

DO THE RIGHT THING.

THIS IS OUR COMMITMENT.

We are going through difficult times, involving a lot of work and many challenges. So, in order for people to better understand the actions we have been carrying out after the accident, we have prepared an objective and complete overview, with official information about the measures taken from the very first moment.

WHO WE ARE

- *Founded in: 1977*
- *Closely held corporation*
- *Shareholders: BHP Billiton Brasil Ltda e Vale S.A.*
- *Product: iron ore pellets*
- *Sales only to international markets*
- *Number of employees: 3000*
- *Units: Minas Gerais and Espírito Santo*

THE ACCIDENT

Date: 5 November 2015

Dam accident

The Fundão dam breached and its tailings impacted the nearby Santarém dam – which held water and sediments – and caused a partial erosion of its right shoulder. The impact also provoked damage to the Selinha dike, one of the side walls of the Germano dam.

Causes

The investigations of the causes of the accident are being carried out by competent authorities, such as the Civil Police, and Samarco is supplying all the information necessary to expedite the process.

In parallel, the Company is counting on the support of international firms, which are working on the investigations and collecting as much information as possible. The objective is for the data obtained – with the participation of experts in geotechnical engineering, geology, seismology and soil mechanics, among others – to explain the causes of the accident and also provide input for potential improvements in the production and safety procedures.

There is no set date for the completion of the investigations, but due to the complexity of the accident, it is expected that the conclusive reports will be issued within six to twelve months.

EMERGENCY PLAN

Emergency actions

Immediately after the accident, together with the Civil Defense, Fire Department, Military Police and other authorities, Samarco performed all the actions outlined in its Dam Emergency Action plan which had been validated by the competent agencies.

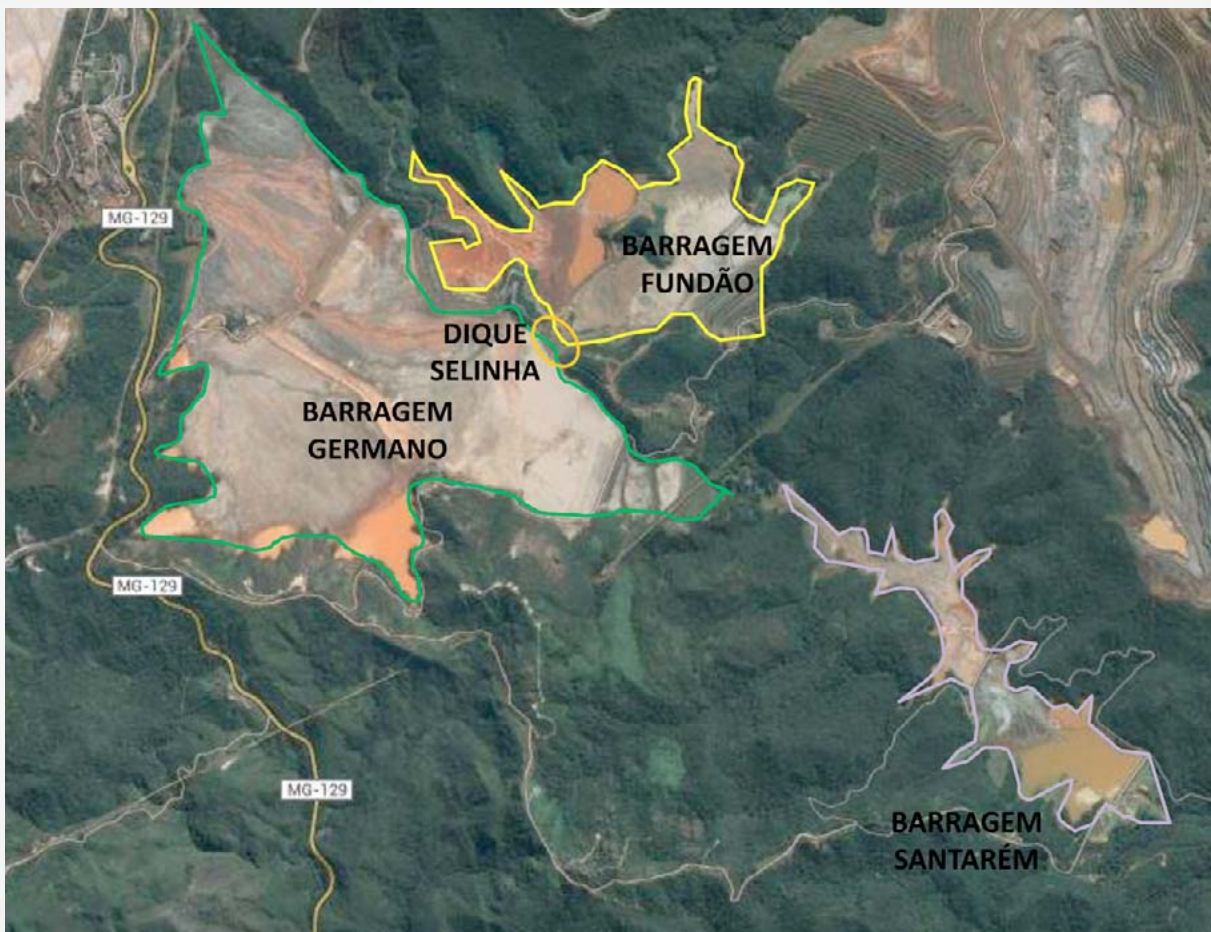
Guidelines

Focused on prevention, the Company has adopted additional safety measures which reinforce the procedures and instructions given to the residents of the communities of the Mariana region. Samarco teams are furnishing information about the emergency procedure, which includes the activation of fixed sirens and the establishment of meeting points. The additional emergency procedures further include 24/7 online monitoring using cameras, large screens, drones and radar, field inspections, and visual inspections of the Santarém and Germano dams.

DAMS

Composition

The Samarco dam system consists of the dams of Germano, Fundão and Santarém.



Aerial view of the dam area before the accident

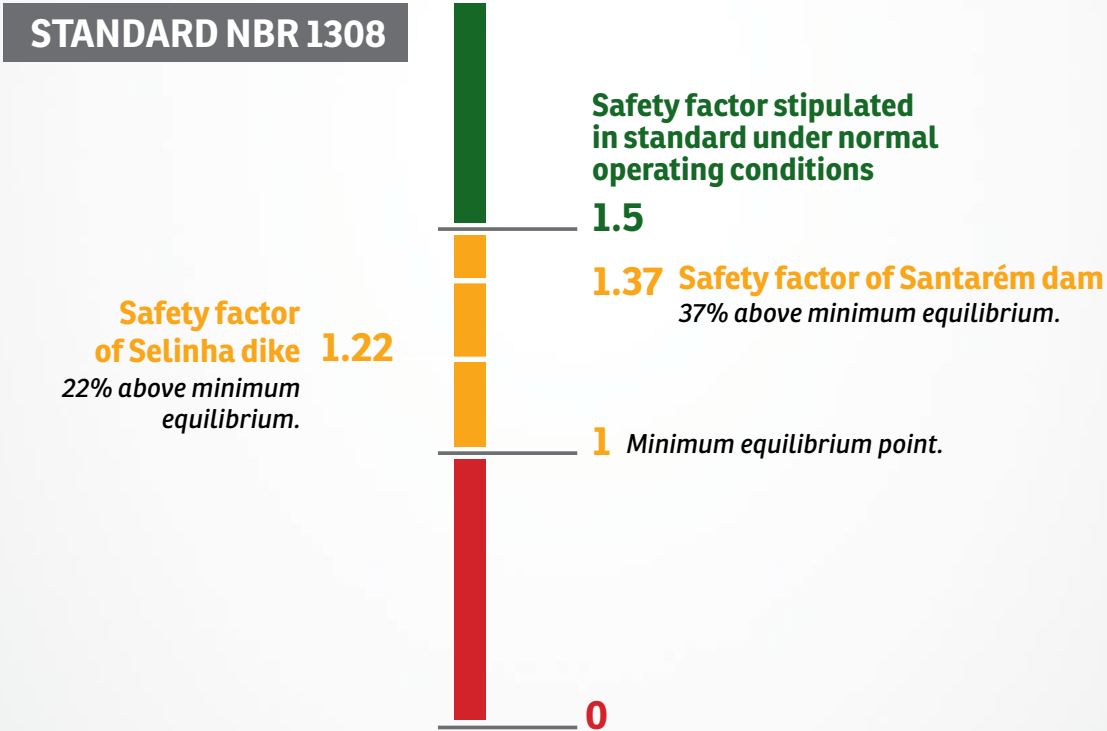
Licensing

All of the Samarco dams have valid Operating Licenses issued by the Regional Superintendency of Environmental Compliance (Supram). The last inspection – performed by a specialized geotechnical consulting company hired by Samarco – took place in July 2015 and in September the corresponding technical reports were delivered to the competent government agencies, showing that the dams were fit and safe for operation. Samarco itself carries out its own inspections, in compliance with the Federal Law of Dam Safety, with a 24/7 team on duty for maintenance and monitoring.

DAMS

Safety factor

Currently, the safety factor of the Santarém dam is 1.37. This means that the index is 37% above the minimum equilibrium point (1.00). For the Germano dam, the safety factor is 1.97. In the case of the Selinha dike, one of the auxiliary structures in the Germano dam complex, the safety factor is 1.22, in other words, 22% above the minimum equilibrium point. In the other two dikes, Sela and Tulipa, the safety coefficients are respectively 1.44 and 1.49.



DAM INTERVENTIONS

Works

Standard NBR 13028 provides that, under normal operating conditions, the safety factor should be equal to or greater than 1.5, i.e., 50% above the limit equilibrium. To reach this index and reduce the risks arising from the accident, Samarco is carrying out emergency works for containment and reinforcement.



Works on the dam at the Germano Unit

Santarém

Here the interventions are focused on the repair of the spillway and the crest of the dam, as well as construction of the reinforcement berm, to halt the erosion process.

DAM INTERVENTIONS

Germano

To increase the safety of the auxiliary dikes of the Germano dam, a reinforcement structure is being built with blocks placed at their base.

Conclusion forecast

Santarém – 90 days

Germano – 45 days

Monitoring

The control room installed inside the Germano Unit close to Mariana has received new equipment to enhance the monitoring of the structures and dikes of the dams. This new equipment is part of an action plan which, even before the accident, already complied with all the requirements stipulated by law.

With the help of cameras, large screens, drones, radar and field inspections, a team of over 40 people is monitoring the status of the Santarém and Germano dams 24/7. In addition, a visual monitoring station was installed, also operating 24/7.



Monitoring room at the Germano Unit

IMPACTED COMMUNITIES



HUMANITARIAN ACTIONS

IN PLACE FROM THE FIRST MOMENT

BELOW ARE SOME NUMBERS* OF THE SUPPORT PROVIDED BY SAMARCO SINCE THE DAM ACCIDENT ON NOV. 5, INCLUDING FULL ASSISTANCE TO THE AFFECTED FAMILIES, INCLUDING FOOD, PERSONAL HYGIENE ITEMS, HEALTH AND PSYCHOSOCIAL ASSISTANCE.

 Potable water supplied
270 million liters

 Mineral water supplied
24 million liters

 Families living in rented homes
153

 Health agents hired
85

 Families receiving psychosocial support
729

 Animals rescued and cared for
4,687


 Back to school with school kit
100% of schools

 Bridges being built
7
1 finished

 Water analyses performed
6.760 on Doce Rive,
531 of sea

 **100%** Communities with reestablished access

 Prepaid allowance cards for families. Initial delivery of
115

 Infrastructure and support for rescue of river fish: **150 thousand fish** rescued

*Numbers updated on Dec. 9, 2015. Follow our daily updated at www.samarco.com.

Lodging for families

153 families, from the cities of Mariana and Barra Longa, are lodged at rented homes fully furnished by Samarco.

The relocation to the new homes has complied with the criteria and methodology of prioritization defined by the Committee of Representatives of Affected Communities. Families with members over 65, with children, newborns and pregnant women, people with special needs or requiring constant medical care have priority in the delivery of the homes.

The new houses are complete with furniture, household appliances, bed/bath linen. Before the families move in, they are also provided with food including vegetables and fruit, cleaning products, personal hygiene items and potable water.

HUMANITARIAN ACTIONS



See the various steps of the procedure for delivering homes to the families.

Meeting with the community

Twice a week, Samarco promotes meetings with representatives of the impacted communities, the Public Prosecution Service of Minas Gerais and other competent authorities to discuss the humanitarian assistance actions and emergency measures.

The criteria and the methodology for prioritization of assignment of homes are partly defined in these meetings, pursuant to the criteria described above for family members of specific ages and with specific needs.

Social interaction with the household members

In this phase, the Samarco professionals go to where the families are temporarily lodged to listen to their needs, so that the home to be offered will meet their expectations. Among the aspects evaluated are the number and size of the rooms, availability of garage, location, type of house and proximity to relatives.

HUMANITARIAN ACTIONS

Purchase of furniture

At the start of the process, a Samarco team is made responsible for the purchase of the furniture for the new homes, giving priority to local suppliers. All of the families receive new furniture, household appliances, bath/bed linen.

Evaluation of available real estate

Concomitantly with the social dialogue, another group of Samarco professionals searches the Mariana region to look for rental properties. They evaluate the condition of the homes, consider the infrastructure, safety aspects, documentation and supply of electricity and water. So far, some 700 units have been mapped and inspected.

Crosschecking needs

Once the Samarco professionals have determined the needs of each household, they crosscheck the data with the real estate mapping, informing the families of the characteristics of the available units.

Cleaning and checking of the infrastructure

Samarco professionals go to the unit to perform the necessary cleaning and check on the electrical and hydraulic installation, so that the family will have no future problems in this regard.

Discussion of options

After the unit is cleaned and the infrastructure is approved, the families are shown the options that would meet their needs. The Company picks them up at their temporary lodging, with the presence of a social assistant of the Mariana city administration, and takes them to all the pre-selected homes. If they are not satisfied with the first visit, additional ones will be made.

HUMANITARIAN ACTIONS

Choosing the house

After the visits are concluded, the families choose the unit they liked most and sign the term of agreement regarding the choice with Samarco.

Assembly and organization

As soon as the furniture set arrives, it is assembled and the household items and linen are organized to be ready for the new residents.

Supply of foodstuff

Samarco, in partnership with the Mariana city administration, supplies the family with staple foods, fruits and vegetables, cleaning products and personal hygiene items, including donations made to the affected families.

Moving the family

On the day of the move, the Samarco team picks the family at up its temporary lodging and takes it to their new home.

Picking up donations

After the move, the Company offers transportation for the family to go to the Mariana Convention Center to pick up available items received through donations.



Kitchen of one of the homes rented by Samarco

HUMANITARIAN ACTIONS

Financial assistance to the families

On 30 November, Samarco started the delivery of the first 115 prepaid debit cards for financial assistance to the families in the communities of Bento Rodrigues, Paracatu, Pedras, Camargos, Ponte do Gama and Campinas, districts of Mariana with validated rosters. In Barra Longa and its districts/sub-districts, the delivery of the cards will start on 11 December and will benefit 70 families who have already had their names validated on the roster. The delivery will continue as the rosters are validated, until all eligible households are included.

The objective is to offer an alternative for the payment of personal, family and home expenses by people who have temporarily lost their source of income.

The families directly affected by the accident with the dam were listed by Samarco and the Civil Defense in Mariana and Barra Longa. The beneficiaries will include the families staying with relatives or those lodged at the hotels and inns or temporary homes, as well as dependents of any age which live with the same family unit and depend on its source of income. In other words, relatives such as in-laws, aunts and uncles, brothers and sisters, children, will be entitled to an extra allowance in the form of a percentage of the financial assistance provided to the head of the household.

In Barra Longa, a survey is being carried out to discuss financial assistance as well to rural producers and those that did not have their homes damaged but were isolated as a result of the accident. This proposal will be discussed with the human rights protection agencies.

HUMANITARIAN ACTIONS

Beneficiaries will also include families living along the river in Minas Gerais and Espírito Santo who suffered an impact on their livelihood obtained from fishing and extracting sand and rock, based on an Agreement between Samarco and the Labor Public Prosecution Service of both states, resulting in the so-called Term of Adjustment of Conduct (TAC).

The funds will be made available in the form of a prepaid debit card accepted for purchase in several commercial establishments, allowing withdrawals and bank transfers at many ATM machines.



Financial support debit cards

HUMANITARIAN ACTIONS

Psychosocial support

Since 5 November, families from the communities of Mariana, Barra Long and nearby districts have been receiving psychosocial support from psychologists and social assistants. The professionals are visiting homes, hospitals, inns and hotels of the region to provide individual, family or group care, with the objective of helping the affected families. When the need for ongoing care is identified, the resident is referred to specialists in mental health of the Mariana city administration.

HUMANITARIAN ACTIONS

Education

Over 600 students from the communities of Barra Longa, Claudio Manoel, Campinas, Pedras, Borba, Gesteira, Bonito, Bento Rodrigues and Paracatu – have gone back to school. They all received a kit with a backpack, pencils, coloring pencils, pens, play dough and other school material.



Child back at school in the Mariana region

Public service centers

In Colatina, Linhares, Marilândia and Baixo Guandu, in Espírito Santo, and in Mariana, Minas Gerais, the population can be helped by professionals contracted by Samarco in tents set up at the locations designated by the government authorities. The Company is also available for support to the residents of these and other localities through the following channels: assistencia.es@samarco.com, relacionamento@samarco.com, Public Relations **(0800 031 2303)** and Ombudsman **(0800 721 0717)**.

HUMANITARIAN ACTIONS

Health services agents

Health services agents are visiting the homes in Governador Valadares to carry out in the community a preventive work of endemic control, mainly dengue, leptospirosis and leishmaniasis, in addition to elimination of scorpions.

This contract was made in response to a request of the Health Inspection Department of the local city administration, considering that the residents had stored water at their homes during the period of interruption in water supply from the Doce River intake. All of the professionals were selected and trained by the department itself, and are residents of Governador Valadares and adjacent areas.

Support to the families of missing people

The families of missing people are receiving psychosocial support from professionals specialized in risk situations. Like all the rest of the communities of the affected areas, they also receive other forms of assistance, such as lodging at inns, relocation to rented homes, furniture kit, food and monthly allowance.

For those that lost a family member as a result of the accident, the Company pays for all costs of documentation and burial. In the case of outsourced employees, the Company provides lodging for the people who are from other regions and complements the life insurance to cover the costs of funeral expenses.

HUMANITARIAN ACTIONS

Employment and income

A work front was established to handle employment and income. Company teams visited the inns and hotels where the families are staying, as well as the families that are already settled in rented homes, to make a profile survey. The interview phase was concluded on 29 November. Now the team is working on the analysis of the collected data, after which a plan will be developed to promote the professional reintegration of the people affected by the dam accident, restating their working conditions or opening up new fronts for occupation and income.

In parallel, some 30 youths of the communities of Bento Rodrigues and Paracatu in Minas Gerais have enrolled in the selection process of the Instituto Federal de Minas Gerais (IFMG) to take technical courses and integrated high school in the fields of industrial automation, administration, metallurgy and building design.

IFMG gave them exemption from payment of the enrollment fee for the selection process, which will be held on 20 December. The approved students will undergo a socio-economic evaluation to receive benefits, such as food, day care center allowance and transportation credit, among others.



Youths from Bento Rodrigues and Paracatu enroll in selection process

INFRASTRUCTURE

Refurbishing of school

Samarco rented and renovated a house in Barra Longa to receive 100 students from elementary school at the Escola Municipal José de Vasconcelos.

Clean-up of homes in Barra Longa

Samarco teams have already performed heavy duty cleaning in 83 homes affected by the accident, and detailed cleaning on 71 of them. In addition, they have cleaned up 40 yards, 8 units are being renovated and 6 stores have been prepared to resume their activities.



Reclamation work progresses in Barra Longa

Candongá

Five teams are working on cleaning the outside area of the Candonga Reservoir, responsible for feeding the Risoleta Neves hydropower plant, in the municipalities of Santa Cruz do Escalvado and Rio Doce, about 100 km from Mariana.

The work is being done by companies hired by Samarco and are being monitored by the consortium Aliança Energia, which operates the plant, with the objective of reestablishing normal operating conditions.

INFRASTRUCTURE

Rebuilding bridges

The Company is working hard to rebuild the seven bridges affected by the dam accident by the end of January 2016. One of them is already ready for use.



Bridge linking the districts of Aguas Claras and Monsenhor Horta is ready for use

DIALOGUE

Documentation

Samarco has maintained permanent contact with the competent entities and the municipal, state and federal governments to offer all of the information requested, in addition to any analyses and expert reports produced periodically by the Company.

Community

In Mariana, meetings are held among representatives of impacted communities, of Samarco and of competent agencies. The first meeting gave priority to the humanitarian assistance efforts of an emergency nature, such as the right to lodging and financial assistance. As these actions were implemented, new dialogues will be promoted for decision making, on a medium and long term, to be defined according to local needs.

Congressmen

On 30 November, Samarco received, at the Germano unit, congressmen who are members of the Extraordinary Commission for Dams, of the State Legislature of Minas Gerais. The Director of Operations and Infrastructure of Samarco, Kleber Terra, accompanied them to the dam monitoring room and also on a visit to the dams.

During the visit, they saw how the dams are being monitored in real time, showing Samarco's determination to assure the stability of these structures. The monitoring includes radar and daily inspections performed by the technical staff of Samarco and contracted specialized companies. In addition, there is the use of drones, laser scanning and existing geotechnical instrumentation for technical evaluation. For the Germano dam, readings are automated with the acquisition of online data.

DIALOGUE

National Association of Mayors

On 23 November, Samarco participated in a dialogue with the National Association of Mayors (FNP) in Mariana. The meeting had the presence of 18 mayors from cities in Minas Gerais: Alpercata, Belo Horizonte, Belo Oriente, Bom Jesus do Galho, Caratinga, Córrego Novo, Ipaba, Mariana, Marliéria, Naque, Ouro Preto, Rio Casca, Rio Doce, Santa Cruz do Escalvado, São Domingos do Prata, São José do Goiabal, São Pedro dos Ferros and Sem Peixe. Samarco listened to their concerns about the emergency needs of the municipalities affected by the dam accident and responded to their questions as to the next work front actions.

Cohab

On 18 November, a round table discussion and weekly negotiation was established between Samarco and the Minas Gerais housing institution - Companhia de Habitação de Minas Gerais (Cohab MG) for the solution of the socioenvironmental problems arising from the dam accident. The action was defined in compliance with a decree issued by the Governor of Minas Gerais, Fernando Pimentel.



Dialogue with the community

WATER

270 million liters of potable water and 24 million liters of mineral water distributed in municipalities of Espírito Santo and Minas Gerais*

*Numbers updated on 9 Dec 2015.



Warehouse for water storage in Colatina (ES)

Consumption

The analysis reports of the companies responsible for supplying the affected cities along the Doce River confirm that the water arriving at the homes of the population is fit for human consumption and complies with the parameters established by the national sanitary inspection agency (Anvisa) – Ruling 2914/2011.

Governador Valadares (MG)

The supply to this city was normalized on 16 November. After being abstracted from the Doce River by the water treatment plant, the water is receiving an organic coagulant based on tannin, extracted from the bark of the black wattle tree (*Acacia mearnsii*), which stimulates the formation of small flocks with the solids that are dissolved in the water, accelerating their decantation. These are the solids that make the water turbid. The use of the coagulant accelerates the clarification of the water and allows it to undergo the conventional treatment process carried out by local water utility, Serviço Autônomo de Água e Esgoto (SAAE). The solution was defined by a joint effort among the teams of Samarco, SAAE, the state water utility Copasa, and companies which supply water treatment products.

WATER

Baixo Guandu (ES)

Since 16 November, the supply to the municipality of Baixo Guandu has been using water abstracted from the Guandu River, an alternative made possible by the installation of three water mains for the treatment plant on the river, an action of SAAE and the city administration of Baixo Guandu, with the support of Samarco through the supply of the material and technical support.

Colatina (ES)

Since 24 November, the water supply to Colatina has been resumed gradually. Reports of the local sanitation utility, Cesan, attest that the water treated by the water utility - Serviço Colatinense de Meio Ambiente e Saneamento Ambiental (Sanear) - is potable.

To this end, Samarco worked jointly with the municipality administration to reestablish the water intake for the city. Among the initiatives carried out, the Company offered the use of a natural flocculant, extracted from the bark of the black wattle tree, which is not harmful to the environment.

Until water supply is fully reestablished. Samarco will keep up the delivery of potable water through water tank trucks, as well as supply of mineral water, as determined in the preliminary Term of Socioenvironmental Commitment (TCSA) signed between the company, the Public Prosecution Service of Espírito Santo, the Federal Public Prosecution Service, and the Labor Public Prosecution Service. The distribution locations are defined by the city administration, the Civil Police and the Civil Defense. Up to the 9th of December, Samarco had delivered over 107 million liters of potable water and over 3 million liters of mineral water. The Company has supplied, on a daily basis, some 300 thousand liters of mineral water, 30 thousand liters more than required by the TCSA, in addition to providing 151 water tank trucks.

Artesian wells

Samarco has drilled artesian wells in cities along the course of the Doce River for water abstraction and treatment. In Minas Gerais, there are four wells in operation in Galileia, two in Periquito, one in Itueta, and one in Resplendor. In Colatina (ES), six artesian wells are being connected to the water treatment plants. The total volume of water to be added to the city's water supply will be approximately 39 liters/second, equivalent to about 13% of the demand of Colatina.

MONITORING OF WATER QUALITY

Doce River

The water, the tailings and the sediments along the Doce River are being monitored by Samarco on a daily basis. Over a distance of 637 km, from the site of the accident in Mariana to the sea in Regencia, there are dozens of monitoring stations, testing some 200 quality parameters.

pH

From the beginning of the monitoring, the pH results have been normal, between 6 and 9, as established by environmental law. These values are suitable for maintaining aquatic life and show that the tailings are not reacting with the water nor are they changing the neutrality conditions of the river.

Tailings are not toxic

The tests show that the tailings from the Fundão dam are not toxic and do not present any risk to human health.

The metals found in the test results have always been present in the Doce waterway. With the passage of the turbidity plume, they were stirred up and came to the surface. This is why some of the indexes are higher than the limit established by law. The tendency is for the numbers to return to normal as the plume settles.

River sediments free of contaminants

Ecotoxicity studies show that the water of the Doce River is not toxic to the environment. In regard to the sediments, no abnormality was found, even after the passage of the plume. In other words, the water which has settled to the bottom of the river bed does not present any hazard to the environment. This result is consistent with the report provided by the Brazilian Geological Service – CPRM, which brings data updated to 18 November, in Minas Gerais, close to the dam area. The report further points out that there has been an increase in the presence of heavy metals in the water and in the sediments compared to the 2010 data, also collected by CPRM.

FAUNA AND FLORA

Animal rescue

Animals of different species have been rescued from the affected areas. They have been receiving daily care from Samarco professionals, NGOs and outsourced companies, as well as proper nourishment and veterinary assistance. Many of the animals have already been identified by their owners and taken home. Others will temporarily stay at the sites provided by the Company, always under specialized care.



For emergency purposes, the Company provided a structure in the urban zone of Mariana to house some animals, as well as a warehouse in Antonio Pereira to store consumables, feed, sawdust and gravel, in addition to a farm to board large size animals. Samarco supplies all the necessary logistics to support the transfer of the animals for treatment in specialized clinics when needed, as well as vehicles with drivers to help rescue animals. Samarco also provides personal protection equipment such as rubber boots, vests and helmets, and also manpower for security and cleaning services, in addition to office material.

Another action also being carried out is the distribution of consumables (corn, cornmeal, feed, salt, etc.) to more than 3600 animals which are staying at farms in Bento Rodrigues, Barra Longa, Bicas, Camargos, Gesteira, Guerra, Paracatu de Baixo, Pedras, Ponte do Gama, Santo Antônio de Pedras, Barretos and Campinas, pursuant to the roster of producers prepared by the Mariana administration, through the Agriculture Secretariat.

FAUNA AND FLORA

As a preventive action, species of fish and crustaceans from the regions of Baixo Guandu, Colatina, Linhares and Aimorés were rescued and taken to other waterways, with characteristics similar to those of their original habitat.

Aqua Ambiental, a firm specialized in environmental monitoring, and the Instituto de Pesquisa e Reabilitação de Animais Marinhos (IPRAM), companies engaged by Samarco, have collected 2308 species between Linhares and Baixo Guandu.

In Aimorés, work is being carried out by Brandt Meio Ambiente, in the form of specialized consultancy in environmental programs and studies, responsible for the rescue of an additional 244 species.

After the collection of the fish, the companies are performing technical work such as the cataloguing and identification of native and exotic species.



Rescued animals

ENVIRONMENTAL REHABILITATION PLAN

Samarco has engaged Golder Associates, a world class consulting specialist in engineering, environment and environmental emergencies, which will be in charge of developing the plans, management and supervision of the actions to be implemented in all the areas impacted along the Doce River. Samarco is also studying partnerships with other environmental institutes, such as Instituto Terra, run by famed photographer Sebastião Salgado, with actions focused on the environmental rehabilitation of water sources along the river.

SOCIO-INSTITUTIONAL RECOVERY PLAN

With consultancy support from ERM – Environmental Resources Management, an international firm with experience in environment, health, social and security services, Samarco is developing the planning for the recovery of the communities impacted by the accident. Among the actions to be carried out is the resettlement of the families of Bento Rodrigues and Paracatu, to a location yet to be determined, as well as the reconstruction of the other communities.

All of the decisions will be taken in mutual agreement with the communities, through collective and individual meetings. Planning also includes the recovery of the regional economic development. The work is divided into four phases, and currently the scope of all the action fronts is being defined. The activities will comply with international standards and criteria.

EMPLOYEES/ CONTRACTORS

Alternatives

Up to 29 November, Samarco employees were on paid leave. From 30 November to 04 January, they will be on vacation. Up to 01 March 2016, the Company has signed a commitment with the Labor Public Prosecution Service to not engage in any mass layoffs.

ACTION MAP

Samarco has mobilized all available resources, human and financial, to meet emergency needs and seek solutions. [Follow updated information on our site.](#)