Here is my response to NEM-RFI-000031...

Hi Calvin

Rip rap will be required for both the Pollution Control Pond liners and the Culvert Spillways. If ROQ is used to cover the Pollution Control Pond liner the fines will wash out and compromise the slope and expose the liner. The same applies to the culvert spillways, the fines will washout compromising the discharge structure.

You can use with the same rip rap sizing for the Doris Creek Bridge (D50 = 400 mm)

Sincerely, Lowell

From: Calvin Goldschmidt

Sent: 17/05/2011 1:51:17 PM PDT (GMT -07:00)

To: Maritz Rykaart, Lowell Wade: Greg Blaylock, Ishan Fechter, Doug Fielding, Jerry Graham, Jeff DePape, Kevin Oakes, Chris Petrovic, Dave Sherlock, Nick

Stoneberger

Mail Number: NEM-RFI-000031

Subject: Doris Polliution Control Pond - Substitute ROQ for Riprap

Hello Lowell,

Can ROQ be used as opposed to Riprap for the Pollution contol pond liner covers and culvert splilways. Stock Riprap is not available on site and would need to be manufactured/sorted.

Thanks.

Calvin Goldschmidt

From: Rykaart, Maritz

Sent: Wednesday, May 18, 2011 6:38 AM

To: Wade, Lowell; Miller, Megan **Cc:** Bay, Hope; Borowski, Lawrence

Subject: RE: Pollution Control Pond Rip Rap

Folks

the answer is NO. It has to be riprap. If they use OQ the fines will wash out and compromise the slope and expose the liner.

And Megan yes - go with the smaller riprap used on the bridge.

Maritz

Maritz Rykaart, P.Eng., PhD.

Principal

Geotechnical Engineering

Office: +604-681-4196 Direct: +604-601-8426 Cell: +604-928-1552

From: Wade, Lowell

Sent: Wednesday, May 18, 2011 5:49 AM

To: Miller, Megan; Rykaart, Maritz

Cc: Bay, Hope; Borowski, Lawrence

Subject: Re: Pollution Control Pond Rip Rap

Hi Megan

I got an email from Calvin yesterday asking the same question.

He also asked about using rog for the dispursion structures for the discharge points from the sed pond and pump 1.

I think rip rap wouls be required for the discharge points as it jhas to be clean ie no sediment issues

To line the pol pond I would think rog would be ok

Maritz...what are your opinions?

Lowell

Lowell Wade, M.Sc., P.Eng. Senior Consultant (Civil Engineering) SRK Consulting (Canada) Inc. 22nd Floor, 1066 West Hastings Street Vancouver, B.C., V6E 3X2, Canada

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From: Miller, Megan

To: Rykaart, Maritz; Wade, Lowell Cc: Bay, Hope; Borowski, Lawrence Sent: Wed May 18 03:24:59 2011 Subject: Pollution Control Pond Rip Rap

Good Morning Maritz,

For the pollution control pond our drawings specify a 0.6 m to 1.0 m layer of Rip Rap over the liner system of the pollution control pond. As this is a fairly thin layer I am assuming that our regular rip-rap sizing of 1 -1.5 m would be too large. Should we go with the same rip-rap sizing that was used for the Doris Creek Bridge (D50 of 400 mm)?

Also, how important is it that they place rip rap not ROQ? I ask because I have a feeling that this is going to come up tomorrow/later today. Nuna has been stockpiling ROQ from the tank farm on the edge of Pad I in preparation for covering the liner. I told the foreman it was supposed to be Rip-Rap but he said he was told not to bother sorting, and now there is some very nice ROQ being stockpiled.

Regards, Megan

Megan Miller E.I.T. Staff Consultant



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