

PORTALS IN ENVIRONMENTAL MANAGEMENT, MINING AND A SOUTH AFRICAN PERSPECTIVE

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THE AFRICAN CONTINENT



DURBAN - SOUTH AFRICA'S PLAYGROUND



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NATURAL RESOURCE FACTS

- ◉ Third-highest level of biodiversity in the world
- ◉ Table Mountain National Park has more plant species in its 22 000 hectares - change to acres than the British Isles or New Zealand
- ◉ South Africa has more species of wild animals than Europe and Asia combined



8 UNESCO WORLD HERITAGE SITES



CAPE FLORAL REGION

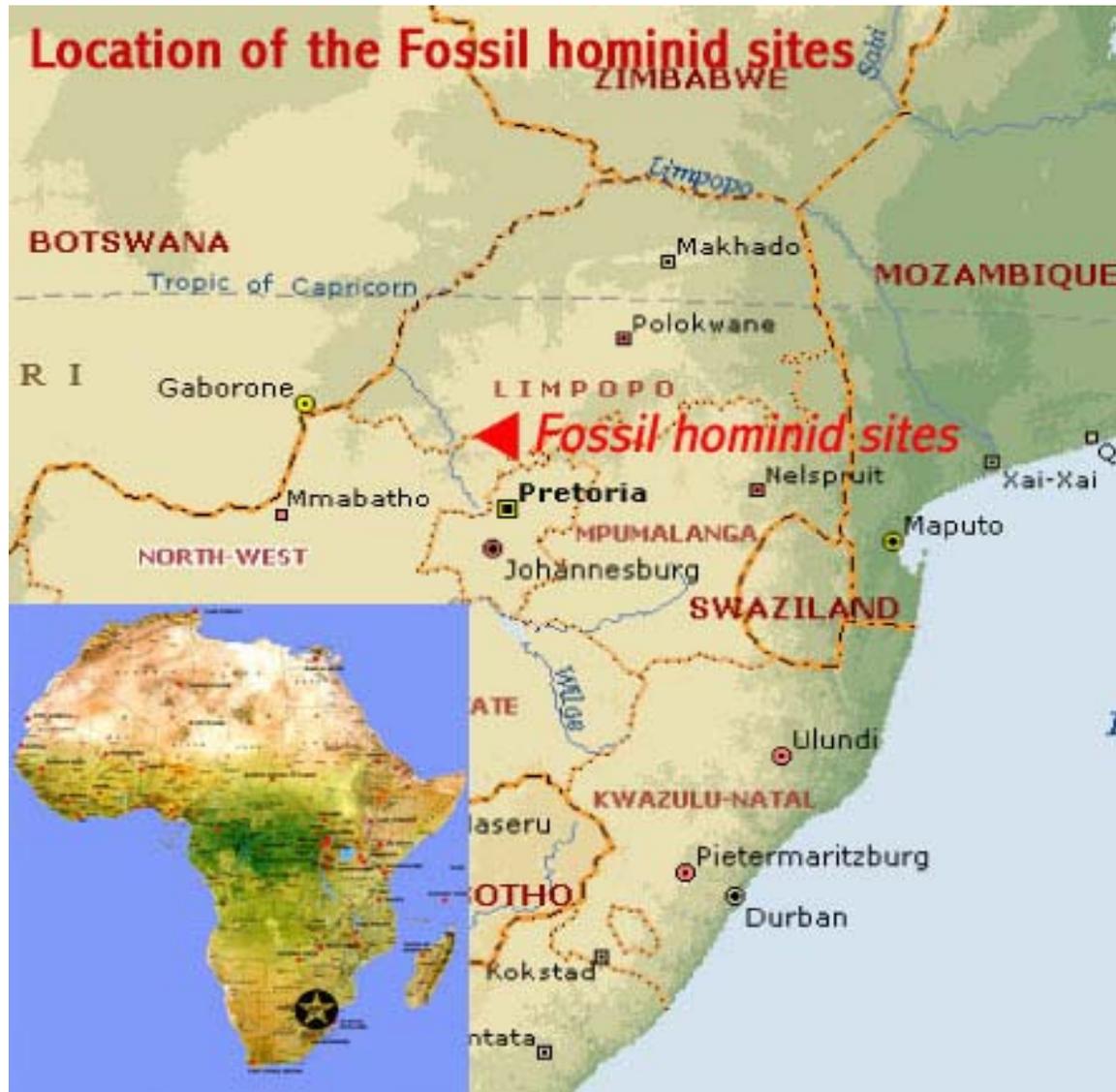




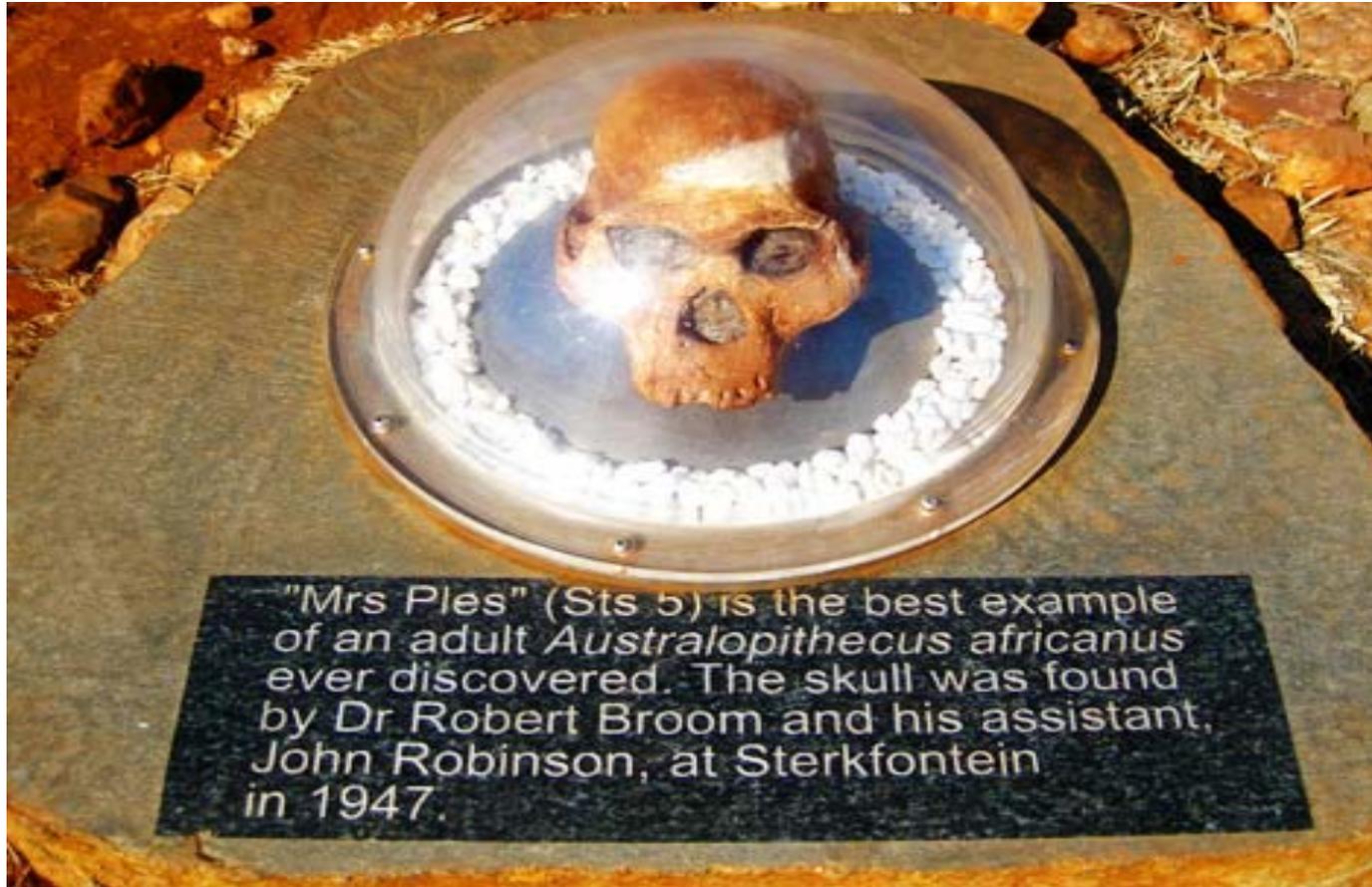
- ◉ Of the 9 600 plant species found here, 70% occur nowhere else on earth
- ◉ The region is home to nearly 20% of Africa's flora, though it makes up less than 0.5% percent of the continent's land mass



CRADLE OF HUMANKIND



- ◉ Region has one of the world's largest concentrations of hominid fossils which provides evidence of human evolution over the last 3.5-million years



This particular fossil is the best example of a complete adult skull which dates back 2 million years

INSIDE THE CRADLE



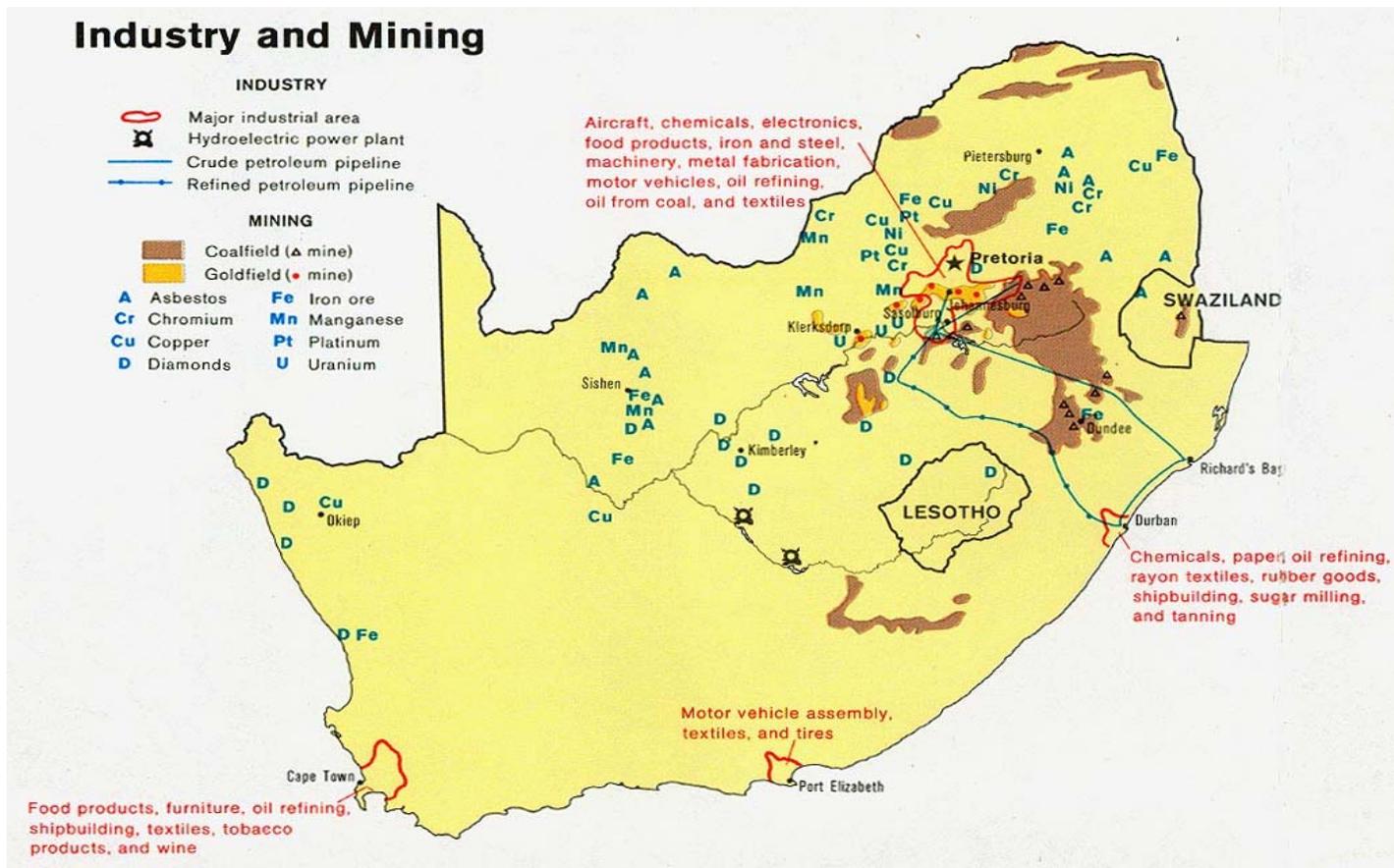
- The Cradle has produced more than 950 hominid fossil specimens
- Near complete skeleton which dates back over 3 million years
- Scientists warn that AMD will reach the Cradle

MINING REGIONS



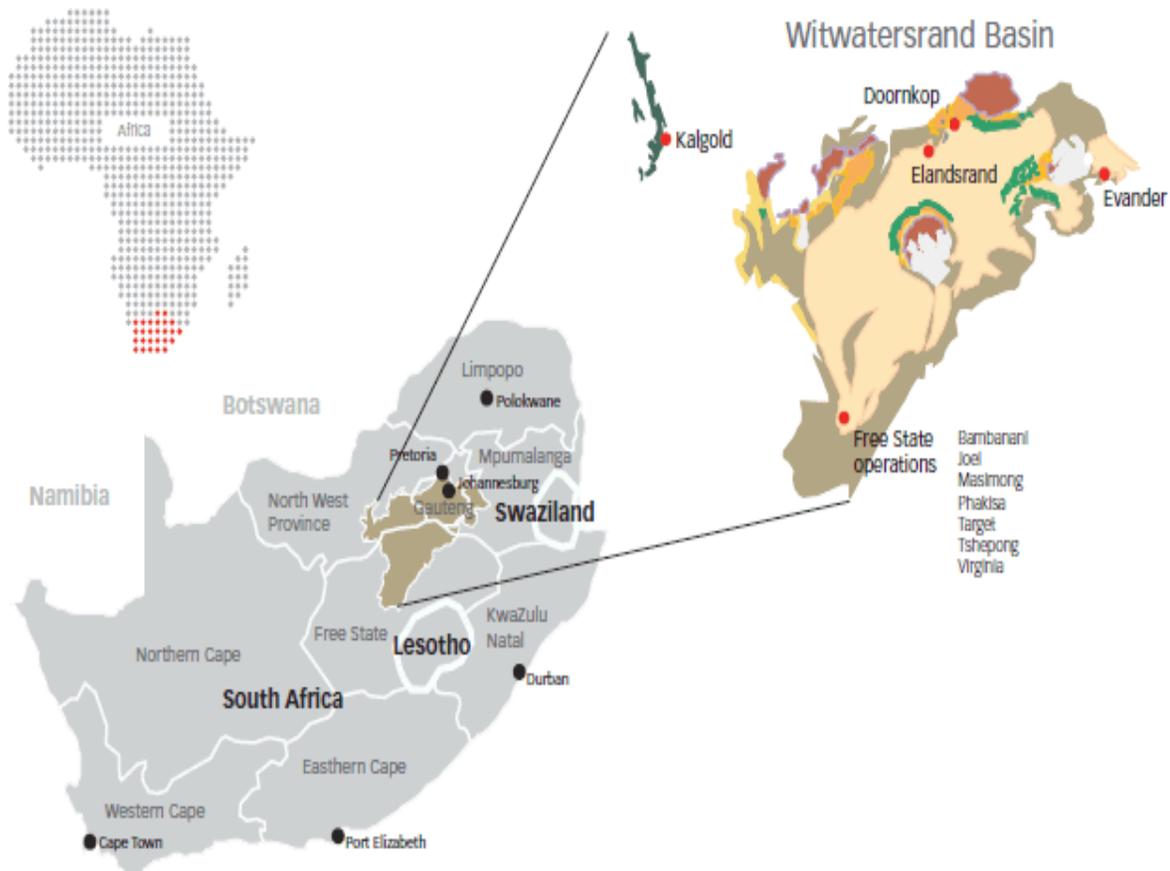
- SA was essentially built on Gold mining 120 years ago
- Concentrated around a relatively small region - Witwatersrand

- Estimated that 40% of Gold ever mined comes from this region and
- 88% of the worlds Platinum reserves are concentrated here
- South Africa is the world's largest producer of platinum and manganese, and one of the leading producers of gold, diamonds, base metals and coal



WITWATERSRAND BASINS

- 3 high priority areas were identified concerning AMD (eastern, western, central basins)
- 8000 abandoned/ownerless mines



ACID MINE DRAINAGE SOUTH AFRICA'S CHERNOBYL



93 million gallons of AMD decanting every day

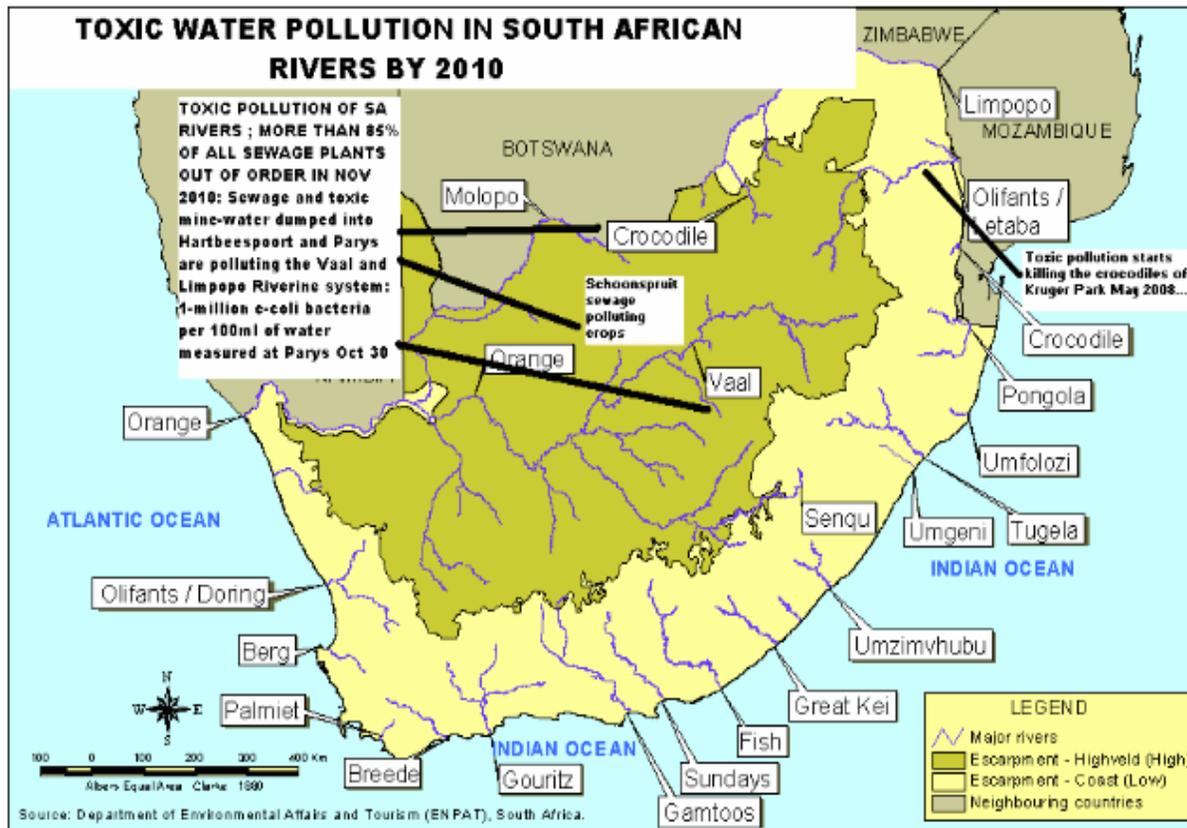


IMPACTS WITHIN THE 3 BASINS



- ◉ Ecological impacts
- ◉ Impacts to rural and urban water supply
- ◉ Regional impacts on major river systems
- ◉ Localized flooding in low lying areas
- ◉ Increased seismic activity
- ◉ Agriculture impacts

TOXIC WATER POLLUTION IN S.A RIVERS



- Wildlife mortality
- Contamination of streams affecting rural drinking water
- Water for irrigation

ROBINSON LAKE



The Robinson Lake in Randfontein - A Toxic Wasteland due to irresponsible mining activities.

- AMD pumped into this lake - result is a toxic wasteland





- AMD decanting at various points along the Witwatersrand
- Makes it way to river systems that supply rural areas with drinking water



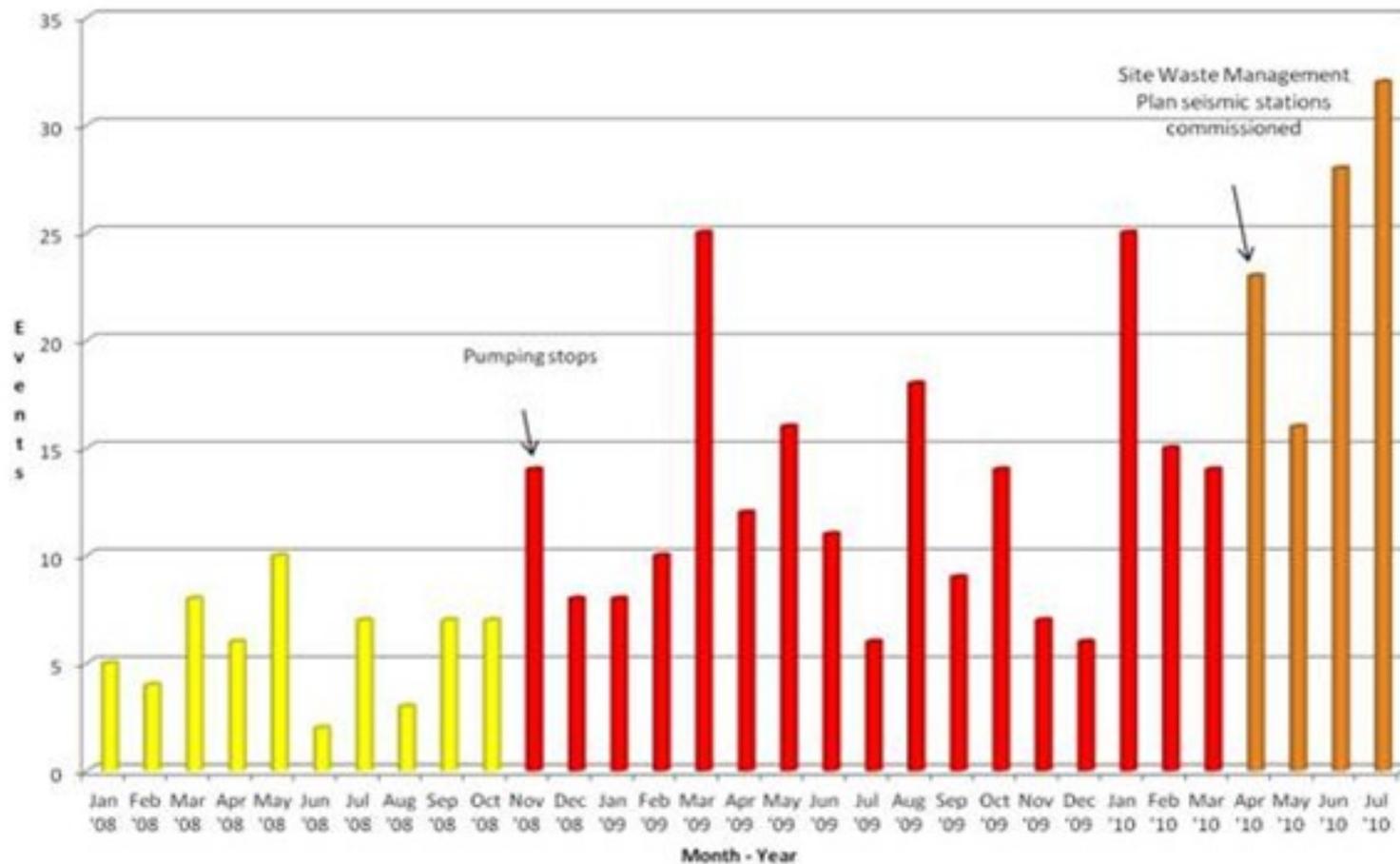
AMD DECANTING INTO RIVER SYSTEMS



AMD reaches the Cradle via Tweelopiespruit which springs from Robinson Lake

WHAT LIES BENEATH

Number of seismic events in the Central and East Rand area before and after pumping at East Rand Proprietary Mines stopped



8/10 OF THE WORLDS DEEPEST MINES ARE IN SOUTH AFRICA



Mponeng	2.5 miles
Tau Tona	2.4 miles
Savuka	2.3 miles

MPONENG MINE - WORLDS DEEPEST



MPONENG MINE FACTS

- ◉ Produces \$1 billion worth of gold a year
- ◉ 140°F at deepest level of the mine
- ◉ Deep as 10 Empire State Building
- ◉ Tunnels are longer than the New York subway (236 miles)
- ◉ Every day, 4,000 workers descend into the mine
- ◉ The rock is so hot underground that ice has to be pumped down to cool the tunnels



- Deep mining destabilizes rock. Six hundred times a month, they said, a "seismic event" will shudder through Mponeng mine. Sometimes the quakes cause rockbursts, when rock explodes into a mining cavity and mows men down with a deadly spray of jagged rock. Sometimes a tremor causes a "fall of ground"—the term for a collapse. Some of the rockbursts had been so powerful that other countries, detecting the seismic signature, had suspected South Africa of testing a nuclear bomb.



- ◉ Socio-economic issues lead to SA having one of the highest incidences of illegal mining in the world
- ◉ Thousands of abandoned mines left unguarded



ILLEGAL MINING IN SOUTH AFRICA



STILL CAN'T GET THE HUMAN ASPECT RIGHT

BACK STORY

South Africa's economy relies increasingly on mining

- South Africa holds 88 percent of the world's platinum reserves
- Between 1994 and 2009 the industry grew by 67 percent
- Around 69,000 mineworkers died in "accidents" between 1900 and 1993—and more than a million were seriously injured
- Some 40 mineworkers died this year before the massacre
- The striking miners earn just £300 a month

MARIKANA MASSACRE

34 SHOT DEAD AT LONMIN PLATINUM MINE



THE MARIKANA MASSACRE WAS THE SINGLE MOST LETHAL USE OF FORCE BY SOUTH AFRICAN POLICE AGAINST CIVILIANS SINCE APARTHEID



SOUTH AFRICA SHOOTING EXPOSES MINERS' LIVING CONDITIONS



- \$500 per month
- No living allowance
- Informal accommodation
- No running water/ablutions



POSITIVES

- ◉ Exposed living conditions
- ◉ Highlighted the high incidence of miner accidents calling for better safety and security within the mining industry
- ◉ Increase in wages
- ◉ Through violence and uprising positive changes are made
- ◉ Brought the mine and country to it's knees

WHAT WE ARE DOING

- ◉ Task team assigned
- ◉ Approximate \$3 billion clean up
- ◉ Taxpayer foot the bill
- ◉ Regulate mine closures and remediation - hold stakeholders responsible for clean ups

QUESTIONS

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