















LAND USE CHANGES WATER QUALITY: PAST/Pre-1800

NAME: _____

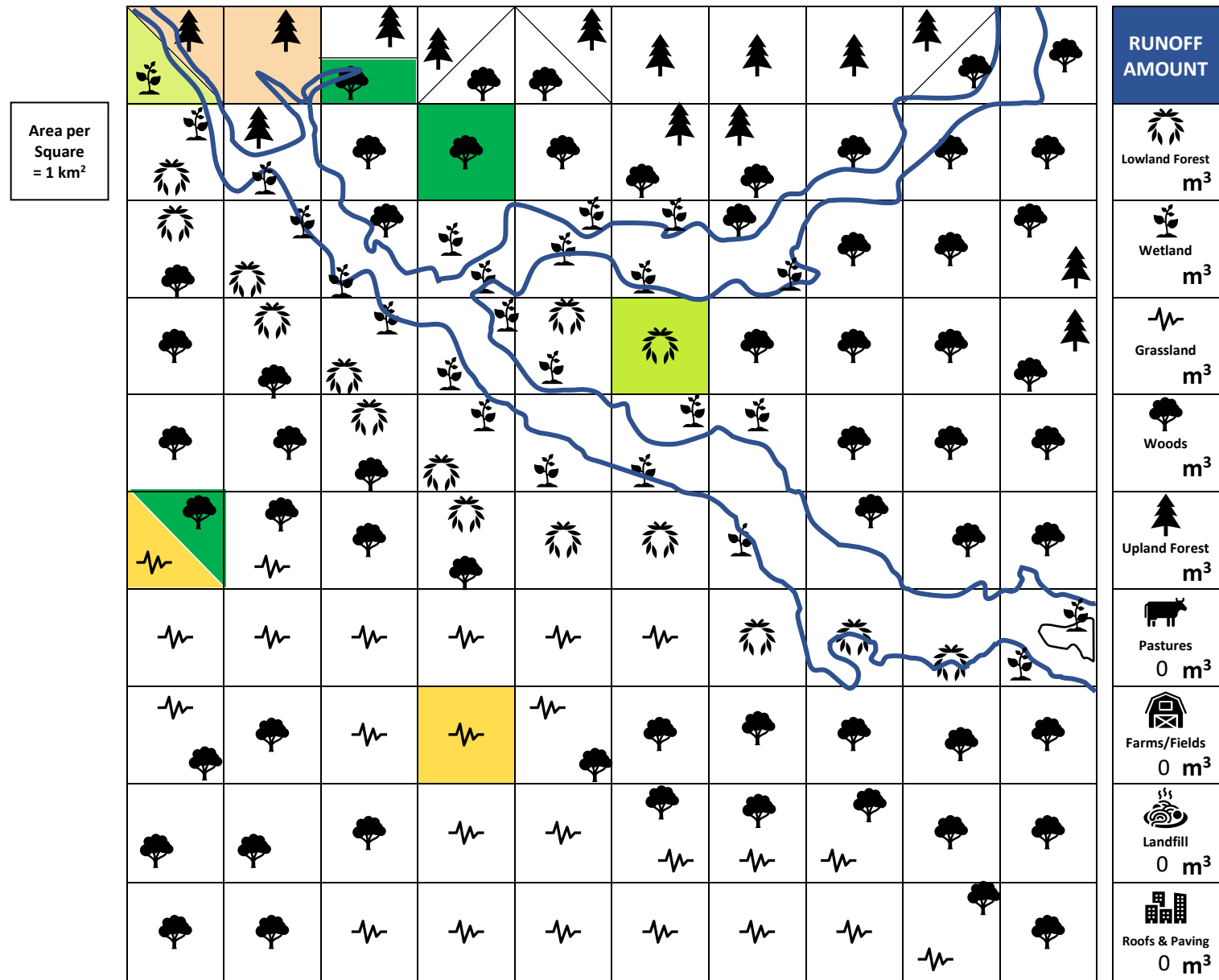
COUNT & RECORD THE TOTAL NUMBER OF MAP SQUARES = _____

LAND USE % of MAP	DIVIDE SQUARES WITH 2 SYMBOLS IN HALF DIAGONALLY   , HORIZONTALLY  , OR VERTICALLY 										
	CATEGORY	Water/River	Lowland Forest	Wetland	Grassland	Woods	Upland Forest	Pastures	Farms/Fields	Landfill	Roofs & Paving
	SYMBOL										
	SQUARES PER SYMBOL				20			0	0	0	0
	Calculate percent (%) of map covered by each land use (100%=1.0; 10%=0.1; 1%=0.01)				PERCENT (%) LAND USE = SQUARES PER SYMBOL ÷ Total MAP Squares x 100						
PERCENT (%) LAND USE				20%=0.2			0%	0%	0%	0%	

ON BACK OF PAGE, CONVERT & CALCULATE Map Area, Area of Each Land Use, Amounts of Rainfall & Runoff

LAND USE COLOR KEY										
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Use the LAND USE COLOR KEY as a guide to color the map squares.



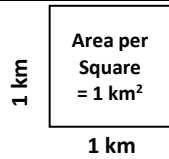
Describe possible **PAST** land use pollution sources:

TOTAL RUNOFF

CONVERT & CALCULATE

MAP AREA

CONVERT the total Map Area from square kilometers (km²) to square meters (m²).
 1 kilometer (km) = 1000 meters (m)
 1 km² = 1 km x 1km = 1000 m x 1000 m = 1,000,000 m²



NUMBER OF 1 km² MAP SQUARES = _____ km² = _____ m²

LAND USE AREAS

Calculate the area covered by each land use

LAND USE AREA = Number of km² per symbol x 1,000,000 m²

CATEGORY	Water/ River	Lowland Forest	Wetland	Grassland	Woods	Upland Forest	Pastures	Farms/ Fields	Landfill	Roofs & Paving
SYMBOL										
SQUARES PER SYMBOL				20			0	0	0	0
AREA OF EACH LAND USE				20,000,000 m ²			0 m ²	0 m ²	0 m ²	0 m ²

RAINFALL & RUNOFF

CONVERT the 5 centimeters (cm) of rain that fell evenly over the Map Area to meters.

1 centimeter (cm) = 0.01 meter
 5 centimeters (cm) = _____ meter

CALCULATE Amount of Rainfall (m³) on Map Area

= Map Area (m²) x Rainfall (m) = _____ m³

CALCULATE Amount of Rainfall (m³) on Each Land Use Area

= Land Use Area (m²) x Rainfall (m) = _____ m³

RAINFALL ON EACH LAND USE AREA				1,000,000 m ³			0 m ²	0 m ²	0 m ²	0 m ²
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CATEGORY	Water/ River	Lowland Forest	Wetland	Grassland	Woods	Upland Forest	Pastures	Farms/ Fields	Landfill	Roofs & Paving
SYMBOL										
% RUNOFF FROM LAND USE AREA	0%	5%	10%	10%	15%	15%	30%	40%	50%	90%

CALCULATE Amount of Runoff (m³) From Each Land Use Area

= Amount of Rainfall (m³) on a Land Use Area x % Runoff = _____ m³
NOTE: •More Plants = LESS Runoff •More Roofs/Paving=MORE Runoff/Pollution

AMOUNT OF RUNOFF FROM EACH LAND USE AREA				100,000 m ³			0 m ²	0 m ²	0 m ²	0 m ²
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TOTAL AMOUNT OF PAST/Pre-1800s RUNOFF = _____ m³

Describe possible affects or impacts of runoff:

LAND USE CHANGES WATER QUALITY: PRESENT/NOW

NAME: _____

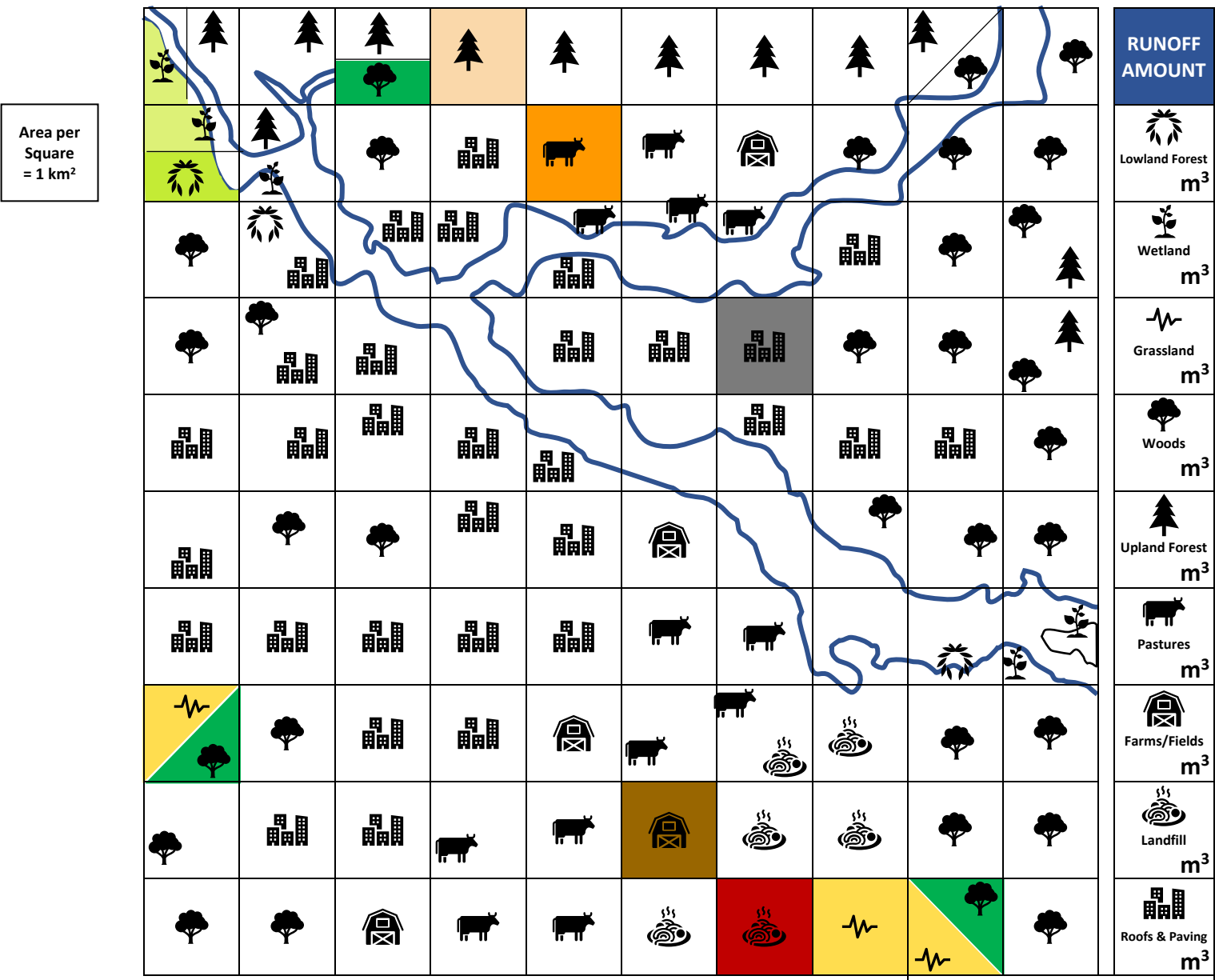
COUNT & RECORD THE TOTAL NUMBER OF MAP SQUARES = _____

LAND USE	DIVIDE SQUARES WITH 2 SYMBOLS IN HALF DIAGONALLY , HORIZONTALLY , OR VERTICALLY										
	CATEGORY	Water/River	Lowland Forest	Wetland	Grassland	Woods	Upland Forest	Pastures	Farms/Fields	Landfill	Roofs & Paving
	SYMBOL										
	SQUARES PER SYMBOL				2						
	Calculate percent (%) of map covered by each land use (100%=1.0; 10%=0.1; 1%=0.01)				PERCENT (%) LAND USE = SQUARES PER SYMBOL ÷ Total MAP Squares x 100						
PERCENT (%) LAND USE				2%=0.02							

ON BACK OF PAGE, CONVERT & CALCULATE Map Area, Area of Each Land Use, Amounts of Rainfall & Runoff

LAND USE COLOR KEY										
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Use the LAND USE COLOR KEY as a guide to color the map squares.

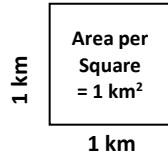


Describe possible **PRESENT** land use impacts or pollution sources:

CONVERT & CALCULATE

MAP AREA

CONVERT the total Map Area from square kilometers (km²) to square meters (m²).
 1 kilometer (km) = 1000 meters (m)
 1 km² = 1 km x 1km = 1000 m x 1000 m = 1,000,000 m²



NUMBER OF 1 km² MAP SQUARES = _____ km² = _____ m²

LAND USE AREAS

Calculate the area covered by each land use

LAND USE AREA = Number of km² per symbol x 1,000,000 m²

CATEGORY	Water/River	Lowland Forest	Wetland	Grassland	Woods	Upland Forest	Pastures	Farms/Fields	Landfill	Roofs & Paving
SYMBOL										
SQUARES PER SYMBOL				2						
AREA OF EACH LAND USE				2,000,000 m ²						

RAINFALL & RUNOFF

CONVERT the 5 centimeters (cm) of rain that fell evenly over the Map Area to meters.

1 centimeter (cm) = 0.01 meter
 5 centimeters (cm) = _____ meter

CALCULATE Amount of Rainfall (m³) on Map Area

= Map Area (m²) x Rainfall (m) = _____ m³

CALCULATE Amount of Rainfall (m³) on Each Land Use Area

= Land Use Area (m²) x Rainfall (m) = _____ m³

RAINFALL ON EACH LAND USE AREA				100,000 m ³						

CATEGORY	Water/River	Lowland Forest	Wetland	Grassland	Woods	Upland Forest	Pastures	Farms/Fields	Landfill	Roofs & Paving
SYMBOL										
% RUNOFF FROM LAND USE AREA	0%	5%	10%	10%	15%	15%	30%	40%	50%	90%

CALCULATE Amount of Runoff (m³) From Each Land Use Area

= Amount of Rainfall (m³) on a Land Use Area x % Runoff = _____ m³
NOTE: •More Plants = LESS Runoff •More Roofs/Paving=MORE Runoff/Pollution

AMOUNT OF RUNOFF FROM EACH LAND USE AREA				10,000 m ³						

TOTAL AMOUNT OF **PRESENT** RUNOFF = _____ m³
 - (Subtract) **PAST/Pre-1800s** TOTAL RUNOFF = _____ m³
 INCREASE IN AMOUNT OF RUNOFF _____ m³

Describe possible affects or impacts resulting from increased runoff: