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CE 5338

Hydrologic Engineering,

Professor Martin Pierson

HW 2

HW:

1:

1: Please read Chapter 3 of the Springfield MO "Flood Control and Water Quality Protection Manual" and write a one paragraph summary of what this chapter is about.

Chapter 3 covers hydrologic and geographical data. To implement stormwater draining and management practices a reliable and accurate set of data is necessary. Rainfall, storm runoff and flood, geography, stormwater system inventory, and geographic information system are taken into account for data collection. This is important because hydrological engineering is based on hydrological science. A fundamental understanding of the conditions can lead to appropriate design and management.

2:

2: Please choose one of the subtopics in Chapter 2 (i.e. 2.1 or 3.3 etc) and summarize "Why that subtopic is important" in one paragraph. Note: I'm not looking for you to restate the paragraph here. Draw on your own knowledge or other resources to make your case.

Section 3.1 is about rainfall. Rainfall is the primary source of water in an urban setting. Springfield, MO maintains a resource website, www.springfieldmo.gov/stormwater, for rain gauges. To obtain the rain gauge to calculate hydrographs for Missouri contact

Carrie Lamb

Water Quality Compliance Officer

e: clamb@springfieldmo.gov

o: 417.864.1996

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3:

3: Please read Chapter 4 of the Springfield MO "Flood Control and Water Quality Protection

Manual” and write a one paragraph summary of what this chapter is about.

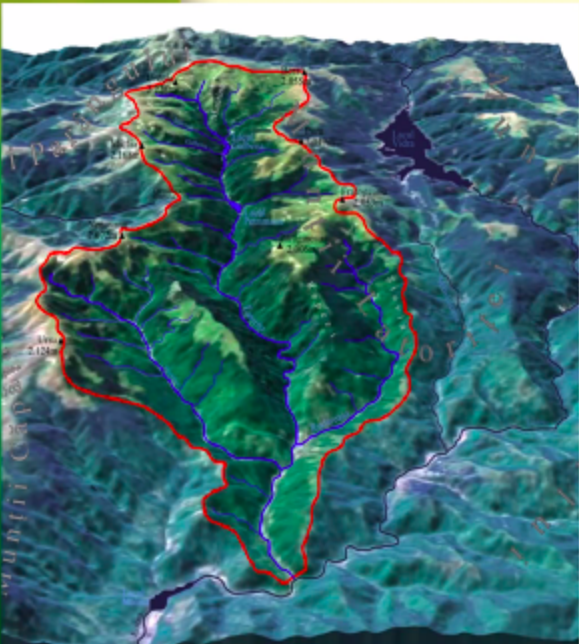
Chapter 4 is about planning. Planning is to management what modeling is to analytical assessment. That is planning is the chosen solution that water management officials have chosen to the conditions of a problem. Building upon scientific drainage principals watershed plans and their priorities are then developed. These include watershed assessments, watershed plans, project priority list, and project development, construction, and maintenance.

4:

4: Please choose one of the subtopics in Chapter 4 (i.e. 2.1 or 3.3 etc) and summarize “Why that subtopic is important” in one paragraph. Note: I’m not looking for you to restate the paragraph here. Draw on your own knowledge or other resources to make your case.

Microsoft PowerPoint - [PowerPoint Slide Show - JCE 6308 - Introduction 2022.pptx]

HYDROLOGY | watershed | characteristic factors



Topography
Topography determines the **speed** with which the runoff will reach a river. Clearly rain that falls in **steep** mountainous areas will **reach the river faster** than flat or gently sloping areas.

Shape
Shape will contribute to the **speed** with which the runoff reaches a river. A **long thin catchment** will take **longer** to drain than a circular catchment.

Size
Size will help determine the **amount** of water reaching the river, as the **larger the catchment** the **greater** the potential for **flooding**.

Soil type
Soil type will help determine **how much** water reaches the river. **Sandy soils** are very **free draining** and **rainfall** on sandy soil is likely to be **absorbed** by the ground. **Clayey soils** can be almost **impermeable** and therefore rainfall on clay soils will **runoff** and contribute to flood volumes.

Land use
Land use can contribute to the **volume** of water reaching the river, in a similar way to clay soils. For example, rainfall on roofs, pavements and roads will be collected by rivers with almost no absorption into the groundwater.

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Above is an image of a possible watershed. A plan would basically be how one would implement different engineering solutions, per approach, in response to say a possible rainfall