

Regional District of Nanaimo Groundwater Monitoring Discussion Minutes

March 30, 2010

Present:

Regional District of Nanaimo (RDN)

Mike Donnelly
Christina Metherall

Ministry of Environment (MOE)

Pat Lapcevic
Kevin Ronneseth
Graeme Henderson

Well Drillers (WD)

Red Williams (Red Williams Well Drilling)
David Slade (Drillwell)
Jim Fyfe (Fyfe's Well Drilling)

Hydrogeologists (HG)

Al Kohut (Hy-Geo Consulting)
Bruce Ingimundson (Thurber Engineering)
Gilles Wendling (GW Solutions)
Dennis Lowen (Lowen Hydrogeology)
Shelley Bayne (Waterline Resources)
Lee Ringham (Levelton Consultants)

(These notes are summarized as a discussion, apologies if anyone is misquoted)

RDN presented an intro talk about the goals of the meeting.

- Watershed Protection
- GW/SW monitoring
- \$220,000 for drilling came from Towns for Tomorrow.
- Outstanding Issues?

Round table introductions were made.

RDN Population is increasing in RDN
More demand on SW and GW.
Insufficient information on GW, needs to increase.
3 key areas: Increase knowledge, Land use planning, Help others to understand and protect.

- MOE** Overall criteria, focus on RDN
Need to acknowledge the political aspect of monitoring GW
Will complement current GW network
Proactive intent to capture data now for use in the future decision making
Aquifer classification is not the same as characterization
- RDN** RDN looking for GW info in general
Asked to use post-it notes to identify issues and info gaps on large maps of RDN
Maps of the RDN were set out
Community water systems may provide info – new wells may not be needed in those areas
- HG** Obs Wells 295 (QB) and 232 (Lantzville) were missing on map
- RDN** Looking to gather info in recharge areas
Population will increase along the coast, not into the hills.
- HG** Suggested site should be closer to coast, where the population increase is expected
- RDN** Yellowpoint is an area of concern
- HG** Areas with high well density need monitoring
- WD** Church Rd (Errington), water level is 10 feet lower than it should be
- HG** Aquifer 220 has low recharge
- WD** Benson Meadows (near Nanaimo) has been deepening wells
Has been closing wells with high boron in ?Dirks Point?
- WD** Flamingo Drive (near QB) has saltwater intrusion issues
- HG** Spider Lake is dividing lots, there is a perched aquifer
- WD** Allusion Lake has 20 foot seasonal fluctuations, water level may appear low depending on time of year
Errington, wells deepened on Church Rd
- HG** Stress on bedrock aquifer in Errington
- WD** Dropping water levels in dug wells
Saltwater interface is lower than before (i.e., bringing in fresh water)
Meadow Lakes Rd (uphill from Nanaimo), saltwater wells, contaminated shallow
- HG** Below 250 feet on Denman Island is salty groundwater

- MOE** There are no saltwater maps, or areas of concern maps
Well density creates quantity concerns
Recharge area monitoring wells are good for calculating water budgets
- HG** Talked a bit about the provincial obs well network review
If funds are limited, focus on areas of concern
Rationale is key
What is the objective for the RDN monitoring wells?
French Creek, Nanaimo River
- MOE** Englishman River GW/SW interaction
Objectives should not be limited
There is a lot of info but no consolidation of info
GSC intends a Nanaimo Lowlands study between Comox and Cobble Hill
- HG** Characterize first, drill second
- MOE** Characterizing takes too long (chicken and the egg dilemma)
- RDN** Recharge areas, rates, travel times, do changes in snow pack change aquifers
- WD** How much GW recharge comes from highlands and how much comes from local precipitation
- HG** Most is recharge from precipitation, about 3 or 4 times the amount from highlands (in his study)
- HG** The till cap in the Parksville area prevents local recharge
- WD** Shale dykes cut through some aquifers, restricting flow
- RDN** RDN wants to avoid dry holes so location is important
- HG** Peaks and troughs in bedrock control flow of GW
- HG** Not always common aquifers
- WD** Wants 1000s of new wells
Drilling outside of known areas may yield very little information
- MOE** Shooting for wells upstream of mapped aquifers
- HG** Benefits of natural state of aquifers vs. impacted

- WD** A problem can be measuring pumping levels and blaming the aquifer
Health requires detailed chemistry of water systems
Care must be taken inferring based on info from active wells
New wells should be close enough to be meaningful but far enough away from undue influence
- MOE** May take 10-20 years to get viable data about water levels
- HG** Large portion of flow recharge is uphill
Recharge through local precipitation is only about 10-15% in the Parksville area
- RDN** Asked that people go through the issues and concerns they had posted on the maps
- WD** Nanaimo River has GW/SW conflicts
- HG** Cassidy aquifer is high capacity
- HG** Thurber did a Cassidy aquifer study
- HG** Nanoose has two areas that could use an obs well, north and south
Two sand and gravel aquifers with a till confining layer (deep quadra sands)
- RDN** RDN wells have naturally occurring ammonia (aqueous)
Overburden aquifers
Ammonia could be from organic matter deposited at the same time as the aquifer materials
Development of monochloromines
- HG** Englishman River, new concentrations of wells
Aquifer boundaries can move
Has done cross-sections that showed two levels of sand and gravel
- HG** Englishman Rive aquifer is a complex system
Criteria needs more solid work
A background well is ideal
- WD** Both types of monitoring wells are required (Dennis agrees)
- HG** Aquifer 220 has low recharge vs. high pumping
High demand in Errington around Grafton Road
- WD** Disagrees, wells are only 0.5 Gal/min
Tough to overpump, the system is self-limiting
- HG** Growth in number of wells is alarming
Tripled in 20 years

- HG** Aquifer 220 boundaries are suspect
- WD** Most domestic wells are only 300 Gal/day
Doesn't see impact
Community wells show more impact
- WD** People have large expectation for well yields, may be unrealistic
- MOE** Water deliveries? Any specific areas?
- WD** Does water deliveries, 95% of them are for people with dug wells
- HG** No backlog when the aquifers were classified
- MOE** How many wells are actually in the BC WELLS database?
- WD** At least 30% of wells are not in the database (Jim agrees)
- HG** Wells in database may not be active
- HG** Field truthing required, funding for a co-op student to go door to door?
- HG** Need the on the ground data
Golf courses etc., are not monitored
- WD** Golf courses have recharge from irrigation
- MOE** Water Act Modernization might help to gather more info
- WD** Is water quality monitored in MOE obs wells?
- MOE** Yes, every 3-5 years is ideal with 3 consecutive years to achieve baseline data
- HG** Spider Lake has development with no info (Shelley agrees)
- RDN** Asked people to discuss the proposed locations circle on maps
- MOE** 6-10 wells, outside influence of other wells, within aquifers
Upper regions good if other wells are available in areas of well density
- HG** 4 areas makes sense near Nanoose, Spider Lake and Coombs
- MOE** Perhaps first round of new wells should be to get more info before moving upland
- MOE** Is development limited to coastal areas?

- RDN** No, but it is not expected to increase much in the highlands
- HG** Should be talking to community water systems
- RDN** Health has lots of info, but many systems don't report.
Has met with some non-reporting water systems
- WD** MOE doesn't always want data due to liability
- MOE** Saltwater intrusion is a good example, what to do with problem wells?
- WD** Saltwater well closure may not be realistic
Need education from contractors to well owners
- HG** Need opportunities to connect with small unregistered water systems
- HG** Proposed location upstream of Englishman River is not good, could be further downstream
- MOE** Unconfined aquifer – precipitation recharge; Confined aquifer – mixed recharge;
Bedrock aquifer – GW recharge
Aquifer boundaries need work
- MOE** Might be able to find existing wells to equip as monitoring wells
- HG** Understanding estuaries and deltas is very important at the discharge point