Groundwater Management Districts Association (GMDA)
Winter 2020 Meeting—Ft. Lauderdale, FL
Dick Ehrman, Dan Schulz

Dan Schulz, Directors Gary Hellerich and Luke Peterson, and I attended GMDA's winter meeting in Ft. Lauderdale. As Nebraska was the organizing state for this conference, Dan and I worked several hours over the pre-conference weekend helping get everything set up. A bulleted summary of the conference itself follows:

States represented: NE, KS, CO, MS, TX, LA, FL, NM, CA

NRDs represented: LPS, LPN, LE, LL, CP, LN, UBB, NARD

Monday, January 13

Jonathan Shaw, South Florida Water Management District

- Overview of SFWMD in the area around Ft. Lauderdale—SFWMD has a budget approaching $1 billion!!!
- Overview of common sources of saltwater intrusion
- South Florida geology consists of several interlayered aquifers down to a depth of over 1000'
- SFWMD is currently mapping coastal aquifers using the 250 mg/l chloride (Cl) standard as the main criterion
- March-May is the critical period for intrusion
- Sequential mapping of saltwater intrusion since 2009
- Some wells are approaching 5000 mg/l Cl (compare to MCL of 250)
- Some improvement in Palm Beach County—largely from switching to deeper aquifers (retreat from about 1800 to few 10s of mg/l)
- Most other areas on the east (Atlantic) coast—intrusion line is moving westward & typically concentrations are increasing from about MCL to few thousands of mg/l

Anushi Obeysekera, South Florida Water Management District

- Central Florida Water Initiative—develop a comprehensive plan for central Florida
- Technical Teams for conservation, regulation, etc.
- Water Resources Assessment Team (WRAT) & Hydrologic Assessment Team (HAT)
- Numerous modeling efforts over the years
- Currently—East Central Florida Transient Expanded (ECFTX) model—expanded boundary, model layering of Lower Floridan aquifer and surficial aquifers; covers about 23,800 mi^2; 11 layers to bottom of Floridan at about 2000'
- Water use numbers for model—about 2 billion gallons/day (BGD; ag and public water supply about 1.5 BGD)
- CFWI projections—667 million gallons/day (MGD) in 2014 increasing to 900 MGD in 2040
- Projected drawdowns in surficial aquifer of several feet, especially in area around Disney World
- Some areas of water level increases in ag areas w/ excess recharge
- Drawdowns of up to about 10' in Lower Floridan, again centered on Disney World area
- Results used to assess regional effects and quantify water availability

Scott Prinos, US Geological Survey

- Review of salt water intrusion mechanisms in Florida
- Problems—lack of data, some wells in multiple aquifers or incorrect aquifer designation, bad sampling methods, badly corroded wells
- USGS network for monitoring—better design/coverage, installed wells (4 new wells added each year at key locations), etc.
- Monitoring well installations try to "bracket" the salinity front—i.e. one well in saline water, one in fresh water
- Currently using borehole electromagnetic surveys, but these always need to account for salt water being higher density
- Water level variations in canals can cause pulses of salt water in ground water
- Lake Okeechobee—dikes eroded by hurricanes & piping due to GW seepage, so seepage barriers installed
- Seepage barriers allowing fresh water from Lake O to "sweep" salt water out
- Ground based geophysics—use a 40 X 40 m loop (compare to 40' X 20' AEM loop in Nebraska(
- Started using AEM in 2003
- Geochemical analyses—ion exchange measurements indicate filling of ion exchange sites (e.g. magnesium vs. calcium, etc.)
- Dissolved gases in ground water can be used to determine temp of water when it entered aquifer; this allows determination of dry vs. wet season recharge
- In some places salt water is intruding as fast as 1000'/year
- Salinity analysis tool/mapper—combination of all of this data for mapping & viewing

Lunch speakers on Ft. Lauderdale/Riverside Hotel history—The history of Ft. Lauderdale is interesting, and the Riverside Hotel is the oldest functioning hotel in Ft. Lauderdale!

Pete Kwiatkowski, South Florida Water Management District

- Central Florida Water Initiative—collaborative water supply planning effort
- Overview of public water supply, ag, & commercial (mostly phosphate mining) uses
- Floridan Aquifer extends to MS, AL, GA, SC as well as FL; unconfined to confined (in north FL mostly un- to semi-confined; south FL mostly confined)
- Water withdrawals from Floridan ranges beyond 100 MGD/county
- Central FL drawdown from pre-development to 1995 ranges >20'
- Floridan has an upper and lower unit, separated by a middle confining unit of variable effectiveness; pumping from lower Floridan has "less" effect on surface water
- Data Management & Investigations Team established to identify site locations for additional work based on spatial data gaps, susceptible areas, knowledge gaps, land ownership/access
- Floridan is highly heterogeneous—hydraulic conductivity (K) varies over 5 orders of magnitude!
- Also conductance ranges from 450 to 45,000 µs/cm (fresh water in NE is around 500 µs/cm)
- Drilling encountered a 75' thick void/cave at about 1400' BLS!
- So, Upper Floridan has reached its sustainable limits in central FL; Lower Floridan is potential alternative –brackish, but less connected to surface systems, but treatment will be necessary
- Additional data collection and modelling is planned (regional modelling as per Anushi)

Dr. Rene' Price, Florida International University

- Historical Everglades estimated at 10,000 km^2; currently about half that w/ 1/3 of wetlands lost
- Historic flow out of Lake O to southwest into Gulf of Mexico; currently to the southeast through canals to the Atlantic &/or then to southwest to Gulf
- Planned flow is to use canals south of Lake O, then southwest to Gulf
- Biscayne Aquifer in very south FL; Biscayne thickens north-south; underlain by sand & limestone aquifers, then confining layer (Hawthorn), underlain by Floridan
- Biscayne Aquifer transmissivity ranges up to several million gallons/ft/day!!!
- Working on how climate change & sea level rise interact w/ coastal mangrove zones & water management
- Algal blooms etc. have indicated high phosphorous (P) levels; research indicates that ground water is higher in P than surface water—sea water intrusion causes calcite dissolution & then ion exchange releasing P from bedrock
- However, mangroves seem to be absorbing much of the P
- Salt water intrusion is causing peat collapse due to sawgrass dieoff, resulting in open water behind mangrove swamps
- Sea level rise increases salt water level in "coastal hammocks" which are dominated by hardwoods which can't live in salt water; these hammocks are dying off and being replaced by buttonwood & eventually mangroves
- Solution: "Fight water with water"—i.e. fight salt water intrusion w/ more fresh water

Nebraska Caucus

- Directors: Lyndon Vogt (CPNRD) elected advisor, Tylr Naprstek (LLNRD) elected 3-year director, Dick Ehrman (LPSNRD) elected 2-year director, and Linda Luebbe (UBBNRD) elected 1-year director. The group also solicited volunteers for future director openings
- NE will be coordinating the 2021 summer meeting—Upstate NY/Niagara Falls, Rapid City/Black Hills SD, Great Lakes, Nebraska City were mentioned as possibilities
- Dick Ehrman reported on the ad hoc ground water quality committee (NM, NE, & CO) especially regarding PFAS

GMDA Board meeting

- Meeting opened with roll call, approval of previous minutes, & financial report
- Steve Walthour is exploring long-range planning to increase membership & revenue
- MS is organizing the summer 2020 meeting June 11-12 at the Mining Exchange Hotel, Colorado Springs CO
- Lively discussion regarding moving control from local to state level as well as from state to national level; general consensus is that most local control is usually desirable. Aron Balok (NM), Mark Rude (KS) & Randy Ray (CO) will draft position statement
- Aron Balok (NM) nominated for national vice president; he'll do it upon approval of his Board

Tuesday, January 14, 2020

Dan Schulz & Dick Ehrman, LPSNRD

- Overview of Marsh Wren Saline Wetlands geology & restoration efforts

Dr. Virginia Walsh

- Miami-Dade County Water & Sewer Department
- 94 wells producing 300+ MGD; each well produces a few up to 20 MGD
- 2.3 M residents served; annual revenue is about $796 million!!!
- Almost 2800 employees!!!
- Flood control—wet season 2018-19 moved 223 B gal of water
- Outstanding Florida Waters—Biscayne & Everglades National Parks; FL statute forbids degradation of OFWs
- Primary challenges—sea level rise, storm water/storm surges, ground water rises, precipitation
- Biscayne aquifer—uppermost & very high quality; then Hawthorn confining unit, then Floridan aquifer (brackish water), finally Boulder Zone at about 3000' which is where waste water disposal wells are finished
- FL has underground injection control (UIC) primacy from USEPA (as does NE)
- Historically waste water was discharged at ocean outfalls (OOFs); growth of Miami & location of OOFs rendered these unsuitable so they went to deep injection for new disposal since the 1970s
- Injection wells are large, w/ telescoping design—largest is 36" final dimension that means initial hole at 72"! Casing usually steel or fiber-reinforced steel
- Injection accomplished at only 70 PSI due to permeability of Boulder Zone
- Caliper logs show tremendous variation in borehole diameter; start at 12" but in some cases expand to 36"
- Any new Class I wells disposing municipal waste must have high level disinfection (HLD) prior to injection; HLD plant is multi-million $ effort
- Long-term Capital Improvement Plan almost $8 billion!!!
- Drilling these wells requires specialized drill rigs (casing weight can exceed 1 M lbs—500 tons!); regular oil & gas rigs won't work; only 1 qualified bidder came up w/ bid of $163M for 15 wells ($55 million over estimate!!!); Youngquist Bros. are the bidder; Layne Christensen used to but is now out of waste water disposal business due to liability issues
- Disposed water in Boulder Zone is brackish & a little high in ammonia; in 20 yrs could be a possible source as it's artesian

Jim Schneider, Olsson

- GET—Groundwater Evaluation Toolbox
- Automated system for connecting simple questions (What will happen if I grant this well permit?) to simple answers (The water table will decline by 3' in 25 years)
- GET is cloud-based, so user doesn't need expensive hardware—just an internet connection and browser
- Available ground water models for use in GET centered in NE, but range from NV to TX to east coast
- Examples from LLNRD re GW transfers, TPNRD re recharge from canals, NDEE re WHPAs & petroleum remediation, GA & IA for various ground water management actions, UT & NV for water rights disputes, CA for water trading & disadvantaged communities

The day concluded with an airboat tour of the Everglades. The weather was fairly cloudy and cool (for Florida) so we only saw a few alligators sunning themselves. But we did get to see many exotic birds, iguanas, plants, etc. I highly recommend it!

Wednesday, January 15

Mark Rude Southwest KS Water Management District/Ian Lyle, National Water Resources Association

- Overview of Colorado bill re abandoned mines, endangered species, etc.
- KS is emphasizing Water Resources Development Act, endangered species, infrastructure, invasive species, etc.
- GMDA is now the ground water caucus for NWRA—priorities are Waters of the US (WOTUS), ground water conservation, surface water storage, etc.
- Mark Rude (KS), Randy Ray (CO), Lyndon Vogt (CPNRD), & AJ Olsen (NM) will continue as voting representatives to NWRA
- Update on congressional action—PFAS is becoming an issue & NWRA is trying to ensure that legislation is reasonable
- Drought Resiliency Act--$1 billion+ bill for water recycling, surface/ground water storage, desalination
- WRDA 2020—caught up in election year and short legislative calendar, but might see progress on regulatory items, PRG (preliminary remediation goals, especially for PFAS), CWA, etc.

Russ Callan (LLNRD), Lyndon Vogt (CPNRD), Terry Julesgard (UNNRD)

- Russ, Lyndon, & Terry gave a great overview of the causes, effects, and NRD response to the March 2019 flooding in central & northern NE

Overall, this was a really good conference (especially since Nebraska organized it!). The weather and venue were great, the speakers were interesting and informative, and I think it was well worth attending. Thanks for the opportunity to do so!

February 13, 2020

I attended the National Association of Conservation Districts Annual meeting, February 9-12, in Las Vegas, Nevada. Others attending from Nebraska were Jeanne Dryburgh and Megan Grimes, of NARD, Lower Platte North NRD General Manager Eric Gottschalk, Nemaha NRD Director Orval Gigstad and Papio-Missouri River NRD directors Tim Fowler and Kevyn Sopinski.

"Conservation Innovation" was the theme of this year's 74th Annual Meeting and, while several new digital tools for evaluating conservation practices, reducing greenhouse gasses and increasing sustainability were featured, new approaches to more established concepts like partnerships and grants were also at the forefront.

NACD's own Technical Assistance grants were spotlighted. LPSNRD has used this program since 2018 to hire a third Resources Technician to help landowners plan improvements like terraces and waterways and to receive cost-sharing. It was good to network with the NACD officials involved in the grant program and thank them for their help. They loved the LPSNRD T-shirts I gave them!

The thousands of connections NACD has to public agencies, local districts and individual agricultural producers has grabbed the attention of big business in a big way. Huge companies like Cargill, Land O'Lakes and General Mills found their way to this year's Annual Meeting and they arrived with a sense of urgency. Representatives from all three participated in a panel discussion and described how customers and shareholders are pressuring them to be more accountable to the environment. General Mills Applied Sustainability Manager Jeff Hanratty said accountability needs to be based on the best science and big food producers will depend heavily on local conservation districts to provide good, continuous information to producers.

For the second year, NACD held a Student Conservation Careers workshop in conjunction with the Annual Meeting. Applications were received from students nation-wide for one of the 15 available spots and a UNL student, Cadence Hernandez, was chosen to participate. Cadence is majoring in Environmental Restoration with a focus on Soil Science. Timing made it impossible to connect with her in Vegas, but staff is hoping she will contact us as a follow-up to the workshop.

The NCF Envirothon was among booth topics covered during the Conservation Expo that was visited by attendees throughout the conference. They learned about Nebraska's NRDs hosting the 2020 national event in Lincoln this summer from representatives of NARD, who staffed the booth along with representatives from the National Conservation Foundation (NCF).

There were "Daily Digests" published each day of the meeting and they are available at https://www.nacdnet.org/newsroom/2020-annual-meeting/. From that link, you can also access other information about NACD and the Annual Meeting.

Thank you for the opportunity to attend,

Mike Mascoe, Public Information Specialist

FOR IMMEDIATE RELEASE

DATE: 1/31/2020

LINCOLN, Neb. — The Nebraska Forest Service is asking for public input on issues related to the state's trees and forests during a series of public meetings March 2 – March 11, 2020. The meetings occur ahead of the submission of Nebraska's Forest Action Plan—a federally mandated document that assesses the condition and trends of the state's tree and forest resources.

The meetings will provide an overview of the Forest Action Plan, priority forest areas, and issues within the respective landscapes. Meeting attendees will have an opportunity to ask questions and provide feedback through the submission of written comments.

Community	Meeting Location	Date/Time
South Sioux City	Papio Missouri River Natural Resources District Office 1505 Broadway, Dakota City, NE 68731	Monday, 3/2/2020 6:30 - 8:00 p.m.
Valentine	Middle Niobrara Natural Resources District Office 303 East US-20, Valentine, NE 69201	Tuesday, 3/3/2020 6:30 - 8:00 p.m.
Chadron	Upper Niobrara White Natural Resources District Office 430 East 2nd St., Chadron, NE 69337	Wednesday, 3/4/2020 6:30 - 8:00 p.m.
Scottsbluff	North Platte Natural Resources District Office 100 547 Airport Rd., Scottsbluff, NE 69361	Thursday, 3/5/2020 6:30 - 8:00 p.m.
North Platte	West Central Research and Extension, Snyder Building 402 W State Farm Rd. North Platte, NE 69101	Friday, 3/6/2020 6:30 - 8:00 p.m.
Omaha	Papio Natural Resources District Office 1060 Wilbur St. Blair, NE 68008	Monday, 3/9/2020 6:30 - 8:00 p.m.
Lincoln	Lower Platte South Natural Resources District Office 3125 Portia St., Lincoln, NE 68521	Tuesday, 3/10/2020 6:30 - 8:00 p.m.
Grand Island	Central Platte Natural Resource District Office 215 Kaufman Ave., Grand Island, NE 68803	Wednesday, 3/11/2020 6:30 - 8:00 p.m.

The public commenting period on Nebraska's Forest Action Plan is 45 days, Monday, March 2 - Wednesday, April 15, 2020. Any person may review and submit comments online during the commenting period. For more information, please visit: nfs.unl.edu/forest-action-plan.

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NATURAL RESOURCES CONSERVATION SERVICE
REPORT TO THE
LOWER PLATTE SOUTH NATURAL RESOURCES DISTRICT
February 19, 2020

PERSONNEL:

- Nicole Strand has been hired as the new NRCS Soil Conservationist in the Lincoln Field Office. Nicole graduated from the University of Nebraska-Lincoln in December with a B.S. in Fisheries & Wildlife and Grassland Ecology & Management. Nicole participated in the NRCS Pathways Intern Program and spent time in the Lincoln and Albion Field Offices.

- Amy Miller has been hired as the new NRCS Programs Assistant in the Lincoln Field Office. Amy will be responsible for assisting with USDA contract management in Cass and Lancaster counties. She has worked as a non-federal contract employee in the Lincoln Field Office for the past 2 years.

- Scott Mathine has been selected as the Resource Conservationist in the Weeping Water Field Office. Scott currently serves as the Soil Conservationist in the Syracuse Field Office. He will begin his duties on March 16, 2020.

LAND TREATMENT:

- The Conservation Technicians are still receiving construction checkout information for completed structural practices and submitting payments for completed projects. They're also working to survey fields for spring/summer work as weather allows.

PROGRAMS:

- EQIP – NRCS is currently accepting applications for FY20. The cutoff for producers to submit an application is March 13th.

- CRP – FSA is accepting applications for general CRP sign-up. The deadline to submit applications is February 28th. They are also accepting applications for Continuous CRP for certain practices.

- CStP – NRCS is currently accepting applications for FY20. The cutoff for producers to apply is March 13th.

UPCOMING EVENTS:

- March 2nd – Local Working Group meeting at the LPSNRD
- March 3rd – Southeast Nebraska Soil Health Conference in Hickman
- March 5th – UNL Ag Land Best Management Practices Workshop in Waverly

Cory Schmidt - District Conservationist