

22 May 2014

Steve Ulrich  
Marlborough District Council  
PO Box  
Blenheim

Dear Steve

Please find the attached from Ross Sneddon regarding sediment zinc and copper concentrations at the Otanerau salmon farm.

Ross presented this recently at the BMP workshop.

Kind regards



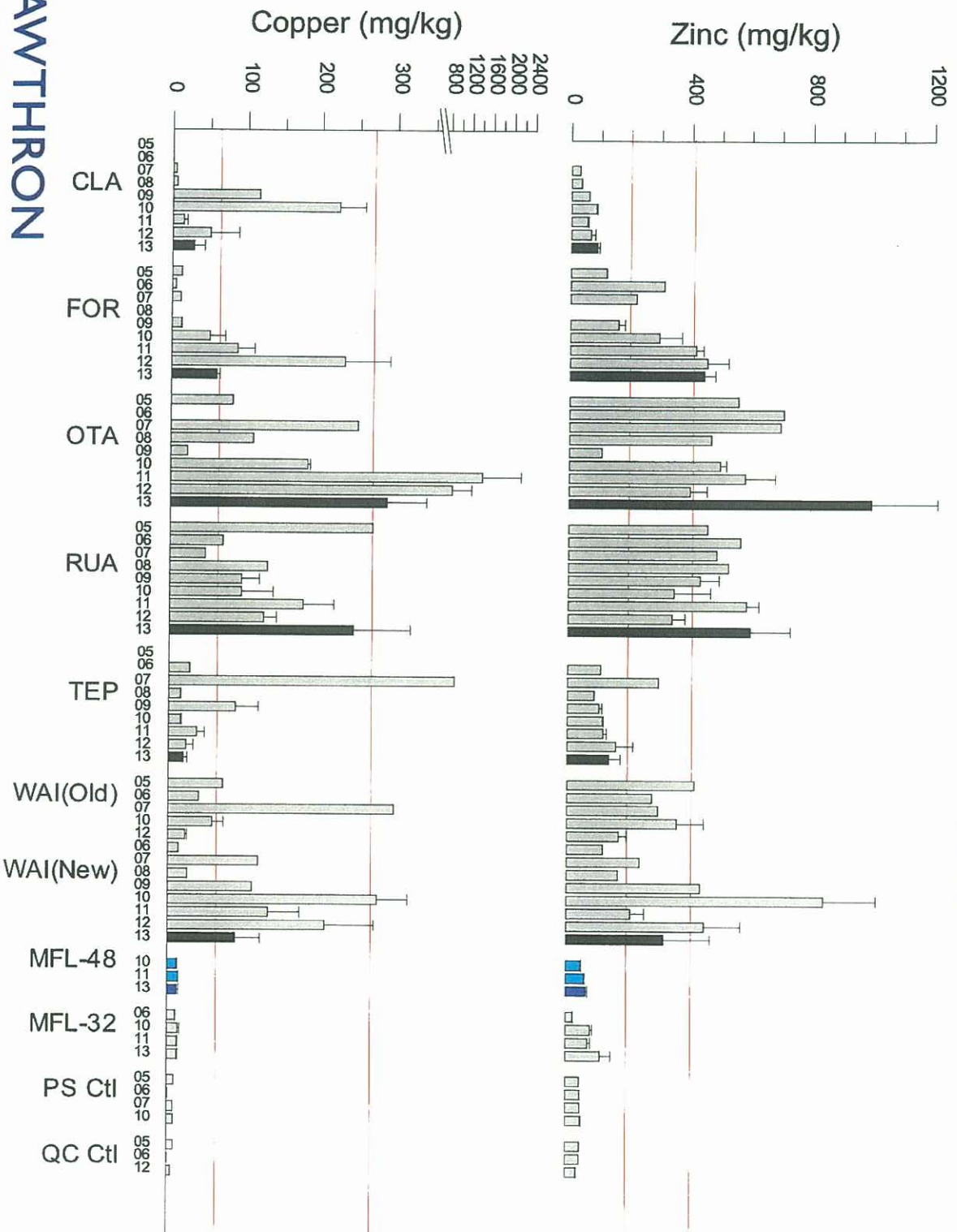
Mark Gillard  
Environmental & Compliance Manager



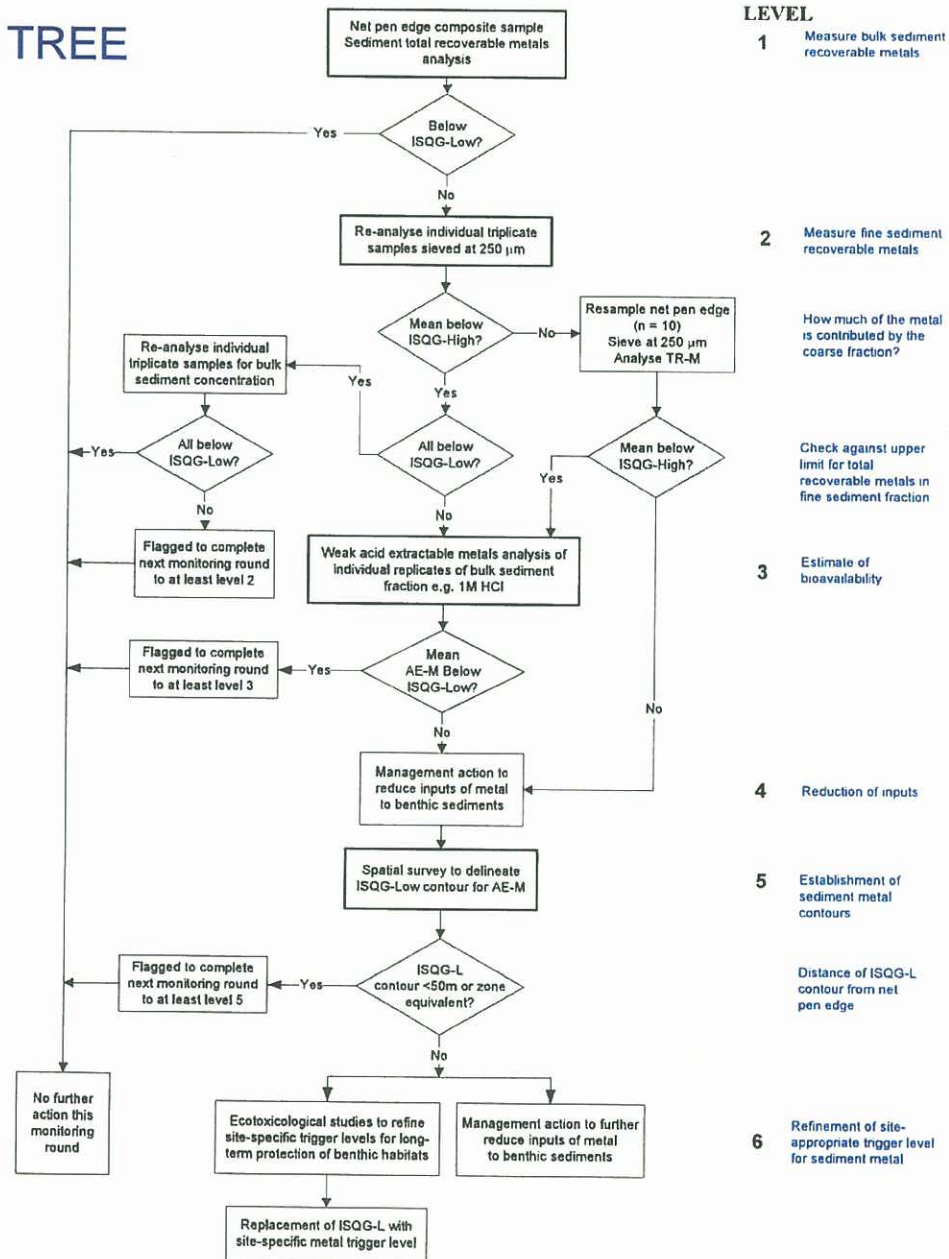
**NEW ZEALAND KING SALMON LTD: |**

**SEDIMENT COPPER AND ZINC – 2013 MONITORING**

# ALL FARMS: COPPER & ZINC DATA – 2005-2013

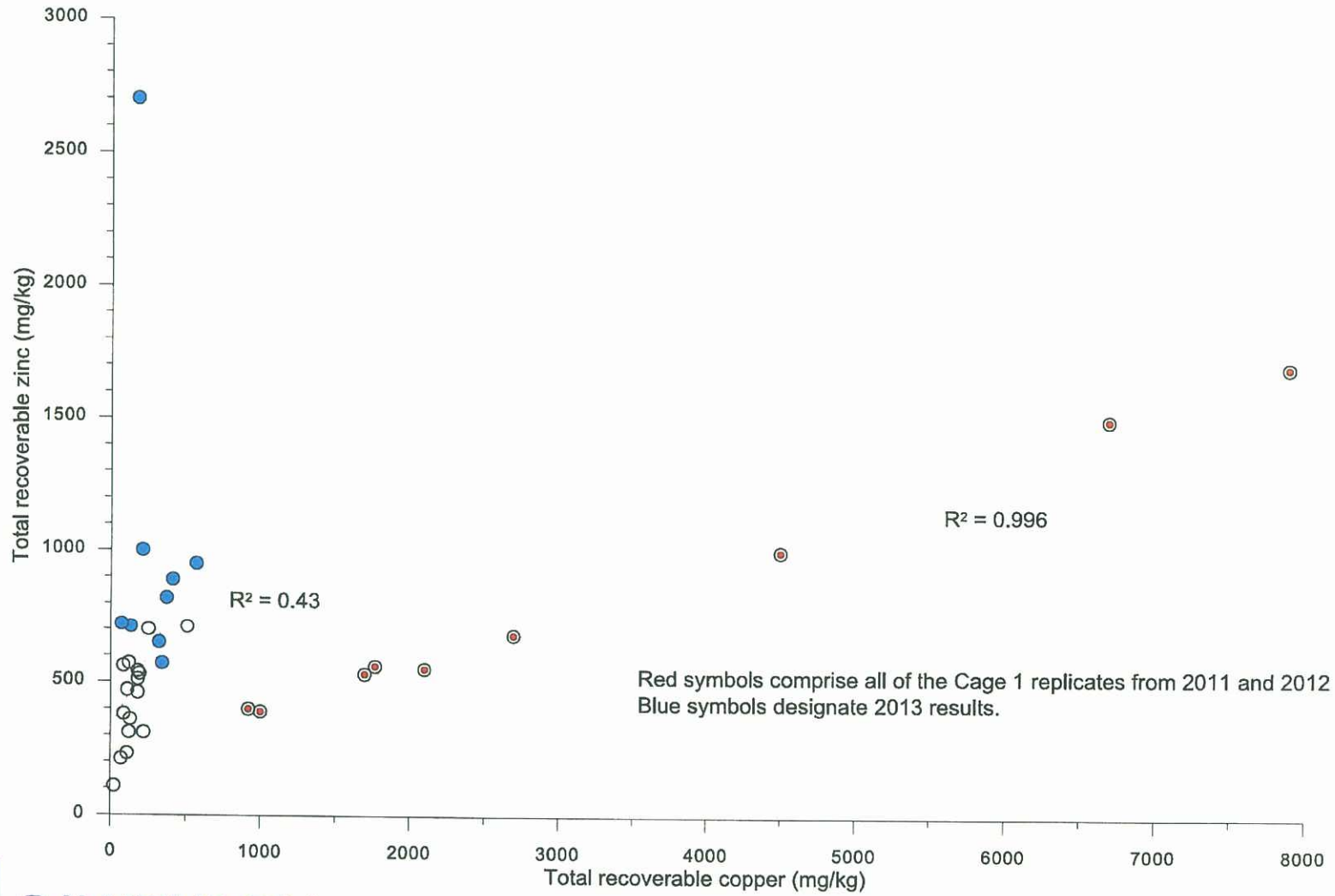


# RECOMMENDED DECISION TREE APPROACH TO SEDIMENT COPPER AND ZINC





# OTANERAU FARM: COPPER VS. ZINC





## Steve Urlich-8309

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**From:** karen.mant@kingsalmon.co.nz on behalf of Mark Gillard  
<mark.gillard@kingsalmon.co.nz>  
**Sent:** Thursday, 22 May 2014 1:53 p.m.  
**To:** Steve Urlich-8309  
**Cc:** Mark Gillard  
**Subject:** Re: Zn Cu results

Hi Steve

This email from Ross Sneddon should have gone with the letter just sent regarding Zinc and Copper.

Regards, Karen

----- Forwarded message -----

**From:** Ross Sneddon <[Ross.Sneddon@cawthron.org.nz](mailto:Ross.Sneddon@cawthron.org.nz)>  
**Date:** 7 May 2014 20:08  
**Subject:** RE: Zn Cu results  
**To:** Mark Gillard <[mark.gillard@kingsalmon.co.nz](mailto:mark.gillard@kingsalmon.co.nz)>  
**Cc:** Nigel Keeley <[Nigel.Keeley@cawthron.org.nz](mailto:Nigel.Keeley@cawthron.org.nz)>

Hi Mark,

There is almost no chance these zinc results could come from antifouling paints since the ratio of zinc to copper is higher than would ever occur in an antifouling paint formulation. This is true even for old paint which is "spent" since the zinc is there to help the paint ablate over its active life, so would decrease at roughly the same rate as the copper (and thus maintaining a fixed ratio between the two metals). I did try to make this clear when I first commented on these results a while back.

Having said all that, I was puzzled that if the zinc came from something other than paint, why was the copper higher as well? But I didn't know until today that NZKS had been using the new net cleaner, and this could explain the increase in copper. So I'm thinking now that the two metals may have different principal sources. But if we rule out paint, the only possible source of zinc is feed (unless I'm missing something). We do not generally see these levels of sediment zinc, even in inner harbour and port environments with multiple anthropogenic sources.

So there is still a big question mark over the zinc concentrations, and if this cannot be explained operationally, it would not be all that easy (though perhaps not impossible) to use laboratory analysis to identify the source.

I attach the powerpoint slides.

I have included some explanatory notes on the last slide.

Regards,

Ross

**From:** Mark Gillard [mailto:[mark.gillard@kingsalmon.co.nz](mailto:mark.gillard@kingsalmon.co.nz)]  
**Sent:** Wednesday, 7 May 2014 6:07 p.m.

**To:** Ross Sneddon  
**Subject:** Zn Cu results

Hi Ross

I was pretty interested to hear you don't think the extra zinc came from the remaining antifoul. Can you clarify why you think that for me please, I may have missed that point. We are desperately trying to work out what has occurred to give these results as they are unexpected and our initial thoughts turned to the new in water net cleaning we now do. Can I get a copy of the graph you presented today please.

Cheers

Mark

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Mark Gillard

Environmental Compliance Manager

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