

Technical Reviewers' Rating Summary

Proposal Number	G-35-02
Application Title	Recycled Drill Cuttings Beneficial Reuse Demonstration Projects
Submitted By	Nuverra Environmental Solutions
Request For	\$759,860.00
Total Project Costs	\$1,523,384.00

Section A. Scoring

Statement	Weight	G-35-02A	G-35-02B	G-35-02C	Avg. Score
1. Objectives	9	3	4	4	33
2. Achievability	7	3	4	2	21
3. Methodology	8	4	3	5	32
4. Contribution	8	4	3	4	29
5. Awareness / Background	5	4	3	3	16
6. Project Management	3	3	3	4	10
7. Equipment / Facilities	2	3	4	4	7
8. Value / Industry - Budget	4	3	3	3	12
9. Financial Match - Budget	4	4	3	3	13
Avg. Weighted Score		175	168	181	174
OVERALL					
FUND		X		X	
TO BE CONSIDERED			X		
DO NOT FUND					

Section B. Ratings and Comments

1. The objectives or goals of the proposed project with respect to clarity and consistency with North Dakota Industrial Commission/Oil and Gas Research Council goals are:

“Overall objectives and goals relating to the beneficial use of drill cuttings was clear and straightforward.”

- Reviewer: G-35-02A

- Rating: 3 (Clear)

“

- Applicant

“The beneficial reuse of drill cuttings would eliminate disposal of a significant waste stream from oil and gas production. There is interest in determining any beneficial reuse opportunities for this waste. ”

- Reviewer: G-35-02B

- Rating: 4 (Very Clear)

“

- Applicant

“The objectives of the proposed project "Recycled Drill Cuttings Beneficial Reuse Demonstration Projects" are clearly presented: "demonstrate, evaluate, and quantify the geotechnical and environmental performance of drill cuttings treated by Nuverra Environmental Solutions' Terraficient process". This project includes field-scale demonstrations with the purpose to prove that using treated cuttings in road-surfacing, road fill and landfill daily cover can be successful as beneficial reuse products, by conserving native materials from North Dakota and improving safety.”

- Reviewer: G-35-02C

- Rating: 4 (Very Clear)

“

- Applicant

2. With the approach suggested and time and budget available, the objectives are:

“The projects goals are achievable assuming all parties maintain a tight testing and data review schedule.”

- Reviewer: G-35-02A

- Rating: 3 (Likely Achievable)

“

- Applicant

“Additional time may be needed to properly evaluate the effectiveness and environmental impacts from the demonstration projects especially the road fill and landfill cover projects.”

- Reviewer: G-35-02B

- Rating: 4 (Most Likely Achievable)

“

- Applicant

“The timetable provided in this proposal is not detailed enough.”

- Reviewer: G-35-02C

- Rating: 2 (Possibly Achievable)

“

- Applicant

3. The quality of the methodology displayed in the proposal is:

“The methodology looking at the bench scale testing and real world applications comparing to established materials used in the field to determine beneficial use and environmental impacts is appropriate and required.”

- Reviewer: G-35-02A

- Rating: 4 (Above Average)

“”

- Applicant

“The testing proposed by the EERC and UND will provide significant data on the material characteristics. It would have been helpful to have a description of the Terrafficient process and detailed information on the characteristics of the drill cuttings that have been treated with that process. The presented data indicates that with 60.6% passing the #200 sieve and a PI of 10, that the material is very fine with limited amounts of clay binder present. It will be difficult to increase the PI of the McKenzie County aggregate if the PI of the added material is only 10.”

- Reviewer: G-35-02B

- Rating: 3 (Average)

“”

- Applicant

“The methodology displayed in this proposal is highly detailed. The three tasks (laboratory characterizations, bench-scale studies, and field-scale studies) are clearly presented, with details in Appendix D “Environmental sampling and monitoring plan”.”

- Reviewer: G-35-02C

- Rating: 5 (Well Above Average)

“”

- Applicant

4. The scientific and/or technical contribution of the proposed work to specifically address North Dakota Industrial Commission/Oil and Gas Research Council goals will likely be:

“If the beneficial use of drill cuttings are found to be equal too or exceed quality and use of existing road and landfill material the contribution would be significant in reducing material deposited in landfills and reducing use of natural resources.”

- Reviewer: G-35-02A

- Rating: 4 (Very Significant)

“”

- Applicant

“This project should provide data on the potential reuse of drill cuttings for road construction and landfill cover.”

- Reviewer: G-35-02B

- Rating: 3 (Significant)

“”

- Applicant

“If successful, this project will demonstrate that treated drill cuttings can be reused in place of native resources, which is environmentally positive. They also intend to write public reports to OGRC, and to present the project approach and findings to a least one major regional conference or symposium. If it successfully proves its objectives, this project anticipates to immediately support 15-20 permanent jobs and 100 or more jobs at Nuverra' Environmental Treatment Center.”

- Reviewer: G-35-02C

- Rating: 4 (Very Significant)

“”

- Applicant

5. The background of the principal investigator and the awareness of current research activity and published literature as evidenced by literature referenced and its interpretation and by the reference to unpublished research related to the proposal is:

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- *Reviewer: G-35-02A*

- *Rating: 4 (Better Than Average)*

“

- *Applicant*

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- *Reviewer: G-35-02B*

- *Rating: 3 (Adequate)*

“

- *Applicant*

“In addition to the principal investigator, David Johnson, three principal investigators will be present: two from the EERC and one from UND Civil Engineering. All of them have adequate background to succeed in this project. However, no previously published research relevant to the project was discussed. They mention that “other commercial entities have indicated interest in beneficial reuse of drill cuttings”, but no scientific results are available.”

- *Reviewer: G-35-02C*

- *Rating: 3 (Adequate)*

“

- *Applicant*

6. The project management plan, including a well-defined milestone chart, schedule, financial plan, and plan for communications among the investigators and subcontractors, if any, is:

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- *Reviewer: G-35-02A*

- *Rating: 3 (Adequate)*

“

- *Applicant*

“

- *Reviewer: G-35-02B*

- *Rating: 3 (Adequate)*

“

- *Applicant*

“While, the milestone chart is not highly detailed, the financial plan and plan for communications among the investigators and subcontractors are highly described. Letters of support are attached from the Energy & Environmental Research Center (EERC) at UND and McKenzie County. Furthermore, EERC is going to assist Nuverra in tracking progress, milestones, and other tasks.”

- *Reviewer: G-35-02C*

- *Rating: 4 (Very Good)*

“

- *Applicant*

7. The proposed purchase of equipment and the facilities available is:

“

- *Reviewer: G-35-02A*

- *Rating: 3 (Justified)*

“

- *Applicant*

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- *Reviewer: G-35-02B*

- *Rating: 4 (Well Justified)*

“

- *Applicant*

“Bench-scale and field-scale testing will be made at Nuverra’s center, while laboratory works will be performed by the EERC and the Civil Engineering Department at UND, which have all the necessary equipment to conduct the studies. Also, Nuverra already has a letter a support from the McKenzie County. The only equipment to buy is for stormwater runoff collection, which will be purchased from Conservation Demonstrations and performed at EERC. ”

- *Reviewer: G-35-02C*

- *Rating: 4 (Well Justified)*

“

- *Applicant*

8. The proposed budget “value”¹ relative to the outlined work and the commitment from other sources is of:

“

- *Reviewer: G-35-02A*

- *Rating: 3 (Average Value)*

“

- *Applicant*

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- *Reviewer: G-35-02B*

- *Rating: 3 (Average Value)*

“

- *Applicant*

“Nuverra is participating to 38% in the proposed budget. This proposal contains letters of support from EERC and McKenzie County.”

- *Reviewer: G-35-02C*

- *Rating: 3 (Average Value)*

“

- *Applicant*

9. The “financial commitment”² from other sources in terms of “match funding” have been identified:

“Having both the end user of the recycled material and the recycler of the drill cuttings participating both financially and in the use of the product will add credibility to the final results and potential acceptance by the state regulators and general public.”

- Reviewer: G-35-02A

- Rating: 4 (High Value)

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- Applicant

“”

- Reviewer: G-35-02B

- Rating: 3 (Average Value)

“”

- Applicant

“The total project cost is estimated to be \$1,523,384, with Nuverra’s Share (\$579,491) representing 38% of this cost, McKenzie County’s Share (\$184,033) 12%, and the support requested (\$759,860) represents 50%. ”

- Reviewer: G-35-02C

- Rating: 3 (Average Value)

“”

- Applicant

General Comments

“In the final analysis the recycled material should exhibit characteristics the same as currently used and accepted materials or exceed durability and environmental impact expectations. The recycled material should also be investigated for physical durability (i.e. does it pulverize quickly under expected road conditions) and use characteristics (i.e. does it exhibit less desirable characteristics when wet etc...)”

- Reviewer: G-35-02A

“”

- Reviewer: G-35-02B

“This proposal is of great interest for the North Dakota Industrial Commission Oil and Gas Research Council. The objectives of the proposed project "Recycled Drill Cuttings Beneficial Reuse Demonstration Projects" are to "demonstrate, evaluate, and quantify the geotechnical and environmental performance of drill cuttings treated by Nuverra Environmental Solutions' Terraficient process". This project includes field-scale demonstrations with the purpose to demonstrate that using treated cuttings in road-surfacing, road fill and landfill daily cover can be successful as beneficial reuse products, by conserving native materials from North Dakota and improving safety.

Merits:

If successful to prove its objectives, it will immediately create 15-20 jobs and 100 or more later on;
It will help conserving native materials from North Dakota;
It will improve safety through dust reduction and traffic risks;
It will improve gravel surface resistance;
It will reduce surface permeability, which would reduce roadway shutdown days.

Flaws:

The timetable is not detailed enough;
The period of one year necessary to complete this project may not be enough.”

- Reviewer: G-35-02C

1 “value” – The value of the projected work and technical outcome for the budgeted amount of the project, based on your estimate of what the work might cost in research settings with which you are familiar. A commitment of support from industry partners equates to a higher value.

2 “financial commitment” from other sources – A minimum of 50% of the total project must come from other sources to meet the program guidelines. Support less than 50% from Industrial Commission sources should be evaluated as favorable to the application; industry partnerships equates to increased favorability.