Town of Jamestown
Land Use Planning and Stream Corridor Master Plan
Community Meeting #3

December 18, 2013
Here’s our agenda for tonight.

- Introductions
- Initial results of Stream Corridor Master Planning effort – Community Stream Model
- Next steps
- Q/A
With your help we will continue to make progress

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Objective 1
Watershed Assessment

Objective 2
Existing Hydrology and Hydraulics

Objective 3
Alternatives Analysis

Community Meeting Dec 3
Community Meeting Dec 18
Community Meeting Dec 10
Community Meeting – Jan 14
Alternatives for public review Jan 7
Final Stream Master Plan CLOMR – Jan 23
Comp Plan Framework

Community Engagement and Land Use Planning Assistance
Timeline, Milestones and Meetings

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Objective 1: Watershed Assessment
Objective 2: Existing Hydrology and Hydraulics
Objective 3: Alternatives Analysis

Community Engagement and Land Use Planning Assistance

- Community Meeting Dec 3
- Community Meeting Dec 10
- Community Meeting Dec 18
- Final Stream Master Plan CLOMR – Jan 23
- Comp Plan Framework
- Alternatives for public review Jan 7
- Community Meeting Jan 14
We use models to understand stream channel form.

- **Stream channel form is a result of:**
  - Streamflow (from precipitation)
  - Sediment supply (watershed slopes, debris flow, channel migration)
  - Morphologic controls (e.g., valley pinches, roads, bridges)

- **Any particular channel is an expression of the relationship of these processes**

- **To understand the relationships, we collect data in the field, and we model**
Stream Equilibrium - Readjustment

\[(\text{Sediment LOAD}) \times (\text{Sediment SIZE}) \propto (\text{Stream SLOPE}) \times (\text{Stream DISCHARGE})\]
Studies of rainfall
Slope-area calculations
Flow competence (the ability of the flow to move material)
Debris flow geomorphology

Understanding the flow is a first step.
Debris flows behave differently.

- Relatively few direct observations
- Capacity to carry large boulders long distance
- High erosive capacity on channel sides
- Up to 6 times the shear stress on channel beds compared to flood flow
- Bedrock scour observed: 12 ft in less than 24 hours
- Surges: Temporary damming and breaching of channels by debris, and channel avulsions
Historical Data

- Maps and field evidence

1883 Plat Map

Pre-Flood Channel Alignment

Post-Flood Alignment
Your Observations, photos, and videos are very helpful

Photos and Videos from the flood

Civil Air Patrol Photos
We also use old Flood Insurance Rate Maps.
The model is accurate compared to aerial photos.
The model will now help us assess changes in stream alignment, terrain, and hydraulics.
The Channel Migration Zone model shows how the stream corridor has changed over the years.

**Channel Migration Zone**

![Channel Migration Zone Diagram]

- **1883 Historic Channel**
- **Preflood Channel**
- **Post-Flood Channel**
- **Post-Flood Scour Zone**
Inundation mapping illustrates the extent of flooding.

- Hydraulic Modeling – HEC-RAS
Stream Power is the stream’s ability to do geomorphic work (move stuff).

Hydraulic Modeling – Flow Competence

Civil Air Patrol Photo (Gillespie Gulch)
The stream corridor has moved significantly since 1883.
The stream corridor has moved significantly since 1883.

Looking Upstream: Sec 6 - 167 Main

Cross Sections From Here

Civil Air Patrol Photo

Pre-Flood Channel

Post-Flood Channel

1883 Channel

The stream corridor has moved significantly since 1883.

Looking Upstream: Sec 6 - 167 Main

Cross Sections From Here

Civil Air Patrol Photo

Pre-Flood Channel

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1883 Channel

The stream corridor has moved significantly since 1883.

Looking Upstream: Sec 6 - 167 Main

Cross Sections From Here

Civil Air Patrol Photo

Pre-Flood Channel

Post-Flood Channel

1883 Channel

The stream corridor has moved significantly since 1883.
Models show us new channel alignment, scour, and deposition.
There is significant deposition and drastic changes in channel alignment at the east end of town.
Channel alignment, slope and stream energy have changed drastically.
What are the next steps?

- Refine HEC-RAS flood model
- FIRM Reassessment for CLOMR
- Assess who is impacted and why
- Evaluate risk and opportunity by individual property
- Determine ‘best’ alignment for the stream based on protecting the Town while preserving Town Culture
Revise the Flood Insurance Rate Map (FIRM)
NRCS Emergency Property Protection

20 Main St
A low area approximately 80 ft in length put the home danger of flooding during high flows.
Recommend: 1. Debris removal (approximately 45 cy);
2. Armoring with riprap (approximately 160 cy).

17 Ward St
Bottom of stream bed is now 2 ft higher than it used to be. This poses a danger during spring runoff which will be significantly higher than it is now. Recommend pushing rock back toward house; give stream more capacity; provide more protection for runoff.
We continue to need your input!

- Meetings
  - December 18th and December 19th from 1pm-4pm in Jamestown
  - Open Forum on December 19th from 5:30pm-7pm in Boulder at the Caribou Room in the Boulder County Courthouse Annex

- Online/hardcopy survey
- Website
- Communication Plan
Questions?