

Development of Operational Aerial Analytics for Remotely Measuring Reclamation Success in North Dakota

Submitted by:

SolSpec, Inc.

- ❑ Funding Request - \$163,200**
- ❑ Total Project Costs - \$330,800**
- ❑ Project Duration: 16 months**

PROJECT DESCRIPTION

- This project seeks to develop and validate a suite of automated analytics that bring remote reclamation assessment technology to operational capacity for industry, agencies, and the interested public of North Dakota. An examination of the cost effectiveness of aerial imaging and analysis methodologies for use in establishing an operational remote reclamation program will be part of the project. This project includes:
 - *Data Management*
 - a. Consideration of which data storage architecture is optimum for data management needs.
 - b. Development of a trusted third-party data organization system accessible by industry and regulators.
 - *Decision Tools*
 - c. Consideration of how image processing can produce decision support tools from gross data.
 - d. Consideration of what data are visualized and provided to leaders for decision making.
 - e. Development of imagery analysis tools that enable cost estimates for completing site reclamation.
 - *Cost-Effectiveness Analysis*
 - f. Analysis of the cost-effectiveness of using remote sensing technologies for well site reclamation assessment compared to current procedures employed by industry and agencies.

The objectives entail four central components: Model Development, Model Validation, Model Automation, and Cost-Effectiveness.

TECHNICAL REVIEWERS' RATING SUMMARY

		Technical Reviewer			
Statement	Weighting Factor	<u>G-51-08A</u>	<u>G-51-08B</u>	<u>G-51-08C</u>	<u>Average Weighted Score</u>
Objectives	9	3	4	5	36
Achievability	7	3	3	4	21
Methodology	8	3	4	5	32
Contribution	8	3	4	3	24
Awareness / Background	5	4	4	4	20
Project Management	3	2	4	3	9
Equipment / Facilities	2	2	4	3	6
Value / Industry-Budget	4	3	4	5	16
Financial Match – Budget	4	3	3	3	12
Average Weighted Score		150	189	204	181
Maximum Weighted Score				250 possible points	

TECHNICAL REVIEWER TOTALS

G-51-08A

Average Weighted Score: **150 out of 250**

FUNDING TO BE CONSIDERED

G-51-08B

Average Weighted Score: **189 out of 250**

FUND

G-51-08C

Average Weighted Score: **204 out of 250**

FUND

TECHNICAL REVIEWER COMMENTS

Reviewer G-51-08A

Merits: The use of aerial imagery is limited by the ability to process and analyze big data. Automated data analytics is key to successful and sustainable use of this data. These combined would assist Regulators and Industry to operate more efficiently.

Flaws: Vegetation roughness and height are important components for soil condition and sediment transport, however should not be the only parameters to represent vegetation community composition. Definitely not for rangeland vegetation community composition. What/how will the end user have access to and training on the automation tool? What QA/QC program is available or should be? How will the results of this project be disseminated to Industry?

Recommendation: Funding to be Considered

Reviewer G-51-08B

The proposed project was well documented and clearly addresses the current challenge of efficiently turning large UAV acquired data sets into usable information. Both the industry and government stand to benefit greatly from the development of such software solutions. One key concern is whether or not the

applicant will be able to complete the full scope of work in the timeline proposed, in particular the validation portion of the model. Additional information would be helpful as to how software/model updates will be handled in the future as technology or data collection evolves.

In conclusion, I recommend funding the proposal as the potential benefits of the work outweigh the concerns.

Recommendation: Fund

TECHNICAL REVIEWER COMMENTS

Reviewer G-51-08C

The proposal was very professionally-written and presented a logical methodology. The budget seemed aggressive in that it is a lot of work for the proposed amount of money budgeted. SolSpec's credentials are recognized. It is likely they will achieve some measure of success for what seems a relatively modest investment. This reviewer is aware of several companies pursuing similar development efforts. If SolSpec is successful, it may pave the way for several possible service providers. If successful, this work would significantly assist DMR and NDDEQ in assessing completion of adequate reclamation efforts. It would also assist oil & gas producers in efficiently closing out well sites and reclaiming bonds. Overall, this technology has the potential to positively impact the efficiency of this whole process for both regulators and industry.

Recommendation: Fund

Director's Recommendation:

Fund in the amount of \$163,200 with the following contingency:

1. Each of the questions and comments noted by the technical reviewers need to be responded to during the applicant's presentation in order for the Council members to determine whether it is feasible for this project to be successful.