Risk Prioritization Tool

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HANDOUTS:

- Instructions and scenarios paper copy
- Risk tool paper copy (see instructions on the paper copy)

FILES:

- **Risk Tool SHOW:** the draft risk tool without any entries
- **Risk Tool Fran the Farmer:** The tool with entries pre-filled for ***still water***. Scenario 1 describes a ***pond***.
- **Risk Tool Produce Paul:** The tool with entries pre-filled for ***running water***. Scenario 2 describes a ***river***.
- **Risk Tool Greg the Grower:** The tool with entries pre-filled for ***ground water***. Scenario 3 describes a ***well***.
- **Risk Tool Library:** Supporting database of descriptions and values. This file is required but you will not change it.

INSTRUCTIONS:

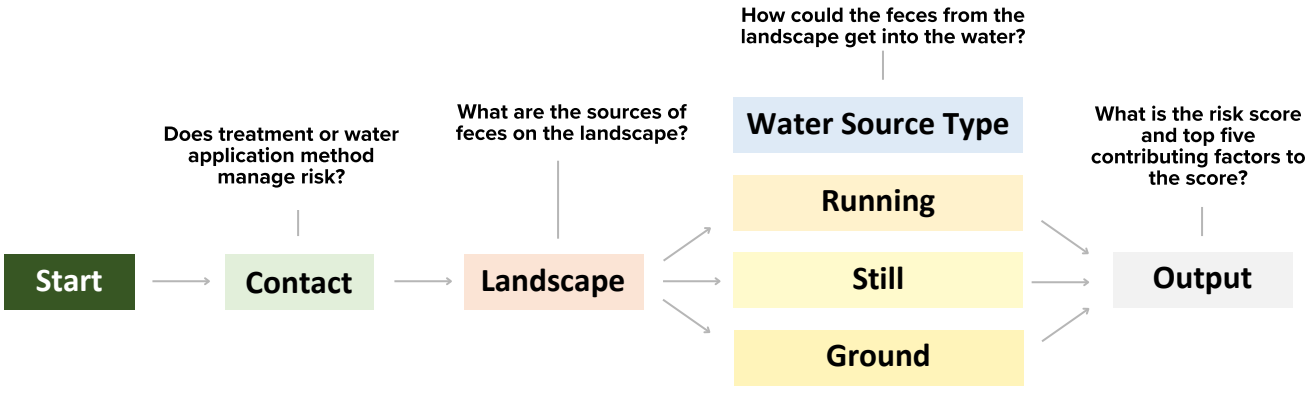
The purpose of these scenarios is to show you how to use the Excel-based or paper copy of the Risk Prioritization Tool. This tool will be used by farmers to help them understand risks to their agricultural water.

If using the Excel-based tool, open the Risk Prioritization Tool file for each scenario on the computer. Read through each scenario in this handout. On the first page of each there are Risk Factors to focus on, and on the second page there are Risk Mitigation strategies. Determine the risk score under different conditions using the hints. After the scenario, ask yourself:

- Would the tool help a farmer make decisions that reduce risk?
- Would the tool help a farmer and an inspector or auditor work through risk factors?

NAVIGATION WITHIN THE RISK TOOL FILE:

The sheets are protected so you can only input information where intended.
Use hot buttons to navigate forward and back.



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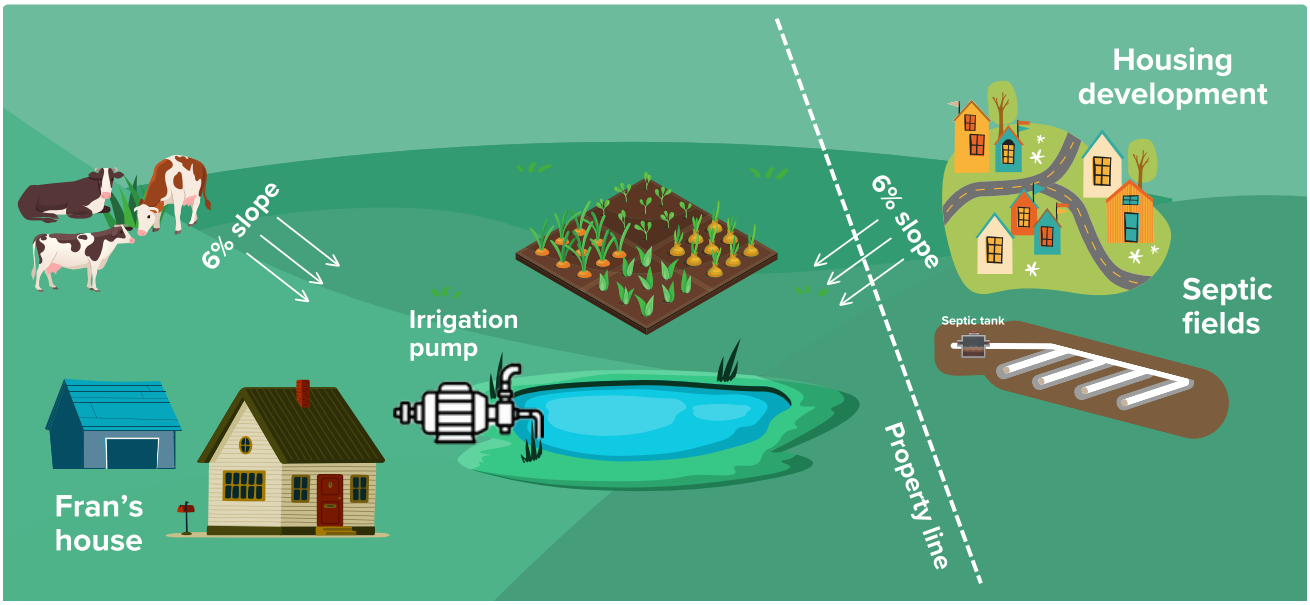
Scenario 1: Fran the Farmer

This exercise is meant to introduce you to the Risk Prioritization Tool for agricultural water using a pond water scenario and walking through steps to recognize and reduce risk. Each step builds on the previous step so do not back up; keep the changes you make in each step to see how risk changes with weather, and can be reduced by your choice of mitigations.

FARM DIAGRAM



Fran the farmer irrigates out of an unlined pond using overhead irrigation

RISK FACTORS TO FOCUS ON:

- The property next door is an unsewered community where each housing unit has a 50-year-old septic system. The pond is at the property line near the housing development.
- Fran grazes cattle in a pasture on sloping land near the pond. The cattle have access to the pond (unfenced).
- Fran grows fresh produce at the back side of the pond, for sale at a farm stand.

Initial score in dry weather:

Score after significant rainfall:

Steps:

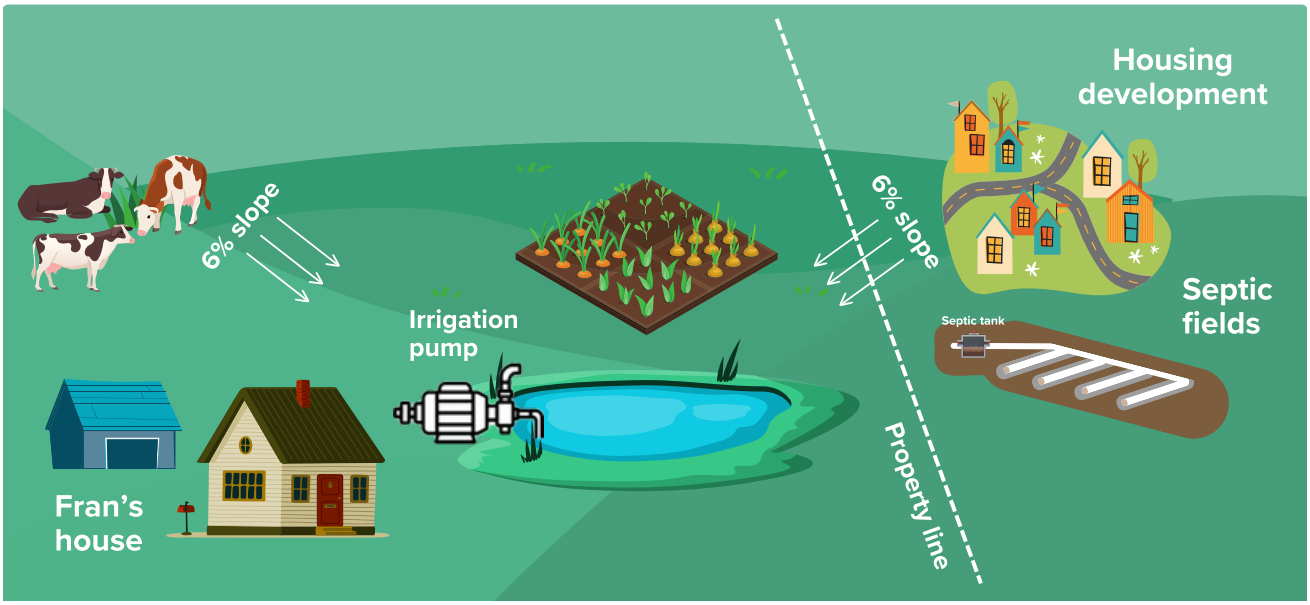
- Click through the risk tool and see how the entries match up with the scenario
- Go all the way to the **Output** page
- Observe the score for dry weather and write it down
- Look at the five risk factors. Do they make sense for dry weather?

Steps:

- Click **Water Type** (button, top right) and choose **Still** (button, bottom right)
- Scroll to the cluster of inputs "**Runoff can Carry Waste**"
- Change **Rain** to "*Sheet Runoff*"
- Change **Time** to "*1 to 3 Days*"
- Go to **Output**
- Observe the score after significant rainfall and write it down
- Did the score go up or down?
- Look at the five risk factors. Do they make sense for wet weather?
- What would you do in this scenario to reduce risk during wet weather?

Scenario 1: Fran the Farmer *(Continued)*

FARM DIAGRAM



Fran the farmer irrigates out of an unlined pond using overhead irrigation

RISK MITIGATION STRATEGIES TO INVESTIGATE:

What happens if Fran has the pond lined when, as planned, it is dug out next year?

Revised score:

Steps:

- From the output page, write the percent of score from **Septic** risk factor in the margin of this paper
- Click **Water Type** and choose **Still**
- Scroll to the input for "**Liner**"
- Change **Subsurface Isolation** "*Synthetic Liner*"
- How is the liner related to the failing septic system?
- Go to **Output**
- Write down the new score
- Compare the percent of score from **Septic** risk factor to the percent you wrote in the margin. Installing a liner only partly mitigated risk from the failing septic systems, Why?

What happens if the septic in the housing development is replaced by city sewers?

Revised score:

Steps:

- Click **Water Type** and choose **Still**
- Scroll to the cluster of inputs "**Human Waste Can Get In Water**"
- Change **Septic** to "*No Septic*"
- Change **Sewers** to "*Low Likelihood of Leaks*"
- Go to **Output**
- Write down the new score.
- Replacement of failing Septic was a more effective mitigation.

What if Fran fences grazing cattle away from the pond?

Revised score:

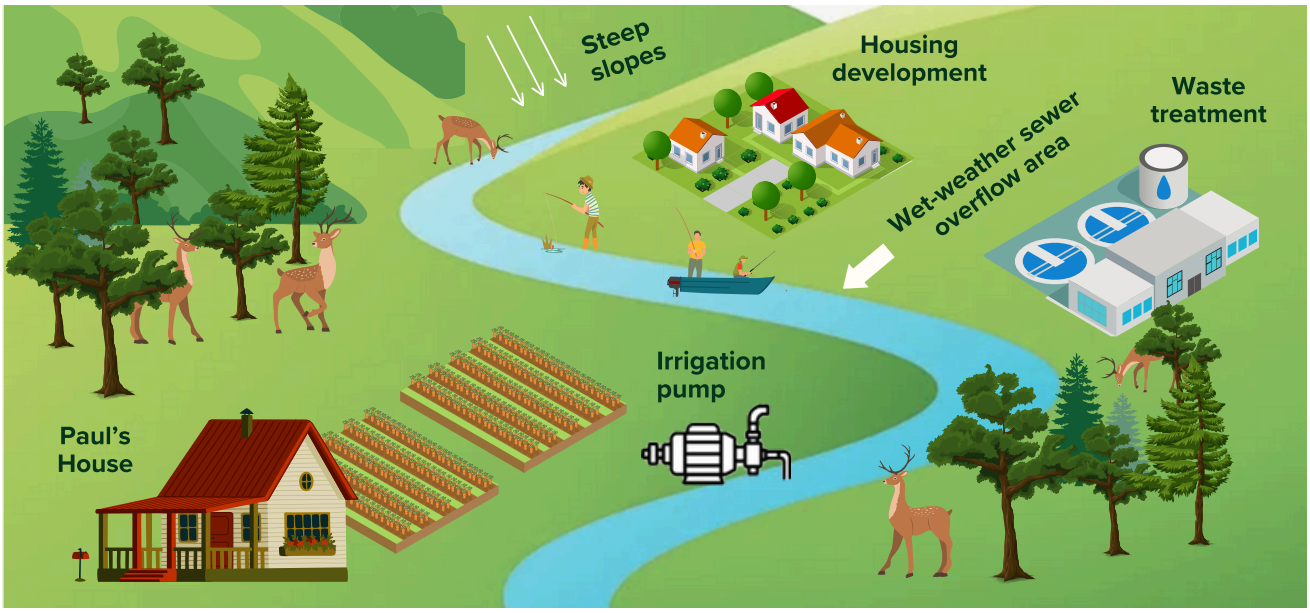
Steps:

- From the output page, write the percent from **Animal/Human intrusion** and **Grazing/Free domestic** in the margin of this paper
- Click **Water Type** and choose **Still**
- Scroll to the cluster of inputs "**Animals and People Can Get in the Water**"
- Change **Animal/Human intrusion** to "*Full Exclusion*"; grazing cattle can't drink from the bank.
- Scroll to the cluster of inputs "**Animal Waste Can Get in the Water**"
- Change **Grazing/Free Domestic** to "*Medium Buffer*"; cattle have a grazing setback.
- Go to **Output**
- Write down the new score.
- See how fencing changed the risk factors.

Scenario 2: Produce Paul

This exercise is meant to introduce you to the Risk Prioritization Tool for agricultural water using a running water scenario and walking through steps to recognize and reduce risk. Each step builds on the previous step so do not back up; keep the changes you make in each step to see how risk changes with weather, and can be reduced by your choice of mitigations.

FARM DIAGRAM



Produce Paul pumps water out of a stream that goes through a residential area before reaching his farm. Paul irrigates their produce using overhead 'water cannons'.

RISK FACTORS TO FOCUS ON:

- An upstream sewer system and treatment plant have been cited by EPA for discharging untreated sewage to the stream during and after heavy rainfall.
- The local deer population has increased and there are frequent reports of deer-car collisions.
- The stream and surrounding woodlands are heavily used for camping, fishing, and boating.

Initial score in dry weather:

Steps:

- Click through the risk tool and how the entries match up with the scenario
- Go all the way to the **Output** page
- Observe the score for dry weather and write it down
- Look at the five risk factors. Do they make sense for dry weather?

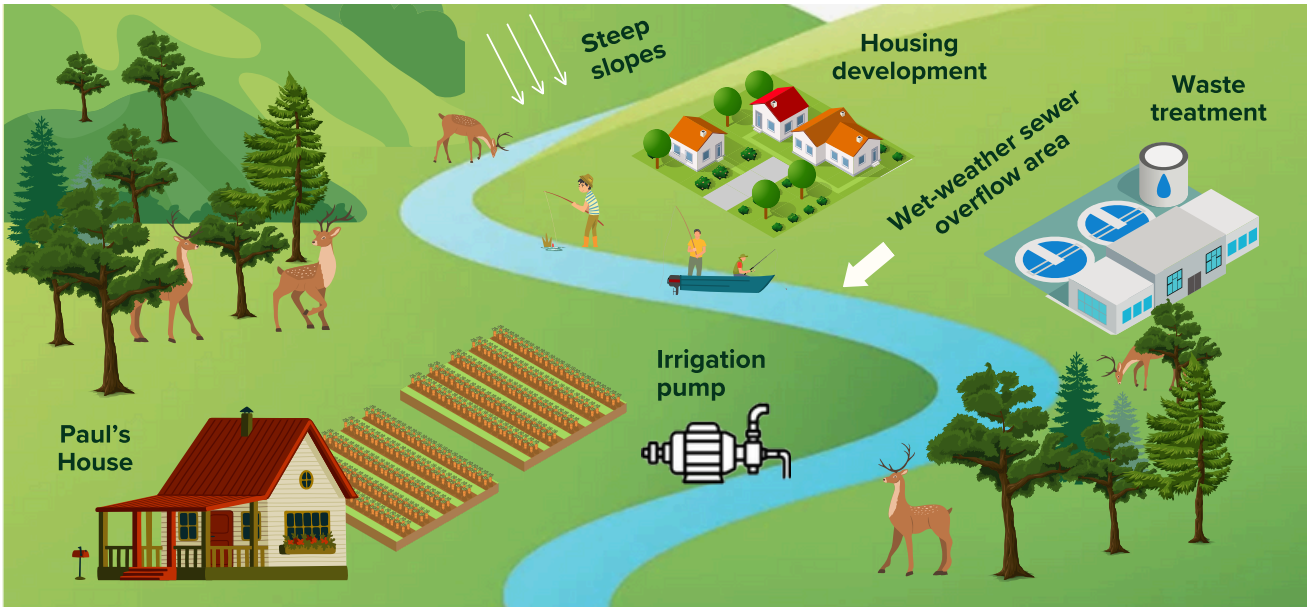
Score after significant rainfall:

Steps:

- Click **Water Type** (button, top right) and choose **Running** (button, bottom right)
- Scroll to the cluster of inputs "**Runoff can Carry Waste**"
- Change **Rain** to "*Sheet Runoff*"
- Change **Time** to "*1 to 3 Days*"
- Go to **Output**
- Observe the score after significant rainfall and write it down
- Did the score go up or down?
- Look at the five risk factors. Do they make sense for wet weather?
- What would you do in this scenario to reduce risk during wet weather?

Scenario 2: Produce Paul *(Continued)*

FARM DIAGRAM



Produce Paul pumps water out of a stream that goes through a residential area before reaching his farm. Paul irrigates their produce using overhead 'water cannons'.

RISK MITIGATION STRATEGIES TO INVESTIGATE:

What happens if the sewer system is repaired?

Revised score:

Steps:

- From the output page, write the percent of score from **Sewers** risk factor in the margin of this paper
- Click **Water Type** and choose **Running**
- Scroll to the cluster of inputs "**Human Waste can get in Water**"
- Change **Sewers** to "*Low likelihood of leaks*"
- Go to **Output**
- Write down the new score.
- See how **Sewers** changed in the list of risk factors.

What happens if the deer population crashes from natural disease, or active management?

Revised score:

Steps:

- From the output page, write the percent of score from **Wildlife** in the margin of this paper
- Click **Landscape**
- Scroll to the cluster of inputs "**On farm**"
- Change **Wildlife** to "*Rarely Present*"
- Scroll to the cluster of inputs "**Adjacent Land**"
- Change **Wildlife** to "*Rarely Present*"
- Go to **Output**
- Write down the new score.
- See how **Wildlife** changed in the list of risk factors.

Since recreational users and natural wildlife are outside Paul's control, what else can be done? (*Hint: convert to drip irrigation*)

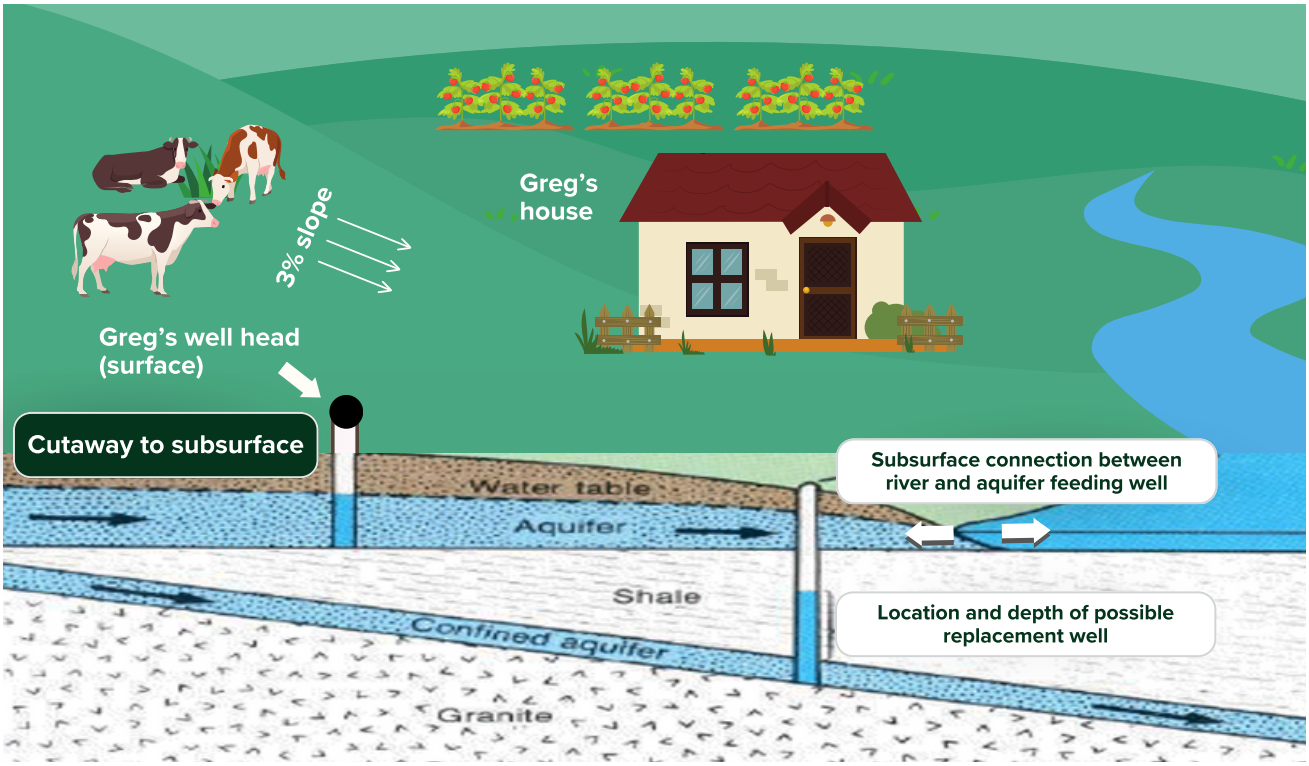
Revised score:

Steps:

- From the output page, write the percent of scores from **Wildlife and Recreation** in the margin of this paper
- Click **Contact**
- Find "**Probability of water contact with produce**"
- Change Categorical to "*Very Unlikely*". *This is the category that describes drip irrigation for above-ground crops.*
- Look at **Current Value** and the pop-up message
- Go to **Output**
- **Risk Score for the Water Source** did not change, but **Risk Score for the Water As Used** now shows nearly complete mitigation of risk.

Scenario 3: Greg the Grower

This exercise is meant to introduce you to the Risk Prioritization Tool for agricultural water using a ground water scenario and walking through steps to recognize and reduce risk. Each step builds on the previous step so do not back up; keep the changes you make in each step to see how risk changes with weather, and can be reduced by your choice of mitigations.



Greg the Grower uses well water for his overhead irrigation system and for drinking water.

RISK FACTORS TO FOCUS ON:

- The well was drilled by his grandparents when they started farming the land in 1947.
- The well may or may not be cased. The well log says the depth is 40 feet, in sand-and-gravel.
- There is a river about 0.25 miles away and the well level goes up and down with the river level.
- The well head has a corroded metal cap, and water generally pools around the well head during rain.
- The well is tested for potability every 5 years or so; the total coliform test is generally "positive" and sometimes the E. coli test is "positive" too.
- Surrounding land is used to graze cattle and the cattle graze up to the well head.

Initial score in dry weather:

Steps:

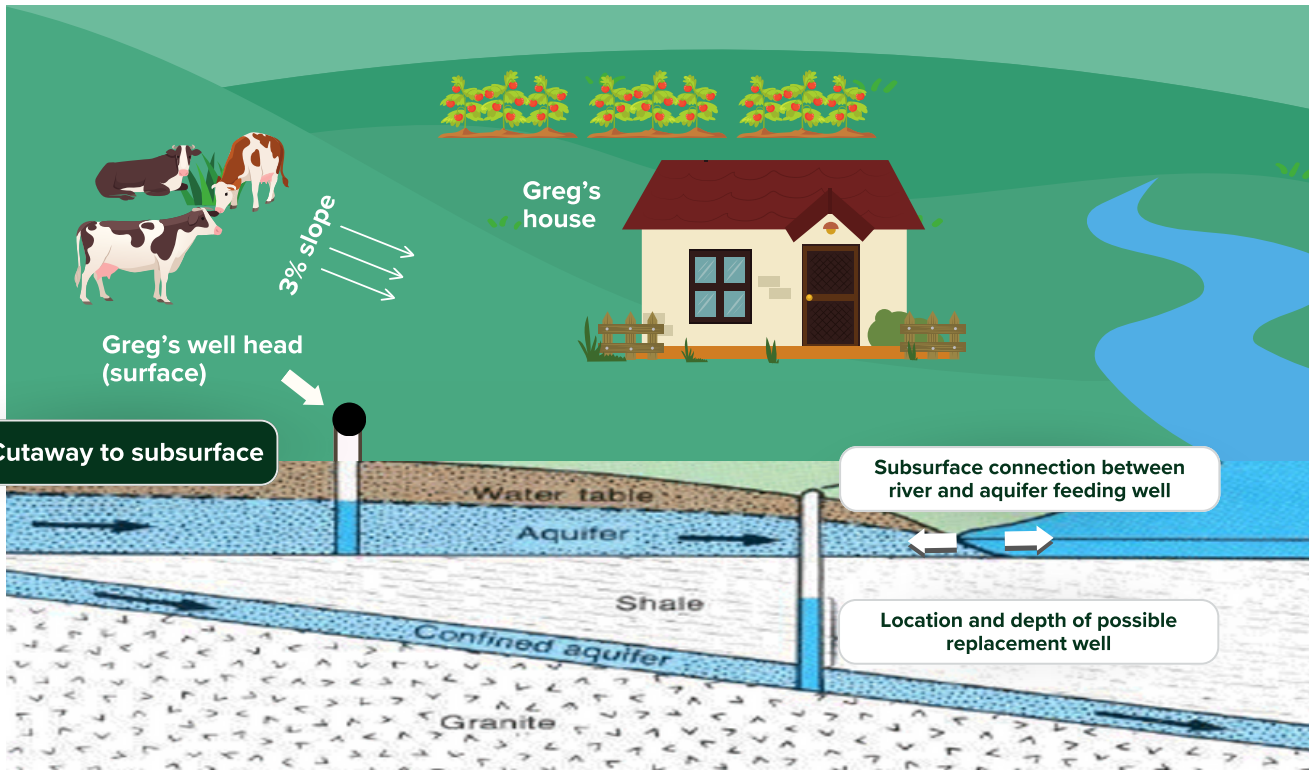
- Click through the risk tool and how the entries match up with the scenario
- Go all the way to the **Output** page
- Observe the score for dry weather and write it down
- Look at the five risk factors. Do they make sense for dry weather?

Score after significant rainfall:

Steps:

- Click **Water Type** (button, top right) and choose **Ground** (button, bottom right)
- Scroll to the cluster of inputs "**Runoff or Infiltration Can Carry Waste**"
- Change **Rain** to "*Sheet Runoff*"
- Change **Time** to "*1 to 3 Days*"
- Go to **Output**
- Observe the score after significant rainfall and write it down
- Did the score go up or down?
- Look at the five risk factors. Do they make sense for wet weather?
- What would you do in this scenario to reduce risk during wet weather?

Scenario 3: Greg the Grower *(Continued)*



Greg the Grower uses well water for his overhead irrigation system and for drinking water.

RISK MITIGATION STRATEGIES TO INVESTIGATE:

What happens if Greg builds a well house?

Revised score:

Steps:

- From the output page, write the percent of scores from **Wildlife** in the margin of this paper
- Click **Water Type** and choose **Ground**
- Scroll to the cluster of inputs "**Animal Waste Can get in Water**"
- Change **Grazing/ Free Domestic** and **Wildlife** to "*excluded by well house*".
- Scroll to the cluster of inputs "**Runoff or Infiltration Can Carry Waste**"
- Change **Pooling** to "*No Pooling*"
- Go to **Output**
- Write down the new score.
- See how **Grazing/ Free Domestic animals** and **Wildlife** changed in the list of risk factors.

What happens if Greg drills an entirely new well into a deeper, confined aquifer as shown?

Even though the score is low, if the test results are still high there may be an unrecognized risk factor.

Revised score:

Steps:

- Click **Water Type** and choose **Ground**
- Scroll to the cluster of inputs "**Well Type and Maintenance**" and "**Geology and Natural Barriers**"
- Change the entries to reflect a new well: "*drilled and cased*", "*excellent repair*", "*cased and grouted*", "*excellent seal*", "*medium depth*", with a "*full confining layer*"
- When Greg re-tested, he no longer has detected bacteria.
- Scroll to the cluster of inputs "**Water Testing**"
- Change **Total Coliforms** and ***E. coli*** to "*Not Detected in 100 mL*"
- Go to **Output**
- Write down the new score.
- Look at the five risk factors. Is further mitigation needed considering the risk score?