Flipping Lakes

Rules of the game

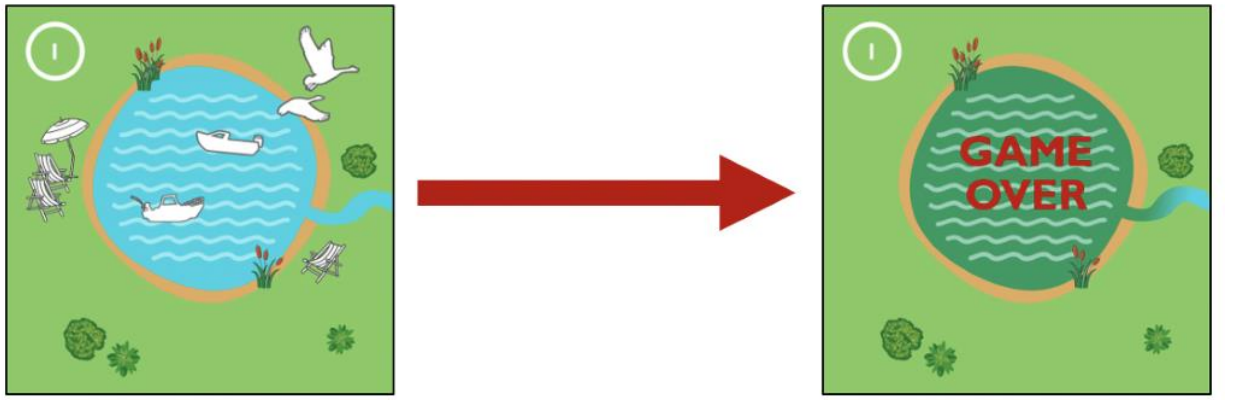
Setting up: Take all catchment cards and design your playing field (the catchment). All special catchment cards (Start card, recreational lake, lakes, pollution sources) need to be connected using connection cards (rivers and streams).

Goal of the game: You are a water manager tasked with keeping pollution out of a recreational lake that is located at the end of your catchment. If pollution does reach the lake, it will become a blue-green algal dominated mess and you lose the game! Managing your catchment effectively will help to stop the pollution. Watch out for societal and climatic events that may occur as they may change the game as you go. When other lakes within the catchment become too polluted they will flip, turning them into turbid systems and ultimately adding to the pollution of the catchment. Keeping your lakes clean and clear will help you to achieve your goals. Will you manage to keep your recreation area up and running?

Playing the game: The player is challenged to manage the system for 15 turns, with each turn representing one year of management. During each turn the player will:

1. Flip an event card for the given turn.
2. Receive taxes. Tax income constitutes 3 Aquabucks.
3. Enact measures if money is sufficient and the player wants to.
4. Add pollution from pollution source(s).
5. Remove pollution due to retention or purification (i.e. bank filtration, clear lakes)
6. Move pollution chips. Default pollution flow speed is one catchment card per turn.
7. Count pollution chips on each lake. If the lake is in clear state and the number of chips exceed the pollution threshold value, flip the lake to the turbid side. If the lake is in a turbid state and the number of chips is lower or equal to the pollution threshold value, flip it to the clear side.
8. Check if pollution has reached your focal lake. If so, GAME OVER! If not, begin the next turn (repeat steps 1-8).

End of the game: If the pollution has not reached the nature area after 15 years, you have won the game. You get two points + one bonus point for every lake you have managed to keep in a good ecological state.



Measure cards

Predictive model (1 Aquabucks*):* Predict the future climate (social and climatic) and check what the event in the following turn will be.

Increase public awareness (2 Aquabucks): Played directly on an urban card, it reduces pollution loads by 1. Played on a lake it will protect it from the influences of duck feeding and dog poop events.

Bank filtration (3 Aquabucks*):* remove one pollution per turn on the given catchment card (assuming there are any).

Sediment capping (3 Aquabucks*):* Stops pollution load from a lake itself (only useful for turbid lakes).

*Dam (*5 Aquabucks*):* Close off one connection in your catchment. Pollution will not travel beyond this point unless there is an extreme rainfall event.

Increase water storage capacity (6 Aquabucks*):* When used on a sewage overflow this card stops the loading from the overflow. When used on other catchment cards it allows the pollution to be held in place for one extra turn. Place the water storage chip on the catchment card.

Dredging (8 Aquabucks*):* Remove all pollution from one catchment card one single time.

Agricultural legislation (9 Aquabucks*):* Reduce the pollution load from all farms to 1.

Water treatment plant (10 Aquabucks*):* Place on the catchment to filter out 8 pollutants per turn from this location.

Event cards

Climatic events

Extreme rainfall: Pollution travels two catchment cards per turn, also over dams. Also, all sewage overflows produce pollution this turn.

Heatwave: Pollution gets concentrated, multiply all pollution added this turn by 1.5.

Extreme drought: Pollution does not travel this turn, new pollution is added as normal.

Societal events

Dog park: Citizens are requesting a dog park in your catchment. Build one along your catchment by adding the dog chip. The dog chip adds 1 pollution each turn to this catchment card.

Agricultural intensification: Agriculture has intensified in the catchment, each farm in your catchment now produces 1 extra pollution per turn.

Feeding ducks: People have been feeding the ducks in one of your lakes. The excess nutrients have caused the lake to flip. Flip one of your lakes to the turbid state unless a) all lakes are already in the turbid state or b) lakes are protected by ‘increase public awareness on urban pollution’ (measure).

Regular events

Business-as-usual: All normal rules apply.