City of Saskatoon
Communications & Public Engagement

ENGAGE

Options for Groundwater Protection

What We Heard – Options Identification
September 13, 2021

Engagement Summary

The City of Saskatoon is developing methods to protect groundwater and groundwater users within its jurisdiction. City Administration intends to put forward a proposal to regulate or prohibit private groundwater wells for domestic purposes within City limits through a bylaw and encourage or require the decommissioning of non-active groundwater wells on City and private properties within Saskatoon.

Administration is engaging internal and external stakeholders from August – September 2021 to explore options for groundwater protection in Saskatoon. Based on what we heard from stakeholders, in addition to further research and internal considerations, Administration will present the options for groundwater protection to City Council in 2021.

A total of 51 respondents participated in a stakeholder survey during the first phase of engagement, which focused on identifying associated opportunities and barriers for groundwater protection in Saskatoon. Preferences that emerged from the engagement activities are discussed in this report.

Importance of Groundwater Protection

When asked how important it is for the City to protect groundwater quality in Saskatoon, most participants felt it was either important (37%) or very important (54%). Similar results were found for protecting groundwater from depletion in Saskatoon, which most participants felt was either important (24%) or strongly important (54%). The following common themes emerged from the comments that were provided by participants:

Contamination: is a major concern for many participants; contamination has the potential to limit the use of local aquifers by a variety of users and not protecting it now could greatly impact its future potability

Importance: many respondents feel water security and scarcity will become larger issues in the near future, therefore protecting groundwater reserves is vitally important

Jurisdictional responsibility: some respondents believe that that regulating/protecting groundwater is the responsibility of the Water Security Agency and the City should not be involved.

Prohibiting Versus Regulating Domestic Wells

When asked whether prohibiting or regulating domestic wells within Saskatoon would impact their work, most respondents stated it would not (51%), followed by those stating it would (36%). Furthermore, 32% felt it would positively or somewhat positively effect their work, while 24% stated it would negatively or somewhat negatively effect their work.

Most respondents supported prohibiting domestic wells (50%), with some respondents supporting regulating domestic wells (37%) or implementing no changes (13%). Out of the comments provided by respondents for their reasoning, the following themes emerged:

Costs and funding: how will the regulation and enforcement of wells be resourced and funded

Health risks: centrally treated, regulated, and distributed source water is significantly safer than unregulated supplies that require the homeowner to maintain the source and monitor/treat the water to ensure safe drinking conditions

Maintenance considerations: if the City chooses to regulate, then shared risks need to be considered (e.g., if flooding causes groundwater to be contaminated through a well).

Decommissioning of Non-Active Groundwater Wells

Most participants either supported or strongly supported the proposed actions for decommissioning non-active groundwater wells on City properties (83%), on private properties for large-scale development (78%), and on single property lots (75%).

Many respondents provided suggestions for the proper decommissioning and maintenance of groundwater wells, including using pre-treated water for all drilling purposes, following more modern standards and best practices for decommissioning, and using registered water well drillers for decommissioning.

Final Thoughts

When asked what other options the City should consider to protect groundwater in Saskatoon, respondents suggested mapping and assessing the vulnerability of aquifers within City limits, considering what changes in land-use could take place in areas of greater risk to aquifers, and establishing an awareness program that demonstrates safe maintenance of wells and responsible use of groundwater. Comments provided by participants included the following common themes:

Education is important: knowledge and education about groundwater is the first step towards better protection

Limited information: many respondents identified that currently there is little information on the viability of groundwater resources, as well as groundwater quality and quantity in Saskatoon

Support: many respondents were supportive towards the City being proactive to protect groundwater within Saskatoon and on the proposed initiatives.

Next Steps

The remaining phase of engagement will further validate our findings by:

- Sharing key components of the policy with stakeholders to close the loop
- Providing opportunities to identify concerns
- Validating our key findings.

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1 Background

Groundwater is a natural resource that requires protection to ensure its viability is sustained for present and future users. Groundwater wells are common within and surrounding Saskatoon, either as pumping wells or monitoring wells. Wells exist on rural land planned for future development as well as on private and City properties within Saskatoon. They are often encountered during land development, redevelopment, or road maintenance by the City or private developers. While City Administration does not expect there to be many residents using domestic wells on properties where City water service is available, the number of active wells in use is currently unknown. The installation and operation of private groundwater wells for domestic purposes is not addressed by current bylaws in Saskatoon.

Untreated groundwater from private wells is not always safe for drinking water purposes. Testing is required to guarantee its safety and treatment is sometimes also needed to meet federal-provincial drinking water quality objectives. The City provides safe drinking water sourced from the South Saskatchewan River and is not responsible for ensuring that groundwater from private wells is tested nor treated. Groundwater can sometimes be used for irrigation without treatment, however minerals dissolved in groundwater tend to accumulate in irrigation equipment over time and may necessitate frequent maintenance or replacement. In addition, bacteria from sanitary sewer line leaks, nitrates from lawn fertilizers or agricultural sources, and chemicals from spills are all contamination risks to groundwater.

The City of Saskatoon is developing methods to protect groundwater and groundwater users within its jurisdiction. City Administration intends to put forward a proposal to:

- Regulate or prohibit private groundwater wells for domestic purposes within City limits through a bylaw, and
- Encourage or require the decommissioning of non-active groundwater wells on City and private properties within City limits.

There are many benefits in protecting groundwater for Saskatoon, including:

1. Improved groundwater quality
2. Improved public safety and health
3. Improved awareness of groundwater and its long-term sustainability
4. Improved security of the City's waterworks system
5. Reduced liability to developers and the City

City Administration are engaging internal and external stakeholders from August – September 2021 to explore options for groundwater protection in Saskatoon. Based on what we heard from stakeholders, in addition to further research and internal considerations, Administration will present the options for groundwater protection to City Council in 2021.

1.1 Strategic Goals

This project supports the Strategic Goal of Environmental Leadership, contributing to responsible land and water use.

1.2 City Project Team

- Jeanna South, Project Sponsor, Sustainability
- Twyla Yobb, Project Advisor, Sustainability
- Vanessa Heilman, Project Manager, Saskatoon Water

- Kristian Hermann, Project Coordinator, Sustainability
- Mike Halstead, Marketing Consultant, Communications & Public Engagement
- Kenton Lysak, Engagement Consultant, Communications & Public Engagement

1.3 Spokesperson(s)

- Jeanna South, Director, Sustainability
- Vanessa Heilman, Project Manager, Saskatoon Water

2 Summary of Engagement Strategy

The following engagement goals were identified to help inform the development of the Options for Groundwater Protection:

- Options Identification
  - Review best practice research
  - Identify new program elements that enhance opportunities and limit barriers

We Are Here

- Close the Loop
  - Share relevant components of the policy with stakeholders to close the loop and provide opportunities to identify any red flags.

2.1 Stakeholder Groups

Three stakeholder groups were identified with the potential to be impacted by the Options for Groundwater Protection. These groups are:

2.1.1 Internal Stakeholders

- Internal stakeholders with associated knowledge or correlated projects involving groundwater protection, including:
  - Bylaw Compliance
  - City Solicitors
  - Construction and Design
  - Communications and Marketing
  - Parks
  - Saskatoon Land
  - Saskatoon Water
  - Sustainability
  - Technical Services
  - Water and Waste Operations

2.1.2 Subject Matter Experts

- Stakeholders with experience or knowledge related groundwater protection, sustainable water use, and the South Saskatchewan Watershed. These include:
  - Association of Professional Engineers and Geoscientists of Saskatchewan
  - Saskatchewan Environmental and Industry Managers Association
  - Saskatchewan Groundwater Association
  - Meewasin (includes Partners for the Saskatchewan River Basin)
  - Saskatchewan Health Authority
  - Saskatchewan Safe Drinking Water Foundation
  - South Saskatchewan River Watershed Stewards
  - University of Saskatchewan – Global Institute for Water
  - Water Security Agency

2.1.3 Key Stakeholders

- Key Stakeholders are those who have potential to be disproportionately impacted (either positively or negatively) by the changes to the implementation of the policy. The following groups have been identified to date:

- Developers
- Supply well drilling companies
- Monitoring well drilling companies
- Environmental consultants
- Geotechnical consultants.

A summary of stakeholder groups, level of engagement, engagement objectives, engagement goals and engagement activities completed are provided below.

Table 1: Summary of Engagement Strategy

Phase	Stakeholder	Level of Influence	Objective	Engagement Goal	Potential Engagement Activities
1	Internal Stakeholders Key Stakeholders	Collaborate	Review best practice research and identify new program elements that enhance opportunities and limit barriers	Options Identification	Emails Meetings Phone Calls Survey Workshops
	Subject Matter Experts	Involve	Review program elements with a wider stakeholder base to refine new program elements and identify red flags	Options Identification	Emails Meetings Phone Calls Survey
2	Internal Stakeholders Key Stakeholders Subject Matter Experts	Consult	Share relevant components of the bylaw/policy with stakeholders to close the loop and provide opportunities to identify any red flags	Close the Loop	Emails Meetings Phone Calls Survey

3 Engagement Activities

Stakeholders were able to provide their feedback on the proposed options through an online survey or by contacting the project team directly via email, mail, or telephone.

3.1 Stakeholder Survey

A stakeholder survey was held from August 9th to August 25th, 2021 to collect feedback on the proposed changes and their potential impacts. The survey comprised a total of 19 closed- and open-ended questions. Respondents were able to provide an "other" response to numerous questions and to further explain their preferences.

3.1.1 Intended Audience

The survey was intended for all Subject Matter Experts, Internal Stakeholders, and Key Stakeholders.

3.1.2 Marketing Techniques

Since the survey was provided directly to stakeholders the following marketing techniques were employed:

1. City Website
    a. Updates to the Engage Page were made to encourage participation in the online survey
2. E-invites
    a. Personalized emails were sent to stakeholders asking them to participate and share the information with their members
    b. Numerous associations agreed to include the e-invite within newsletters and internal outreach methods.

3.1.3 Analysis

The results were analyzed for the following indicators:

- Most popular options and recommendations (count)
- Thematic analysis of reasoning offered for inclusion of certain options over others
- Look for options that might improve or reduce accessibility and uptake.

Mixed methods were used to analyze the data. Qualitative methods included the thematic analysis and open coding of responses.

3.1.4 What We Heard

Demographics

A total of 51 individuals participated in the survey with 93% operating in Saskatoon. The largest group of respondents were consultants that design wells for the monitoring or pumping of groundwater (44%) and subject matter experts (42%), followed by drillers or well installers (17%), City of Saskatoon employees (15%), and land developers (7%). Out of the respondents, 73% stated they completed the survey as a representative of the following businesses, organizations, or groups:

- City of Saskatoon - Landfill
- Clifton Engineering Group

- Concentric Geoscience Inc.
- Dream
- Geosyntec Consultants
- KGS Group
- Klohn Crippen Berger
- Maple Leaf Drilling Ltd.
- Matrix Solutions Inc.
- Mobile Augers
- Parkland Drilling
- Pinter & Associates
- P. Machibroda Engineering Ltd.
- Reid and Sons Directional Drilling Ltd.
- Safe Drinking Water Foundation
- Saskatoon and Region Home Builders Association
- Saskatoon Land
- SNC-Lavalin
- South Saskatchewan River Watershed Stewards
- Stantec Consulting Ltd.
- Thurber Engineering Ltd.
- Vertex Environmental Inc.
- Water Security Agency
- Wolverine Drilling Inc.
- Wood Environment and Infrastructure Solutions.

Importance of Groundwater Protection

When asked how important it is for the City to protect groundwater quality in Saskatoon, most participants felt it was either important (37%) or very important (54%). Similar results were found for protecting groundwater from depletion in Saskatoon, which most participants felt was either important (24%) or very important (54%).

The following themes emerged from the comments that were provided by participants:

Connections: shallow groundwater is often hydraulically connected to surface water, which can have implications for the quality and quantity of Saskatoon's municipal supply

Contamination: is a major concern for many participants; contamination has the potential to limit the use of local aquifers by a variety of users and not protecting it now could greatly impact its future potability; the risks of contamination are greater than the risk of depletion considering the demand for groundwater is currently not high

Explore opportunities: it was suggested that there are opportunities the City can explore further, such as using groundwater to irrigate parks and assessing the City's groundwater demands

Importance: (the most commented theme); many respondents feel water security and scarcity will become larger issues in the near future, therefore protecting groundwater reserves is vitally important; it was suggested that a significant portion of recharge to the South Saskatchewan River occurs through groundwater contributions

Jurisdictional responsibility: some respondents suggested that regulating/protecting groundwater is the responsibility of the Water Security Agency and the City should not be involved

> *"Sask Water Security already works to manage, monitor and make recommendations for all ground water sources in Saskatchewan. domestic wells under 500 cubic decametres. It is not that there is no regulation. There is legislation and regulations already in place by Sask Water Security Agency and permits for accessing Saskatchewan's Renewable Resource."*

> *"The City has (in my opinion) an obligation to provide water service to properties within it's boundaries to prevent the drilling of private service wells."*

Serves as a backup: it was suggested that groundwater is a finite resource and should be considered as a backup to surface water supply

Updates to legislation are needed: many respondents identified the need to update the provincial groundwater legislation and requirements.

Prohibiting Versus Regulating Domestic Wells

When asked whether prohibiting or regulating domestic wells within Saskatoon would impact their work, most respondents stated it would not (51%), followed by those stating it would (36%). Further to this, 32% felt it would positively or somewhat positively effect their work, while 24% stated it would negatively or somewhat negatively effect their work.

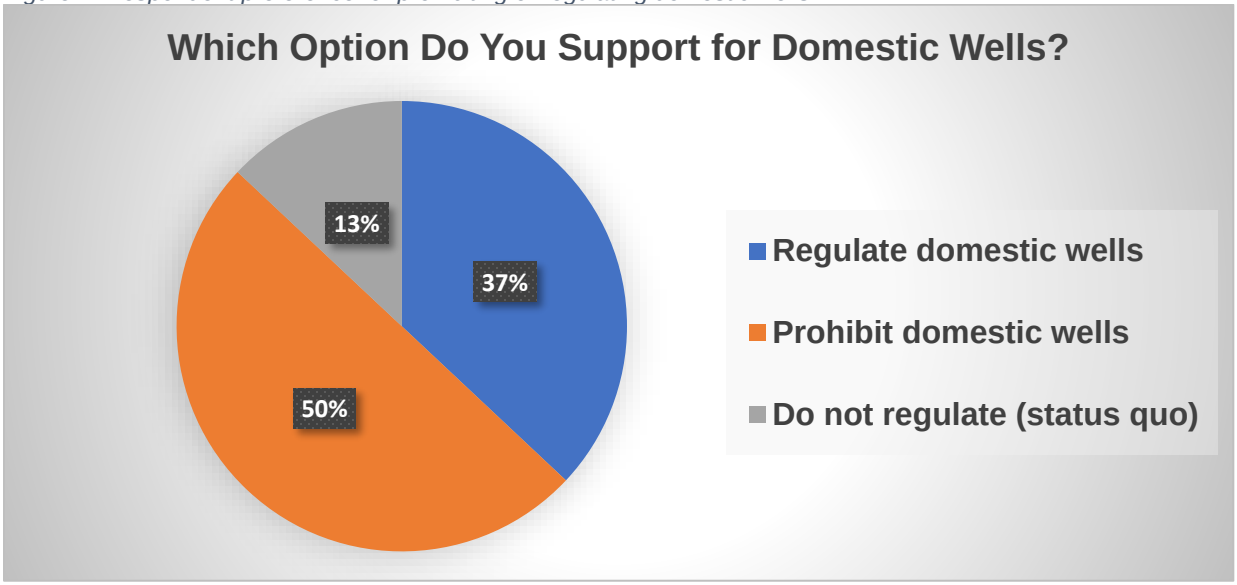
Numerous respondents provided comments as to how it would either positively or negatively effect their work, which included:

Table 2: Potential impacts for prohibiting or regulating domestic wells.

Positive Impacts	Negative Impacts
• Added education and enforcement measures could result in more work for the industry and better job security • Additional planning and considerations for the service life of installed wells • Allow for exploration of groundwater use for irrigation purposes • Easier to use Tier 2 Endpoints to assess environmental impacts at sites • Help to standardize the process and make it clear to future clients • The outcomes could properly address well integrity and decommissioning	• Create more work for the proper decommissioning of wells • Limiting free access to groundwater reservoirs and adding stress to municipal systems • Limit properly constructed wells, which are reliable and cost effective • More responsibility could be placed on the Water Security Agency to provide more support to private well owners • Potentially decrease the number of monitoring wells installed.

Most respondents supported prohibiting domestic wells (50%), with some respondents supporting regulating domestic wells (37%) or implementing no changes (13%).

Figure 1: Respondent preference for prohibiting or regulating domestic wells.



Of the comments provided by respondents, the following themes emerged:

Climate change and environmental impacts: if headwaters and water levels drop in the South Saskatchewan River, the City may want to access groundwater resources in the future

Contamination: improperly constructed or decommissioned wells can be hazardous and create a pathway for aquifer contamination; prohibiting domestic wells minimizes the risks associated with potential contamination to local aquifers; the City would need to ensure installed wells do not create a new pathway for contaminants between aquifers.

Costs and funding: how will the regulation and enforcement of wells be resourced and funded; one respondent suggested the owner should have to pay for the upfront and ongoing costs of compliance to ensure the program continues to remain viable and scalable in the long-term; it was suggested that by allowing private groundwater wells the burden of regulating and enforcing groundwater wells could be placed onto the entire tax base when only the few that install a groundwater well are actually benefitting

> *"If private wells within the City were to be regulated, it would require significant investment that when stacked beside the risk to human health and source water contamination doesn't seem to be a logical decision."*

Cross connectivity: allowing people to connect to homes also connected to the City distribution system introduces significant risk of contamination of the city distribution; even if the bylaw states that the system must stand alone from City distribution, people may still alter the system, and this may require routine checks or inspections.

Demand for groundwater: one respondent noted that although private wells are not currently in high demand, future drought conditions and the impacts of climate change may make them more attractive to homeowners

Employ best practices: it was suggested to follow best practice research in the development of regulation requirements, including looking at our provincial neighbours (i.e., Manitoba) and municipalities

Greater information needed: more information is needed if the City chooses to regulate wells; although the City will ask for an estimated withdrawal volume, unless a water meter is attached to the system the City will not know if the amount is exceeded

Health risks: centrally treated, regulated, and distributed source water is significantly safer than unregulated supplies that require the homeowner to maintain the source and monitor/treat the water to ensure safe drinking conditions; issues of liability as it relates to contamination and human health could put the City into difficult and costly situations

> *"If people consume the water, there are significant health hazards found in raw ground water in Saskatchewan. Common hazards that exceed the Saskatchewan Drinking Water Guidelines include: arsenic, uranium, selenium, nitrate, total coliform bacteria, E.coli, and manganese. 87% of private wells tested in the province exceed in at least one health guideline so the majority of wells require effective treatment, or a minimum of continuous disinfection, to make them safe for human consumption"*

Jurisdictional considerations: how will the City work in conjunction with the Water Security Agency who already regulates groundwater wells in the province; there is further confusion as to whether the Water Security Agency regulates private wells, to which they do not; a push for better provincial legislation of groundwater protection would prevent greater administration and costs for the City; the City is already required to provide drinking water to all residents so there is no reason for people to use groundwater

> *"I am unsure of how City of Saskatoon proposes to regulate wells in concert with WSA (who currently regulate wells for the rest of the province). Would the CoS regulations be on top of WSA's requirements or in lieu of? I don't think there needs to be two sets of regulations, but if WSA does not regulate wells in urban areas, then the CofS should regulate and the process described above is appropriate."*

> *"This best aligns with the current SK Ministry of Environment's approach that the potable water pathway can be excluded within incorporated cities (and 500 m of the city boundary). This has resulted in many sites being considered not-contaminated, as the potable pathway has been eliminated without detailed evaluations and the potential impacts on the near surface and/or deeper aquifer. Installing potable water wells in these areas has the potential to result in contamination in the potable water source. If regulating or permitting potable water wells within the city, detailed discussions would be required with the Ministry of Environment and potentially re-evaluating contaminated sites in the vicinity of the potable well(s)."*

> *"Currently, the province does not regulate any aspect of private wells with exception of construction and the requirement for the driller to use a registered rig… These regulations are dependent on the number of connections and volume which means they do not apply in the case of individual private wells."*

Limit administration and fees: if the City chooses to regulate domestic wells, the regulating body and process should not be too restrictive or cumbersome and fees should be kept to a minimum

Maintenance considerations: if the City chooses to regulate, then shared risks need to be considered (i.e., if flooding causes groundwater to be contaminated through a well); there is also an

inherent risk of cross contamination for the municipal water supply if participants mix water in their residence; a comprehensive groundwater monitoring program should be implemented to identify operational risks to the aquifer

Regulation requires further management: adaptive management (including cumulative impact assessments and establishing threshold targets), frequent water quality testing, and comprehensive monitoring should be undertaken if the City proceeds with regulating domestic wells

Responsibility of the owner: private well owners are responsible for the source water protection, maintenance, monitoring, and treatment of their source water, which is a lot of responsibility; most private well owners do not establish an effective multibarrier approach.

> *"ineffective well management can result in risks to human health and the potential for ground water contamination… People need to understand that they carry the sole liability associated with these systems and their use."*

Decommissioning of Non-Active Groundwater Wells

The majority of participants either supported or strongly supported the proposed actions for decommissioning non-active groundwater wells on City properties (83%), on private properties for large-scale development (78%), and on single property lots (75%). Comments included the following themes:

Enforcement: owners are not held responsible for proper maintenance or the decommissioning of wells, which can act as conduits for surface contaminants to enter groundwater; who will enforce the maintenance and decommissioning of wells and how will it be funded

Need for management: typically, the management of wells is not maintained after installation, so additional regulation would be useful in protecting groundwater resources

Proper methods and standards: many respondents emphasized the importance of using proper standards and methods to decommission groundwater wells; although standards exist, many contractors do not meet them or are unaware of them.

Many respondents provided suggestions for the proper decommissioning and maintenance of groundwater wells, including:

- Decommissioning should be completed by drillers registered with the Water Security Agency and the Saskatchewan Ground Water Association
- Decommissioning plans and schedules should be mandatory for all environmental monitoring wells and submitted for City approval prior to their installation
- Disinfection of all well hardware, pumps, and hose reels are necessary
- Existing provincial regulations for decommissioning as stated in the Water Regulations and by the Water Security Agency should be followed
- Include appropriate mix weight (for grout)
- Rebates or incentives to individuals for decommissioning wells could be offered
- Pre-treated chlorination of all drilling fluid and back flush water
- All aquifers should be remediated to potable or original conditions
- Monitoring wells should be required to be decommissioned when they are no longer needed

- Testing for biological and chemical parameters to demonstrate no unusual contamination prior to decommissioning
- Seal wells properly by using bolted covers, tremie line grouting (20-line grouting) and annulus seals
- Wells should be registered with the Water Security Agency.

Final Thoughts

When asked what other options the City should consider to protect groundwater in Saskatoon, respondents provided the following suggestions:

- Assess and map the vulnerability of aquifers within City limits to identify areas of increased importance and susceptibility to contamination
- Consider what changes in land-use could take place and create bylaws to limit development in areas of high vulnerability or greater risk to aquifers
- Create a database for all existing groundwater wells and boreholes within Saskatoon
- Education and awareness programs that demonstrate safe maintenance of wells and responsible use of groundwater
- Encourage source water protection through educational materials and incentives
- Explore updating building guidelines and supports for rainwater collection (e.g., roof top collection from homes)
- Identify and manage remediation sites that are known to be contaminated or pose a risk
- Installation of monitoring wells could include a deposit collected per well during the right of way permit application to guarantee funds are available for the decommissioning or remediation of groundwater wells
- Ongoing monitoring for all groundwater wells
- Potable wells should be installed to provide a safe and reliable back-up to river-sourced water
- Use telescopic casings with bonded adhesive and set screws for all applicable wells.

Respondents provided their final comments on the project, which included the following themes:

Challenge: some respondents stated that the regulation and enforcement of private wells would be a substantial feat that has not been successfully implemented in other jurisdictions

Education is important: knowledge and education about groundwater is the first step towards better protection; it was recommended that each well owner should become familiar with their well construction, maintenance, decommissioning requirements as per provincial regulations, and overall risks associated with using groundwater

> *"Successful campaigns and regulations to ensure individuals test and treat their well water, and maintain the physical condition of the well are to my knowledge not existent."*

Limited information: many respondents identified that currently there is little information on the viability of groundwater resources, as well as groundwater quality and quantity in Saskatoon

Resources: it was suggested that if the City chooses to regulate groundwater wells within Saskatoon, additional resources and funding will be needed to administer and enforce the policy

> *"it should be noted that any regulations (other than a complete ban) may require staff resources to ensure compliance with such bylaws, including public education about groundwater and wells."*

Responsibility: some respondents expressed their confusion for why the City isn't following the provincial guidelines and requirements set by the Water Security Agency

> *"Water is a right for all Canadians. Access to ground water is a fundamental right to all. When we get into prohibiting rights it is a very slippery slope. Ground Water Legislation and recommendation does exist already, it is important to support and improve provincially. I would encourage the city of Saskatoon to seek changes on a larger scale than just the city of Saskatoon. I would ask personal passionate about water to work with Sask Water Security Agency to change the regulations for all."*

> *"Ground water protection is not just a city of saskatoon issue. It is an everyone issue. Join, support, and be the change that you want to see. Ground water is all connected. The city of Saskatoon does not exist in a bubble."*

Support: many respondents extended their support for the initiatives being described and for the City in being proactive in the protection of groundwater resources within Saskatoon

> *"The City of Saskatoon is being proactive in the protection of the groundwater resources. I commend that the multi-barrier approach is being considered with acknowledgement of the risks from domestic water wells to the aquifers."*

> *"Regulating wells and aquifer conditions is needed to reduce water security risks in the future."*

Updates to legislation: some respondents expressed the need for provincial legislation and regulations surrounding groundwater protection to be updated since their original development in 1968.

Questions to Consider

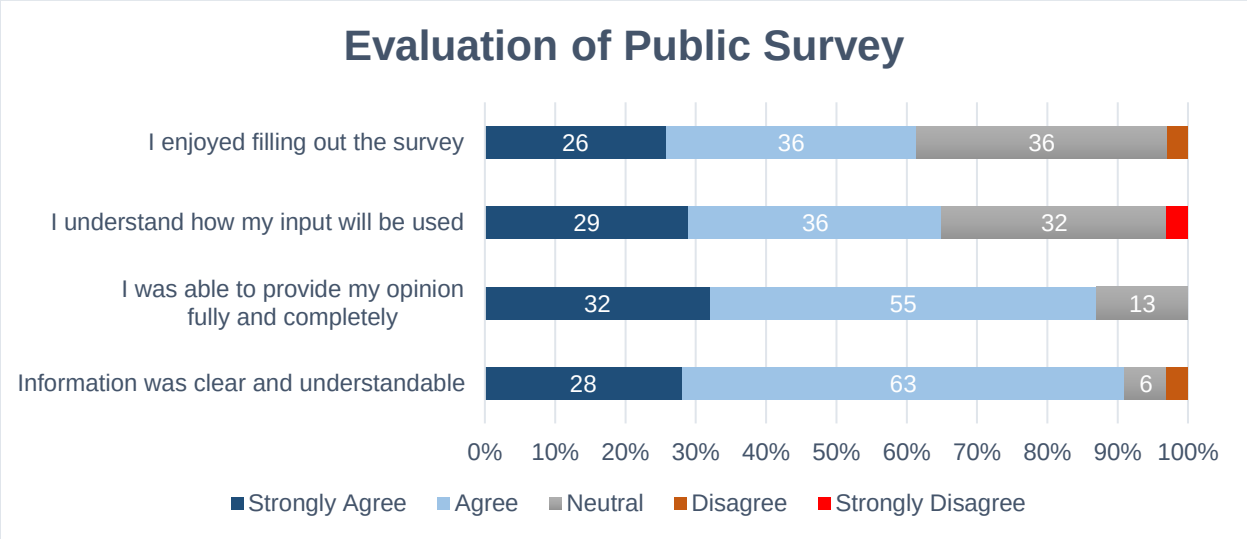
Numerous follow-up questions were provided by respondents, including the following:

- How does the right-of-way permit application guarantee well decommissioning after service life?
- How will the new policy be enforced and how will it be funded?
- What happens if an owner consumes contaminated groundwater and their household falls ill?
- What if a groundwater owner or applicant refuses to comply?
- What will happen if someone contaminates groundwater?
- Who is responsible for wells installed in City right-of-ways as part of an environmental assessment once the property changes ownership?
- What is the role of the Health Authority and the City in these circumstances?
- Who takes on the responsibility of decommissioning or maintenance?

3.2 Evaluation

Participant evaluation through the survey indicated support for both the level of engagement conducted and the opportunities provided. 91% of participants agreed or strongly agreed with the information that was provided being clear and understandable, with 87% feeling they were able to provide their opinions fully throughout the process.

Figure 2: Evaluation of survey



Comments provided by participants were supportive of the process:

"The engagement page was really well written. Great job to those involved. This is a very important topic to help protect groundwater quality, integrity, and help ensure responsible parties are held accountable for abandoned wells."

3.3 Data Limitations

Due to public health orders (i.e., social distancing measures) and considerations related to the COVID-19 pandemic, engagement activities were confined to virtual means. Virtual engagement has limitations, primarily by limiting accessibility for those without internet access or with limited computer literacy and by enabling accessibility by those who have a more active online/social media presence. The COVID-19 pandemic has also shifted the priorities for many people, resulting in numerous stakeholders being unable to participate in our engagement process due to more pressing concerns. Therefore, some residents and stakeholder groups may not have been able to fully participate in the engagement activities conducted; however, the results are considered to provide the best available indication of how stakeholders perceive the proposed options at the current time.

When developing the engagement strategy, it was decided that well owners would not be engaged, which was primarily due to the lack of active well owner records. The Water Security Agency has a database of water wells drilled within the province, however it does not include monitoring wells nor all domestic wells. Furthermore, since domestic wells do not require a provincial licence, up-to-date records are not maintained. Locating domestic wells on a door-to-door basis within residential areas was not considered feasible at this time. Also, because the proposed changes to the policy could potentially restrict the activities of those desiring to own domestic-use or monitoring wells, the project team engaged with subject matter experts and associations to gain more general perspectives in shaping the options. Therefore, it was decided by the Project Team to follow best practice research and focus on engaging with stakeholders directly involved in the construction, maintenance, and decommissioning of groundwater wells.

4 Next Steps

The next steps for the Options for Groundwater Protection project are described below:

- Options Identification
  - Review best practice research
  - Identify new program elements that enhance opportunities and limit barriers
- Close the Loop
  - Share relevant components of the policy with stakeholders to close the loop and provide opportunities to identify any red flags

We Are Here