

ASSAY

A NEWSLETTER ABOUT ACID SULPHATE SOILS

No 15. November 1997

NSW Water Reform package

The NSW Government recently announced a \$117 million Water Reform Package to halt the decline in the quality of NSW waterways. Key issues include the decreasing amount of freshwater flows in rivers and bad water quality. ASS will be included in the assessment of unregulated rivers to determine the "stressed river" status of catchments. Each sub catchment will be assessed using standard criteria, such as existence of fish kills or poor water quality due to ASS drainage.

One of the ASS issues addressed in the package is a review of all significant structures and weirs that impede natural waterways. In NSW many weirs prevent salt water from reaching formerly tidal areas underlain by ASS.

The NSW Government is asking for public comment on the Package and the deadline for submissions is May 1, 1998. For further information please contact Barbara Richardson from the EPA on 02 9795 5000 or Craig Copeland from NSW Fisheries on 0266 261394 or the Department of Land and Water Conservation: Des Schroder (north coast) on 0266 402193; or Sydney, Warren Martin 02 9228655; or George Gates for groundwater issues on 02 98956211.

Water CEOs

The Chief Executive Officers (CEOs) of NSW Departments implementing the Water Reform Package recently considered a report on current ASS management issues. It contained 10 recommendations for further action and integration of Government responses.

A small taskforce, with a core of ASSMAC members, will compile a draft policy paper for State Cabinet to consider. It will cover planning issues as well as enforcement options and education. It is possible that ASSMAC will report direct to the Water Reform CEOs, to enable better coordination of ASS issues between departments.

For information tel: John Williams on 0266 261 344

CEOs Hastings River inspection

Hastings River oyster growers recently hosted a boat trip on the Maria River, near Port Macquarie, for the CEOs involved in the Water Reform Package. The CEO's inspected the impact of ASS runoff on water quality and the oyster industry.

- ABC television news recently reported concerns by oyster growers about declining water quality allegedly due to some tea tree plantations.

For information tel: Phil March 02 65 666 879



NSW Department of Land and Water Conservation officer, Stuart Naylor, (left) recently hosted a visit from the Richmond River's Tuckean farmers who visited ASS remediation areas near Kempsey. Stuart is pictured with Tuckean Landcare Committee President, John Garbutt (centre left) and committee member Arthur Weis during a visit to inspect ponded pasture as an ASS remediation technique on Russell Yerbury's cattle property, which is part of the Seven Oaks Drainage scheme.

Stuart has recently left DLWC and plans to travel overseas.

ASSPRO funding

A total of about \$720,000 is available this financial year for projects in the NSW Acid Sulfate Soils Program (ASSPRO).

The ASSPRO Program is part of a special three-year NSW Treasury enhancement to NSW Agriculture involving a total of \$2.1 million for improvements to ASS management throughout the State.

Funds will be available in November to start projects involving education, prevention, remediation and management practices.

An ASSPRO Project Coordinator, Greg Fenton, has been appointed to administer the project.

For further information please telephone Greg on 0269 381906 or fax 0269 381809.

The following are projects that have been approved to date:

Project Title	Organisation
Water table management under tea tree	Oceania Agriculture Limited
Remediation of ASS by ground water management	Dept Civil Mining & Environ. Engineering
Belmore River water quality assessment	Kempsey Shire Council & Macleay ASS LAC
ASS treatment for tea tree and pasture land uses	Twæed Shire council
Anna Bay integrated ASS management strategy	Port Stephens ASS Drainage Advisory Committee
Bench marking of attitudes & management practices of ASS	NSW Agriculture
Education & training workshop for council & government agency officers.	DUAP
ASS education video	Water Research Foundation of Australia
Seven Oaks Drainage Union Headworks modification to manage levels in drains	Seven Oaks Drainage Union Board
Maria ASS water rehabilitation via floodgate management	Hastings Est. Mgt Cte DLWC, Flood Branch Port Macq. Oyster Fmrs NSW FA
Remediation of ASS by ground water management	Berry Pasture Research Station
Awareness raising amongst waterway users	Ocean Watch
Hire of data logger	Manning ASS Local Action Committee
Evaluation of best management practices for agricultural industries on ASS. Monitoring support for ASSPRO	NSW Agriculture
ASS Rehabilitation Project Officer	Department of Land and Water Conservation, North Coast
Financial support to ASSMAC, Technical Committee & Local Action Committees	ASSMAC
Training of government agency staff who handle ASS enquiries.	NSW Agriculture
Updating NSW ASS Risk Maps	DLWC

ASS manual

ASSMAC plans to compile an ASS manual that combines all current advice on ASS in an integrated document. The ASS manual will sell at cost. It will have four sections - planning; regulations; field sampling, assessment, and analytical methods; and preventative measures (drainage management, best practice for agriculture, extractive industries, roads etc). Contact numbers for State Government department staff working on ASS in each region will be listed in the manual. The manual will eventually be available on the NSW Agriculture internet home page.

For information tel: Jon Woodworth 02 66 261 344.

Coming events

Planning workshops

The Department of Urban Affairs and Planning in conjunction with ASSMAC will hold a series of workshops for local government in November. Yolande Stone, says the workshops will help planners, engineers, agronomists, environmental officers and agency staff who are responsible for designing, assessing or approving projects that are likely to affect ASS.

The workshop will advise on how to strengthen ASS provisions in council local environment plans and development control plans. The workshop will also include: identification of ASS; legislation dealing with ASS; non-compliance and breaches; rehabilitation of degraded areas, conditions of approval and evaluating ASS management.

The workshops are part of the NSW State Government's Acid Sulfate Soil Program and each workshop will include a field trip. The dates are: Berry, November 17; Taylors Beach Fisheries Research Station, Port Stephens on November 19; and at the Maclean RSL club on November 21.

To register for the free planning meetings, please contact Yolande Stone on tel: 02 93912156

ASS excavation workshop

A workshop for excavator operators who maintain large drains will be held at Port Macquarie on Thursday, November 27. NSW's Acid Sulfate Soils Advisory Officer, Jon Woodworth is conducting the workshop to introduce ASS issues and explain to excavator operators their legal obligations.

The workshop includes: identification of ASS, ASS risk maps, field and laboratory testing, NSW legislation, cleaning of existing drains, and the use of lime to neutralise acidity.

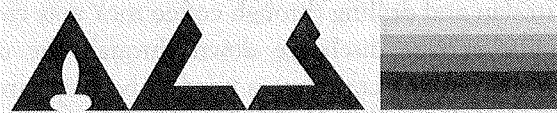
Similar workshops, specifically for excavator operators who maintain sugar cane farm drains, will be held at Broadwater (November 18); Condong (November 11) and at Harwood (November 19). Contact Jon Woodworth 0266 261 344 or Peter Nielsen 0266 208 257.

Maryborough workshop

QASSIT, in conjunction with Department of Natural Resources will run a one day introductory technical workshop on ASS on 25 November, at the Maryborough City Hall.

Presenters include Col Ahern and Kylie Hey (QASSIT), David Brown (DNR, Maryborough), Peter Wilson (DNR, Bundaberg), and Sue-Ellen Dear (DNR, Nambour).

The workshop will include a half day field trip. For further information, please contact David Brown (DNR, Maryborough) on tel: (071) 237 855 or fax: (071) 237 869.



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ASS Sunshine Coast workshop

QASSIT and Maroochy Shire Council will conduct a one day introductory workshop on ASS on November 27, 1997, at the Nambour Civic Centre, Centenary Square, Currie Street, Nambour.

Due to increasing pressures for canal and housing developments on the Sunshine Coast, there is an increased risk of ASS exposure. The workshop will cover ASS identification, sampling procedures, lab analysis and best management practices for coastal development.

For further information and registration costs please contact Judy Schnitzerling (Maroochy Shire Council) on tel: (07) 5441 8429 or Anne Kennedy (Maroochy Shire Council) on Tel: (075) 441 8410.

Richmond River Development Controls for ASS

Richmond River Shire Council has drafted Local Environment Plan (LEP) amendments and a draft Development Control Plan (DCP) for ASS areas.

The plans will go on public display later this year once ASS risk maps, which are currently being updated by the Department of Land and Water Conservation, are printed.

Council's Manager Environmental Services, Stan Taylor says that agricultural works, which may require a development application, depending on ASS risk level, include drainage works, drain clearing, excavation, dams, site levelling, flood mitigation, topsoil removal and laying of pipes.

Stan is working with local rural industries to streamline the processing of management plans for farms in ASS areas. For information - Stan Taylor on tel: 02 6662 2066

- Hastings Council's LEP for ASS was gazetted earlier this year, making it the first in NSW.

Technical Committee News

Analytical methods approved

The ASSMAC Technical Committee (ASSMACTC) has approved two main methods for routine analysis of ASS. Col Ahern, Angus McElnea and Dennis Baker helped refine the methods which will be published in both NSW and Qld. For an interim copy, please email Kylie Hey at Heyk@dnr.qld.gov.au or fax (07) 3896 9782.

Ponded pasture and ASS

The ASSMACTC discussed the use of ponded pasture as a treatment strategy for severely affected ASS soils at its meeting on August 29.

Water quality, as well as revegetation, needs to be considered in assessing ponding projects. A special scientific symposium will be held soon by ASSMACTC with input from consultant Bob Smith who has undertaken a number of ponded pasture trials near Kempsey.

For further information tel: Ian White 06 249 0660 or Bob Smith tel: 0266 283 472

Measurement of pH in ASS

The ASSMACTC has reviewed the methods of measuring the pH of ASS. Experience in NSW and Qld with over 5000 soil samples shows that the Raupach test can be out by 4 pH units. Ian White says that given the ready availability of cheap, accurate and reliable pH probes, meters and calibration solutions, the Technical Committee does not recommend this method for pH testing of ASS.

Drilling in coffee rock

The Technical Committee has issued a warning about drilling in coffee rock (soft sandstone the colour of coffee that occurs on coastal areas). Aquifers beneath near-shore coffee rocks can be artesian and drilling through coffee rock may cause acidic surface discharge down through the drill hole. "Drilling contractors need to be very careful when drilling and should seal the hole once the drilling operation is completed." Bernie says.

Sampling guidelines

The ASSMAC Technical Committee recently approved an update of the NSW EPA Guidelines and the Qld "Sampling and Analysis Procedure for Lowland ASS in Queensland". Bruce Blunden from NSW and Col Ahern from Qld helped prepare the updates which vary slightly due to state legislation.

Industries across both states, consultants, universities, CSIRO, Australian Nuclear Science and Technology Organisation, government agencies, councils and sugar industry representatives provided comment on the guidelines. The guidelines will be published this year and updated periodically.

Until published, the current Qld version is 3.47, dated 15 October, 1997. You may obtain the 27

page, updated version by emailing Kylie Hey at Heyk@dnr.qld.gov.au or fax (07) 3896 9782.

Program to exchange samples

With the analytical methods approved, a new ASS exchange sample program will assist laboratories produce consistent and reliable results. Col Ahern will supervise the technical methods while George Rayment, from the Australian Soil and Plant Analysis Council (ASPAC), will compile the statistics. Data and statistical analysis will be distributed to laboratories using a confidential identification code. ASSAY will list participating laboratories.

Those who have already registered should check that their address and details are current. For further details or to register on the program, please contact Kylie Hey, QASSIT, on Ph: (07) 3896 9819, Fax: (07) 3896 9782 or Email: Heyk@dnr.qld.gov.au. An administrative fee will cover sample preparation, packaging, distribution and final statistical analyses.

Drainage advisory committee for Port Stephens.

A drainage advisory committee has been formed to assist Port Stephens Council develop a plan of management for Anna Bay Drains.

The committee includes representatives of the Department of Land and Water Conservation, (Stuart Russell); Environmental Protection Authority, (Pam Dean-Jones); Port Stephens Council, (David Bonjer); Anna Bay Drainage Union, (Tom Frost); NSW Farmers Federation, Barry Wright (check) and Department Urban Affairs and Planning. The committee will be chaired through the local Total Catchment Management Committee.

ASSMAC technical committee member, Jes Sammut is currently assessing the results of a six month water testing program of ASS drains undertaken by Council and DLWC.

Council has commissioned a consultant to do a separate flood study of Anna Bay which will include an assessment of ASS drains. For information tel: Stuart Russell 02 49294346

Oyster research progress

FRDC-funded research by University of NSW and NSW Fisheries shows that ASS runoff can kill oysters. Jes Sammut from UNSW says that a pioneering field project at Port Macquarie reveals that exposure to acid increases mortality rates in juvenile and adult oysters. ASS also causes shell dissolution and interferes with feeding activity.

Research team member, Mike Dove, from the School of Geography, has completed his honour's research under supervision from Jes Sammut and NSW Fisheries Dick Callinan. Jes Sammut presented research findings on behalf of the research group at a recent Oyster Industry Field Day held at Port Stephens Fisheries Research Station. The field day was organised by NSW Fisheries and attracted oyster growers from throughout NSW.

Scott Wilson and Dr Ross Hyne University of Technology, Sydney, have shown that ASS runoff also harms oyster embryos. For information tel: Jes Sammut 02 93856211.

BHP mine near Margaret River, WA

Conservation groups in Western Australia are concerned about the possible environmental impacts of a large mineral sands mine in a known ASS area.

The BHP Beenup mine, one of the largest in the



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southern hemisphere, is situated 16 kms east of Augusta near Margaret River. A dredge excavates ore at 3500 tonnes per hour to a depth of 50 metres.

Public awareness of ASS occurred when BHP applied for an extension to the mine and permission to discharge dredge pond water into the Blackwood River. Local landowner and member of Leeuwin Conservation Group, Lyn Serventy (tel/fax 08 9757 7534) says that acidification of an earlier bulk sample sand mine may have been due to ASS.

While BHP has agreed not to discharge directly into Blackwood River, the WA Environmental Protection Agency decided not to use the more stringent guidelines developed in NSW. The WA EPA has required BHP to develop an acid management program within 12 months of mining starting. BHP says there is little risk of acidification because as part of the mines slimes treatment, the ASS is immediately underlaid below watertable resulting in minimal exposure to oxygen. BHP's Louise Parkinson says that low pH levels, and high aluminium readings are naturally occurring and match water samples taken before mining commenced.

BHP's Louise Parkinson tel: 08 97582500.

Tea Tree growers learn about ASS

About 50 tea tree growers from as far north as Murwillumbah and as far south as Port Macquarie met in Ballina on September 10 to learn how to minimise the disturbance of ASS.

The workshop day, was jointly supported by the Australian Tea Tree Industry Association and NSW Agriculture. Neil Sutherland, a partner with Qld consultancy, Gilbert and Sutherland, said that a recent field trial shows tea tree produces higher yields due to the increased nutrient availability in more neutral soils.

"There is a misconception that because tea tree grows naturally on ASS swampy conditions that it needs this type of environment," Neil says.

NSW tea tree industry consultant, John Murtagh, said it was vital growers know the depth of the pyrite layer in plantations as well as likely seasonal watertable fluctuations.

"Tea tree growers need to understand acid sulfate soil management issues to successfully operate within environmental legislation guidelines," John says.

Other speakers included Bruce Blunden and Graeme Budd from the Environment Protection

Authority and Richard Bush, a Ph.D student from NSW University. Representatives from sugar cane industry, who spoke about ASS testing and management, included Tony Hayes, Julian Collins and Robert Quirk.

For information: ATTIA secretary Pat Bolster on 0266742925 or president, Tony Doherty on 0266 423348.

Slag a solution for ASS?

A by-product of steel manufacture may soon be available for use on NSW acid soils and acid sulfate soils.

BHP's Project Manager for Associated Products, David Jones, had recently done pasture trials at the NSW Berry pasture research station using crushed slag (pH 11). NSW Agriculture agronomist Euie Havilah has demonstrated at Berry that slag (crushed to 5mm with fines also) works well on acid pasture.

David says that further trials are required before the practice should be adopted for broadacre areas. While the slag will be available at much cheaper price than agricultural lime, it has a slightly lower neutralising ability. BHP produces about 450,000 tonnes of steel slag annually in NSW. Slag has been exported to Hawaii during the past decade for use on sugar cane and pineapple plantations. For further information - David Jones on tel: 02 42757522.

Early ASS research in Australia

Pam van Oploo, from the School of Geography, UNSW has replied to an ASSAY article about ASS research in Western Australia in the 1950's (July, 1997 ASSAY).

"Please inform fellow readers that even earlier work in WA dates back to the 1930's," Pam said.

The ASS work is described in two journal articles by Teakle and Southern: Teakle, L.J. and B.L. Southern (1937), *The peat soils and related soils of West Australia. Notes on the occurrence and properties of peats and other poorly drained soils in the South West coast areas of Western Aust. Dept. Agric., W.Aust.* 14: 332 - 358

Teakle L.J. and B.L. Southern (1937) *The peat soils and related soil of West Aust. A soil survey of Herdsman Lake.* J. Dept Agric. W. Aust. 14 : 404-424.

Tuckean Swamp progress

A workshop at the Merschumvale Hall, involving NSW Agriculture and Department of Land and Water Conservation (DLWC) and the Tuckean Landcare Group recently discussed funding priorities for proposed Tuckean Swamp projects.

These include fencing of drain banks, erosion control in drain areas, revegetation of acid scald areas, liming techniques and drainage modification. A total of \$60,000 is available for on-ground works and demonstration sites under the Federal Government's National Heritage Trust program.

A Tuckean Coordinator starts in the new year to oversee the projects and encourage participation by landholders and awareness of ASS issues.

For information: Gerry Ryan tel 0266 286009

New ASS policy for QLD sugar cane

Queensland's Canegrowers have released *Guidelines for Cane Growing on Acid Sulfate Soil*. They are based on the "Draft National Strategy on Acid Sulfate Soils" and include recommendations for sustainable management of ASS in cane lands in Qld. The guidelines include strategies for minimising potential and negative impacts of potential ASS in cultivated areas and on adjacent environments, and highlight some management principles for new land in ASS areas. For more information contact Jennifer Marohasy, Canegrowers, Tel: (07) 3864 6444.

Bundaberg workshop

Col Ahern and Kylie Hey (QASSIT) recently conducted a one day ASS technical workshop, including a field trip, in Bundaberg. Participants included consultants, laboratory technicians, cane farmers, community representatives and government representatives. Following inspections of local ASS areas, Col says that a number of farm dam sites north of the Burnett River may have problems with ASS. He said that a Transport Department site where tenders called for (potentially pyritic) dredged material to be spread over private land, raised a number of environmental issues.

Qld ASS Officer "goes" to school

Kylie Hey has recently given presentations to over 200 first and third year Griffith Uni students while high school work experience students have spent a

week with QASSIT undertaking field sampling.

New ASS Publications and Papers

C. Wilson, S.P.Hyne, R.V.S.P Wilson Australia
Toxicity of acid-sulfate soil leachate and aluminum to embryos of the Sydney Rock oyster. Source: *Ecotoxicology and Environmental Safety*. Vol. 37(1);1997 : 30 - 36

C.Minh, L.Q.Tuong, T.P.Vanmensvoort, M.E.F.Bouma, J. MEF Vanmensvoort

"Tillage and water management for riceland productivity in acid sulfate soils of the Mekong delta, Vietnam. Source: *Soil & Tillage Research* Vol 42(1-2);1997 : 1 - 14.

C. Ahmed, F.B.Dent, D.L. Dent Resurrection of soil surveys: A case study of the acid sulphate soils of The Gambia. Source: *Soil Use and Management* Vol. (13); 1997 : 2 - 57.

J.W. Portnoy and A.E. Giblin. A.Fanning Effects of historic tidal restrictions on salt marsh sediment chemistry. Source: *Biogeochemistry* Vol 36; 1997 : 275-303.

D.S.Burch Acid sulphate soils and some associated environmental problems;

Source: *Soils and Environment - Soil Processes from Mineral to Landscape Scale* 1997 145-158.

C Portnoy, J.W.Giblin, A.E. JW Portnoy

Biogeochemical effects of seawater restoration to diked salt marshes

Source: *Ecological Applications* Vol. 73; 1054 - 1063.

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