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Council-In-Committee Meeting – April 12, 2022

Subject: Forestry Farm Road Gas Well Update-Budget Amendment
Report Number: OPS 22-009
Division: Operations
Department: Administration
Purpose: For Decision

Recommendation(s):

THAT Staff Report OPS 22-009 Forestry Farm Road Gas Well Update be received as information;

AND THAT Council authorizes staff to move forward with Option 1, plugging the Forestry Farm Road Gas Well;

AND THAT the Forestry Farm Gas Well Project (Project 2132002) be amended by \$175,000 to a total budget amount of \$890,000 to include the additional costs associated with plugging the gas well;

AND THAT the funding for the Forestry Farm Gas Well Project be amended to include \$140,000 from the Council Initiative Reserve Fund, and \$750,000 of Ministry Funding for the plugging of the gas well.

Executive Summary:

As Council is aware, Norfolk County has been dealing with a leaking natural gas well on a parcel of land owned by the county, in Woodlot 5 located off the Forestry Farm Road since 2017 (referred herein as the FFR gas well).

In the late fall of 2020, staff prepared a Request for Proposal (RFP) to hire a consulting firm to conduct an in-depth hydrogeological study of the area to gain information on the flowing gas well. Matrix Solutions Inc. was the successful firm and was awarded the project in the spring of 2021. Staff received Matrix Solutions final report in December of 2021. Staff Report OPS 22-009 Forestry Farm Road Gas Well Update is a companion staff report to Matrix Solutions' final report and presentation. This staff report recommends Council authorizes staff to move ahead with plugging the FFR gas well.

Discussion:

The scope of the RFP was to gain information to improve the understanding of the geological and hydrogeological conditions leading to the flowing well conditions. The information and data gathered would then guide any proposed future remediation options. This study included discussions with local landowners and local subject matter experts with experience in the gas well industry. Ministry of Northern Development, Mines, Natural Resources and Forestry” (MNDMNRF) staff and other relevant outside agencies were also consulted. Previous local studies and field work along with academic papers were reviewed.

In addition to the discussions, analysis of all drilled well records in the area held by the Oil, Gas and Gas Resources Library were completed. Regional geological maps of bedrock, site investigations and the construction and application of a numerical model of groundwater flow were completed as well.

With the completion of the study, the findings led to 4 (four) potential options for Norfolk County to consider as remediation steps. It needs to be noted that since this situation is very complex in nature all the options have pros and cons. There is no clear choice, and each option should be reviewed independently to be assessed on how it best solves Norfolk County’s Forestry Farm Road leaking well situation. This staff report provides a high-level summary of each option. The Matrix Solutions report, and presentation will cover much more detail of each option provided.

Cost estimates for options 2, 3 and 4 were not able to be gathered for this report but would be a much more significant undertaking if Council were to select one of these options. These options would not only have significant upfront costs, but the remediation of this issue would also span over years increasing the overall cost and resource requirements for remediation.

Summary of Options

Option 1 is the plugging of the FFR gas well. This option is being recommended by staff. This option is estimated to cost approximating \$500,000 plus a contingency of \$250,000 for a total of \$750,000 and would seal off the flowing sulfur water from the well. This option could be completed in as little as 2 months from the time plugging permits are received and approved. This option immediately solves the following conditions presently being experienced on this well site located on Norfolk County’s parcel of land.

Public health and safety concerns would be addressed in the vicinity of the FFR gas well. Specifically, the residents and general public will no longer be exposed to the smell of hydrogen sulfide gases from the FFR gas well and residents can once again enjoy their nearby properties. This option would cover off Norfolk County’s responsibility under the Oil, Gas and Salt Resources Act (OGSRA) to maintain a gas well in a safe condition. A MNDMNRF Compliance Inspector can order the County to plug the FFR gas well if deemed necessary, but Norfolk County has not currently received such an order.

There will be a positive environmental benefit as the discharge of sulfur water into Big Creek will be eliminated. This will benefit water quality and wildlife which depend on Big Creek to survive. There is also a concern that if the FFR gas well is left open, the flowing well will eventually create soil erosion and potentially expand to the point that it could collapse into Big Creek making the effort/complexity and cost to plug dramatically increase. During the 2021 year the size of the surface opening of the gas well has increased.

Lastly, this option would ultimately prove to be the fastest to implement and cheapest solution to the ongoing concerns at the FFR gas well site. The MNMNR have indicated that they will be covering the full costs of plugging this well. The funding will come from Abandoned Works Program (AWP).

The risks with this option are that with the complexity of the situation, the plugging of the FFR gas well could result in a rise in ground water pressure in the local area and may impact other wells. There also is the chance the plugging operation may fail to locate the specific well opening at the interface of the bedrock. If this was to occur success of the plugging operation cannot be guaranteed. Even if the well opening at bedrock cannot be located there are benefits with attempting to plug as the surface opening can be stabilized to prevent further erosion. The erosion at surface is a serious concern as the area of the surface opening is expanding. At the very least the surface opening needs to be stabilized.

Option 2 is the capture and treatment of the water flow from the FFR gas well. This option involves capturing the water flow and treating it before it is dumped back into Big Creek. The positives with this option are the same as with the option 1 plugging. The cost is deemed to be cheaper at the outset depending on the treatment plant required; the plant could be set up relatively quickly, possibly under a year.

The negatives are the ongoing cost for treatment as the costs will be continuing until another solution is agreed upon or could be for the very long term. There would be additional permitting and environmental approvals as well. Additionally, another issue is that if the flows were to increase, as is a possibility, modifications to the treatment plant would be needed and these costs can't be fully calculated. The plant needed for the FFR well will need to treat 55,000 litres a day at present flows. Lastly a 3rd party firm would likely be needed to operate the plant. Due to the future unknown cost factors staff are not recommending this option.

Option 3 and 4 both involve drilling a new relief well next the FFR gas well or a new relief well next the original relief well location further south. The concept here is like option 2 however a much greater volume of water would be drawn out and treated. In this option it is suggested up to 3,800,000 litres a day of water would need to be treated. This option would be much more of a larger scale regional solution as the influence of the greater water volume draw would substantially reduce groundwater pressure over a larger area, similar to conditions existing before MNMNR plugged the original well. The negatives are the cost to drill the well and construct the treatment plant would be

very costly. Operating costs for the plant would be a burden for generations with increased environmental assessment and permitting costs. Although this option is the best solution for a larger regional impact, staff are not recommending it due to the long lead time measured in years, high capital, and ongoing operating costs.

Financial Services Comments:

The Approved Capital Plan includes an allocation of \$715,000 for the Forestry Farm Gas Well Project. This consists of the initial \$140,000 to complete the Engineering Study which was funded from the Council Initiative Reserve Fund, along with an additional \$575,000 that was directed to this project with 2020 Surplus Funds from the Contingency Reserve. To date, Norfolk County has incurred \$93,951 in expenditures related to the Engineering Study for project.

Additionally, the Approved 2021 and 2022 Levy Supported Operating Budgets included budgetary allocations to engage the services of a project manager for this project. In 2021, Norfolk County incurred \$10,359 in expenditures related to the project management costs. The Approved 2022 Levy Supported Operating Budget includes an allocation of \$20,000.

If Council were to approve of Option 1 as recommended, a budget amendment of \$175,000 to the Capital Project would be required. As mentioned, the well plugging is approved to be funded by the AWP, covering 100% of the costs of the plugging. As such, staff are recommending the funding sources for this project be amended. Table 1 below illustrates the recommended budget amendments for this project.

Table 1: Summary of Approved Budget and Required Amendments

	Approved Budget (\$)	Proposed Revised Budget (\$)	Proposed Amendments (\$)
Total Project Costs	715,000	890,000	175,000
Project Financing			
Council Initiative Reserve Fund	140,000	140,000	0
Contingency Reserve	575,000	0	(575,000)
Ministry Funding	0	750,000	750,000
Total Project Financing	715,000	890,000	175,000

This additional funding will have a positive impact on Norfolk County's Contingency Reserve balance, as the project had initially included \$575,000 from the reserve to fund additional works required.

It should be noted that this work must be completed by one of the contractors identified as vendors of record under the Abandoned Works Program, whom will be invited to bid on the work. The NDMNDRF will select the winning bid and pay that vendor directly for the work they perform. As such, Norfolk County is not expected to incur any costs

directly related to the work performed to plug the well, however staff are recommending including the full project allocation in the budget to ensure the value of the work is recorded as a Tangible Capital Asset. As well, continuing to include this work as a capital project will ensure the project is included in future Capital Status Reports, which will provide a mechanism for more regular updating to Council and the public on the progress of the project.

Interdepartmental Implications:

N/A

Consultation(s):

Ops staff have consulted with Office of the CAO, Risk Management, MNMNR, Consultant Frank Kuri and finance staff.

Strategic Plan Linkage:

This report aligns with the 2019-2022 Council Strategic Priority "Other".

Explanation: The plugging of the FFR gas well is deemed a priority for public health.

Conclusion:

In conclusion staff are recommending Council moves forward with option 1 of the Matrix Solutions report that being plugging of the FFR gas well. This option is selected as it is viewed as the best route to solving FFR gas well issue. The plugging operation cannot be guaranteed as locating the well opening at the interface of the bedrock could be a challenge. It needs to be noted that if the opening cannot be located there still is the benefit of the stabilization of the surface opening. The expansion of the surface opening is becoming a concern as Big Creek is located in close proximity of the flowing well.

Attachment(s):

N/A

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