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MR. WILL MOODY– DIRECTOR OF BUSINESS DEVELOPMENT PROVECTUS ENVIRONMENTAL PRODUCTS, INC. 2871 W. FOREST RD., STE 2 | FREEPORT, IL 61032 USA PH: (815) 650-6650 | FAX: (815) 650-2232 DIRECT: (908) 581-6291 EMAIL: WILL.MOODY@PROVECTUSENV.COM

Provectus ENVIRONMENTAL PRODUCTS"

MR. WILL MOODY BIOGRAPHICAL SKETCH / CV

Mr. Moody received a Bachelor of Science Degree in Environmental Science from Virginia Polytechnic Institute and State University (Virginia Tech) in May 2004. During his time at Virginia Tech, Mr. Moody worked part-time (e.g., summer) at A.W.K. Associates, Inc. in Bridgewater, New Jersey as an Environmental Scientist focusing on Phase I environmental assessments, soil and groundwater sampling, and the removal of underground and aboveground storage tanks.

In July 2004, Mr. Moody joined the staff of Geo-Cleanse International, Inc. (Geo-Cleanse) as a Field Technician to assist with the application of *in situ* chemical oxidation (ISCO) and chemical reduction (ISCR) in the laboratory and field. Over a 13-year period at Geo-Cleanse, Mr. Moody was promoted to Site Supervisor followed by Project Manager, and then finally, Director of Sales and Marketing. His responsibilities were diverse, ranging from development of technical proposals for laboratory and field-scale remediation programs to managing the business development department. His experience includes the successful design and implementation of conventional and innovative solutions utilizing hydrogen peroxide, sodium/potassium persulfate, sodium/potassium permanganate, zero valent iron (ZVI), and surfactants. Mr. Moody has addressed a wide range of contaminants including mono- and polyaromatics, chlorinated ethenes and ethanes, manufactured gas constituents, chlorofluorocarbons, dioxanes, and light/dense non-aqueous phase liquids.

In August 2017, Mr. Moody accepted the position of Director of Business Development with Provectus Environmental Products, Inc. (Provectus) to continue to work within the remediation field with several advanced and novel technologies. Provectus has made genuine advances in ISCO and ISCR with a focus on safety, efficacy and cost-efficiency. Mr. Moody has now built on his previous *in situ* experience by utilizing Provectus' unique, proprietary environmental applications that include emulsified zero valent iron (EZVI), Provect-OX® (ISCO coupled with bioremediation), and antimethanogenic reagents such as Red Yeast Rice. At Provectus, Mr. Moody is also involved with research and development of next-generation remediation solutions for perflourinated compounds and polychlorinated biphenyls.



EDUCATION:

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, Virginia

B.S., College of Agriculture and Life Sciences Environmental Science, May 2004

PROFESSIONAL EXPERIENCE:

Remediation Work Summary

• Mono- and Polyaromatic Remediation

Design, implementation and oversight of many MAH and PAH laboratory and field-scale remediation programs, including residential, commercial, and industrial properties in the United States and Europe. Contaminants of interest (COIs) have included BTEX, naphthalene, manufactured gas plant constituents, and other petroleum-related compounds (e.g., EPH, TPH, DRO, GRO, TICs, etc.).

Utilization of catalyzed hydrogen peroxide (CHP), activated sodium persulfate (ASP), activated potassium persulfate (APP), and surfactants to address sorbed, dissolved and free phase mass. Remedial designs include coupling of technologies, such as CHP and enhanced product recovery. Application methodologies include direct push injection, dedicated well injection, and hydraulic emplacement. Remediation goals have ranged from achieving No Further Action (NFA) to source reduction with monitored natural attenuation.

• Chlorinated Ethene and Ethane Remediation

Design, implementation and oversight of many chlorinated ethene and ethane remediation programs, including commercial and industrial properties in the United States and Europe. COIs include parent/daughter chlorinated ethenes, trichloroethane, and associated compounds such as 1,4-dioxane and chlorofluorocarbons.

Utilization of CHP, potassium/sodium permanganate, and zero valent iron (ZVI) to address sorbed, dissolved and free phase mass. Remedial designs included coupling of technologies, such as permanganate and ZVI. Application methodologies include direct push injection, dedicated well injection, and hydraulic emplacement. Remedial goals have ranged from achieving NFA to source reduction with monitored natural attenuation.



Certifications:

- OSHA 40-hour HAZWOPER, 2001.
- OSHA 8-hour HAZWOPER Refresher (active)
- OSHA 8-hour Hazardous Waste Site Supervisor

Professional Affiliations:

- Founding Member of the Focused Remediation Seminars (active)
- Advisory Board Member of Remediation Workshops (inactive; 2013 2016)

Publications:

 Bryant, D., Moody, W., Turkot, S., Maalouf, G., Sanderson, P., Slack, B., and Knight, D. 2013. Oxidants and reductants join for in-situ remediation. *Pollution Engineering*, May 2013, volume 45(5), pages 20-28.

Abstracts and Presentations (duplicates not included):

- Moody, W., Mueller, J., "Managing Rebound by Combining Persulfate, In Situ Ferrate Generation and Enhanced Bioremediation for Safer, More Effective Remedial Actions", 47th Annual Environmental Show of the South, Chattanooga, TN, 2018.
- Moody, W., Bryant, D., Turkot, S. "Combined ISCO and ISCR Approach for DNAPL Brownfield Redevelopment in New Jersey", The Tenth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Palm Springs, CA, 2016.
- Moody, W., Turkot, S. "Destruction of Emerging Contaminants Utilizing Site-Specific In-Situ Chemical Remediation Approaches", RE3, Philadelphia, PA, 2015.
- Moody, W., Bryant, D., "Coupling Oxidative and Reductive Treatment Technologies for Integrated Site Remediation", National Association of Environmental Professionals, St. Petersburg, FL, 2014.
- Moody, W. "Is there a Difference between Catalyzed Hydrogen Peroxide and Stabilized Hydrogen Peroxide?" RemTEC Summit, Westminster, CO, 2013.
- Moody, W., Bryant, D. "A Novel and Sustainable Combined Oxidant In-Situ Approach for Brownfield Redevelopment Linked to Construction of a 'Green' Power Plant", 22nd Annual International Conference on Soil, Water, Energy, and Air, San Diego, CA, 2012.
- Moody, W., Bryant. D. "Coupling of ISCO Technologies Proves Successful at the Orlando Events Center Brownfield Site", 6th Annual Environmental Challenges and Innovations Conference, Houston, TX, 2012.



- Moody, W., "Outlining the Advantages of Selecting Catalyzed Hydrogen Peroxide or Activated Sodium Persulfate at Two Different Petroleum Hydrocarbon Sites", 18th International Petroleum and Biofuels Conference, Houston, TX, 2011.
- Moody, W., Bryant, D., Vidumsky, J., "Superoxide Catalysts for In-Situ Reduction of VOCs", The 21st Annual International Conference on Soil, Water, Energy, and Air, San Diego, CA, 2011.

Workshops:

- *ISCO or ISCR? Advances and Selection Criteria for 2018*, 2018 Focused Remediation Workshops, Multiple Cities, 2018.
- In-Situ Chemical Remediation Design and Application, 2016 Focused Remediation Workshops, Multiple Cities, 2016.
- Overcoming Site-Specific Challenges with Innovative In-Situ Remediation, 2015 Remediation Workshops, Multiple Cities, 2015.
- In-Situ Chemical Oxidation: Focus on Green Remediation, The 21st Annual International Conference on Soil, Water, Energy, and Air, San Diego, CA, 2011.
- *In-Situ Bio and Chemical Remediation*, 3rd Joint Nordic Meeting on Remediation of Contaminated Sites International Conference, Copenhagen, Denmark, 2010.
- In-Situ Chemical Oxidation, The 23rd and 24th Annual International Conference on Soil, Water, Energy, and Air, San Diego, CA, 2007 and 2008.