NOVEMBER 2013

Meeting with UNE Scientists

Scientists from the University of New England have done several studies of the arsenic and antimony dispersion in the Macleay River (see references below). SOMR had invited some of them to speak at the public meetings earlier in the year, but the dates weren't suitable.

In late October, Bernadette contacted Dr Matthew Tighe. By coincidence, several of the scientists were in the valley taking samples for further studies and agreed to meet SOMR members in Bellbrook on 6 November.

Several SOMR Committee Members met with Matthew Tighe as well as Paul Ashley & Sue Wilson (all of UNE) on Wednesday evening in Bellbrook to discuss the current state of the Macleay River.

The meeting was generally positive in nature. However, Paul Ashley was quite vocal about the 'misinformation' being advertised by some groups in the community, although in his publications he himself has described the problematic and long term effects of arsenic and antimony contamination in the Macleay.

Paul Ashley advised that he instigated testing on the Macleay in 1999 and they (UNE) have continuous data from then on. He confirmed that there is mild sediment contamination in the entire Macleay Catchment and he now believes there is no issue. Paul Ashley also added that he believes the installation of the water treatment plant at Bellbrook was political.

Matthew Tighe advised that minor problems occur when contaminated water comes in contact with acid sulphate soils with regard to uptake in the pasture e.g the Lower Macleay. However he did not feel the contamination was a major issue.

Sue Wilson discussed the recorded biodiversity in the Upper Catchment that she has studied. While she admitted there was contamination, she has not recorded any impact of the biodiversity of the ecosystem.

All three advised they had a good working relationship with Daniel Calderwood of Hillgrove Mines and did not seem concerned about any potential impacts of recommencing extraction. Matthew Tighe, Sue Wilson & Paul Ashley offered to come to a community meeting to discuss issues & display testing process. Georges Creek was proposed as the location in January or February 2014. Bernadette will liaise with Matthew Tighe to organise it.

Matthew Tighe & Sue Wilson advised that funding for the studies of contamination is very limited. Hillgrove Mines and Armidale Shire Council are among others who have at times assisted with funding but neither organisation have any 'say' in the research. Sue Wilson has applied for a grant to Australian Research Council (ARC) to continue her research project on the contamination of the Macleay Catchment.

In order to assist further studies, SOMR resolved at the committee meeting on 9 November 2013 that a letter of support from SOMR be drafted and sent to Armidale Council & Kempsey Shire Council for Sue Wilson's ARC Linkage Grant Proposal. ◆

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Publications by UNE scientists: The chemistry and behaviour of antimony in the soil environment with comparisons to arsenic: A critical review by Susan C. Wilson, Peter V. Lockwood, Paul M. Ashley, Matthew Tighe

Antimony and arsenic dispersion in the Macleay River catchment, New South Wales: a study of the environmental geochemical consequences by P. M. Ashley, B. P. Graham, M. K. Tighe and B. J. Wolfenden

SOMR Meeting with Hillgrove Mines representatives

SOMR Meeting with Hillgrove Mines representatives Environmental &Safety Manager Daniel Calderwood and Operations Manager Peter Hoskings, Bellbrook Community Hall, 14 November 2013, 4pm. Ten committee members represented SOMR.

SOMR Chairperson Arthur Bain opened the meeting with Welcome to Country. Daniel Calderwood is an environmental scientist and Peter Hoskings a metallurgist. Both have been working at Hillgrove since before Bracken Resources purchased the company early in 2013. They described Roger Jackson as entrepreneur and main stakeholder of Bracken Resources Pty Ltd.

Using a PowerPoint presentation, they explained the history and operations of Hillgrove Mines. The presentation was planned to take 20 minutes. However, every slide triggered questions from SOMR members and a discussion of over 2 hours evolved.

Hillgrove Mines is envisaged to recommence operations in April or May 2014, producing gold and antimony concentrates to be trucked to either Sydney or Brisbane via the New England Highway.

The ore will be extracted from narrow vertical veins at the Metz Mine which is on the side facing Hillgrove, just across Bakers Creek. The rock will be carted across the creek and up the steep slope to the production site. There it will be crushed in preparation for the extraction of gold and antimony in floatation tanks. In the tanks, chemicals (xanthates) are used as floatation agents which attach to ore particles and bring them to the surface in air bubbles. The same process is used for gold and antimony.

The mineral field to be exploited by Hillgrove Mines Pty Ltd is located in the Bakers Creek Gorge and covers an area of 4km - 6km, covered by several mining leases. The current plan envisages about 15 years of operation with around 80 employees.

Progressively, it is planned to return all waste into the shafts. Other progressive rehabilitation measures could include the potential re-processing of the material from a large historical dump at the bottom of the gorge near the creek crossing. It would then also be used as additional backfill in the shafts. It is being considered to reclaim water from the historical adits, with varying degrees of contamination, for use in the ore processing. This will depend on the physical and economic feasibility for the mine.

Due to the location of Hillgrove Mine close to the edge of the escarpment, water discharge into the Macleay tributaries is of major concern. The licence conditions do not allow spillages from the catchment area of Hillgrove Mines processing area or tailings dams unless certain conditions are met (equivalent runoff from a 1 in 100 year 72-hour rainfall event at 0.3 runoff coefficient). Consequently, there is an emphasis by the mine operators to prevent water contaminated with arsenic, antimony and chemical agents (used in the processing) flowing into the Macleay River catchment.

Evaporation systems in the storm water dams and reverse osmosis filtering have been amongst the measures being taken to contain the contaminated water

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SOMR Meeting with Hillgrove Mines Representatives — Continued from Page 1

on site. This has proven unsatisfactory and has been decommissioned. Recently, a micro filtration/reverse osmosis system has been installed. Capacity in the storm water and the tailings dams have been expanded. Tests have convinced the mine operators that the combination of water filtering and large holding capacity of the dams will prevent run offs, except in the most extreme weather conditions.

Rain water running from the properties surrounding the mine is directed away from the dams to reduce the load of water running through and entering in the site's storm water dams.

Hillgrove Mines are regularly monitoring dust and surface water at several points. Water tests are also carried out in nine abandoned adits within the Hillgrove Mines area. The arsenic and antimony contamination in the adits varies greatly. SOMR has been provided with the monthly test results for March 2012 to June 2013.

Surface water is tested at 10 points, including one above the mine and two below at Bakers Creek. The samples are taken by mine employees and sent to an independent, accredited laboratory for analysis. Daniel Calderwood and Peter Hoskings indicated that they would make the results for the surface water tests available to SOMR. All test results are published in Hillgrove Mines' annual reports to EPA and should be available on a website. The next annual report is due soon.

It was emphasised that there is no acid mine drainage at Hillgrove. However, material from the Halls Peak mine was found on site. This was of concern due to the link of those materials with acid mine drainage. The material has been removed. There is no other material of this description onsite.

Hillgrove Mine also co-operates extensively with scientists from the University of New England (UNE) by providing the mines' test results and permitting access to the site for water sampling and other sampling for several research projects (eg. mineral uptake by various plant species).

In accordance with a SOMR committee resolution, chairperson Arthur Bain asked if Hillgrove Mines would be willing to finance an independent scientist to collate and interpret all available test results before recommencing operations. The answer was, 'no', because Hillgrove provides enough data and details and, together with UNE data and publications, there should be no need for such an additional study.

The second question by the committee was for a guided tour of the mine site to be arranged. Again, the answer was 'no'. Not yet. The reason given was that the mining company could not yet trust SOMR because of company concerns their operations and intentions could be misrepresented. It might be possible to arrange a visit in the future.

Our first meeting with Bracken has left a feeling of hope — hope that, in time, not only can they trust us, but we can trust them. ◆

Meeting With EPA Officials

SOMR Committee members and EPA officials Brett Nudd (Lower Macleay) and Simon Smith (Upper Macleay) met at Kempsey Hotel 5-7 pm 19/11/2013

It was a welcome opportunity for the group to learn about the various roles of the EPA in complex monitoring environmental pollution issues and their independent advisory role for environmental protection.

The group expressed its concern for the health of our waterway now and in the future with respect to current and past practices that have resulted in legacy issues that are yet to be fully understood.

The improved water management strategies for the Hillgrove mine were discussed and it is hoped that these measures, if implemented, may reduce the risk of future additional harmful inputs into the Macleay catchment. It was acknowledged that naturally occurring mineralisation and historical mining practices appear to have contributed to elevated levels of some metals in the Macleay catchment.

It appears the impact of past mining practices remains difficult to determine, although it is known that what has been described as a "plume" of tailings material (including arsenic, antimony, lead, zinc and mercury) is gradually working its way down the valley with each flood event.

This is the impact that has resulted in contamination of the water supply to Bellbrook that has required a water treatment plant to remove harmful levels of heavy metals. This plume has been estimated to possibly take up to a thousand years to work its way to the ocean and the impacts will need to be observed and managed as they unfold. They raised the possibility of phytomining as a partial remedy.

(http://www.epa.gov/aml/news/phytomin.htm)

Recent studies (2005 and 2011) of uptake by various food crops of arsenic and antimony as well as examination of fish caught with the assistance of the local Bass fishing club have indicated levels below concern, which is reassuring.

There have also apparently been isolated tests of random meat samples which to date have not revealed elevated levels of concern in beef cattle.

The funding to perform more comprehensive testing that is event related and has more accurate traceability of crops and livestock products is greatly needed to enhance confidence in these initial findings from the pilot studies.

The lack of attention by governments federal, state and local — past and present, to this issue remains a concern. Although the NSW Government has established a Derelict Mines Program and allocated $4.276 million for the rehabilitation of derelict mines for the 2013-14 financial year, the Derelict Mines Program Steering Committee seems to have little power. With several thousands of derelict mines in NSW, we would be in competition with a number of other claims for clean-ups.

Both Mr Nudd and Mr Smith engaged to assist with some of our concerns such as advising regarding a possible model by which landowners can determine when it is not safe to pump water from the river and public education on water quality issues.

When asked what SOMR can do, they advised focussing on an educational role for the public e.g. advising when and where it is safe to use water from the river and for people to peel or scrub local vegetables before eating.

Mr Smith said, he will keep SOMR informed about the interdepartmental Macleay River Contamination Working Group which has met annually to exchange information. He is the convenor. With numerous recent changes in the composition and responsibilities of State government bodies and without immediate issues to be solved, the role of the working group needs to be re-evaluated.

It was reassuring that as a community group our concerns are valued and that our input is appreciated and will be taken on board in decisions that are made which affect the health of our river.

It is hoped that SOMR will continue to be able to have a voice for the community in ongoing interaction with the EPA, scientists at the UNE and the current Hillgrove Mine owners for the benefit of water quality in the Macleay. ◆