Performance Plan - James Doolittle

Performance Objective 1.
Engages in quality soil research that directly supports the inventory, interpretation, and understanding of soils including the dissemination of research results.

- Cooperates with NCSS partners in development of a hydropedological functional unit concept; manuscript describing concept and data collected is available for review by June 30, 2013.
  Paper published - Zhu, Q., H.S. Lin, and J.A. Doolittle, 2013. Functional soil mapping for site-specific soil moisture and crop yield management. *Geoderma* 200-201: 43-54.
- Complete contributions to Vermont subaqueous soil project for Missisquoi Bay in Lake Champlain. Publication describing research is available for review by September 30, 2013.
  - Conducted GPR bathymetric survey of St Albans Bay in February 2013.
  - Coauthored a paper, which has been accepted for publication - Libohova, Z., J. Doolittle, T. Villars, and R. Sims, 2013. Mapping the Subaqueous Soils of Lake Champlain's Missisquoi Bay using Ground-Penetrating Radar, Digital Soil Mapping and Field Measurement. *Photogrammetric Engineering & Remote Sensing Journal*.
- Continue project to assess the effectiveness of EMI for inferring the magnetic susceptibility of soils and differentiation of mineralogy for soils developed from serpentine parent material in MLRA 148 (Northern Piedmont) as resources allow.
  - Study expanded to include the Northern Piedmont Area of Maryland (My trip report of April 16, 2013)
  - Provided a brief overview of the use of EMI on serpentine soils during the preconference tour of the 2013 National Cooperative Soil Survey National Conference (Soldiers Delight, Maryland).
  - Coauthored a published paper: Doolittle, J., J. Chibirka, E. Muniz, and R. Shaw, 2013. Using EMI and P-XRF to Characterize the Magnetic Properties and the Concentration of Metals in Soils Formed over Different Lithologies. *Soil Horizons* 54(3): 1-10. Doi: 10.2136/sh13-01-0009.
- Contribute to development of and assist with implementation of research projects to enhance understanding of properties, distribution, genesis, and interpretation of saline soils and sodic soils in the northern Great Plains and soils in Bay Delta watershed in CA as resources allow.
  - In July 2013, presented a two-day salinity workshop at Great Falls, Montana, for about 20 NRCS employees.
  - Conducted saline seep survey in Teton County, Montana.
- Complete a paper on the concept of hydropedological functional units in cooperation with Dr Henry Lin of Pennsylvania State University.
  - Coauthored a published paper: Zhu, Q., H.S. Lin, and J.A. Doolittle, 2013. Functional soil mapping for site-specific soil moisture and crop yield management. *Geoderma* 200-201: 43-54.
- Prepare two manuscripts for publication on the use of ground-penetrating radar for the assessment of fragipans (1) and depth to bedrock (2). Papers will be submitted for review by September 30, 2013.
  - Reorganization, budgetary limitations and SDJ issues have had adversely impacted these studies.
  - However, coauthored a published paper on using GPR to delineated fractures in rock on the Tug Hill Plateau of New York. - Doolittle, J.A., O. Vargas, A. Langer and R. Dobos, 2013. Crossing the Lines with GPR. *Soil Horizons* 54(4): 1-3. Doi: 10.2136/sh13-02-0010.

- Continue study to evaluate hydropedology of soils in MLRAs 147 (Northern Appalachian Ridges and Plateau), and 140 (Glaciated Allegheny Plateau using geophysical technologies as funding permits).
    - Completed two field assignments with Dr Henry Lin at the Shale Hills Critical Zone Observatory in central Pennsylvania (my trip reports of 18 April and 12 June of 2013).
    - However, reorganization, budgetary limitations, and SDJ issues have had adversely impacted these studies with the MLRA 147 office.
- Initiate project to evaluate the suitability of GPR for identifying graves of different ages in acid soils of MLRA 144A (New England and Eastern New York Upland, Eastern Part) as funding permits.
    - No further action was taken this fiscal year because of a lack of funds and personnel to carry out work on this project.
- Is senior author on at least one manuscript submitted for publication in a peer reviewed journal. Article submitted by September 30, 2013.
    - Doolittle, J., J. Chibirka, E. Muniz, and R. Shaw, 2013. Using EMI and P-XRF to Characterize the Magnetic Properties and the Concentration of Metals in Soils Formed over Different Lithologies. *Soil Horizons* 54(3): 1-10. Doi: 10.2136/sh13-01-0009.
    - Doolittle, J.A., O. Vargas, A. Langer and R. Dobos, 2013. Crossing the Lines with GPR. *Soil Horizons* 54(4): 1-3. Doi: 10.2136/sh13-02-0010.

- Is co-author on at least one manuscript submitted for publication in a peer reviewed journal. Article submitted by September 30, 2013.
    - Reuter, R., L. Dlugolecki, J. Doolittle, and P. Pedone, 2013. Chapter 15, Using Remotely-Sensed Soil Conductivity to Monitor Restoration Activities on Vernal Pools, Northern Great Basin, USA. 237-250 pp. In: Shahid, S.A., Abdelfattah, M.A., Taha, F.K. (Eds.), Developments in Soil Salinity Assessment and Reclamation: Innovated Thinking and Use of Marginal Soil and Water Resources in Irrigated Agriculture. Springer, The Netherlands.
    - Zhu, Q., H.S. Lin, and J.A. Doolittle, 2013. Functional soil mapping for site-specific soil moisture and crop yield management. *Geoderma* 200-201: 43-54.
    - Shaffer, G.D., R. Hall, and J.A. Doolittle, 2013. Applying archaeological techniques to conserve a historical cemetery in Ripley, Maine. *The Maine Archaeological Society Bulletin* 53(1): 1-25.

- Demonstrates an understanding of and complies with all ethics and standards of conduct statutes, regulations, policies, and procedures. Reports any instances of ethics and/or standards of conduct violations to supervisor or designated official within 48 hours.
    - Understands and compiles with all ethics and standards of conduct statutes, regulations, policies, and procedures. However, no violations occurred that I was aware of to report.
- Demonstrates an understanding of the Privacy Act and applies the Act correctly when exercising controls and safeguards to preserve the integrity and confidentiality of materials containing Personally Identifiable Information (PII). Ensures that PII is protected at all times, including when being transferred, according to NRCS policy. Reports any violations to supervisor within four hours of becoming aware of a problem.
    - Yes.

Performance Objective 2 (Safety & Health):
Demonstrates a basic understanding of NRCS Safety and Health programs. Actively supports the Safety and Occupational Health Program through personal acceptance.
Outcome: To provide a safe and healthful work environment for all by taking personal responsibility for safety in the performance of assigned job duties.
Performance Standards:
• -Participate in the safety and health program by reporting unsafe acts and/or conditions in the workplace to the supervisor or designated official within 48 hours.

- Prior to survey on ice-covered ST. Albans Bay, Lake Champlain, *safety on ice* was discussed by Resource Soil Scientists Thom Villars of White River Junction, Vermont.

• -Get involved by serving on a safety committee, making recommendations for safety activities and promotions, or other involvements in the program.

- No involvement. My remote location prevents many of these activities.

• -Complete mandatory training.

- I have completed all mandatory training in a timely manner.

• -Safe practices will be performed at all times to ensure personal safety whether on or off duty.

- Yes.

• -Comply with safety and health rules and regulations.

- Complies with all safety and health rules.

Performance Objective 3:
Outcome: Contributes to NRCS and NCSS technical documents
Performance Standards/Measures:

- Prepares appropriate sections of NRCS and NCSS technical documents as requested.
  If requested, I will contribute to NRCS and NSSC technical documents.
- All document milestones are complete by agreed upon due date.
  Generally completes all milestones by the agreed upon date.
- Completes development of a library of trip reports of field projects completed during the period of 1982 to -2012. Library will be organized in a manner that can be searched by year, state, and type of project and will be housed on NSSC SharePoint site or other suitable easily accessible location.
  Library of trip reports has been developed spanning the period of 1983 to 2013. A large number of trip reports have been copied as pdf files. Some of my earlier reports have been lost. The trip reports that are filed in the Geophysical Library are arranged by year, state, and purpose of investigation or activity. Older reports (pre 2000) had illustrations and figures attached separately; where available, these figures and illustrations have been attached to original document and scanned as pdf files. However, many of these figures and illustrations have been lost. Presently awaiting means to transfer these large files to NSSC server.

Performance Objective 4:
Outcome: Contributes to NRCS and NCSS soil scientist training.
Performance Standards/Measures:

• Provides on-site GPR and EMI training to MOs, States, and MLRA SSOs as requested and resources allow.

- This fiscal year, provided GPR training to operators located in CT, MA, and PA during field visits.
- Provided EMI training to operators located in CT, IL, MT and PA during field visits.

- I provided a presentation on the use of EMI on serpentine soils during the preconference tour of the 2013 National Cooperative Soil Survey National Conference (Annapolis, Maryland).
- I hosted a two-day salinity workshop at Great Falls, Montana, for about 20 NRCS employees.

• Provides leadership for development of formal GPR and EMI training system including web based courses, OJT modules, and self-paced materials. Outline of course completed by June 30, 2012.

- Marc Crouch and Shawn McVey took control of this activity. OJT modules were developed by soil scientists that operate EMI and GPR.

• All training materials developed in proper format by agreed upon due dates.

- Marc Crouch and Shawn McVey took control of this activity.

Performance Objective 5:

Outcome: Provides technical assistance to MLRA SSOs, other NRCS units, and NCSS cooperators in analysis and interpretation of soil survey data and research results.

Performance Standards/Measures:

• Provides geophysical evaluations to MOs, States, and MLRA SSOs as requested and resources allow.

- Completed 13 geophysical field assignments in nine states (CT, IL, MA, ME, MD, MT, OH, PA, and VT). The focus of these field investigations included archaeology, hydropedology, subaqueous soils, soil health, stratigraphy and lithology, and soil salinity.
- I hosted a seminar entitled "*Use of Ground-Penetrating Radar in Soil Investigations*" for the Department of Earth & Environmental Science at Temple University.

• Continues to develop protocols and methods to assist with remote evaluation of GPR data. Initial testing of procedures completed by September 30, 2013.

- Data interpretation conducted over the phone with GPR operators in CT, MA, NJ, and WI.
- I requested training (for next fiscal year) on the use of new GPR processing software to better assist field GPR operators.

• Responds to requests for technical assistance from MOs, States, and MLRA SSOs for soil research projects and special studies within 20 days.

- I respond to all requests the day that I receive them.

• Completes trip reports within 10 working days of return from field trip and forwards to National Leader for SSRL for review and processing.

- If possible (back-to-back assignments have delayed some trip report, but none for more than 4 week; (I wish that I could say the same for the reports that I have sent into the NSSC for signature)).

• Serves as project coordinator for MLRA SSO projects involving geophysical techniques.

- Always. As a note, the number of requests coming in from MLRA SSO has declined due to limited personnel involved in field work and budgetary constraints. Request from the Midwest and West have been most seriously impacted. Why?

• Work assignments are completed with a constructive attitude and in a timely manner, assuring the quality of work that meets the needs of the NRCS and NCSS.

- Cam, you know and have worked with me. Nothing has changed.

Performance Objective 6:

Outcome: Provide consistent, quality products, services, advice, and guidance to customers regarding human resources (i.e., classification and position management, recruitment, staffing, merit promotion, performance management, benefits, training and development, employee relations, HR policy) throughout the current performance period that results in customer needs being met and achieving satisfaction among customers.

Performance Standards/Measures:

• Work products and other written information provided to customers are organized, accurate, adhere to NRCS standards, do not require substantive revisions, and meet established due dates.

• Information and advice (verbal and written) is accurate, is in accordance with regulations, policies and procedures, etc. and is presented in a manner that is understood by the recipient.

• Maintains constructive and professional rapport with internal (NRCS) and external customers.

• Provides reviews of grant proposals and manuscripts as requested. Reviews are completed by requested due date.

• Follows through on internal and external customers' inquires, requests and complaints.

• Keeps customers informed about progress of projects.

• Distributes project reports, and publications to cooperators within 30 days of completion.

• Maintains clear communication with NCSS cooperators regarding mutual expectations and follow through.

• Responds to requests, inquiries, and questions within 10 business days from receipt (80 to 95% of the time).

• Customer feedback indicates the following (85 to 90% of the time):

- Quality of service provided meets customer needs and expectations.
- Requirements, needs, and expectations are sought out and listened to.
- Services, solutions, and/or tools are practical and address customer needs.
- Quantity and quality of information results in an increased understanding of NRCS.
- Courtesy and professionalism with which the services were provided.
- Clear action is taken in accordance with law, regulation, and Department policy, and meets mutual understanding of requirements, needs, and expectations.

During this fiscal year, I have reviewed 9 manuscripts as part of peer review process for professional journals. The manuscripts are:

(1) Application of Ground Penetrating Radar for Root Detection and Quantification: A Review (Li Guo·Jin Chen·Xihong Cui·Bihang Fan·Henry Lin).

(2) Imaging Skeletal Remains with Ground-Penetrating Radar: Comparative Results over Two Graves from Viking Age Churchyards on the Stóra-Seyla Farm, Northern Iceland (Brian N. Damiata, John M. Steinberg, Douglas J. Bolender, and Guðný Zoëga).

(3) Evaluating salinity and sodium levels on soils prior to drain tile installation: a case study (Katrin Chambers, Andrew Fraase, Yangbo He, Kristine Larson, Lindsey Malum, Leif Sande, Jeff Schulte, Eva Sebesta, Dustin Strong, Eric Viall, Rodney Utter, and David Hopkins).

(4) Impact of Root Water Content on Root Biomass Estimation Using Ground Penetrating Radar: Part I. Forward Simulation Protocol and Its Validation (Li Guo, Henry Lin, Bihang Fan, Xihong Cui, Jin Chen).

(5) Impact of Root Water Content on Root Biomass Estimation Using Ground Penetrating Radar: Part II. Forward Simulations and Field Controlled Experiments (Li Guo, Henry Lin, Bihang Fan, Xihong Cui, and Jin Chen).

(6) Spatial Distribution of Potential Erosion Rates at Hillslope scale in Albania using Shuttle Radar Topography Mission (SRTM) elevation data (Zamir Libohova, Fiorentina Jorgj, Spiro Grazhdani).

(7) Atrazine Transport in a Field and Riparian Buffer Simulated Using APEX and REMM (Candiss O. Williams, Richard Lowrance, and Thomas Potter).

(8) Development of a tool to predict new soil moisture and soil temperature regimes (Xiuying Wang, Jimmy Williams, Candiss Williams, Jaehak Jeong, Phillip Schoenberger, Lee Norfleet, Jay Angerer).

(9) Integrating EMI and GPR data to enhance the three-dimensional reconstruction of a circular ditch system. (Timothy Saey, Samuel Delefortrie, Lieven Verdonck, Philippe De Smedt, Auke Baeyens, Mohammad Monirul Islam and Marc Van Meirvenne).