

Stormwater Management David Zokaites January 7, 2020

Corrected October 17, 2020

Two Views of Waterways

- 1) Accept, enjoy, protect nature and habitat
- 2) Something to control, manage, pollute

Global Warming

- Increases extreme weather
- 500 year flood more common
- 500 year rain event more common
- Refine zoning to compensate:
- Increase elevation requirements
- Larger no-build buffer around streams
- Require better drainage

City Building Standards

- Development drains stormwater at 80% of farmland rate – slower [corrected Oct 2020 per Andy Berg, city stormwater manager]
- Because $80\% < 100\%$, development reduces flooding [corrected]
- Buildings designed for 5 year rain event, 3.5” in 24 hours
- Sewers and roads set for 100 year storm, 6” in 24 hours

Channelization

- Confine water to a small canal
- Frees land for commerce
- Increases erosion, downstream flooding
- Destroys valuable habitat

Channelization by Benson Rd



Levees

- Artificial earth mound along river (or lake)
- Channelization on a grand scale
- Reduce flood risk by keeping water back
- Increase flood risk by allowing construction
- Fail occasionally
- Our city has 1% levees plus 2 feet freeboard
- Protect much of Sioux Falls

Channelized Big Sioux

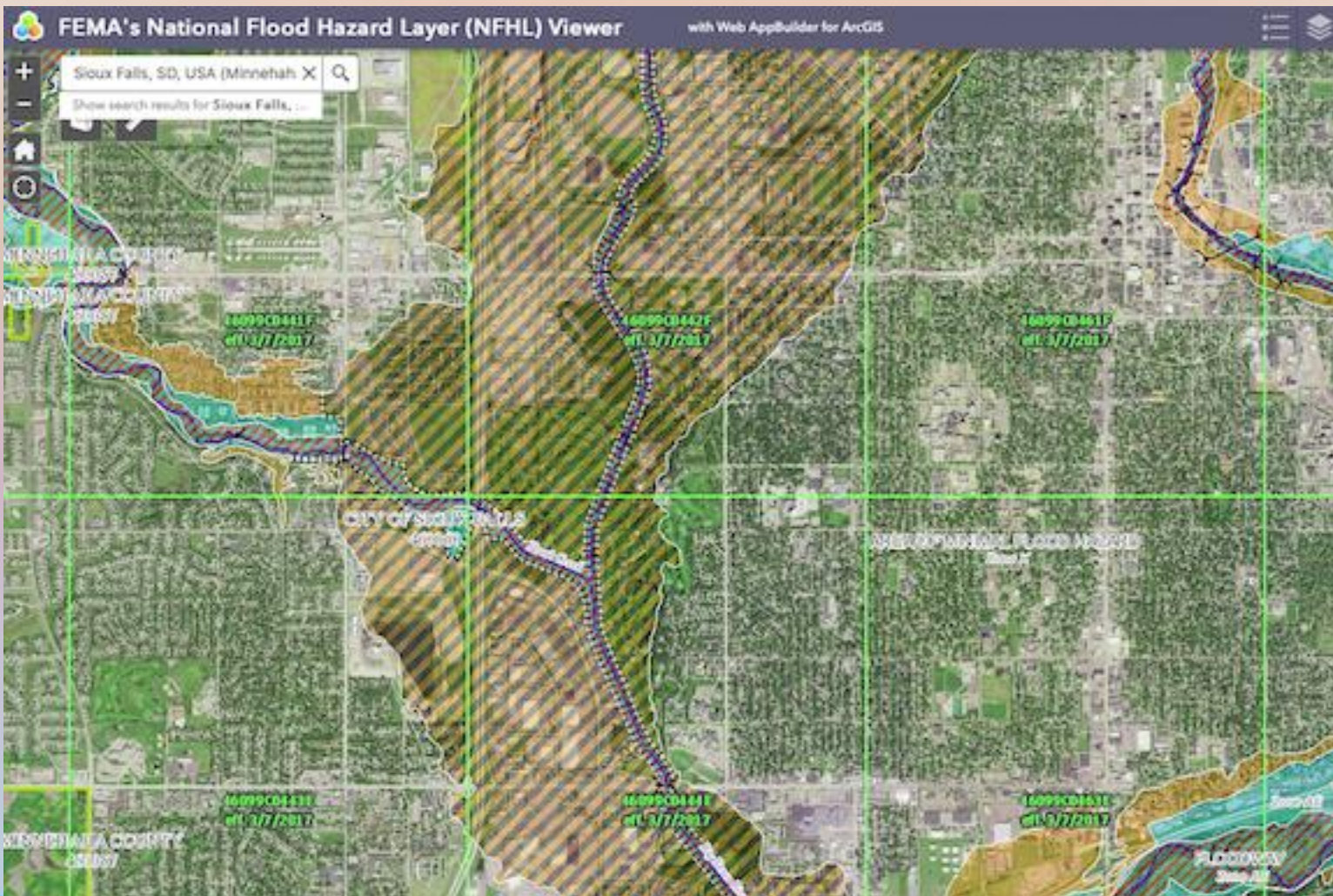


Building In Floodplain

- Reduces area for safe flooding
- Encourages channelization
- Developers profit
- Owners want government help
- Too risky, bad idea

Floodplain Map (West SF)

Shaded orange shows floodplain protected by levee
Let's hope these levees don't fail



Roadway Flood

Image Argus Leader 3/14/2019. 41st & Louise
High river & iced sewers slowed storm drainage



Roadway Flood (41st & Cliff)

September 13, 2019, in floodplain



Risky Construction

Image 10/15/2019 City Council, 3104 N Galaxy Lane



Reducing Flood Risk

- City recently bought giant stormwater pumps
- Don't channelize waterways
- Reserve floodplain for habitat
- And ...

Water Permeable Pavement

- One vendor is TrueGrid of Houston
- Gravel contained in plastic cells
- Good up to 30 mph in all climates
- For parking lots, parking lanes, slow roads, gutter
- Filter, clean runoff, reduce pollution
- Reduce urban heat
- Reduce need for storm sewer
- Trial implementations needed

Rooftop Detention Ponds

- Roofs designed for winter snow weight
- Spec is 34 pounds per sq foot, 6.5" water
- Could release stormwater slowly
- Incorporate valve, electronics, weather info

Enjoy Our Watery City

