

EAU CLAIRE COUNTY GROUNDWATER ADVISORY COMMITTEE

MEETING MINUTES – JANUARY 18, 2012 AGRICULTURE & RESOURCE CENTER - ALTOONA, WI

MEMBERS PRESENT: Steve Chilson, Michael Blodgett, John Paddock, Katherine Grote, Jim Dunning

MEMBERS ABSENT: Pete Marsnik, Duane Merritt and Will Fantle

STAFF PRESENT: Kelly Jacobs (Eau Claire County P&D – LCD), Rod Eslinger (Eau Claire Co. P&D-LUD), Courtney Johnson and Ken Jain (Eau Claire City/County Health Dept.)

OTHERS PRESENT: Public

Call to Order

The meeting was called to order at 5:40 p.m. by Jim Dunning.

Introductions of Committee members were made.

Approval of 12/21/2011 Minutes

Dec. 21, 2011 minutes corrections: On page 2, DNR Maximum Contaminant Level Goal (Not EPA); no second required on motion to adjourn. Paddock moved to approve the Dec. 21, 2011 minutes as corrected. All in favor. Motion carried.

Status of Eau Claire County Wellhead Protection Zones

The Village of Fall Creek, by resolution, requested that the County move forward on Wellhead Protection zones. This will be on the Planning & Development Committee agenda Feb. 28, 2012. We still have not heard from the City of Augusta or the Village of Fairchild.

Develop Recommendations for County Board regarding the Impact of Silica Sand Mining

Jacobs highlighted the last page of the minutes as a starting point for recommendations from the committee.

Johnson put together the Health Department's areas of consideration (handout – attached to the minutes as a record). It was agreed that the Committee discuss the handout and take any motions at the end.

Paddock declared that on Jan. 10, 2012 his land, owned under partnership, was contacted by Hi-Crush for purchase for allowing a conveyor system. He will recuse himself from any discussion regarding the Hi-Crush application specifically; however, will participate in the more general policy discussions.

The Committee proceeded to review the handout and discuss items included for consideration. Health department took the perspective that these policy recommendations would apply to all industries, not just mining. Discussion on handout as follows:

2 – Groundwater and Drinking Water

2a. Applies to hazardous substances only if they causes groundwater issues. Consensus that item 2a is ok for now – more details will be coming to further committee meetings. Since this applies across all industry, how is an agricultural field application affected. This section would not limiting the practice, but that practice would have to make those applications based on industry standards. Also, any Nitrate contamination in groundwater would have to be linked directly (and have definitive proof) to that agricultural application. Jacobs stated that there is the potential for that policy to cross paths with agriculture; however, this policy still allows normal, lawful, non-negligent activities.

2b. Reclamation Plans.

Item 2bi – similar reference to septic systems. Could look into “exemption” language that allows for a study in order to determine a practice is safe. This will be brought to the Board of Health for recommendations. Depth of separation could also utilize language from NR151. The Committee recommends that this be looked at further – they are in favor of separation and a topsoil/soil minimum depth requirement, but exactly how that looks still needs to be fleshed out. Also can use St. Croix County’s language – “if you mine into groundwater, then you have to...” Reclamation has to be done right. Option to mine above groundwater, but if you go below then studies would be required. Three foot separation goes across several policies under Health Department authorities (i.e., spreading of septage, paper sludge, septage drainfields, etc.).

Eslinger explained the typical reclamation process which includes no follow-up once they are issued a certificate of compliance and the financial assurances are released. Blodgett commented that one benefit of allowing mining into groundwater is that it allows wetland protection policies to go into effect on those sites over the long term.

Paddock wants to forward this on to those responsible for reclamation plan as guidance to allow for 36” soil (as outlined in 2bi). Each reclamation plan would be site specific.

Item 2bii – pH requirement to prevent metal oxides. Can be used as consideration in the reclamation plan review. Tricky to maintain a pH across the soil strata. Core samples will provide evidence of metal oxides. Could be looked at prior to doing any activity/operation. Do we need to look at having access to geologic borings? Get soil borings. Also recommend getting core samples as part of reclamation application. Could require them to prevent mobilization of metals offsite by the use of slurry walls or by other means. Final depth to groundwater is important as well in this issue. This could also be more of a policy guidance (request but not require). This comes forward as part of NR809 as well. Soil borings – hope to be addressed by Health Department. If the Health Department collects them they would share them for the reclamation plan (outlined in Section #4 of the handout as well..

2c. Discussed encouraging wellhead protection zones be mapped.

2d. High capacity wells.

County and Towns can’t supersede what DNR has. Encourage applicants to get background levels on chlorides, TSS, nitrates, others. Private well issues are normally handled by the courts as a civic matter. No authority by DNR to regulate based on cumulative effects. We can require baseline testing but not where the high capacity well is placed. Encourage private landowners to do the monitoring as well (but can’t require those to be tested). In Frac Sand processing, the typical recycling of process water, and utilization of stormwater, should minimize aquifer impact. A correction was suggested on the “i” bullet under 2d to state “properties” instead of wells to more accurately reflect that. There was also an overview of DNR high capacity well approval process. High capacity wells need to be abandoned properly if not used within the past 2 years.

2e. Separation of mining activities from groundwater

2f. Internally and externally drained sites.

2g. Monitoring wells

Establish groundwater elevations – minimum of three to establish gradient and up to six or seven

may be needed. Once the wells are established on-site, it seems to be a best management practice anyway to keep them available for future monitoring needs that may arise. Paddock stated that we also have to look at the smaller black dirt operations as compared to frac sand operations. There is a need to design well placement dependent on what you're monitoring for. Grote noted that they can use boring logs to help in determining placement. Should have monitoring wells, and especially have some based on the site.

2h. Inspections of private wells

Careful about requiring inspection because if there is a problem then DNR requires them to replace because the well driller is required to report those problems to DNR. Perhaps this should be voluntary, but we need to have a procedure and offer it. Most often the recommendation is to utilize distance from mine site to determine which wells would be affected. Rule of Thumb: "High capacity gal/min" ÷ 2 = _____ft. setback of private wells. It is a pretty accurate guidance policy, but not a requirement. Most companies will probably do this on their own. We will need to make sure those people 30 years from now have some kind of understanding and relation to the original agreement?

2i. Testing.

Worst case is that we do have known half-lives and therefore zones could be established if there is a contamination event. There was a discussion about requiring lined ponds. If for any reason a problem is evident, the county could require testing. Companies could also use PAM's for dust control, soil stabilization, etc. under DOT standards for proper uses. County Policy could reference those specifications.

Monitoring recommendation: Put a BMP in place – better off than monitoring and trying to "catch it". There is legitimate need to determine groundwater elevations, but all other tests get to be a bit much to handle (workload, finances, etc.). We should have BMPs identified as part of the code. If there is a violation, then require even more BMPs or perhaps that event could trigger sampling. Could do baseline testing, BMPs, and then followup on potential contamination which would trigger a blend of additional BMPs and monitoring. Need to define what BMPs we would suggest. With monitoring, data overload is an issue and it does not replace on-site inspections. Monitoring requirements would also take a lot of definition. Perhaps include language that prior to release of financial assurance they do a certain type of study. Overall we should look at some consistency across the board.

Overall there is a desire for baseline monitoring and determine what might trigger monitoring down the road.

3 – Stormwater and Erosion Control

3a – Consensus that the Nonmetallic mining operations should not be exempted from erosion control plan requirements.

3b. Pond lining requirements. This item would already be addressed in stormwater plans under the current ordinance. Process water is also specifically addressed in DNR rules. Consensus that nothing additional is needed to address this item.

Delete "see "Other", #10c below" from the handout as it is an error.

4 – Soils and Excavated Materials

4b. Hesitant on using settling fines in reclamations without first testing that (especially for flocculant). What happens if you break the brick up? Or should they be left in place? Similar requirements to testing of lake dredge material if used in reclamation.

4d. Soil borings

Anything over 10 ft. is a well under DNR rules. Abandonment reports sent to the Central Office of DNR. (Requires a GPS location.) Currently, if someone failed to report to DNR, the county could

make a referral or issue local citation. As part of reclamation plan, request that all boring and paperwork are included in application.

**Of anything discussed at today's meeting, this is the one has the most potential for groundwater contamination.

Education item vs. require more documentation (such as showing us copies of the abandonment reports). Education is good. Suggest that if we can put it in 8.12 somehow that's good. Local citation authority would be the most effective and timely to address issues and local officials would be able to provide the education along with it. There are also realtors assisting in the current exploratory drilling work. We do not know how many of these exist as a lot of the prospecting is pretty secretive.

If using material below groundwater table for reclamation, then testing should be required. If the separation from groundwater is sufficient enough, then, dependent on BMP's approach and some other criteria, perhaps no testing.

5 – Hazardous Substance Control

5a/5b – Consensus to pursue the bullet points outlined here. WI DSPS (Department of Safety and Professional Services) code references were formerly the WI COMM (Department of Commerce) codes.

6 – Blasting Ordinance

Concerns of Fracturing that extends into groundwater table? Towns better to address this and perhaps not counties? This is worth looking at – at least to answer towns questions.

Cross referencing to various codes will be important. Also will be looking at processing vs. mining and how each is affected.

Discuss Next Meeting Date

Report to County Board provided by discussions in minutes. Likely develop recommendations as part of next meeting and then understand that finalizing these concepts will happen at oversight committees.

Groundwater Advisory Committee will meet again prior to the Planning and Development Committee who meets prior to the March 6, 2012 County Board Meeting. The next meeting will be held February 16, 2012, at 5:30 pm.

Adjourn

Chilson moved to adjourn at 8:29 p.m. Paddock seconded. All in favor. Motion carried.

Respectfully submitted,

Kelly Jacobs
Committee Clerk

KJ/ljz

**Eau Claire County Groundwater Advisory Committee
Sand Mining – Groundwater Implications Follow-up Areas of Consideration**

Prepared By: Health Department (Ken Jain and Courtenay Johnson)

1. What might be direct conduits to groundwater?

- Prospective Soil Borings and proper abandonment
- Breaking the seals/liners of settling ponds
- Blasting and separation distance from groundwater
- Monitoring wells and abandonment
- Mining in the water groundwater

2. Groundwater and Drinking Water

Note: Johnson and Jain are attending the Statewide Groundwater Meeting on February 9, 2012. Drawdown and recovery, as well as Frac Sand Mining will be agenda items. There may be more useful information on these topics at the February 22, 2012 Board of Health meeting.

a. County Ordinance “8.12.080 – Groundwater contamination – prevention” states:

It is unlawful for any person to **dispose** of any material which contains hazardous substances and/or biological substance(s) that would cause groundwater to be unpalatable or unfit for human consumption. These substances include but are not limited to the chemical or biological substances listed in **NR 109** and NR 140, as well as other compounds for which state or federal health advisory limits have been issued.

Code Amendments:

-At a minimum, NR 109 is the old code number for NR 809. This will need to be included in an ordinance amendment to the County Board.

-The Board may wish to consider an amendment to this code to broaden its application beyond “disposal”. Example language might include:

It is unlawful for any person to utilize in any manner, including but not limited to disposal, processing, application, and storage of any material which contains hazardous substances and/or biological substance(s) that would cause groundwater to be unpalatable or unfit for human consumption. These substances include, but are not limited to, the chemical and biological substances listed in NR 809 and NR 140, as well as other compounds for which state or federal health advisory limits have been issued.

b. Reclamation Plans are key for protecting Groundwater.

- i. Reclamation sites should be designed with a minimum amount (depth) of unsaturated soils to protect groundwater in these areas.

-Recommend to Planning and Development that a minimum of three feet (36 inches) of unsaturated soil with a minimum of 12 inches of topsoil (A horizon) USDA sandy loam texture (or finer). This would be required to create a minimum separation distance from saturated soils or bedrock (reference WI Admn. Code SPS 383, table 383.44-3) be written into the reclamation plans.

- ii. Reclamation sites should be maintained at a pH level to prevent mobilization of metal oxides into groundwater.

-Recommend to Planning and Development that a pH requirement be written into the reclamation plans to prevent the mobilization of metal oxides into groundwater.

c. Groundwater Advisory Committee.

- i. Municipal Wellhead Protection was not fully implemented for municipalities within Eau Claire County. This issue was initially addressed through a letter from the Groundwater Advisory Committee on December 21, 2011.

-Recommend the Board of Health issue a letter to municipalities that have not requested the creation of these zones, which is written in support of the Groundwater Advisory Committee letter issued to municipalities on December 22, 2011. A draft letter is included with the Board mailing for your review and comment.

-Note: As of January 10, 2012, the Fall Creek Village Board passed a resolution to request the County to develop the wellhead protection districts/zones (map).

d. High Capacity Wells.

- i. Those wells that use 70 gpm or 100,000 gpd and are DNR-regulated.
- ii. Sites recycle process water and utilize storm water to minimize aquifer impact.
- iii. Effect on quantity in surrounding wells and considerations for minimum separation distances from neighboring wells. The DNR and Local jurisdictions have no authority to regulate high capacity wells separation distances from private wells.

Example: An industrial sand mine operation uses an average of 186 gpm 24/7, 365. The majority of this use is for dust suppression, usually within a 4-month timeframe (seasonal). The largest water use would occur at the start-up of the process water ponds, while the largest water loss is evaporative at about 7-10%. If the site is internally drained, the majority of the water used onsite infiltrates back into the aquifer. Compared to a municipal well using 250 gpm, water loss is nearly 100% as it is a “pump and dump” operation through municipal use and sewage treatment disposal to surface water. *Note: municipal supplies are additionally vulnerable to increases in water use because of industrial demands and operational fluctuations.*

- e. Separation of Mining Activities From Groundwater
 - i. In Eau Claire, the majority of the frac sand resource is located above the regional groundwater table.
 - ii. In Eau Claire County, there are currently sand and gravel sites that are working within the water table. If a decision is made to regulate, there'd likely need to be a grandfather rule or recommendation for "exempted" sites to allow for work in groundwater at some of the existing locations.
 - iii. Internally and Externally drained sites. See #1.f below.

- f. "Internally" and "Externally" drained sites.
 - i. Internally Drained Sites. These sites are designed so that all water is retained and infiltrated on-site.
 - ii. Externally Drained Sites. These sites are usually operating within the groundwater table and therefore excess water is discharged off-site. This discharge of excess water may lower the groundwater table, as excess water *is* groundwater.

- g. Monitoring Wells for groundwater depth and quality monitoring
 - i. NR 141 – Groundwater Monitoring Well Requirements
 - ii. Many companies routinely install and often expect to be required to install these types of wells.
 - iii. Water Quality – what to test for. See #1.i. below.

-Consider a mechanism requiring a minimum number of monitoring wells on every mine site, taking into consideration the mine phasing and growth.

- h. Inspections (structure and testing) of private wells surrounding the site prior to construction and operation.
 - i. Distance of private wells from site perimeter? Distance based on what?
 - 1. Time of Travel – e.g. 10 yrs. *This is difficult to ascertain, as groundwater direction and rate are not well known in most areas.*
 - 2. Fixed distance – e.g. ½ mile
 - ii. Direction of private wells from perimeter (using groundwater flow)?
 - iii. Define perimeter and phasing (parcel line or edge of active mine).
 - iv. Water Quality – what to test for. See #1.i. below.

-Consider a mechanism requiring inspection and testing of private wells around a mining site, based on set criteria to ensure baseline information is documented.

- i. Baseline and Continuous Water Quality Testing (monitoring wells AND private wells). Baseline testing is good for the neighboring properties as well as the business operator as it allows an opportunity to establish baseline parameters and future effects on water supplies.
 - i. Standards in NR 140 – Groundwater Standards
 - ii. Standards in NR 809 – Drinking Water Standards
 - iii. US EPA Advisories as listed in their most current “Edition of the Drinking Water Standards and Health Advisories”
 - iv. Residential wells tested would require owner or occupant permission.
 - v. Frequency of testing might include criteria such as:
 - 1. Require pre-construction baseline of all identified residential wells
 - 2. Require pre-construction baseline testing of all monitoring wells.
 - 3. Annual testing of all identified residential wells.
 - 4. Monitoring well testing frequencies would likely be variable depending upon mining activity.
 - vi. Require testing at a certified lab.
 - vii. What might be tested for:
 - 1. Static Water Level and Pumping Water Level
 - 2. Bacteria
 - 3. Nitrate
 - 4. Conductivity
 - 5. Total Suspended Solids
 - 6. Turbidity
 - 7. pH – changes in pH can affect lead/copper in water supplies
 - a. Lead
 - b. Copper
 - 8. Nuisance Metals (Iron, Manganese, Calcium, Magnesium)
 - 9. Toxic metals (Cobalt, Cadmium, Chromium, Arsenic)
 - 10. Petroleum Products
 - 11. Volatile Organic Compounds (VOCs) – includes diesel and gasoline byproducts (e.g. benzene and naphthalene)
 - 12. Other chemicals that may be tested for would be selected based on site-specific activities. For example, Flocculants – specifically Polyacrylamide:
 - a. Flocculants are used to settle out fines from the process water for the purpose of recycling the water.
 - b. There are EPA-approved methods for testing these compounds.
 - c. There are no ‘Groundwater standards’ for polyacrylamide or acrylamide.
 - d. WI has a drinking water “Maximum Contaminant Level Goal” established for acrylamide. The “goal” is not an enforceable standard. It is 0.01 parts per billion (ppb). NR 809
 - e. The EPA has a “Health Advisory” for acrylamide. According to County Ordinance 8.12.080, if acrylamide was found in exceedence of the health advisory, the County would have enforcement authority.

- f. These flocculants are being used by local municipal drinking water systems and they are regulated based on a minimum acrylamide ingredient value. When Acrylamide is used in drinking water systems, the combination (or product) of dose and monomer level shall not exceed that equivalent to a polyacrylamide polymer containing 0.05% monomer dosed at 1 mg/L.
- g. Acrylamide degrades:
 - i. in distilled water, over 1-2 months
 - ii. if released into water (e.g. river), within 8-12 days
 - iii. released on land and leaching into the ground, within a few weeks
 - iv. released directly into soil, remains partially in soil (~90%) and migrates into water (~10%); within days in water under aerobic, longer under anaerobic conditions; half-life in soil less than 182 days

Degradation of Acrylamide in Soil			
Study/Reference	Type of Soil	Conditions	Rate/Half-Life
Laboratory Study (Lande et al. 1979)	Loamy soil	Aerobic, ambient temperature, complete mineralization	Half-life = 1.5 to 1.9 days
Field Study (Donberg et al. 1992)	Sand, Londo Soil, Tappan Loam	Aerobic	Complete removal in < 2 days
Laboratory Study (Abdelmagid and Tabatabai 1982)	Iowa soil	Aerobic, release of ammonia	Half-life = < 6 days
Field Study (Shanker et al. 1990)	Tropical Garden soil	Release of acrylic acid, ammonium and nitrate ions and at 30°C	Complete removal in 5 days
Laboratory Study (Nawaz et al. 1993)	Cell cultures	Cells immobilized in calcium alginate	Complete removal in 1 to 2 days
(USEPA 1985)		Aerobic soil conditions	74 – 94% removal in 14 days
(USEPA 1985)		Anaerobic, waterlogged soil conditions	64 – 89% removal in 14 days

Source: Belvidere sand & Gravel Site White Township, Warren County, New Jersey
 U.S. Department of Health and Human Services – Public Health Service, August 20, 2008

viii. Impacts are defined as:

1. Preventive Action Limit or Enforcement Standard is exceeded
2. EPA or State Advisory Limit Exceeded
3. Affect on quantity (includes interrupted flows)
4. Lowering of surface waters serving as a source for personal, agriculture, or municipal functions below base flow for more than 5 days (e.g. cattle watering holes).
5. Changes in aesthetic qualities such as taste, color, and odor.

-Consider a mechanism for the testing of monitoring wells and identified private wells using above considerations such as frequency, use of a certified laboratory, and identified parameters.

-Consider a rule or policy that if polyacrylamide flocculant is used, it must meet those requirements of municipal drinking water systems.

-Consider having a policy or guideline for determining and mitigating impacts to private wells.

-Consider General Monitoring Requirements.

3. Storm water and Erosion Control

- a. Eau Claire County Ordinance exempts non-metallic mines from erosion control plans.

-Recommend to Eau Claire County Planning and Development (P&D) and Land Conservation (LC) that non-metallic mines not be exempted from erosion control plans.

- b. Lined -vs- Unlined process water ponds. Lining provides little protection as the fines coming out of the process water create a natural liner within a short amount of time. These sediments eventually start to accumulate to a point where the pond volume is affected. They are then removed and incorporated into the reclamation process.

-Consider General Monitoring Requirements. See "Other", #10.c below.

4. Soils and Excavated Material

- a. Overburden. See #3.e. above.
- b. Sediments from settling ponds usually form what are called "sticky bricks" which are primarily composed of fines. These "bricks" should be effective during reclamation because they are fines and should "treat" infiltrated water.
- c. Reclaimed soils and pH. See #1.b.ii and #3.e. below

- d. Soil Borings (Prospecting)
 - Testing. See #3.e. below
 - Abandonment required per NR 812, Table C
 - Abandonment reports are required per NR 812.26(8)
 - Prospect borings done in Eau Claire County have likely not been abandoned properly, nor recorded with the DNR.

-Recommend Chapter 8.12 be amended to create a Section specific to soil boring permitting and abandonment for local oversight of drilling and proper abandonment of the drillholes.

-Consider the creation and distribution of information about local (if applicable) and state DNR abandonment requirements to drilling contractors and others involved in core sampling.

-Consider requiring abandonment of soil borings already done in Eau Claire County within a designated “timeframe” preceding the adoption of any regulations to this effect.

- e. Testing of soils
 - Test soil borings for nuisance and toxic metals.
 - Test reclamation site soils. See #1.b.ii and #1.i.vii.12.g.

5. Hazardous Substance Control.

a. County Ordinance 8.12.070 states:

“A. It is unlawful for any person to store, use, transport, or dispose of any hazardous substance in such quantity or manner that it is, or has, the potential to create a human health hazard.

B. It is unlawful to use or dispose a hazardous substance product other than as the label or labeling directs or as required by applicable federal, state, and local rules and regulations.”

b. State Agency Rules, Regulations and Statutes:

i. WI DNR

1. NR 140, 141, 149, 150, 157
2. NR 660-666, 668, 670, 673, 679
3. Stats 289, 291-292, 299

ii. WI DSPS

1. SPS 310 (Flammable, combustible, and hazardous liquids)
2. SPS 348 (Petroleum and other liquid fuel products)

-Recommend Sec. 8.12.070 be amended to include a reference to sections 8.12.080 (Groundwater Contamination Prevention) and 8.12.075 (Human Health Hazards).

-Recommend Sec. 8.12.070 be amended to adopt rules, regulations, and state statutes pertaining to hazardous wastes and hazardous materials.

6. Blasting Impacts.
 - a. Blasting ordinances take into consideration a variety of issues (e.g. structural damage, noise, debris, water quality, time, notifications) that may arise from blasting.
 - b. Chippewa County has a blasting ordinance that the County could consider for revision and adoption.
 - c. Adoption of SPS 307 (Explosives and Fireworks)

-Recommend the County consider the adoption, if possible, a blasting ordinance and the adoption of SPS 307 (Explosives and Fireworks).