generated 82 grant applications, of which 44 were approved. These were all designed to address basic social and community infrastructure needs. Project examples include, a mini-football field, bicycles for local government transportation, road repairs, kindergarten equipment, office and internet equipment, and language and cooking classes.

Kumtor's partnership with the Eurasia Foundation of Central Asia to develop this project over a two year period is programed to run initially 2 years, with support of about $250,000 per year.

Donations and charitable support

In addition to our sustainable community development programs, we provide one-off donations, usually in form of in kind equipment or services. We receive many requests for support from across the country. Donation requests and proposals are reviewed on a monthly basis by our donations committee and may be supported as long as they are:

1. For local community groups or organisations, not individuals or companies
2. Not for travel or medical expenses
3. Not for funding of private businesses
4. Not for religious or political purposes
5. Not for government related costs

In order to ensure a transparent and strictly governed donation process, a donation committee, consisting of 6 managing members, meets once a month to review all applications and approve those meeting the criteria. Our donations are not made in cash but rather through goods or equipment procured by Kumtor and provided to the recipients. Follow up monitoring visits ensure that the donations are used for the intended purpose.

A selection of examples of one-off donations during 2013 are

- Sports equipment for Balykchi Taekwondo Federation (through Youth Committee)
- Office equipment, clocks, MP3 players, and audiobooks to the Society of the Deaf and Blind
- Furniture and audiovisual equipment to the Nadezhda Krupskaya school
- Books to the library at Tosor, Jety-Oguz district
- Musical instruments and furniture to Tamga music school
- Sports equipment, park benches, and musical equipment to the Jety-Oguz Youth Committee, to improve district park and for a new skating rink.
- Sports equipment, furniture, and office equipment to the Kaji-Say Youth Committee for gym renovation
- Provision of life-saving power generator to the Karakol Oblast hospital
- Since 2010, Kumtor has provided more than one million litres of subsidized fuel for farmers in the Jety-Oguz Region
- Equipment for weightlifting gym at Kol-Tor village
- Renovation of the Kaji-Sai sports hall
- Purchase of gifts to World War II victims on Victory Day
- Purchase of gifts for International Day for the Protection of Children

Kumtor mine employees have also been involved and have supported a number of activities, such as supporting orphanages and other social causes.

Grievances and Road Blocks

As the major company operating in the Kyrgyz Republic, Kumtor receives complaints and requests ranging from dust related to truck traffic, to requests for jobs and building hospitals or roads.

Kumtor also experienced temporary road blocks in 2012 and 2013. Protests, which included up to 1,000 demonstrators, and typically involved demands for a greater distribution of the mine's profits and benefits. The road blocks lasted several days at a time, but each reached a successful settlement. As evidenced by actions taken by local prosecutors and discussed in the Kyrgyz media, some of the road blocks appear to have been linked to fruitless extortion attempts. Overall, we note that the frequency and scale of road blocks have been diminishing.

In 2013, we deployed a new IT-supported management system, Kumtor Connect, to further improve our approach and recording of stakeholder engagement, governance of community investment spending, and managing grievance and commitments.

GLOSSARY AND ABBREVIATIONS

ARD – Acid rock drainage is a term used to describe the outflow of mine waters that have been acidified by contact and exposure to rocks, reducing the pH levels which, in turn, can release and mobilize metals into the environment

Biodiversity – Short for "biological diversity," the variability among living organisms and the ecosystems of which they are part. This includes diversity within species, between species, and within ecosystems

Boroo Gold Company – The name of Centerra's operating entity in Mongolia

Capacity Building – Activities and initiatives that strengthen the knowledge and skills of individuals and improve structure and processes such that communities can grow and develop in a sustainable way

CCP – Conceptual Closure Plan (see also Closure Plan)

Closure Plan – A plan designed to ensure public safety and restore the physical, chemical, and biological quality of the area disturbed by mining to an acceptable level. It must aim at leaving the area in such a way that the rehabilitated property does not become a burden to society after the mining operation is over

Code of Ethics – A policy that sets out Centerra's dedication to upholding high moral and ethical standards and specifies basic business conduct and behavior

Collective Bargaining Agreement – An agreement between a company and one or more workers' organizations or, in absence of such organizations, the representatives of the workers duly elected and authorized by them in accordance with national laws and regulations

Corporate Responsibility – A form of corporate self-regulation integrated into a business model where companies embrace the responsibility for the impact of their activities on the environment, consumers, employees, communities, and stakeholders

CRO – Community Relations Officers dedicated to developing and managing fruitful relationship between Kumtor and local communities and stakeholders

Currencies – Kyrgyz som (KGS): 2013 exchange rate 1 USD = 48.44 KGS (2013 average)

Cyanide – A chemical compound containing carbon and nitrogen used to dissolve gold from ore

EBRD – European Bank for Reconstruction and Development

Economic Value Retained – Component of GRI Economic Indicator EC1 and calculated as economic value generated less economic value distributed (see also www.global reporting.org for further details)

masl – Metres above sea level

EMAP – Environmental Management Action Plan

EITI – Extractive Industries Transparency Initiative

Engagement – A process of contact, dialogue, and interaction that ensures all parties of interest are informed and participate in decisions that affect their future

Environmental Assessment – The process of identifying, predicting, evaluating, and mitigating the biophysical, social, and other relevant effects of development proposals prior to making major decisions and commitments

Environmental Incident – An event that has caused or could cause environmental harm. Ranges in scale and severity from Type I (Insignificant) to Type V (Catastrophic)

Environmental Management System (EMS) – A framework developed by an organization to help improve its environmental performance by taking environmental considerations into account when making decisions and managing risks

ETP – Effluent treatment plant

GHG – Greenhouse gas - Emissions commonly reported as CO^2 equivalents (CO^2e)

GJ – Gigajoules is equal to one billion (10^9) joules

Global Reporting Initiative (GRI) – A global network-based organization that has developed a widely used sustainability reporting framework consisting of principles and indicators to measure and report on an organization's economic, environmental, and social performance. See also www.globalreporting.org for further details and definitions of the GRI framework and indicators

Governance – A set of processes, customs, policies, laws, and institutions affecting the way a company is directed, administered, or controlled

Hazard – A source of potential damage, harm, or adverse effects on something or someone under certain conditions at work

ICMI – International Cyanide Management Institute

IFC – International Finance Corporation, a member of the World Bank Group

IFRIC 20 - International Financial Reporting Interpretations Committee / Stripping Costs in the Production Phase of a Surface Mine

ISO – International Organization for Standardization, the world's largest developer of voluntary International Standards

JSC - Joint Stock Company

km – Kilometres / Kilometers

KOC – Kumtor Operating Company

Kumtor Gold Company (KGC) – The name of Centerra's operating entity in the Kyrgyz Republic

Kyrgyz Som – Kyrgyz som (KGS): See 'Currencies' for exchange rate

Liter / Litre (International System unit of volume)

Local Suppliers – Suppliers based in the same country as the operation that they supply

LTI – Loss time injury

MAC – Maximum allowable concentration standards apply at Kumtor's surface water quality compliance point (referred to as W.1.5.1) downstream of the Kumtor mine

MAD – Maximum allowable discharge standards apply to treated effluent discharges from the effluent treatment plant and the sewage treatment plant

MAE – Maximum allowable emission

Materiality – The threshold at which an economic, environmental or social issue or indicator becomes sufficiently important that it warrants disclosure in the corporate responsibility report

Meter / Metre – (International System unit of length)

Millimeter / Millimetre (International System unit of length, 1000th of a metre)

Near Miss – An identified hazard that could lead to an HPI or injury

NGO – Non-Governmental Organization, a not-for-profit group largely funded by private contributions and operating outside of institutionalized government or political structures. NGOs focus on environmental, social, and economic issues at local, regional, national and international levels

Oblast - Administrative division, which in English translates as province or region

Open Pit – A mine where the minerals are mined entirely from the surface

Ore – A naturally occurring solid material (usually rock) from which a metal or valuable mineral can be extracted profitably.

QA/QC – Quality assurance and quality control program for collection, handling, and analysis of samples to ensure a consistent approach and accurate results

Reclamation – The restoration of a site after the completion of mining or exploration activity

Recordable Injury Frequency (RIF) – A measurement of the percentage of people seriously hurt in a given year, including fatal, lost-time, and medical aid injuries. RIF = [(lost-time injuries + medical aid injuries) X 200,000] / hours worked

Responsible Mining – A comprehensive and transparent minerals activity that respects the rights of all stakeholders, especially those of local people, operates safely, protects the environment, minimizes the impact on human health, embraces the best international practices, and upholds the rule of law while generating benefits for host countries. See also Corporate Responsibility

RIF – See Recordable Injury Frequency

SAEL – Stewart Assay and Environmental Laboratories LLC (part of the ALS international group of laboratories), located in Kara-Balta, Kyrgyz Republic

SCER – Sary Chat Ertash Reserve, a strictly protected Zapovednik neighboring Kumtor Concession. Sometimes referred to as SCEZ, with Zapovednik replacing Reserve. Zapovednik is a work of Russian origin meaning protected wilderness.

Significant Spill – Any spill that is Level III or higher, as defined by Centerra's incident reporting system, Level III spills are significant enough that they must be reported to Centerra's Board of Directors

SME – Small or medium sized enterprise, referring usually to small businesses. Definitions vary, but typically they have less than 50 employees

Stakeholder – Any person or group of people who may be affected in a good or bad way by the financial, safety, environmental, and social aspects of our operations and those who have an interest in or an influence on our activities

Stakeholder Engagement – The communication with stakeholders, through various means, to find out what social and environmental issues matter most to them, with a view to a company improving decision-making and actions to address these concerns

STP – Sewage Treatment Plant

Sustainable Development – As used in the report Our Common Future (also known as the Brundtland Report): "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." See also Corporate Responsibility. Kumtor develops mineral deposits in a manner that does not restrict communities' efforts to sustain themselves and strives to catalyze economic activity that promotes long-term sustainability among our communities and their surroundings

Sustainability – An approach to decision-making that integrates economic, environmental, and social considerations. See also Corporate Responsibility

Tailings – The material that remains after recoverable metals or minerals of economic interest have been removed from ore through milling

Threshold Limit Values – Maximum allowable concentration or discharge standards

TMF – The Tailings Management Facility is the combination of infrastructure to hold and manage semi-liquid tailings so as to avoid negative health and environmental impacts, consisting of delivery infrastructure, storage ponds, holding dam, water and waste treatment facilities, and discharge facilities for treated effluent

TSP – Total suspended particulates

WTP – Water Treatment Plant

APPENDIX

Environmental Monitoring Data 2013

Appendix Contents

Monthly Average Dust (TSP) **Concentrations 2013** (micrograms/m^3)

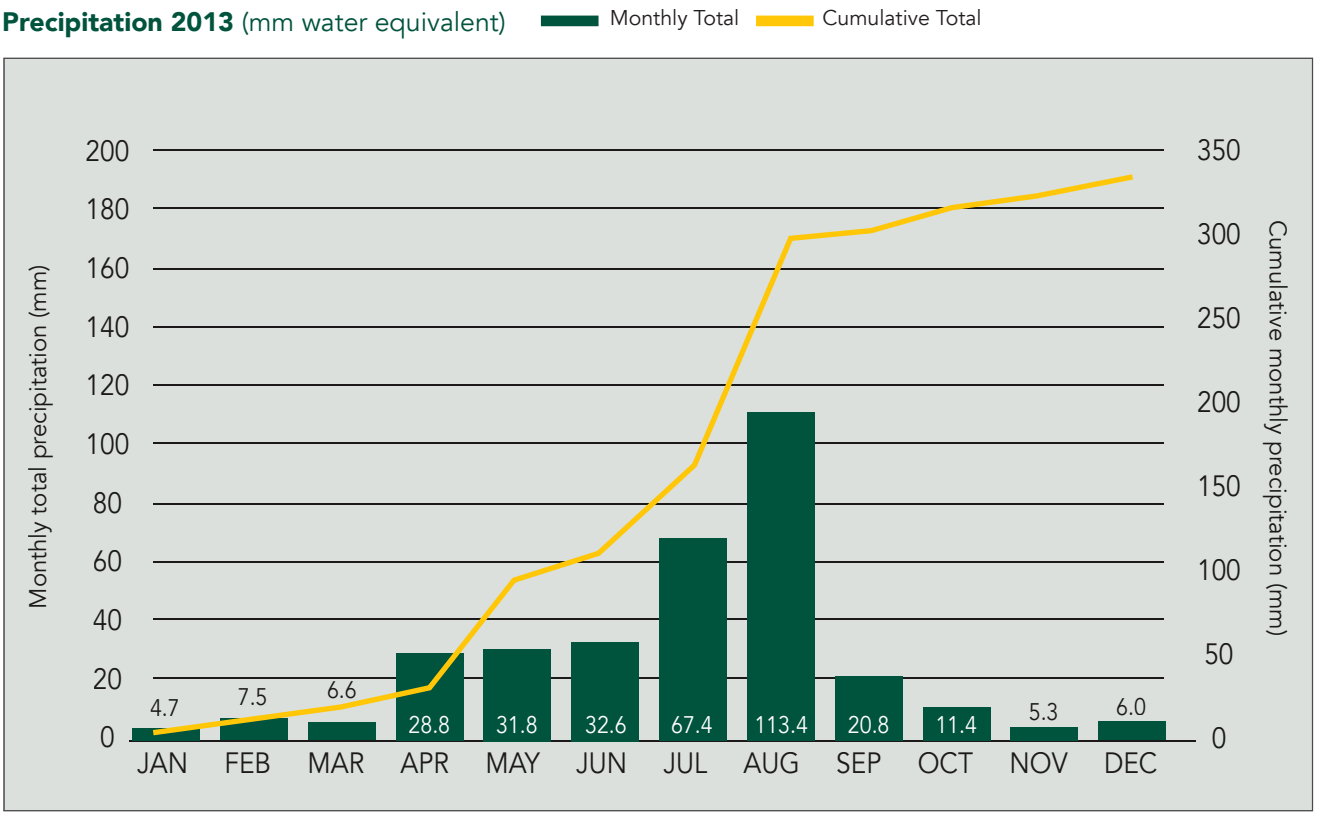
Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A1.1	121	41	71	125	43	114	20	30	53	67	69	36
A1.2	262	274	96	137	57	70	39	32	66	108	213	79
A1.3	113	33	81	109	33	54	29	18	37	75	48	25
A1.4	66	69	107	143	43	90	53	46	80	128	102	62
A1.5	21	40	66	122	23	144	161	93	153	131	134	38
A1.6	22	56	165	62	17	184	11	24	51	34	41	10

Metals and Radio-nuclide in Dust (TSP) **at Kumtor Mine 2013**

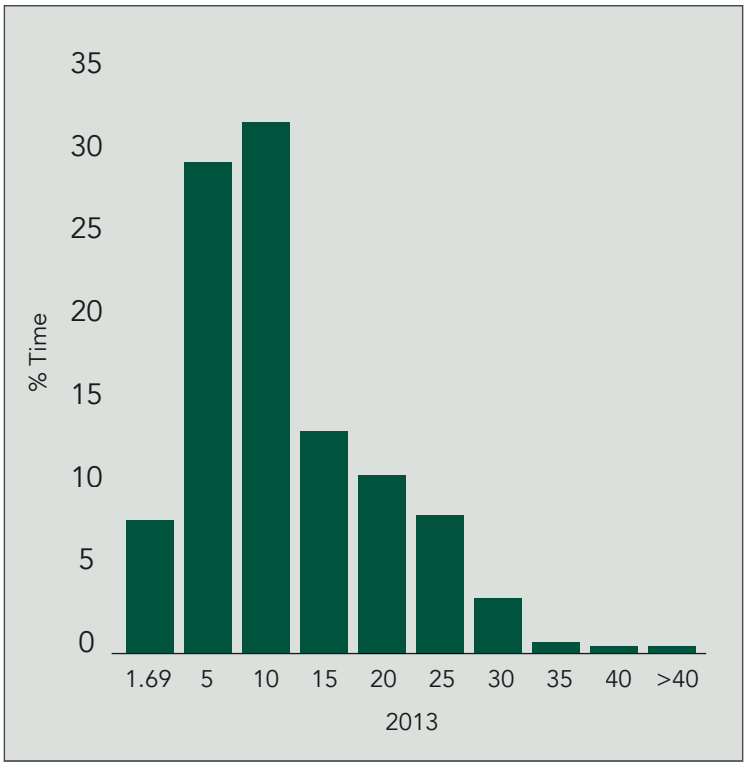
Station	CN (ng/m^3)	As (ng/m^3)	Ni (ng/m^3)	Se (ng/m^3)	S[1] (ng/m^3)	U (ng/m^3)	Zn (ng/m^3)	Pb-210 (mBq/m^3)	Ra-226 (mBq/m^3)	Sr-90 (mBq/m^3)
A1.1	0.07	0.80	1.80	0.02	97.6	0.31	142.24	0.06	0.07	0.03
A1.2	0.07	1.20	2.60	0.04	186.9	0.35	67.43	0.089	0.007	0.04
A1.3	0.28	0.80	1.80	0.03	94.3	0.23	10.41	0.092	0.004	0.03
A1.4	0.08	1.10	2.20	0.04	180.1	0.38	65.87	0.111	0.007	0.04
A1.5	0.01	0.60	1.70	0.02	138.3	0.22	130.14	0.055	0.004	0.03
A1.6	0.04	3.40	6.90	0.12	285.6	1.07	346.26	0.43	0.007	0.13

NOTE | [1] No TLV for elemental S, therefore the TLV for SO^2 is used and adjusted by molar ratio. [2] ACGIH Threshold Limit values for non-radioactive elements in ng/m^3. KBB ICRP Derived air concentrations for radionuclides in mBq/m^3 except for U in ng/m^3. n.s.- no standard.

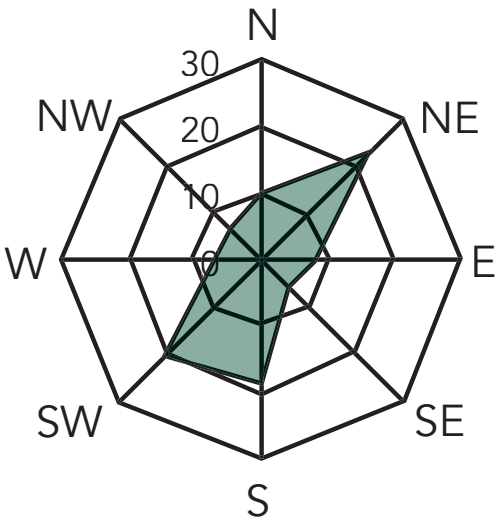
Precipitation 2013 (mm water equivalent)



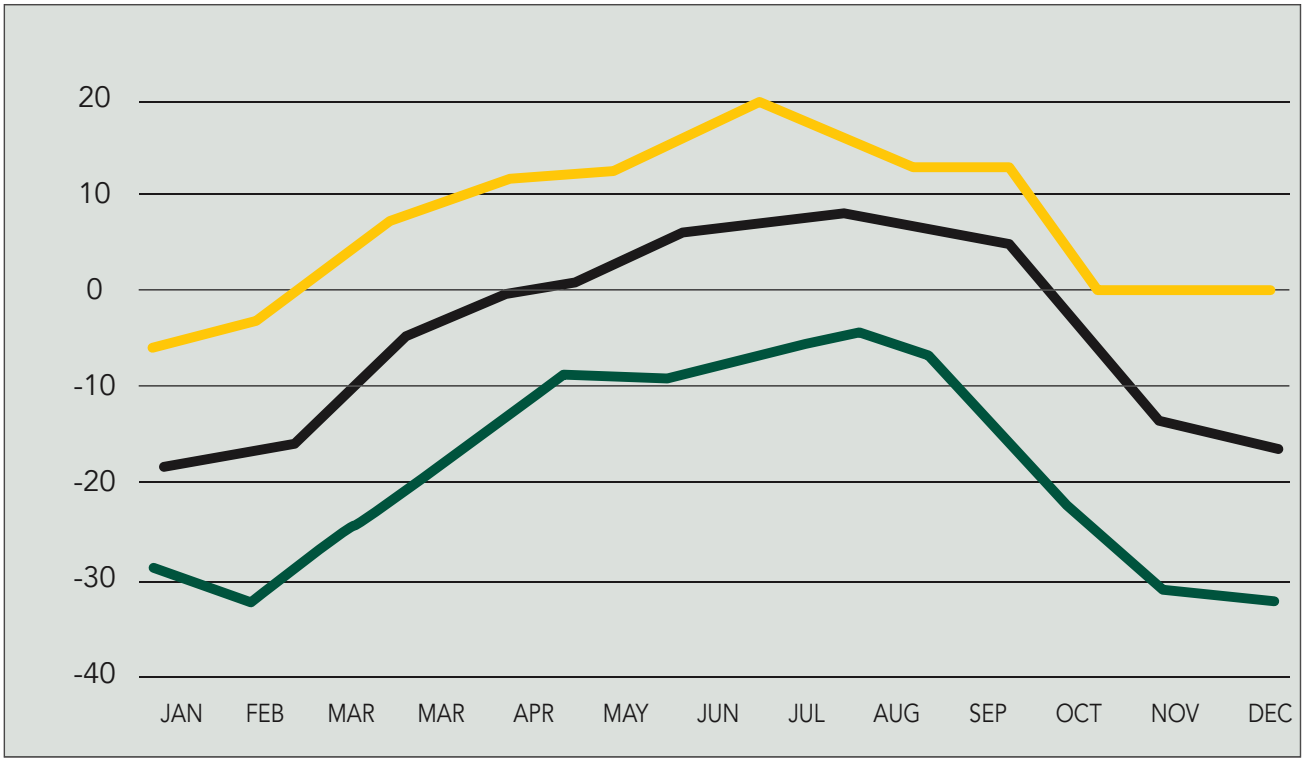
Wind Speed and Direction 2013 (km/hour)



Distribution of Wind Direction 2013 (%)



Average Monthly Temperatures 2013



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MINIMUM	-28.8	-32.6	-22.7	-16	-8.8	-9.5	-5	-3.9	-8.3	-21.7	-30.5	-31.7
MAXIMUM	-4.5	-3.4	5.7	9.8	12.1	16.1	19.1	16.3	13.5	13.3	-0.6	-0.2
AVERAGE	-18.3	-17	-6.8	-3.1	0	3.7	5.1	5.1	2.6	-2.5	-13.6	-16.9

Kumtor Weather Station 2013 Summary

2013		HOURLY AVERAGE READINGS FOR 2012										AVERAGE 5 SECOND READINGS			
					TEMPERATURE, °C										
		W. Spd. 10 m, km/h	W. dir. deg. true N	W. Spd. 0.5 m, km/h	Avg./h	Max., 5 s.	Min., 5 s.	Re. hum., %	Dew.point, °C	Solar rad., KW/m^3	hr./rdg. Total precip, mm	Temp °C	Rel. hum., %	Dew Point, °C	Barom. press., mbar
JAN	max	36.0	358.8	20.9	-8.0	-4.5	-8.7	89.8	-12.7	0.58		-7.2	89.9	-12.9	656.0
	min	0.2	0.3	0.0	-27.6	-26.3	-28.8	22.6	-37.6	0.002		-27.0	23.9	-37.2	642.7
	avg	6.7	24.7	4.6	-18.3	-17.3	-19.4	62.8	-25.8	0.11		-18.4	62.8	-25.8	650.4
	tot										4.7				
FEB	max	31.6	359.6	21.8	-5.6	-3.4	-6.4	91.5	-9.9	0.70		-5.5	92.7	-10.0	659.4
	min	0.0	0.3	0.0	-30.5	-29.3	-32.7	20.7	-42.2	0.002		-29.9	19.1	-42.0	645.0
	avg	7.5	127.7	5.2	-17.0	-15.7	-18.2	66.2	-23.7	0.15		-17.0	66.1	-23.7	650.8
	tot										7.5				
MAR	max	35.5	358.8	24.1	4.3	5.7	4.0	94.7	-4.6	0.86		4.1	94.8	-4.6	660.5
	min	0.0	0.0	0.0	-21.3	-19.9	-22.7	17.0	-27.6	0.002		-20.9	17.5	-27.5	650.0
	avg	8.9	167.7	6.0	-6.8	-5.9	-7.8	63.0	-13.3	0.20		-6.8	62.9	-13.3	655.5
	tot										6.6				
APR	max	38.3	359.3	24.5	8.9	9.8	8.4	98.9	-1.1	0.97		9.4	98.9	-1.2	661.9
	min	0.15	1.0	0.0	-15.7	-15.3	-16.0	16.5	-21.3	0.002		-15.7	17.6	-20.3	647.7
	avg	10.4	190.3	6.5	-3.1	-2.3	-3.8	63.8	-9.6	0.24		-3.1	63.9	-9.6	656.5
	tot										28.8				
MAY	max	48.1	359.8	27.3	11.7	21.1	10.8	99.9	0.7	1.07		11.39	99,90	0.83	662.4
	min	0.2	0.0	0.00	-8.4	-8.1	-8.8	21.4	-14.4	0.002		-8.29	22.57	-14.10	653.3
	avg	11.9	188.1	6.4	0.0	0.8	-0.7	68.8	-5.2	0.25		0.04	68.58	-5.25	658.2
	tot										31.8				
JUN	max	41.48	360.0	26.7	14.8	16.1	14.2	99.2	4.5	1.08		5.7	99.1	4.2	663.5
	min	0.27	0.56	0.00	-8.9	-8.3	-9.5	15.2	-12.6	0.002		-8.6	14.5	-13.2	651.2
	avg	13.49	192.29	6.8	3.7	4.6	2.8	64.6	-2.6	0.27		3.7	64.5	-2.6	658.1
	tot										32.6				
JUL	max	39.9	359.5	23.4	18.4	19.1	17.8	99.6	4.3	1.12		18.3	99.6	4.3	663.4
	min	0.1	0.5	0.0	-4.3	-3.4	-5.0	14.4	-6.4	0.002		-4.0	14.6	-6.4	654.4
	avg	11.6	182.0	7.2	5.1	5.9	4.2	66.3	-1.0	0.26		5.1	66.3	-1.0	658.7
	tot										67.4				
AUG	max	44.1	359.9	24.15	15.87	16.31	15.47	99.40	6.31	1.08		16.0	99.4	6.4	663.5
	min	0.7	0.2	0.00	-3.10	-2.49	-3.83	13.01	-15.81	0.00		-2.7	13.6	-15.1	656.9
	avg	12.5	172.1	6.0	5.13	5.90	4.37	69.38	-0.27	0.21		5.1	69.4	-0.3	660.2
	tot										113.4				
SEP	max	35.4	358.5	21.8	13.1	13.5	12.7	99.9	1.0	0.96		13.0	99.9	0.9	664.5
	min	0.0	1.5	0.00	-7.5	-6.5	-8.3	11.5	-17.8	0.002		-7.4	11.6	-16.4	653.7
	avg	10.6	172.1	4.0	2.6	3.5	1.8	58.8	-5.1	0.22		2.6	58.7	-5.1	660.6
	tot										20.8				
OCT	max	38.5	359.8	0.0	12.6	13.3	12.1	97.1	-2.6	0.76		12.5	96.9	-2.7	665.0
	min	0.0	0.3	0.00	-20.2	-18.4	-21.7	13.0	-24.6	0.002		-20.2	13.0	-24.8	653.7
	avg	9.2	159.2	0.0	-2.5	-1.6	-3.3	56.1	-10.9	0.17		-2.5	56.1	-10.9	660.6
	tot										11.4				
NOV	max	29.8	358.8	0.0	-2.1	-0.6	-2.6	90.5	-9.7	0.62		61.0	90.1	-10.1	661.7
	min	0.1	0.1	0.00	-29.4	-28.8	-30.5	23.0	-38.0	0.002		-29.3	23.9	-39.2	649.7
	avg	6.6	125.8	0.0	-13.6	-12.4	-14.7	61.2	-21.0	0.11		-13.5	61.2	-23.9	657.4
	tot										5.3				
DEC	max	27.1	359.2	0.0	-1.6	-0.2	-2.3	91.8	-9.9	0.47		-1.8	92.0	-9.8	659.6
	min	0.4	0.5	0.00	-30.9	-30.1	-31.7	27.2	-39.5	0.002		-30.8	26.7	-39.5	648.3
	avg	6.1	114.2	0.0	-16.9	-15.6	-18.1	64.4	-23.9	0.08		-16.9	64.4	-23.9	653.2
	tot										6.0				
YEAR	max	48.1	360.0	27.3	18.4	19.1	17.8	99.9	6.3	1.12		61.0	99.9	6.4	665.0
	min	0.0	0.00	0.0	-30.9	-30.1	-32.7	11.5	-42.2	0.0		-30.8	11.6	-42.0	642.7
	avg	15.6	173.2	7.4	-5.2	-4.2	-6.0	59.3	-13.2	0.35		-3.3	59.4	-13.1	656.3
	tot										336.3				

Water Quality Data 2013

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W1.1													
Field data													
Temp	deg C				9.6	3.6	4.3		35		5.5		6.8
Cond-F	mS/cm				0.670	0.624	0.036		0.080		0.065		0.984
pH-F	pH unit				8.1	8.2	7.6		6.4		8.1		8.1
Major Constituents													
Ca	mg/L	17.8		16.6	15.2	11.8	17.2	25.3	16.7	20.5	16.8		20.3
Cl	mg/L							0.6	0.7	0.5	0.5		0.9
CO_3	mg/L	1		1	1	1	1	1	1	1	1		1
HCO_3	mg/L	43		43	40	44	36	40	41	41	40		45
K	mg/L	1.83		1.50	1.61	1.60	1.95	3.72	2.56	3.03	2.42		1.96
Mg	mg/L	3.24		3.01	2.74	2.60	3.33	5.91	3.65	4.64	3.54		3.74
Na	mg/L	2.01		1.66	1.71	1.60	1.83	3.14	2.37	2.75	2.41		2.08
SO_4	mg/L	16		17	16	16	14	16	15	18	16		19
T-Hardness	mg/L	50		50	49	49	44	50	47	47	47		60
T-Alkalinity	mg/L	35.2		35.4	33.0	35.8	30.0	32.6	33.3	34.0	32.6		36.8
Total Metals													
Ag	mg/L					0.003		0.003	0.003	0.003	0.003		
Al	mg/L					0.34	0.54	2.9	6.3	3.6	2.0		0.6
As	mg/L					0.005	0.001	0.001	0.0015	0.001	0.002		0.001
B	mg/L												
Ba	mg/L					0.025		0.065	0.15	0.085	0.069		0.028
Be	mg/L					0.0002		0.0002	0.0006	0.0002	0.0002		0.0002
Bi	mg/L												
Cd	mg/L					0.0003		0.0003	0.0003	0.0003	0.0003		0.0003
Co	mg/L					0.004		0.004	0.004	0.004	0.004		0.004
Cr	mg/L					0.008		0.008	0.008	0.008	0.008		0.008
Cu	mg/L					0.005	0.005	0.005	0.005	0.005	0.005		0.005
F	mg/L												
Fe	mg/L					0.409	0.512	3.66	4.56	3.74	1.98		0.540
Hg	mg/L												
Mn	mg/L					0.01	0.02	0.083	0.11	0.091	0.057		0.019
Mo	mg/L					0.004	0.004	0.004	0.004	0.004	0.004		0.004
Ni	mg/L					0.005	0.005	0.005	0.005	0.005	0.013		0.005
Pb	mg/L					0.006		0.002	0.0056	0.003	0.002		0.002
Sb	mg/L					0.002		0.001	0.001	0.001	0.001		0.001
Se	mg/L					0.001		0.00001	0.001	0.001	0.001		0.001
Si	mg/L												
V	mg/L					0.006		0.006	0.01	0.006	0.006		0.006
Zn	mg/L	0.005		0.003	0.002	0.014	0.005	0.016	0.026	0.021	0.01		0.027
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L	0.04		0.04	0.04	0.04	0.04	0.04	0.06	0.14	0.04		0.06
NO_2-N	mg/L	0.007		0.001	0.001	0.001	0.003	0.002	0.003	0.001	0.001		0.001
NO_3-N	mg/L	0.3		0.3	0.3	0.3	0.2	0.3	0.15	0.2	0.2		0.6
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU				17	16	20	85	210	120	110		20
TDS	mg/L	94	71	69	68	61	52	71	88	104	86		48
TSS	mg/L	28	32	20	15	16	17	25	126	28	46		1
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L							0.005	0.008	0.007	0.005		0.005
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W1.3													
Field data													
Temp	deg C				1	3.5	11.4	6.9	5.7	4.9	4.7		
Cond-F	mS/cm				0.625	0.089	0.104	0.980	0.120	0.661	1.40		
pH-F	pH unit				8.8	8.3	7.5	6.1	7.6	8.1	8.7		
Major Constituents													
Ca	mg/L								40	18	32		
Cl	mg/L								1.8	1.0	1.6		
CO_3	mg/L								1	1	1		
HCO_3	mg/L								65	49	52		
K	mg/L								2.28	2.01	3.21		
Mg	mg/L				33.3	4.02	7.79	7.01	13.56	5.19	8.93		
Na	mg/L				5.89	1.95	2.70	2.33	3.08	2.23	3.83		
SO_4	mg/L				148	17	33	31	74	33	36		
T-Hardness	mg/L								133	70	90		
T-Alkalinity	mg/L								52.7	39.8	43.0		
Total Metals													
Ag	mg/L							0.003	0.003	0.003	0.003		
Al	mg/L					0.18	0.75	2.1	1.9	7.5	1.7		
As	mg/L							0.001	0.0015	0.001	0.001		
B	mg/L												
Ba	mg/L							0.057	0.076	0.18	0.058		
Be	mg/L							0.0002	0.0002	0.0002	0.0002		
Bi	mg/L												
Cd	mg/L							0.0003	0.0003	0.0005	0.0003		
Co	mg/L							0.004	0.004	0.004	0.004		
Cr	mg/L							0.008	0.008	0.008	0.008		
Cu	mg/L					0.007	0.005	0.005	0.005	0.005	0.005		
F	mg/L												
Fe	mg/L					0.185	1.19	2.78	2.31	5.60	1.53		
Hg	mg/L												
Mn	mg/L					0.02	0.036	0.06	0.087	0.12	0.044		
Mo	mg/L					0.004	0.004	0.004	0.004	0.004	0.004		
Ni	mg/L					0.005	0.005	0.025	0.005	0.005	0.005		
Pb	mg/L							0.002	0.0046	0.003	0.002		
Sb	mg/L							0.001	0.001	0.001	0.001		
Se	mg/L							0.001	0.0012	0.006	0.001		
Si	mg/L												
V	mg/L							0.006	0.006	0.009	0.006		
Zn	mg/L				0.002	0.01	0.001	0.012	0.016	0.024	0.018		
Nutrients													
Un-ionized NH_3	mg/L				0.0025	0.001	0.0002		0.0003	0.0007	0.0025		
NH_3-N	mg/L				0.04	0.04	0.06	0.04	0.04	0.04	0.04		
NO_2-N	mg/L				0.028	0.003	0.004	0.003	0.002	0.003	0.001		
NO_3-N	mg/L				0.5	0.1	0.3	0.5	1.2	0.5	0.3		
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU				0.55	15	24	65	150	130	36		
TDS	mg/L				647	98	111	140	190	107	126		
TSS	mg/L				6.5	28	33	64	115	108	44		
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L				0.005	0.005	0.006	0.005	0.005	0.005	0.005		
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W1.4													
Field data													
Temp	deg C				0.1	6.4	11	6.3	6.5				
Cond-F	mS/cm				0.218	0.195	0.096	1.08	0.240				
pH-F	pH unit				8.3	8.2	7.8	7.7	6.7				
Major Constituents													
Ca	mg/L					28.5	28.2	25.8		47.3	47.5		
Cl	mg/L						1.3			2.5	2.5		
CO_3	mg/L					1	1			1	1		
HCO_3	mg/L					88	56			54	54		
K	mg/L					2.00	2.04	1.89		7.57	8.28		
Mg	mg/L				33.0	14.6	7.74	7.50		7.82	6.97		
Na	mg/L				5.82	3.24	2.60	2.29		35.6	53.2		
SO_4	mg/L				148	79.5		40.0		150	172		
T-Hardness	mg/L					100	82			130	140		
T-Alkalinity	mg/L					72.5	45.0			44.4	44.5		
Total Metals													
Ag	mg/L					0.003	0.003	0.003		0.003	0.003		
Al	mg/L					0.93	2.9	3.5		6.2	1.8		
As	mg/L					0.001	0.003	0.002		0.002			
B	mg/L												
Ba	mg/L					0.049	0.078	0.061		0.14	0.073		
Be	mg/L					0.0002	0.0002	0.0002		0.0002	0.0002		
Bi	mg/L												
Cd	mg/L					0.0003	0.0003	0.0003		0.0003	0.0003		
Co	mg/L					0.004	0.004	0.004		0.004	0.004		
Cr	mg/L					0.008	0.008	0.008		0.008	0.008		
Cu	mg/L					0.0065	0.007	0.006		0.015	0.021		
F	mg/L												
Fe	mg/L					1.46	4.21	2.67		4.47	1.88		
Hg	mg/L												
Mn	mg/L					0.093	0.12	0.06		0.098	0.063		
Mo	mg/L					0.011	0.004	0.005		0.021	0.023		
Ni	mg/L					0.006	0.013	0.015		0.005	0.01		
Pb	mg/L					0.004	0.004	0.003		0.003	0.004		
Sb	mg/L					0.003	0.001	0.001		0.001	0.001		
Se	mg/L					0.001	0.001	0.001		0.002	0.002		
Si	mg/L												
V	mg/L					0.006	0.006	0.006		0.007	0.006		
Zn	mg/L				0.001	0.01	0.013	0.008		0.018	0.076		
Nutrients													
Un-ionized NH_3	mg/L				0.0008	0.0011	0.0003	0.0003		0.0011	0.0013		
NH_3-N	mg/L				0.04	0.04	0.04	0.04		1.3	1.5		
NO_2-N	mg/L				0.0010	0.0025	0.0060	0.0030		0.023	0.012		
NO_3-N	mg/L				0.50	0.70	0.40	0.80		1.6	1.4		
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU				5.5	75	105	6		110	65		
TDS	mg/L				314	195	133	125	769	265	337		
TSS	mg/L				6.5	84	145	59	124	95	42		
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L				0.005	0.005	0.005	0.005		0.024	0.006		
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W1.5.1													
Field data													
Temp	deg C				0.73	2.5	7.2	7.9	8.5	6.2	0.97		
Cond-F	mS/cm				0.484	0.444	0.258	0.227	0.241	0.436	0.467		
pH-F	pH unit				8.4	8.1	7.9	8.2	8.0	7.6	8.2		
Major Constituents													
Ca	mg/L				101	64.0	42.7	41.2	49.6	70.5	86.2	112	
Cl	mg/L				11.0	14.1	3.05	2.20	2.93	4.96	5.98	7.35	
CO_3	mg/L				1	1.25	1.25	1.17	1.11	1.2	1	1	
HCO_3	mg/L				130	95.5	59.5	61.2	60.2	154	84.1	110	
K	mg/L				5.80	2.90	2.37	2.56	5.43	9.14	12.4	13.8	
Mg	mg/L				60.3	63.5	35.4	22.7	19.8	25.3	26.9	42.4	
Na	mg/L				8.11	5.85	3.33	3.45	20.6	39.2	76.4	81.1	
SO_4	mg/L				284	286	146	112	150	251	362	425	
T-Hardness	mg/L				650	232	198	172	180	258	330	425	
T-Alkalinity	mg/L				104	59.1	51.3	51.6	50.1	57.0	69.3	89.9	
Total Metals													
Ag	mg/L					0.003	0.0023	0.0024	0.0026	0.0018	0.0030		
Al	mg/L				0.54	0.61	1.0	1.9	5.2	4.0	1.2	0.38	
As	mg/L					0.001	0.0012	0.0015	0.0025	0.0021	0.0015	0.001	
B	mg/L												
Ba	mg/L					0.044	0.038	0.056	0.13	0.098	0.054	0.038	
Be	mg/L					0.0002	0.00018	0.00018	0.00027	0.00012	0.00019	0.0002	
Bi	mg/L												
Cd	mg/L					0.0003	0.00024	0.00024	0.00025	0.00019	0.00028	0.0003	
Co	mg/L					0.0050	0.0042	0.0036	0.0052	0.0044	0.0040	0.0040	
Cr	mg/L					0.008	0.0066	0.0068	0.0086	0.006	0.0076	0.008	
Cu	mg/L				0.005	0.005	0.0055	0.0046	0.013	0.033	0.031	0.015	
F	mg/L					0.23		0.21		0.17	0.20		
Fe	mg/L				1.11	1.38	2.04	3.20	7.15	4.31	1.23	0.349	
Hg	mg/L												
Mn	mg/L				0.125	0.463	0.223	0.159	0.233	0.190	0.0373	0.0137	
Mo	mg/L				0.005	0.0045	0.011	0.0042	0.013	0.026	0.037	0.037	
Ni	mg/L				0.012	0.034	0.020	0.010	0.014	0.016	0.010	0.012	
Pb	mg/L					0.0030	0.0020	0.0026	0.0054	0.0031	0.0024	0.0020	
Sb	mg/L					0.001	0.00083	0.0011	0.0011	0.00094	0.0014	0.0018	
Se	mg/L					0.001	0.001	0.00092	0.0010	0.0019	0.0025	0.0027	
Si	mg/L												
V	mg/L					0.0060	0.0048	0.0053	0.0089	0.0059	0.0059	0.0060	
Zn	mg/L				0.033	0.011	0.013	0.014	0.027	0.017	0.015	0.0057	
Nutrients													
Un-ionized NH_3	mg/L				0.036	0.0093	0.0026	0.013	0.016	0.022	0.061	0.062	
NH_3-N	mg/L				0.88	0.32	0.26	0.30	0.84	2.0	2.8	2.6	
NO_2-N	mg/L				0.0037	0.077	0.038	0.068	0.038	0.073	0.036	0.038	
NO_3-N	mg/L				8.13	3.34	1.88	2.15	2.11	4.06	5.96	8.28	
T-PO_4	mg/L					0.02	0.09	0.059	0.11		0.065	0.055	0.094
TKN	mg/L								7.86	9.16			
Solids													
Turb-L	NTU				16	34	48	50	157	103	36	4.4	
TDS	mg/L				648	540	288	238	299	412	659	783	
TSS	mg/L				15	52	79	64	248	101	35	4.0	
Trace Constituents													
CN-F	mg/L				0.005	0.0043	0.005	0.0060	0.0057	0.0063	0.005	0.005	
CN-T	mg/L				0.005	0.0047	0.007	0.0097	0.019	0.102	0.026	0.026	
CN-WAD	mg/L				0.005	0.0043	0.005	0.0052	0.0054	0.0072	0.0097	0.0085	

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W1.6													
Field data													
Temp	deg C				0.3	2.5		5.7		8.2			
Cond-F	mS/cm				0.564	0.474		0.204		0.441			
pH-F	pH unit				8.9	7.9		7.4		8.2			
Major Constituents													
Ca	mg/L							50.1		78.5			
Cl	mg/L							3.1		7			
CO_3	mg/L							1		1			
HCO_3	mg/L							74		88			
K	mg/L							2.34		9.73			
Mg	mg/L							24.0		27.2			
Na	mg/L							3.38		50.7			
SO_4	mg/L				440								
T-Hardness	mg/L							170		300			
T-Alkalinity	mg/L							61		73			
Total Metals													
Ag	mg/L							0.003		0.003			
Al	mg/L							0.98		3.0			
As	mg/L							0.002		0.001			
B	mg/L												
Ba	mg/L							0.051		0.09			
Be	mg/L							0.0002		0.0002			
Bi	mg/L												
Cd	mg/L							0.0003		0.0003			
Co	mg/L							0.004		0.004			
Cr	mg/L							0.008		0.008			
Cu	mg/L							0.005		0.02			
F	mg/L												
Fe	mg/L							2.17		2.00			
Hg	mg/L												
Mn	mg/L							0.155		0.141			
Mo	mg/L							0.004		0.030			
Ni	mg/L							0.007		0.01			
Pb	mg/L							0.002		0.002			
Sb	mg/L							0.001		0.001			
Se	mg/L							0.001		0.001			
Si	mg/L												
V	mg/L							0.006		0.006			
Zn	mg/L							0.011		0.008			
Nutrients													
Un-ionized NH_3	mg/L							0.0012		0.061			
NH_3-N	mg/L							0.3		2			
NO_2-N	mg/L									0.028			
NO_3-N	mg/L									4			
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU				5.4			60		50			
TDS	mg/L				924	447		239		551			
TSS	mg/L				6	198		100		34.5			
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L							0.005		0.07			
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W1.7													
Field data													
Temp	deg C				1.5	2.4		7.3		8.1			
Cond-F	mS/cm				0.285	0.264		0.165		0.281			
pH-F	pH unit				8.8	8		7.6		8.31			
Major Constituents													
Ca	mg/L							42.6		59.8			
Cl	mg/L							3.1		9.3			
CO_3	mg/L							1		1			
HCO_3	mg/L							78		105			
K	mg/L							1.55		4.86			
Mg	mg/L							13.2		17.4			
Na	mg/L							3.26		24.6			
SO_4	mg/L				140								
T-Hardness	mg/L							130		220			
T-Alkalinity	mg/L							63.5		86.5			
Total Metals													
Ag	mg/L							0.003		0.003			
Al	mg/L							0.81		1.53			
As	mg/L							0.001		0.001			
B	mg/L												
Ba	mg/L							0.034		0.055			
Be	mg/L							0.0002		0.0002			
Bi	mg/L												
Cd	mg/L							0.0003		0.0003			
Co	mg/L							0.004		0.004			
Cr	mg/L							0.008		0.008			
Cu	mg/L							0.005		0.01			
F	mg/L												
Fe	mg/L							1.72		1.12			
Hg	mg/L												
Mn	mg/L							0.078		0.063			
Mo	mg/L							0.004		0.015			
Ni	mg/L							0.006		0.005			
Pb	mg/L							0.002		0.002			
Sb	mg/L							0.001		0.001			
Se	mg/L							0.001		0.003			
Si	mg/L												
V	mg/L							0.006		0.006			
Zn	mg/L							0.009		0.007			
Nutrients													
Un-ionized NH_3	mg/L							0.0004		0.040			
NH_3-N	mg/L							0.06		1.04			
NO_2-N	mg/L							0.003		0.011			
NO_3-N	mg/L							1.2		2.3			
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU				11			55		21			
TDS	mg/L				362	300		887		338			
TSS	mg/L				11	53		66		19			
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L							0.007		0.046			
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W1.8													
Field data													
Temp	deg C			3.3	6.0		12				5.6	0.20	0.20
Cond-F	mS/cm			0.218	0.243		0.199				0.201	0.220	0.358
pH-F	pH unit			8	8.3		7.91				8.25	8.2	8.2333333
Major Constituents													
Ca	mg/L	68.9	60.6	51.1		49.1	59.0	37.0	45.0	48.5	47.4	43.7	69.0
Cl	mg/L	6.0	6.7	6.3	6.4	4.5	2.8	4.0	3.8	3.9	5.5	5.2	5.8
CO_3	mg/L	1.0	6.0	5.0	1.0	1.3	1.5	1.0	1.3	1.3	2.1	2.6	1.0
HCO_3	mg/L	185	145	140	150	116	113	116	115	118	144	138	165
K	mg/L	1.6	1.7	1.9		1.2	1.7	1.0	1.7	1.5	1.4	1.3	1.7
Mg	mg/L	18	17	16		12	13	10	11	13	14	13	20
Na	mg/L	8.9	9.7	8.6		5.3	5.0	3.8	5.1	6.6	7.8	7.7	9.6
SO_4	mg/L	75	67	53	58	49	45	45	48	60	68	63	67
T-Hardness	mg/L	220	200	180	180	166	66.5	132	144	167	185	182	210
T-Alkalinity	mg/L	151	131	123	121	101	101	95.0	101	102	122	117	135
Total Metals													
Ag	mg/L					0.0010	0.003	0.00005	0.0012	0.0025	0.0043		
Al	mg/L					1.14	1.12	1.33	11.8	6.43	0.249	0.194	0.170
As	mg/L					0.0015	0.001	0.0013	0.0066	0.0011	0.0012	0.001	0.001
B	mg/L												
Ba	mg/L					0.063	0.070	0.090	0.17	0.042	0.051	0.050	0.052
Be	mg/L					0.00013	0.0002	0.0001	0.0008	0.00043	0.00018	0.0002	0.0002
Bi	mg/L												
Cd	mg/L					0.00012	0.0003	0.00015	0.00029	0.00014	0.00024	0.0003	0.0003
Co	mg/L					0.0022	0.004	0.0012	0.0088	0.0020	0.0032	0.004	0.004
Cr	mg/L					0.005	0.008	0.0022	0.019	0.0052	0.0065	0.008	0.008
Cu	mg/L					0.004	0.005	0.0032	0.019	0.0061	0.0042	0.005	0.008
F	mg/L					0.20		0.20	0.24	0.27	0.44		
Fe	mg/L					1.77	1.43	1.42	16.8	2.11	0.290	0.108	0.262
Hg	mg/L									0.00001			
Mn	mg/L					0.081	0.079	0.15	0.42	0.054	0.012	0.0084	0.015
Mo	mg/L					0.0037	0.004	0.0009	0.0025	0.0026	0.0038	0.0044	0.004
Ni	mg/L					0.0038	0.005	0.0028	0.022	0.0044	0.0042	0.005	0.005
Pb	mg/L					0.0038	0.002	0.0026	0.0073	0.0015	0.0017	0.0034	0.002
Sb	mg/L					0.00047	0.001	0.0002	0.0012	0.0011	0.00083	0.001	0.001
Se	mg/L					0.00083	0.001	0.0005	0.001	0.0017	0.00097	0.001	0.001
Si	mg/L												
V	mg/L					0.0040	0.006	0.0038	0.023	0.0036	0.0050	0.006	0.006
Zn	mg/L	0.002		0.75	0.07	0.49	7.7	8.7	0.045	0.40	0.11	0.15	0.33
Nutrients													
Un-ionized NH_3	mg/L		0.0002	0.0005	0.0013	0.0009	0.0009	0.0006	0.0009	0.0022	0.0029	0.00068	0.0042
NH_3-N	mg/L	0.04	0.04	0.04	0.04	0.06	0.07	0.03	0.067	0.087	0.10	0.044	0.26
NO_2-N	mg/L	0.001	0.001	0.001	0.002	0.016	0.016	0.01	0.018	0.016	0.0055	0.0012	0.001
NO_3-N	mg/L	0.9	0.9	0.6	0.7	0.51	0.59		0.49	0.40	0.55	0.52	0.7
T-PO_4	mg/L					1.0	1.3		0.52	0.090	0.091	0.068	
TKN	mg/L									1.79	1.65		
Solids													
Turb-L	NTU				17.0	65.0	86.4	66.0	688	53.0	5.96	1.92	3.80
TDS	mg/L	293	242	232	248	205	183	215	185	186	246	237	260
TSS	mg/L	24	11	24	23	92	98	48	769	70	5.4	1.0	5.0
Trace Constituents													
CN-F	mg/L	0.005	0.005	0.005	0.005	0.0075	0.0075		0.0075	0.0075	0.0058	0.005	0.005
CN-T	mg/L	0.005	0.005	0.005	0.005	0.0057	0.009	0.01	0.007	0.0053	0.0069	0.005	0.005
CN-WAD	mg/L	0.005	0.005	0.005	0.005	0.0053	0.0075	0.01	0.0053	0.0053	0.0054	0.005	0.005

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W2.4													
Field data													
Temp	deg C			1.4	1.5	3.6	4.3	8.7	7.1	5.3	1.1	0.90	0.84
Cond-F	mS/cm			0.723	1.07	0.756	0.810	0.861	1.16	1.31	1.41	1.68	1.78
pH-F	pH unit			8.2	8.2	8.1	8.0	8.1	7.4	7.7	8.2	7.3	7.9
Major Constituents													
Ca	mg/L	496	550	375	308	245	219	346	305	372	416	395	470
Cl	mg/L	18.3	19.8	15.8	11.4	11.7	9.3	13.4	22.9	18.0	19.2	22.3	21.7
CO_3	mg/L					1					1	1	
HCO_3	mg/L	333	433	217	205	164	151	224	213	245	300	363	390
K	mg/L	44.1	47.9	29.0	17.6	11.5	13.7	25.5	20.9	26.2	30.7	29.5	37.4
Mg	mg/L	316	334	215	231	118	99.2	180	148	180	221	216	275
Na	mg/L	42.5	46.2	29.0	19.2	21.9	14.2	25.9	20.8	22.5	27.4	26.8	34.7
SO_4	mg/L	1853	1900	1393	1103	700	582	970	903	1080	1351	1467	1548
T-Hardness	mg/L					700					2018	2019	
T-Alkalinity	mg/L					93					258	284	
Total Metals													
Ag	mg/L					0.003		0.003	0.003	0.003	0.0052		
Al	mg/L					8.2	29	9.4	6.5	2.2	2.8	3.0	1.2
As	mg/L					0.001		0.002	0.0058	0.0028	0.0028	0.0024	0.0037
B	mg/L												
Ba	mg/L					0.088		0.10	0.10	0.061	0.041	0.036	0.046
Be	mg/L					0.0002		0.00043	0.00033	0.0002	0.00018	0.0002	0.0002
Bi	mg/L												
Cd	mg/L					0.0003		0.0027	0.00058	0.00065	0.00039	0.00039	0.0003
Co	mg/L					0.004		0.014	0.012	0.0095	0.013	0.015	0.013
Cr	mg/L					0.008		0.014	0.011	0.008	0.0089	0.0081	0.008
Cu	mg/L					0.020	0.086	0.022	0.030	0.0055	0.0092	0.0050	0.0053
F	mg/L												
Fe	mg/L					16.1	58.2	20.5	12.1	4.12	4.24	4.25	3.18
Hg	mg/L												
Mn	mg/L					0.66	1.6	0.78	0.72	0.70	0.84	0.98	1.0
Mo	mg/L					0.021	0.015	0.037	0.038	0.054	0.059	0.067	0.062
Ni	mg/L					0.029	0.079	0.063	0.056	0.071	0.091	0.11	0.11
Pb	mg/L					0.008		0.0095	0.006	0.002	0.0032	0.0023	0.003
Sb	mg/L					0.001		0.0015	0.0023	0.0033	0.0046	0.005	0.0053
Se	mg/L					0.001		0.006	0.0073	0.008	0.012	0.011	0.0083
Si	mg/L												
V	mg/L					0.006		0.015	0.013	0.006	0.0066	0.0063	0.006
Zn	mg/L	0.0085	0.012	0.038	0.024	0.037	0.12	0.044	0.034	0.015	0.016	0.012	0.011
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L	11	11	6.3	5.7	3.6	4.6	4.8	4.5	6.6	6.4	8.0	8.5
NO_2-N	mg/L	0.0018	0.009	0.001	0.24	0.23	0.27	0.38	0.098	0.0093	0.0012	0.001	0.001
NO_3-N	mg/L	109	122	85	43	34	38	62	42	52	67	78	96
T-PO_4	mg/L										0.1	0.093	
TKN	mg/L												
Solids													
Turb-L	NTU				159	538	1964	93	247	124	139	139	61
TDS	mg/L	2196	2708	1428	1892	1119	1074	1726	1330	1606	2155	2731	2724
TSS	mg/L	23	27	102	159	935	1924	331	291	169	157	159	67
Trace Constituents													
CN-F	mg/L										0.005	0.005	
CN-T	mg/L							0.0083	0.0078	0.0068	0.005	0.005	0.005
CN-WAD	mg/L										0.005	0.005	

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W3.1													
Field data													
Temp	deg C				0.80	4.2	2.0	3.6	5.1	2.2	2.3	1.3	0.88
Cond-F	mS/cm				0.260	0.460	0.275	0.430	0.532	0.507	0.642	0.260	1.54
pH-F	pH unit				7.4	8.5	8.1	8.1	7.7	8.7	7.9	8.3	7.8
Major Constituents													
Ca	mg/L	359	434	425	66.1	130	106	122	122	136	189	480	482
Cl	mg/L	11	32	21	2.5	3.9	3.5	3.1	3.8	3.6	4.1	13	16
CO_3	mg/L								1				
HCO_3	mg/L	570	820	610	86	130	118	98.7	136	145	155	450	550
K	mg/L	15.2	37.1	22.3	1.6	3.7	2.7	4.8	3.9	4.0	5.6	15.7	19.4
Mg	mg/L	383	891	517	30	70	50	55	53	64	116	490	523
Na	mg/L	12.4	30.4	17.1	2.2	5.6	3.7	4.0	4.9	5.2	6.8	18.5	24.0
SO_4	mg/L	1660	4000	2520	172	256	275	336	320	331	596	2230	2653
T-Hardness	mg/L								300				
T-Alkalinity	mg/L								155				
Total Metals													
Ag	mg/L						0.003	0.003	0.003	0.003	0.015		
Al	mg/L						0.92	6.3	1.4	2.9	2.7	1.3	0.087
As	mg/L						0.001	0.00633333	0.004	0.00175	0.00214	0.00166667	0.001
B	mg/L												
Ba	mg/L						0.033	0.042	0.045	0.051	0.056	0.049	0.031
Be	mg/L						0.0002	0.00047	0.0002	0.00015	0.0002	0.0002	0.0002
Bi	mg/L												
Cd	mg/L						0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Co	mg/L						0.004	0.004	0.0048	0.0043	0.0042	0.005	0.004
Cr	mg/L						0.008	0.008	0.008	0.008	0.0086	0.008	0.008
Cu	mg/L						0.005	0.0053	0.005	0.006	0.0224	0.005	0.005
F	mg/L												
Fe	mg/L						1.69	15.6	2.63	3.12	3.01	1.86	0.174
Hg	mg/L										0.0005		
Mn	mg/L						0.05	0.35	0.19	0.13	0.14	0.48	0.25
Mo	mg/L						0.005	0.0083	0.0082	0.0093	0.0094	0.013	0.013
Ni	mg/L						0.0063	0.03	0.025	0.013	0.021	0.053	0.042
Pb	mg/L						0.002	0.0047	0.0024	0.002	0.0028	0.002	0.002
Sb	mg/L						0.001	0.001	0.001	0.001	0.0024	0.001	0.001
Se	mg/L						0.004	0.0043	0.0075	0.0045	0.004	0.0063	0.007
Si	mg/L												
V	mg/L						0.006	0.011	0.006	0.0073	0.006	0.006	0.006
Zn	mg/L	0.008	0.005	0.004	0.001		0.0073	0.032	0.017	0.01	0.016	0.012	0.011
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L	0.16	0.46	0.46	0.2	0.2	0.27	0.57	0.44	0.29	0.57	0.19	0.25
NO_2-N	mg/L	0.001	0.001	0.001	0.002	0.001	0.002	0.002	0.0012	0.0015	0.001	0.001	0.001
NO_3-N	mg/L	3.2	3.6	2	1.6	3.8	3.9	6.9	5.3	4.2	6.0	13	14
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU				340	60	35	411	41	58	98	32	7.5
TDS	mg/L	1729	4830	2581	296	489	406	628	731	798	807	3254	3303
TSS	mg/L	19	70	28	272	85	49	349	69	80	108	32	12
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L						0.005	0.0068	0.0068	0.0068	0.005	0.005	0.005
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W3.2													
Field data													
Temp	deg C				1.8		1.8		5.5	2.3	1.8		
Cond-F	mS/cm				0.133		0.468		1.00	0.881	0.915		
pH-F	pH unit				7.9		8.1		8.0	7.5	7.7		
Major Constituents													
Ca	mg/L				71.3				264	197	336	441	
Cl	mg/L				4.2		8.7		10.8	6.6	12.8	24	
CO_3	mg/L												
HCO_3	mg/L				86		140		163	152	206	490	
K	mg/L				1.81				13.5	6.96	8.91	8	
Mg	mg/L				22.5				137	97.1	169	205	
Na	mg/L				3.19				10.1	7.36	14.7	25	
SO_4	mg/L				142		265		828	510	850	1100	
T-Hardness	mg/L				230								
T-Alkalinity	mg/L				70								
Total Metals													
Ag	mg/L						0.003		0.003	0.003	0.016		
Al	mg/L						1.62		5.81	2.40	0.347	0.09	
As	mg/L						0.002		0.0068	0.003	0.0013	0.002	
B	mg/L												
Ba	mg/L						0.06		0.11	0.050	0.032	0.037	
Be	mg/L						0.0002		0.00033	0.0002	0.0002	0.0002	
Bi	mg/L												
Cd	mg/L						0.0003		0.0017	0.0003	0.0003	0.0003	
Co	mg/L						0.004		0.01	0.0047	0.004	0.004	
Cr	mg/L						0.008		0.012	0.008	0.008	0.008	
Cu	mg/L						0.005		0.0094	0.0053	0.005	0.005	
F	mg/L												
Fe	mg/L						3.01		10.3	3.52	0.593	0.19	
Hg	mg/L												
Mn	mg/L						0.085		0.46	0.19	0.11	0.037	
Mo	mg/L						0.004		0.016	0.01	0.0088	0.006	
Ni	mg/L						0.006		0.052	0.02	0.021	0.014	
Pb	mg/L						0.002		0.0033	0.002	0.002	0.002	
Sb	mg/L						0.001		0.0013	0.001	0.001	0.001	
Se	mg/L						0.003		0.0083	0.0053	0.009	0.01	
Si	mg/L												
V	mg/L						0.006		0.010	0.007	0.006	0.006	
Zn	mg/L				0.001		0.014		0.029	0.014	0.0063	0.006	
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L				0.54				2.3	0.65	0.52	0.06	
NO_2-N	mg/L				0.034				0.0024	0.0017	0.001	0.001	
NO_3-N	mg/L				6.2				19.2	10.9	25.5	37.0	
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU				210		31		173	71.5	15.2	2.5	
TDS	mg/L				286		563		1271	844	1268	2370	
TSS	mg/L				175		95		203	94.3	20.8	11	
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L						0.008		0.0084	0.0063	0.005	0.005	
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W4.1													
Field data													
Temp	deg C				3.45	5.52	10.4						
Cond-F	mS/cm				0.143	0.154	0.308						
pH-F	pH unit				8.6	8.4	7.5						
Major Constituents													
Ca	mg/L					25.8	25						
Cl	mg/L					14	6.8						
CO_3	mg/L					1	1						
HCO_3	mg/L					94	60						
K	mg/L					1.2	0.85						
Mg	mg/L					4.2	3.1						
Na	mg/L					2.9	2.09						
SO_4	mg/L					12	7						
T-Hardness	mg/L					150	65						
T-Alkalinity	mg/L					76.5	49.5						
Total Metals													
Ag	mg/L					0.003							
Al	mg/L					0.11	0.09						
As	mg/L					0.001							
B	mg/L												
Ba	mg/L					0.015							
Be	mg/L					0.0002							
Bi	mg/L												
Cd	mg/L					0.0003							
Co	mg/L					0.004							
Cr	mg/L					0.008							
Cu	mg/L					0.005	0.005						
F	mg/L												
Fe	mg/L					0.295	0.173						
Hg	mg/L												
Mn	mg/L					0.059							
Mo	mg/L					0.004							
Ni	mg/L					0.009	0.005						
Pb	mg/L					0.002							
Sb	mg/L					0.001							
Se	mg/L					0.001							
Si	mg/L												
V	mg/L					0.006							
Zn	mg/L					0.014	0.001						
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L					0.04	0.04						
NO_2-N	mg/L					0.001	0.003						
NO_3-N	mg/L					0.1	0.1						
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU					4.2	2.8						
TDS	mg/L				113	119	88.4		78		398		
TSS	mg/L				14	12	9.0		17		9.0		
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W4.2													
Field data													
Temp	deg C				3.0	6.0	9.6						
Cond-F	mS/cm				0.180	0.203	0.168						
pH-F	pH unit				8.3	8.2	8.1						
Major Constituents													
Ca	mg/L						46.3						
Cl	mg/L						11						
CO_3	mg/L						1						
HCO_3	mg/L						110						
K	mg/L						2.31						
Mg	mg/L						10.5						
Na	mg/L						5.19						
SO_4	mg/L						22						
T-Hardness	mg/L						124						
T-Alkalinity	mg/L						90						
Total Metals													
Ag	mg/L												
Al	mg/L						4.87						
As	mg/L												
B	mg/L												
Ba	mg/L						0.075						
Be	mg/L						0.0002						
Bi	mg/L												
Cd	mg/L						0.0003						
Co	mg/L												
Cr	mg/L												
Cu	mg/L						0.012						
F	mg/L												
Fe	mg/L						7.04						
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L						0.013						
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L						0.022						
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L						0.04						
NO_2-N	mg/L						0.0095						
NO_3-N	mg/L						0.1						
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU						145						
TDS	mg/L				162	199	165		105		235		
TSS	mg/L				79	224	269		15		15		
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

SAMPLE POINT : W4.3		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Field data													
Temp	deg C				4.1	6.5	8.8						
Cond-F	mS/cm				0.122	0.136	0.093						
pH-F	pH unit				8.4	8.2	8.0						
Major Constituents													
Ca	mg/L						29.2						
Cl	mg/L						8.75						
CO_3	mg/L						1						
HCO_3	mg/L						66						
K	mg/L						0.81						
Mg	mg/L						3.59						
Na	mg/L						2.19						
SO_4	mg/L						8						
T-Hardness	mg/L						70						
T-Alkalinity	mg/L						55						
Total Metals													
Ag	mg/L												
Al	mg/L						0.03						
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L						0.005						
F	mg/L												
Fe	mg/L						0.035						
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L						0.005						
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L						0.0045						
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L						0.04						
NO_2-N	mg/L						0.001						
NO_3-N	mg/L						0.1						
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU						0.525						
TDS	mg/L				136	133	94.5				103		
TSS	mg/L				14	14.3	3.75				7		
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

SAMPLE POINT : W4.3.1		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Field data													
Temp	deg C				1.1	5.7	6.8				1.3		
Cond-F	mS/cm				0.107	0.165	0.090				0.205		
pH-F	pH unit				7.8	8.2	7.6				8.6		
Major Constituents													
Ca	mg/L					35.2	24.8						
Cl	mg/L					30	4.9						
CO_3	mg/L					1	1						
HCO_3	mg/L					110	58						
K	mg/L					1.3	1						
Mg	mg/L					6.7	3.3						
Na	mg/L					4.3	2.3						
SO_4	mg/L					23	7.5						
T-Hardness	mg/L					150	60						
T-Alkalinity	mg/L					90.5	47.4						
Total Metals													
Ag	mg/L					0.003							
Al	mg/L					0.17	0.03						
As	mg/L					0.001							
B	mg/L												
Ba	mg/L					0.031	0.011						
Be	mg/L					0.0002	0.0002						
Bi	mg/L												
Cd	mg/L					0.0003	0.0003						
Co	mg/L					0.004							
Cr	mg/L					0.008							
Cu	mg/L					0.005	0.005						
F	mg/L												
Fe	mg/L					0.315	0.268						
Hg	mg/L												
Mn	mg/L					0.021							
Mo	mg/L					0.004							
Ni	mg/L					0.009	0.005						
Pb	mg/L					0.002	0.002						
Sb	mg/L					0.001							
Se	mg/L					0.001							
Si	mg/L												
V	mg/L					0.006							
Zn	mg/L					0.013	0.012						
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L					0.04	0.04						
NO_2-N	mg/L					0.001	0.001						
NO_3-N	mg/L					0.1	0.2						
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU					11	5						
TDS	mg/L				142	172	92.9	107	70	157	77		
TSS	mg/L					16	7.8	15	18	13	8		
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : W6.1													
Field data													
Temp	deg C				0.2	4.1	5.5	8.2	10.3				
Cond-F	mS/cm				0.141	0.132	0.117	0.110	0.156				
pH-F	pH unit				9.0	8.4	7.8	7.9	8.0				
Major Constituents													
Ca	mg/L						38.8	35.7	42.0				
Cl	mg/L						3.3	1.8	3.2				
CO_3	mg/L						1	1	1				
HCO_3	mg/L						86	76	92				
K	mg/L						0.75	0.84	0.87				
Mg	mg/L						4.82	4.61	5.76				
Na	mg/L						2.39	1.91	2.60				
SO_4	mg/L						19	18	35				
T-Hardness	mg/L						90	80	120				
T-Alkalinity	mg/L						71	62	75				
Total Metals													
Ag	mg/L								0.003				
Al	mg/L						0.03	0.03	0.43				
As	mg/L								0.001				
B	mg/L												
Ba	mg/L						0.0065	0.001	0.035				
Be	mg/L						0.00015	0.0002	0.0002				
Bi	mg/L												
Cd	mg/L						0.0003	0.0003	0.0007				
Co	mg/L								0.004				
Cr	mg/L								0.008				
Cu	mg/L						0.005	0.005	0.005				
F	mg/L												
Fe	mg/L						0.078	0.005	0.683				
Hg	mg/L												
Mn	mg/L								0.019				
Mo	mg/L								0.004				
Ni	mg/L						0.005	0.005	0.005				
Pb	mg/L						0.002	0.002	0.002				
Sb	mg/L							0.001	0.001				
Se	mg/L							0.001	0.001				
Si	mg/L												
V	mg/L								0.006				
Zn	mg/L						0.0035	0.001	0.013				
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L						0.04	0.04	0.04				
NO_2-N	mg/L						0.0015	0.001	0.001				
NO_3-N	mg/L						0.1	0.3	0.1				
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU						3.2	14	18				
TDS	mg/L					163	117	106	147	226	71		
TSS	mg/L					27	1	8	10	41	80		
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L						0.005	0.006					
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : SDP													
Field data													
Temp	deg C								12.2	9.36	11.4		
Cond-F	mS/cm								0.398	3.98	0.458		
pH-F	pH unit								7.4	5.3	8.1		
Major Constituents													
Ca	mg/L										52.8		
Cl	mg/L								44.7	52.7	56.0	310	
CO_3	mg/L												
HCO_3	mg/L												
K	mg/L										16.1		
Mg	mg/L										18.5		
Na	mg/L								87.3		90.5	43.3	
SO_4	mg/L								93.3	106	117	184	
T-Hardness	mg/L								250	230	170	725	
T-Alkalinity	mg/L								112	163	90.8	165	
Total Metals													
Ag	mg/L												
Al	mg/L								0.084		0.086		
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L								0.005		0.006		
F	mg/L												
Fe	mg/L								0.289		0.278		
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L								0.005		0.01		
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L								0.033		0.031		
Nutrients													
Un-ionized NH_3	mg/L								0.0037	0.0019	0.024	0.0013	
NH_3-N	mg/L								0.87	0.83	0.92	0.64	
NO_2-N	mg/L								0.22	0.085	0.24	0.009	
NO_3-N	mg/L								8.8	9.2	16	2.2	
T-PO_4	mg/L								1.2	2.3	2.9	2.4	
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L								429	435	502	912	
TSS	mg/L								12	24	22	67	
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : KU200-3													
Field data													
Temp	deg C	19.5	20.3	19.8	20.8	20.2	20.0	19.5	19.7	19.4	19.0	19.5	17.6
Cond-F	mS/cm												
pH-F	pH unit	7.4	7.5	10.8	7.3	7.1	7.2	7.3	7.3	7.1	7.0	7.3	14.5
Major Constituents													
Ca	mg/L												
Cl	mg/L												
CO_3	mg/L												
HCO_3	mg/L												
K	mg/L												
Mg	mg/L												
Na	mg/L												
SO_4	mg/L												
T-Hardness	mg/L												
T-Alkalinity	mg/L												
Total Metals													
Ag	mg/L												
Al	mg/L												
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L												
F	mg/L												
Fe	mg/L												
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L												
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L												
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L												
NO_2-N	mg/L												
NO_3-N	mg/L												
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L	400	435	416	487	454	405	397	459	466	436	390	
TSS	mg/L	23.6	27.0	29.7	22.2	18.5	27.9	29.2	25.8	23.1	20.7	18.0	
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : KU200													
Field data													
Temp	deg C	19.6	20.3	19.8	20.7	19.8	20.8	19.4	20.0	19.3	19.2	19.2	17.7
Cond-F	mS/cm												
pH-F	pH unit	7.5	7.6	7.6	7.5	7.5	7.3	7.5	7.5	7.5	7.3	7.5	14
Major Constituents													
Ca	mg/L												
Cl	mg/L												
CO_3	mg/L												
HCO_3	mg/L												
K	mg/L												
Mg	mg/L												
Na	mg/L												
SO_4	mg/L												
T-Hardness	mg/L												
T-Alkalinity	mg/L												
Total Metals													
Ag	mg/L												
Al	mg/L												
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L												
F	mg/L												
Fe	mg/L												
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L												
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L												
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L												
NO_2-N	mg/L												
NO_3-N	mg/L												
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L	382	433	427	465	442	371	364	450	455	442	386	
TSS	mg/L	24.9	26.5	28.0	20.8	21.4	22.3	25.9	22.6	24.1	19.7	8.0	
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : KU200-2													
Field data													
Temp	deg C	19.3	20.5	19.7	21.0	20.0	20.0	19.3	20.2	17.5	18.8	19.8	17.4
Cond-F	mS/cm												
pH-F	pH unit	7.5	7.5	7.5	7.6	7.4	7.3	7.4	7.5	7.4	7.3	7.5	14.3
Major Constituents													
Ca	mg/L												
Cl	mg/L												
CO_3	mg/L												
HCO_3	mg/L												
K	mg/L												
Mg	mg/L												
Na	mg/L												
SO_4	mg/L												
T-Hardness	mg/L												
T-Alkalinity	mg/L												
Total Metals													
Ag	mg/L												
Al	mg/L												
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L												
F	mg/L												
Fe	mg/L												
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L												
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L												
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L												15.5
NO_2-N	mg/L												
NO_3-N	mg/L												
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L	393	455	414	445	434	366	361	457	426	434	343	
TSS	mg/L	29.4	38.5	26.3	16.9	18.6	26.3	24.4	28.6	21.3	23.0	13.0	
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : S1.1													
Field data													
Temp	deg C	19.2	20.7	16.4	20.1	19.1	18.1	18.0				19.2	16.4
Cond-F	mS/cm												
pH-F	pH unit			7.1	7.5	7.5	6.9					7.4	12.9
Major Constituents													
Ca	mg/L							26.4	23.3				28.1
Cl	mg/L	30.7	30.5	32.6	32.3	34.0	34.5	34.3	34.0			35.0	34.7
CO_3	mg/L												
HCO_3	mg/L												
K	mg/L							22.4	18.9				17.0
Mg	mg/L							5	5.2				7.1
Na	mg/L				141	1.79	114	102	151			146	151
SO_4	mg/L	83.7	85.0	79.4	85.3	87.5	89.5	93.5	90.0			93.0	98.0
T-Hardness	mg/L											60.0	100
T-Alkalinity	mg/L											189	42.4
Total Metals													
Ag	mg/L												
Al	mg/L												
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L												
F	mg/L												
Fe	mg/L												
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L												
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L												
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L	0.513	3.47	8.94	2.46	1.26	1.08	0.550	1.66			0.460	1.78
NO_2-N	mg/L	0.473	0.893	0.455	0.083	0.199	0.0443	0.180	0.110			0.0363	0.0547
NO_3-N	mg/L	25.0	19.6	22.2	6.28	21.8	22.0	19.0	21.0			21.3	37.3
T-PO_4	mg/L	4.2	5.5	5.5	6.3	3.7	4.9	5.2	5.8			7.7	7.7
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L	420	439	436	488	412	407	357	440			526	574
TSS	mg/L	23.1	30.1	28.7	30.6	13.8	17.2	18.8	28.0			1.7	20.7
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : S1.2													
Field data													
Temp	deg C							4.5	9.5	13	0.70		
Cond-F	mS/cm							0.948	0.270		0.256		
pH-F	pH unit							8.4	7.4		7.7		
Major Constituents													
Ca	mg/L								46.5	44.5			
Cl	mg/L								2.6	4.7	5.8		5.8
CO_3	mg/L								1				
HCO_3	mg/L								58				
K	mg/L								7.11	6.96			
Mg	mg/L								9.06	8.56			
Na	mg/L								32.1	34.2	94.7		94.7
SO_4	mg/L								140	160	345		
T-Hardness	mg/L								137	140	230		
T-Alkalinity	mg/L								49	49	63		
Total Metals													
Ag	mg/L								0.003				
Al	mg/L								1.9	4.1	3.1		3.1
As	mg/L								0.001				
B	mg/L												
Ba	mg/L								0.055				
Be	mg/L								0.0002				
Bi	mg/L												
Cd	mg/L								0.0003				
Co	mg/L								0.004				
Cr	mg/L								0.008				
Cu	mg/L								0.015	0.016	0.085		0.085
F	mg/L												
Fe	mg/L								2.53	4.75	3.74		3.74
Hg	mg/L												
Mn	mg/L								0.05				
Mo	mg/L								0.016				
Ni	mg/L								0.007	0.005	0.008		0.008
Pb	mg/L								0.0036				
Sb	mg/L								0.001				
Se	mg/L								0.001				
Si	mg/L												
V	mg/L								0.006				
Zn	mg/L								0.018	0.02	0.017		
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L								1.07	1.68	3		3
NO_2-N	mg/L								0.044	0.026	0.048		0.048
NO_3-N	mg/L								2.0	1.6	2.5		2.5
T-PO_4	mg/L								0.13	0.05	0.12		
TKN	mg/L												
Solids													
Turb-L	NTU								130				
TDS	mg/L							102	275	301	569		
TSS	mg/L							47	153	102	109		
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : P5.2													
Field data													
Temp	deg C			8.9	8.6	11	8.8	12	28	15	11	11	12
Cond-F	mS/cm			0.080	0.080	0.099	0.064	0.098	0.080		0.089		0.319
pH-F	pH unit			7.8	7.9	7.9	7.2	7.4	7.1	7.3	7.5	7.8	7.5
Major Constituents													
Ca	mg/L			16.2								65.5	75.1
Cl	mg/L			1.1								0.5	1.1
CO_3	mg/L			1								1	1
HCO_3	mg/L			29								3	30
K	mg/L			1.32								3.55	1.46
Mg	mg/L			2.82								13.5	3.44
Na	mg/L			1.88								10.7	2.08
SO_4	mg/L			30								1	26
T-Hardness	mg/L			50								2	55
T-Alkalinity	mg/L			23.8								2.2	24.6
Total Metals													
Ag	mg/L							0.003					
Al	mg/L				0.025	0.13	0.045	0.06	0.11	0.12	0.075	0.03	0.1
As	mg/L										0.0015		0.001
B	mg/L												
Ba	mg/L							0.021					0.019
Be	mg/L							0.0002					0.0002
Bi	mg/L												
Cd	mg/L												0.0003
Co	mg/L							0.004					0.004
Cr	mg/L							0.008					0.008
Cu	mg/L				0.012	0.031	0.0068	0.005	0.015	0.005	0.12	0.054	0.058
F	mg/L			0.071									
Fe	mg/L				0.037	0.071	0.033	0.081	0.104	0.077	0.168	0.062	0.073
Hg	mg/L												
Mn	mg/L							0.003					0.006
Mo	mg/L							0.004					0.004
Ni	mg/L							0.005					0.005
Pb	mg/L												0.002
Sb	mg/L												0.001
Se	mg/L												0.001
Si	mg/L												
V	mg/L							0.006					0.006
Zn	mg/L			0.008				0.013					0.007
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L			0.04								0.04	0.04
NO_2-N	mg/L			0.001								0.001	0.001
NO_3-N	mg/L			0.3								0.1	0.3
T-PO_4	mg/L			0.01								0.01	0.01
TKN	mg/L												
Solids													
Turb-L	NTU			0.40	0.43	0.91	0.81	0.60	5.8	1.6	0.93	0.48	2.8
TDS	mg/L	78.8	73.9	76.2	64.5	70.1	93.0	78.5	70.5	78.1	78.3	50.7	63.2
TSS	mg/L	7.2	7.8	6.6	4.5	5.2	4.6	3.6	6.6	6.6	6.3	1.0	1.0
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L			0.005							0.005	0.005	0.005
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : P5.3													
Field data													
Temp	deg C			10.2	10.3	10.6	12.3	13.0	25.2	14.5	12.1	13.4	12.2
Cond-F	mS/cm			0.079	0.081	0.099	0.077	0.067	0.075	0.134	0.106	0.080	0.095
pH-F	pH unit			7.7	7.7	8.0	6.5	7.5	7.1	7.1	7.1	7.3	7.9
Major Constituents													
Ca	mg/L			16.6				18.8					
Cl	mg/L			1.7				2.3			25		
CO_3	mg/L			1				1					
HCO_3	mg/L			25				19					
K	mg/L			1.21				1.41					
Mg	mg/L			2.91				3.34					
Na	mg/L			2.49				3.2					
SO_4	mg/L			32				32			34		
T-Hardness	mg/L			48				49					
T-Alkalinity	mg/L			20.6				15.6					
Total Metals													
Ag	mg/L							0.003					
Al	mg/L				0.014	0.068	0.42	0.058	0.083	0.12	0.082	0.04	0.09
As	mg/L							0.001					
B	mg/L												
Ba	mg/L							0.023					
Be	mg/L							0.0002					
Bi	mg/L												
Cd	mg/L							0.0003					
Co	mg/L							0.004					
Cr	mg/L							0.008					
Cu	mg/L				0.018	0.017	0.021	0.0088	0.024	0.007	0.013	0.005	0.011
F	mg/L			0.059				0.036					
Fe	mg/L				0.043	0.043	0.066	0.081	0.101	0.080	0.093	0.046	0.098
Hg	mg/L												
Mn	mg/L							0.0035					
Mo	mg/L							0.004					
Ni	mg/L							0.0055					
Pb	mg/L							0.002					
Sb	mg/L							0.001					
Se	mg/L							0.001					
Si	mg/L												
V	mg/L							0.006					
Zn	mg/L		0.016					0.02					
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L			0.04				0.04			12		
NO_2-N	mg/L			0.001				0.001			0.003		
NO_3-N	mg/L			0.3				0.2			0.1		
T-PO_4	mg/L			0.01				0.01			11		
TKN	mg/L												
Solids													
Turb-L	NTU			0.35	0.30	0.38	2.1	0.74	1.0	2.1	0.91	0.65	1.6
TDS	mg/L			80.0	71.2	72.2	68.5	70.7	74.5	82.0	77.3	67.5	67.3
TSS	mg/L			1	1	1	1.8	1	1	1	1	1	1
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : P5.4													
Field data													
Temp	deg C			9.7	10.1								
Cond-F	mS/cm			0.079	0.082								
pH-F	pH unit			8.5	8.2								
Major Constituents													
Ca	mg/L			16.1									
Cl	mg/L			1.2									
CO_3	mg/L			1									
HCO_3	mg/L			27									
K	mg/L			1.3									
Mg	mg/L			2.8									
Na	mg/L			1.9									
SO_4	mg/L			30									
T-Hardness	mg/L			55									
T-Alkalinity	mg/L			22.2									
Total Metals													
Ag	mg/L												
Al	mg/L												
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L												
F	mg/L			0.071									
Fe	mg/L												
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L												
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L	0.016	0.014	0.027									
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L			0.04									
NO_2-N	mg/L			0.001									
NO_3-N	mg/L			0.3									
T-PO_4	mg/L			0.01									
TKN	mg/L												
Solids													
Turb-L	NTU			0.35	1.5								
TDS	mg/L			81	72								
TSS	mg/L			1	2.8								
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L			0.005									
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : RS1													
Field data													
Temp	deg C												
Cond-F	mS/cm												
pH-F	pH unit												
Major Constituents													
Ca	mg/L												
Cl	mg/L												
CO_3	mg/L												
HCO_3	mg/L												
K	mg/L												
Mg	mg/L												
Na	mg/L												
SO_4	mg/L												
T-Hardness	mg/L												
T-Alkalinity	mg/L												
Total Metals													
Ag	mg/L												
Al	mg/L												
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L												
F	mg/L												
Fe	mg/L												
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L												
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L												
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L												
NO_2-N	mg/L												0.024
NO_3-N	mg/L												
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L												
TSS	mg/L												
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : T8.1													
Field data													
Temp	deg C				4.4	4.7	9.7	11.6	16.2	10.2	6.3	2.0	2.3
Cond-F	mS/cm				0.710	0.593	2.37	1.50	2.50	1.23	1.69	1.99	1.24
pH-F	pH unit				9.9	9.7	10.8	10.2	9.2	9.0	8.8	9.7	9.3
Major Constituents													
Ca	mg/L		510	461	136	166	421	413	422	376	414	424	404
Cl	mg/L		28	27	11	11	21	21	22	22	22	23	26
CO_3	mg/L		150	270	39	56	56	17	5.5	6.8	5.4	15	38
HCO_3	mg/L		1	1	1	1	1	49	65	77	98	70	35
K	mg/L		145	128	37	51	123	125	127	112	121	128	133
Mg	mg/L		6.9	2.1	4.0	1.8	3.0	3.4	4.7	4.9	6.2	6.8	6.8
Na	mg/L		567	513	144	186	488	495	505	463	526	578	611
SO_4	mg/L		1850	1730	415	569	1460	1560	1543	1490	1592	1600	1690
T-Hardness	mg/L		1275	1200	240	950	883	925	913	931	940	942	938
T-Alkalinity	mg/L		330	314	74	169	79	73	69	75	90	83	92
Total Metals													
Ag	mg/L					0.051	0.055	0.052	0.056	0.051	0.070		
Al	mg/L				0.01	0.23	0.13	0.14	0.12	0.11	0.09	0.073	0.14
As	mg/L					0.001	0.0017	0.0023	0.0028	0.0028	0.0034	0.002	0.003
B	mg/L												
Ba	mg/L					0.028	0.030	0.028	0.026	0.023	0.025	0.020	0.021
Be	mg/L					0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Bi	mg/L												
Cd	mg/L					0.0003	0.0011	0.0017	0.0015	0.0017	0.0013	0.0016	0.0014
Co	mg/L					0.046	0.071	0.076	0.088	0.076	0.077	0.071	0.057
Cr	mg/L					0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
Cu	mg/L				6.03	11.2	19.8	18.8	20.8	17.6	21.2	23.7	27.1
F	mg/L												
Fe	mg/L				0.135	0.303	0.282	0.437	0.329	0.466	0.495	0.404	0.682
Hg	mg/L												
Mn	mg/L				0.012	0.011	0.0073	0.0062	0.014	0.018	0.017	0.015	0.011
Mo	mg/L				0.123	0.141	0.412	0.420	0.435	0.364	0.372	0.383	0.413
Ni	mg/L				0.225	0.223	0.507	0.704	0.735	0.622	0.641	0.678	0.713
Pb	mg/L					0.004	0.002	0.0043	0.0065	0.002	0.0032	0.002	0.002
Sb	mg/L					0.013	0.009	0.018	0.013	0.013	0.030	0.050	0.084
Se	mg/L					0.014	0.020	0.019	0.026	0.026	0.025	0.033	0.029
Si	mg/L												
V	mg/L					0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
Zn	mg/L		0.232	0.250	0.166	0.239	0.268	0.255	0.185	0.117	0.124	0.174	0.291
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L		22	24	6	6	13	11	17	16	15	19	18
NO_2-N	mg/L		0.34	0.88	0.13	0.27	0.37	0.40	0.77	0.33	0.84	0.36	0.94
NO_3-N	mg/L		29	30	7.8	10	24	25	22	20	21	22	26
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU		1.5	10	12	8.5	4.0	2.4	3.6	5.4	6.2	1.5	2.6
TDS	mg/L		3213	3509	779	1206	2154	2579	2494	2560	2742	2639	2638
TSS	mg/L		11	18	15	15	7	5.9	4.4	14	20	2.7	2.0
Trace Constituents													
CN-F	mg/L		42	46	8.4	12	30	15	6.7	5.7	6.0	12	19
CN-T	mg/L		74	80	20	38	51	36	25	24	27	37	50
CN-WAD	mg/L		70	72	18	33	48	40	31	29	30	34	48

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : T8.4													
Field data													
Temp	deg C					4.8		10.7	13.8	8.1	4.6		
Cond-F	mS/cm					2.18		0.781	2.52	1.23	0.894		
pH-F	pH unit					11.4		8.6	7.8	8.0	7.9		
Major Constituents													
Ca	mg/L							265	352	380	401	375	
Cl	mg/L							17.0	37.5	22.0	30.0	22.8	
CO_3	mg/L							1.8	1.2	1.2	1.3	1.0	
HCO_3	mg/L							106.4	91.2	55.4	67.6	73.2	
K	mg/L							87.7	104.7	113.2	105.0	98.5	
Mg	mg/L							9.04	6.74	7.34	8.49	9.39	
Na	mg/L							527	516	635	746	718	
SO_4	mg/L							1318	1680	1760	2215	2144	
T-Hardness	mg/L							575	804	924	973	945	
T-Alkalinity	mg/L							88.8	78.1	47.0	56.1	60.2	
Total Metals													
Ag	mg/L							0.003	0.0023	0.0024	0.0049		
Al	mg/L							0.37	0.096	0.14	0.084	0.074	
As	mg/L							0.0013	0.0027	0.0021	0.0075	0.007	
B	mg/L												
Ba	mg/L							0.058	0.031	0.030	0.028	0.028	
Be	mg/L							0.0002	0.00018	0.00018	0.00019	0.0002	
Bi	mg/L												
Cd	mg/L							0.0008	0.0010	0.00090	0.0012	0.0014	
Co	mg/L							0.028	0.035	0.026	0.025	0.019	
Cr	mg/L							0.008	0.0062	0.0065	0.0075	0.008	
Cu	mg/L							0.107	0.338	0.393	0.714	0.575	
F	mg/L								0.22		0.27		
Fe	mg/L							0.821	0.242	0.304	0.187	0.186	
Hg	mg/L												
Mn	mg/L							0.036	0.025	0.074	0.264	0.319	
Mo	mg/L							0.254	0.371	0.300	0.333	0.306	
Ni	mg/L							0.035	0.023	0.018	0.019	0.015	
Pb	mg/L							0.0035	0.0015	0.0017	0.0019	0.0022	
Sb	mg/L							0.0048	0.0067	0.0046	0.012	0.014	
Se	mg/L							0.0083	0.018	0.013	0.018	0.019	
Si	mg/L												
V	mg/L							0.006	0.0046	0.0048	0.0056	0.006	
Zn	mg/L							0.011	0.011	0.015	0.012	0.008	
Nutrients													
Un-ionized NH_3	mg/L							1.4	0.31	0.54	1.2	0.30	
NH_3-N	mg/L							16	22	27	23	22	
NO_2-N	mg/L							0.41	1.2	0.81	0.001	0.0028	
NO_3-N	mg/L							15.6	18.3	17.5	16.4	15.6	
T-PO_4	mg/L										0.34	0.22	
TKN	mg/L												
Solids													
Turb-L	NTU							11.84	4.38	3.71	5.47	3.84	
TDS	mg/L							1727	2713	2854	3281	3314	
TSS	mg/L							14.5	9.88	8.13	6.56	2.40	
Trace Constituents													
CN-F	mg/L								0.01	0.01	0.0054	0.005	
CN-T	mg/L							0.058	0.059	0.16	0.10	0.061	
CN-WAD	mg/L							0.025	0.020	0.032	0.019	0.020	

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : SSS.1													
Field data													
Temp	deg C				10.2								1.5
Cond-F	mS/cm				0.015								0.024
pH-F	pH unit				8.2								9.4
Major Constituents													
Ca	mg/L	6.49	0.97	2.78	3.75								8.11
Cl	mg/L	0.5	0.5	0.5	1.1								0.8
CO_3	mg/L												
HCO_3	mg/L	12	5	12	12								4
K	mg/L	0.34	0.18	0.26	0.31								0.52
Mg	mg/L	0.98	0.14	0.37	0.27								0.59
Na	mg/L												0.49
SO_4	mg/L	7	1	3	3								3
T-Hardness	mg/L												
T-Alkalinity	mg/L												
Total Metals													
Ag	mg/L												
Al	mg/L												
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L												
F	mg/L												
Fe	mg/L												5.97
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L												
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L	0.008	0.005	0.012									
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L	0.14	0.08	0.18	0.34								0.16
NO_2-N	mg/L	0.001	0.001	0.001	0.001								0.001
NO_3-N	mg/L	0.1	0.2	0.2	0.3								0.1
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L												
TSS	mg/L	96	27	30	97								175
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : SSS.2													
Field data													
Temp	deg C				9.0								2.7
Cond-F	mS/cm				0.023								0.018
pH-F	pH unit				8.2								9.5
Major Constituents													
Ca	mg/L	2.8	1.7	4	4.9								5.9
Cl	mg/L	1.1	0.50	0.50	1.3								0.50
CO_3	mg/L												
HCO_3	mg/L	8	6	11	13								4
K	mg/L	0.94	0.23	0.23	0.27								0.29
Mg	mg/L	0.83	0.21	1.85	0.31								0.52
Na	mg/L												0.24
SO_4	mg/L	4	1	9	3								2
T-Hardness	mg/L												
T-Alkalinity	mg/L												
Total Metals													
Ag	mg/L												
Al	mg/L												
As	mg/L												
B	mg/L												
Ba	mg/L												
Be	mg/L												
Bi	mg/L												
Cd	mg/L												
Co	mg/L												
Cr	mg/L												
Cu	mg/L												
F	mg/L												
Fe	mg/L												7.13
Hg	mg/L												
Mn	mg/L												
Mo	mg/L												
Ni	mg/L												
Pb	mg/L												
Sb	mg/L												
Se	mg/L												
Si	mg/L												
V	mg/L												
Zn	mg/L	0.009	0.0025	0.034									
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L	0.1	0.13	0.18	0.54								0.16
NO_2-N	mg/L	0.001	0.001	0.001	0.001								0.001
NO_3-N	mg/L	0.1	0.2	0.2	0.4								0.1
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L												
TSS	mg/L	39.0	17.5	36.5	57.0								146
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L												
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : SWS.1													
Field data													
Temp	deg C					4.9	3.9	6.5	4.3	7.5	2.1		4.5
Cond-F	mS/cm					2.05	1.24	0.791	0.585	0.950	0.788		0.145
pH-F	pH unit					8.1	8.0	7.8	7.2	7.3	8.0		7.4
Major Constituents													
Ca	mg/L					200	143	134	153	160	156	200	260
Cl	mg/L				1.2	6.9	4.2	3.1	4.1	4.1	4.5	6.0	9.3
CO_3	mg/L				1	0.67	1	1	1	1	1	1	1
HCO_3	mg/L				34	148	103	99	117	123	145	190	250
K	mg/L					6.2	5.3	5.7	3.8	6.6	6.6	8.0	4.4
Mg	mg/L					515	256	153	117	189	202	330	358
Na	mg/L					5.79	4.17	4.09	4.02	6.60	6.81	8.00	9.54
SO_4	mg/L				48	2237	1090	670	490	790	910	1310	1520
T-Hardness	mg/L						1256	825	633	994	1155	1575	1900
T-Alkalinity	mg/L						84	82	96	101	119	156	207
Total Metals													
Ag	mg/L					0.003	0.003	0.003	0.003	0.003	0.0036		
Al	mg/L					0.117	4.27	2.57	3.37	1.12	0.619	0.760	0.460
As	mg/L					0.001	0.0028	0.0023	0.0033	0.0015	0.0017	0.057	0.001
B	mg/L												
Ba	mg/L					0.022	0.055	0.050	0.063	0.044	0.041	0.028	0.026
Be	mg/L					0.0002	0.00035	0.0002	0.00023	0.0002	0.0002	0.0002	0.0002
Bi	mg/L												
Cd	mg/L					0.0003	0.0003	0.0003	0.0003	0.000375	0.0003	0.0015	0.0003
Co	mg/L					0.031	0.029	0.012	0.010	0.018	0.011	0.016	0.004
Cr	mg/L					0.008	0.012	0.009	0.0087	0.008	0.008	0.008	0.008
Cu	mg/L					0.005	0.0083	0.0053	0.005	0.018	0.005	0.005	0.005
F	mg/L												
Fe	mg/L					0.358	7.84	4.15	5.55	1.76	1.06	1.21	1.01
Hg	mg/L						0.01						
Mn	mg/L					2.90	1.96	0.913	0.657	1.47	0.848	1.09	0.268
Mo	mg/L					0.007	0.008	0.011	0.008	0.018	0.011	0.009	0.004
Ni	mg/L					0.163	0.124	0.0688	0.0403	0.0908	0.0614	0.0870	0.02
Pb	mg/L					0.00433	0.0055	0.003	0.003	0.002	0.0022	0.002	0.002
Sb	mg/L					0.00267	0.00175	0.002	0.001	0.003	0.0022	0.001	0.001
Se	mg/L					0.00167	0.004	0.003	0.0033	0.00425	0.0042	0.003	0.005
Si	mg/L												
V	mg/L					0.006	0.0103	0.008	0.00767	0.0065	0.006	0.006	0.006
Zn	mg/L				0.074	0.015	0.025	0.013	0.0177	0.0133	0.0096	0.008	0.017
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L				0.08	1.44	1.42	0.975	0.633	1.60	0.956	0.70	0.10
NO_2-N	mg/L				0.005	0.00133	0.00175	0.00225	0.00133	0.0015	0.0012	0.001	0.001
NO_3-N	mg/L				0.20	6.43	6.68	5.68	3.07	8.03	7.30	8.60	8.90
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU				19	43	47	75	87	35	26	37	16
TDS	mg/L				106	2976	1465	1078	882	1163	1186	2100	3070
TSS	mg/L				12	43	49	113	176	53	34	33	13
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L						0.005	0.0072	0.012	0.008	0.005	0.005	0.005
CN-WAD	mg/L						0.005	0.005	0.005	0.005	0.005	0.005	0.005

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : SWS.2													
Field data													
Temp	deg C					6.6	4.1	5.5	4.9	7.4	2.3		3.9
Cond-F	mS/cm					1.15	1.22	0.750	0.621	0.933	0.838		0.130
pH-F	pH unit					8.1	7.9	8.0	7.8	7.7	8.1		7.9
Major Constituents													
Ca	mg/L					223	152	130	122	155	168	232	291
Cl	mg/L				13	9.9	4.7	3	3.5	4.4	4.9	7.5	10
CO_3	mg/L				1	0.50	1	1	1	1	1	1	1
HCO_3	mg/L				105	133	102	94.0	94.8	125	153	200	270
K	mg/L					8.31	5.52	4.79	5.02	6.23	6.31	6.00	4.82
Mg	mg/L					433	261	156	142	182	224	334	395
Na	mg/L					6.84	4.29	3.85	4.37	6.31	6.93	8.00	10.50
SO_4	mg/L				3360	1945	1095	676	606	774	990	1380	1570
T-Hardness	mg/L						1313	785	719	965	1175	1675	2100
T-Alkalinity	mg/L						83.8	76.8	77.0	103	124	168	220
Total Metals													
Ag	mg/L					0.003	0.003	0.003	0.003	0.003	0.004		
Al	mg/L					1.48	6.26	5.17	2.97	1.57	1.20	0.39	0.26
As	mg/L					0.001	0.0043	0.0046	0.003	0.0018	0.0019	0.001	0.001
B	mg/L												
Ba	mg/L					0.034	0.091	0.092	0.069	0.046	0.043	0.029	0.029
Be	mg/L					0.0002	0.00043	0.00016	0.00015	0.0002	0.0002	0.0002	0.0002
Bi	mg/L												
Cd	mg/L					0.0003	0.0003	0.0003	0.0003	0.00053	0.0003	0.0003	0.0003
Co	mg/L					0.053	0.028	0.017	0.017	0.016	0.0084	0.006	0.004
Cr	mg/L					0.008	0.013	0.010	0.009	0.008	0.008	0.008	0.008
Cu	mg/L					0.012	0.012	0.011	0.0053	0.012	0.005	0.012	0.005
F	mg/L												
Fe	mg/L					9.11	15.1	14.7	7.53	2.64	2.11	0.759	0.541
Hg	mg/L												
Mn	mg/L					3.17	1.86	1.23	1.14	1.32	0.741	0.519	0.272
Mo	mg/L					0.0055	0.008	0.008	0.013	0.017	0.011	0.006	0.005
Ni	mg/L					0.24	0.11	0.067	0.087	0.081	0.053	0.048	0.02
Pb	mg/L					0.0085	0.006	0.0032	0.003	0.002	0.002	0.002	0.002
Sb	mg/L					0.0015	0.0013	0.0016	0.0018	0.0025	0.0016	0.001	0.001
Se	mg/L					0.0035	0.0043	0.0029	0.0035	0.0035	0.004	0.007	0.005
Si	mg/L												
V	mg/L					0.007	0.013	0.0092	0.0073	0.0065	0.0062	0.006	0.006
Zn	mg/L				0.055	0.02	0.038	0.026	0.023	0.015	0.0094	0.009	0.01
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L				0.800	1.41	1.22	0.776	1.22	1.50	0.976	0.340	0.240
NO_2-N	mg/L				0.028	0.0030	0.0028	0.0042	0.0025	0.0014	0.001	0.001	0.001
NO_3-N	mg/L				7.50	9.93	6.35	5.02	4.875	7.70	7.14	8.30	9.30
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU				65	100	119	157	142	63	46	6.5	3.3
TDS	mg/L				5380	1792	1487	1054	1013	1198	1215	2100	2540
TSS	mg/L				19	186	153	252	174	55	57	7.0	1.0
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L						0.0075	0.0076	0.0095	0.0088	0.005	0.005	0.005
CN-WAD	mg/L						0.005	0.005	0.005	0.005	0.005	0.005	0.005

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : WR2													
Field data													
Temp	deg C			2.3	2.6	3.5	5.1	6.3	4.8	1.1	0.85		
Cond-F	mS/cm			0.230	0.736	1.48	1.48	1.98	1.51	1.67	1.61		
pH-F	pH unit			7.7	8.4	7.9	8.0	7.8	7.3	7.3	8.1		
Major Constituents													
Ca	mg/L			593	425	317	410	369	356	445	462	403	420
Cl	mg/L			90	80	81	64	43	34	44	55	58	60
CO_3	mg/L			1	1	1	1	1	1	1	1	1	1
HCO_3	mg/L			490	320	219	278	227	233	303	348	420	360
K	mg/L			19.0	12.6	19.4	15.5	14.8	10.9	13.8	14.8	15.3	13.7
Mg	mg/L			1080	688	274	442	355	342	501	628	677	601
Na	mg/L			28.6	21.8	15.8	20.4	13.9	12.1	19.1	22.4	25.1	21.4
SO_4	mg/L			4610	3023	1915	2205	1643	1623	2360	3013	4260	
T-Hardness	mg/L												
T-Alkalinity	mg/L												
Total Metals													
Ag	mg/L					0.003	0.0033	0.003	0.003	0.003	0.015		
Al	mg/L				1.36	9.04	5.99	32.1	7.82	7.73	1.91	18.3	0.942
As	mg/L					0.001	0.004	0.0093	0.0076	0.003	0.0018	0.016	0.001
B	mg/L												
Ba	mg/L				0.037	0.185	0.137	0.823	0.172	0.215	0.0558	0.678	0.033
Be	mg/L					0.0002	0.0002	0.0013	0.00045	0.00013	0.0002	0.001	0.0002
Bi	mg/L												
Cd	mg/L					0.0003	0.0003	0.00067	0.00088	0.0003	0.0003	0.0003	0.0003
Co	mg/L					0.004	0.024	0.022	0.011	0.0077	0.004	0.019	0.004
Cr	mg/L					0.008	0.0093	0.031	0.011	0.012	0.008	0.022	0.008
Cu	mg/L				0.005	0.015	0.0093	0.033	0.012	0.015	0.018	0.04	0.051
F	mg/L												
Fe	mg/L				3.23	14.7	10.4	64.7	25.2	15.0	3.94	39.6	1.96
Hg	mg/L												
Mn	mg/L				0.318	0.561	1.50	1.37	1.25	0.632	0.287	1.10	0.233
Mo	mg/L				0.012	0.014	0.019	0.011	0.0075	0.016	0.015	0.020	0.015
Ni	mg/L				0.039	0.036	0.073	0.086	0.047	0.049	0.034	0.080	0.033
Pb	mg/L				0.0050	0.0078	0.0040	0.019	0.0083	0.0033	0.0020	0.015	
Sb	mg/L					0.002	0.001	0.001	0.0013	0.001	0.001	0.001	
Se	mg/L				0.009	0.0063	0.0053	0.009	0.010	0.012	0.011	0.023	
Si	mg/L												
V	mg/L					0.006	0.008	0.024	0.0095	0.011	0.006	0.018	
Zn	mg/L			0.004	0.026	0.044	0.033	0.14	0.053	0.036	0.017	0.01	0.017
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L			0.14	0.38	0.94	0.25	0.25	0.17	0.54	1.5	2.7	2.5
NO_2-N	mg/L			0.001	0.0015	0.083	0.61	0.0073	0.0013	0.007	0.001	0.001	0.001
NO_3-N	mg/L			21	19	18	11	12	10	11	12	16	14
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L			7900	4835	3288	3375	2773	2705	4193	4843	6840	
TSS	mg/L			30.0	80.3	619	220	2408	432	398	236	530	
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L							0.006	0.008	0.0087	0.005	0.005	0.005
CN-WAD	mg/L												

		Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
SAMPLE POINT : WR11													
Field data													
Temp	deg C			1.6	0.93	3.6	9.0	6.1	4.2				
Cond-F	mS/cm			0.323	0.811	0.513	0.212	1.66	1.73				
pH-F	pH unit			8.7	8.5	8.0	8.3	8.1	7.7				
Major Constituents													
Ca	mg/L			261	454	173	389	426	417				
Cl	mg/L			29	44	81	62	48	44				
CO_3	mg/L			11	8.5	1	1	1	1				
HCO_3	mg/L			260	448	133	260	250	270				
K	mg/L			17.3	34.9	7.2	16.8	19.2	12.4				
Mg	mg/L			858	1386	75	394	425	436				
Na	mg/L			25.9	51.8	10.4	17.7	17.5	15.8				
SO_4	mg/L			3000	5225	380	1880	1760	1860				
T-Hardness	mg/L												
T-Alkalinity	mg/L												
Total Metals													
Ag	mg/L						0.003	0.003	0.003				
Al	mg/L				0.720	0.155	1.45	10.7	0.426				
As	mg/L						0.002	0.006	0.0015				
B	mg/L												
Ba	mg/L				0.05	0.038	0.039	0.14	0.022				
Be	mg/L						0.0002	0.0003	0.0002				
Bi	mg/L												
Cd	mg/L						0.0003	0.0003	0.0003				
Co	mg/L						0.007	0.008	0.004				
Cr	mg/L						0.008	0.011	0.008				
Cu	mg/L				0.005	0.005	0.005	0.006	0.005				
F	mg/L												
Fe	mg/L				1.11	0.220	2.34	18.9	0.448				
Hg	mg/L												
Mn	mg/L				0.434	0.0595	0.574	0.457	0.393				
Mo	mg/L				0.043	0.0075	0.012	0.011	0.010				
Ni	mg/L				0.072	0.0075	0.034	0.036	0.025				
Pb	mg/L				0.002	0.002	0.003	0.003	0.002				
Sb	mg/L						0.001	0.001	0.001				
Se	mg/L				0.026	0.0025	0.009	0.01	0.0092				
Si	mg/L												
V	mg/L						0.006	0.008	0.006				
Zn	mg/L			0.076	0.017	0.007	0.012	0.035	0.021				
Nutrients													
Un-ionized NH_3	mg/L												
NH_3-N	mg/L			1.3	2.5	0.69	0.18	0.24	0.92				
NO_2-N	mg/L			0.003	0.0013	0.003	0.15	0.003	0.001				
NO_3-N	mg/L			39	73	5.4	17	14	15				
T-PO_4	mg/L												
TKN	mg/L												
Solids													
Turb-L	NTU												
TDS	mg/L			5360	8365	833	3410	2960	7130				
TSS	mg/L			105	38	27	67	25	23				
Trace Constituents													
CN-F	mg/L												
CN-T	mg/L							0.005	0.012				
CN-WAD	mg/L												

Materiality Assessment

As part of our reporting process, we identified our most significant (or material) sustainability issues. These are issues that are considered important by several key stakeholders, have the ability to significantly impact our business performance, and can be influenced by our actions. We used three complementary approaches to identify our material environmental and sustainability issues. First, we considered the reporting requirements under our leagally required Environmental Management Action Plan (EMAP), and the content of our previous annual environmental and sustainability reports. Second, we continued to listen to our key stakeholders about issues and concerns they expressed about our operations. These are outlined in the Social Responsibility section of this report. Third, we benefited from Centerra's corporate membership in, and support of, industry and multi-sectorial initiatives. These include the World Gold Council and the Extractive Industries Transparency Initiative. We also participate in a variety of local and international events and conferences. These activities inform our judgment and allow us to remain abreast of emerging trends and standards.

As a result of this assessment, we expanded the sections on local procurement, social responsibility, and mine closure planning in our 2013 reporting. The status of ongoing negotiations with the Kyrgyz government about the restructuring of its ownership in Centerra Gold and Kumtor, and a series of claims issued in 2012 and 2013 are highlighted in the President's letter and detailed further in media releases which are available on Centerra's website: (www.centerragold.com).

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Certain information contained or incorporated by reference herein may include "forward-looking statements" within the meaning of certain securities laws. Such forward-looking statements involve risks, uncertainties, and other factors that could cause actual results, performance, prospects, and opportunities to differ materially from those expressed or implied by such forward-looking statements. For a detailed discussion of such risks, uncertainties and other factors, see the Management's Discussion and Analysis included in Centerra's most recent Annual Report and Annual Information Form, both of which are available on Centerra's website. Although Centerra believes that the assumptions inherent in these forward-looking statements are reasonable, the reader should not place undue reliance on these statements. Forward-looking information is as of December 31, 2013. Centerra disclaims any intention or obligation to update or revise any forward-looking statements whether as a result of new information, future events or otherwise.

How can we make a bigger difference?
To provide your feedback about our performance and this report, please contact us at environment@kumtor.com or visit www.kumtor.kg.

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