Restoration Acts for the Waikato River (RAWR)

Group 8: Abby Britz, Lianna Greenstein, Kiera Heavey, Faith Moen, and Karlie Monti

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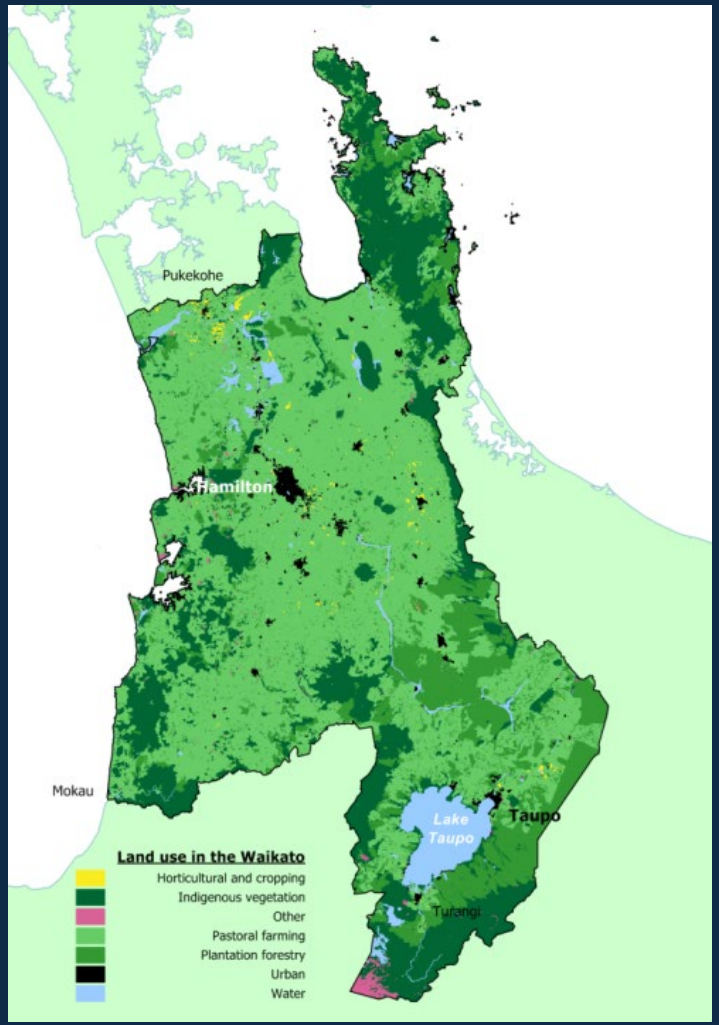
01 Mission Statement

RAWR's goal is to target the increased concentrations of mercury, arsenic, and boron around geothermal sources of the Waikato River on the North Island of New Zealand. We also look to decrease the high levels of *E. Coli* downstream of Hamilton city and promote awareness of how the hydroelectric dams are impacting animals and having downstream effects by 2040.



Land Use Map

- Shows pastoral farming as the majority of the land use within the Waikato River Catchment

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02 Background and History

- The Waikato River has been populated for over 700 years
- The river holds significance to the Maori settlement because of fertile lands and resources
- The river and its tributaries were used for transportation and is used for economic purposes
- The river originates from Lake Taupo which was formed by a volcano eruption around 26,500 years ago
- In the 20th century the Waikato river became a symbol for hydroelectric development

03 Current Policies and Mandates

Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010:

- Purpose: restore and protect the health of the Waikato River
- Gave Waikato River Authority full governance over the Waikato River
- Provides $210 million to WRA to cleanup the river and restore it over the next 30 years
- Addresses redress for certain assets, the regulation of customary activities, and the management of the Waikato River

Waikato River Authority:

- Advises and prepares the strategy for restoration
- consist of 10 members appointed by the Waikato River Clean-Up Trust
- Revise older policies and mandates to align with the WRA's goals

04 Problem 1

Increased concentrations of mercury, arsenic, and boron.

- Adverse health effects on the people and animals that use the river for food and water
- Hg can build up its concentration through the food chain and the consumption of most fish becomes a hazard for humans
- Arsenic is filtered out and the water is safe to drink farther downstream from geothermal power stations, but the other toxins are worrisome.

04 Goal 1

Decrease concentrations of mercury, arsenic, and boron.

- The major cause ->wastewater released by the nearby geothermal power stations (Wairakei and Ohaaki)
- Power stations need to treat their wastewater before returning it back into the environment
- Reduce sediment production upstream, since sediment is a sink for toxins ->to reduce sediment production in water, reduce the amount of sediment entering the watershed ->no till farming methods upstream.

05 Problem 2

High levels of E. Coli downstream of Hamilton.

- Stems from the Waipa river and the farm animals that live in close proximity to the river ->their waste products contaminate the river
- Local birds such as ducks and swans pollute the river with their waste products
- The increased levels also come from the towns of Karapiro's and Hamilton's wastewater

05 Goal 2

Decrease levels of E. Coli downstream of Hamilton.

- Increase the effectiveness of the wastewater treatment plant ->waters would be cleaner before going back into the water
- Establishing the local farms a farther distance from the river ->decrease the amount of E. Coli entering the river due to the farm animals
- Developing storm water runoff systems to avoid pollutants, such as animal waste products, from entering the river during periods of rain

06 Problem 3

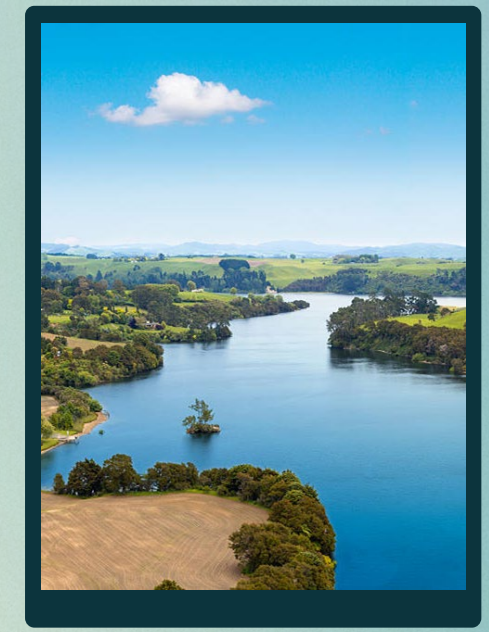
Dams are interfering with animals and having downstream effects

- Issues in water temperature changes as the water moves downstream from the dams causing problems for the existing ecosystems and creating unbalance
- Dams also contribute to a disruption of nutrient cycles as things get caught in reservoirs making it difficult for aquatic life to get food
- Along with these issues dams can also cause a disruption of fish migration, and big changes in habitat

06 Goal 3

Look for alternative options to the dams

- River hydropower and micro hydro power are both great options for generating electricity and diverting water flow through turbines ->reduces a lot of the environmental impact, minimizes the destruction of the river
- Solar power, wind power, and tidal energy techniques ->less impact on our ecosystems and cause less sudden changes and damage
- Biomass energy is also a way to take organic matter and turn it into energy which can be renewable and most sustainable



07 Conclusion

The Waikato River is a very versatile and resourceful catchment that needs to be improved upon and protected. The issues with the dams, E. coli, arsenic, boron, and mercury need to be addressed and solved quickly and efficiently. Efforts can be made to fix these said problems by looking for alternative solutions to dams, increasing the effectiveness of the river's surrounding wastewater treatment plants, and requiring the nearby power stations to filter their wastewater before bringing it back to the ecosystem that is this catchment. A few policies and mandates are in place to protect the Waikato River, but more need to be enacted by the RAWR action plan. If these plans and recommendations are followed, the Waikato River will be in better shape by 2040.

Resources

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