

Lake Austin – Meredith Storm Drain Improvement Project



Flooding on Meredith St.,
November 2001

Neighborhood Meeting
April 21, 2015

Introductions

Watershed Protection Department

- ❖ Jorge Morales, P.E., Supervising Engineer
- ❖ Angela Todd-Sheremet, P.E., Ph.D., Engineer C
- ❖ Sylvia Pope, P.G., Hydrogeologist

Klotz Associates

- ❖ John Friedman, P.E., Senior Project Manager

Two Types of Flooding



After Flooding on Meredith St.,
January 2012

- ❖ **Creek Flooding:**
Occurs when a creek rises over its banks.
- ❖ **Localized Flooding:**
Occurs away from creeks.

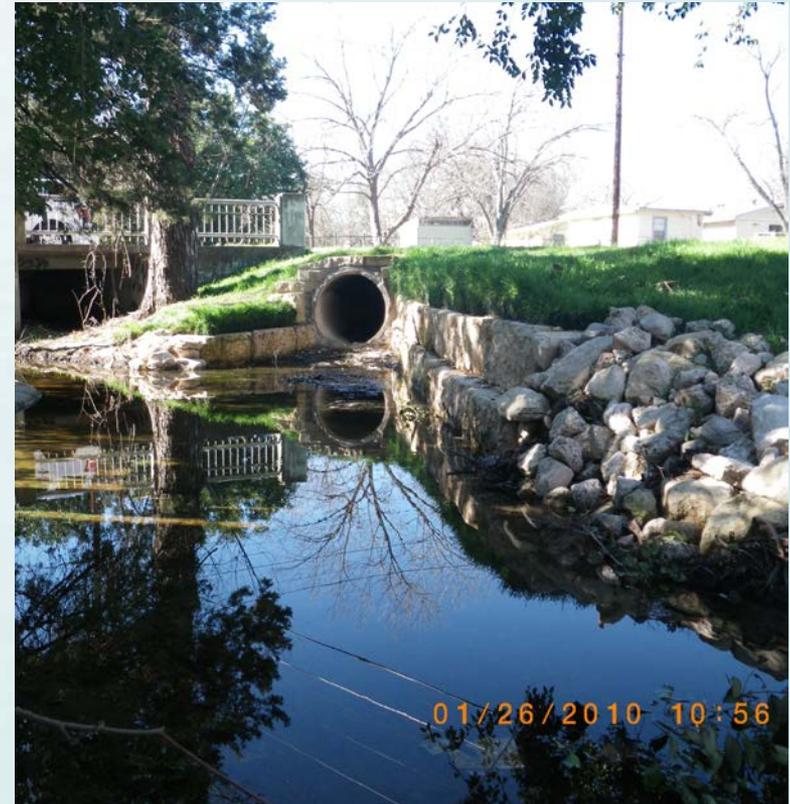
What Is A Storm Drain System?

- ❖ System of ditches, pipes and culverts
- ❖ Drains rainfall from streets to prevent flooding
- ❖ Inlets are placed along curb to catch rainfall



Typical Storm Drain System

- ❖ Rain water is carried underground through pipes
- ❖ Water is usually released into a creek or lake.

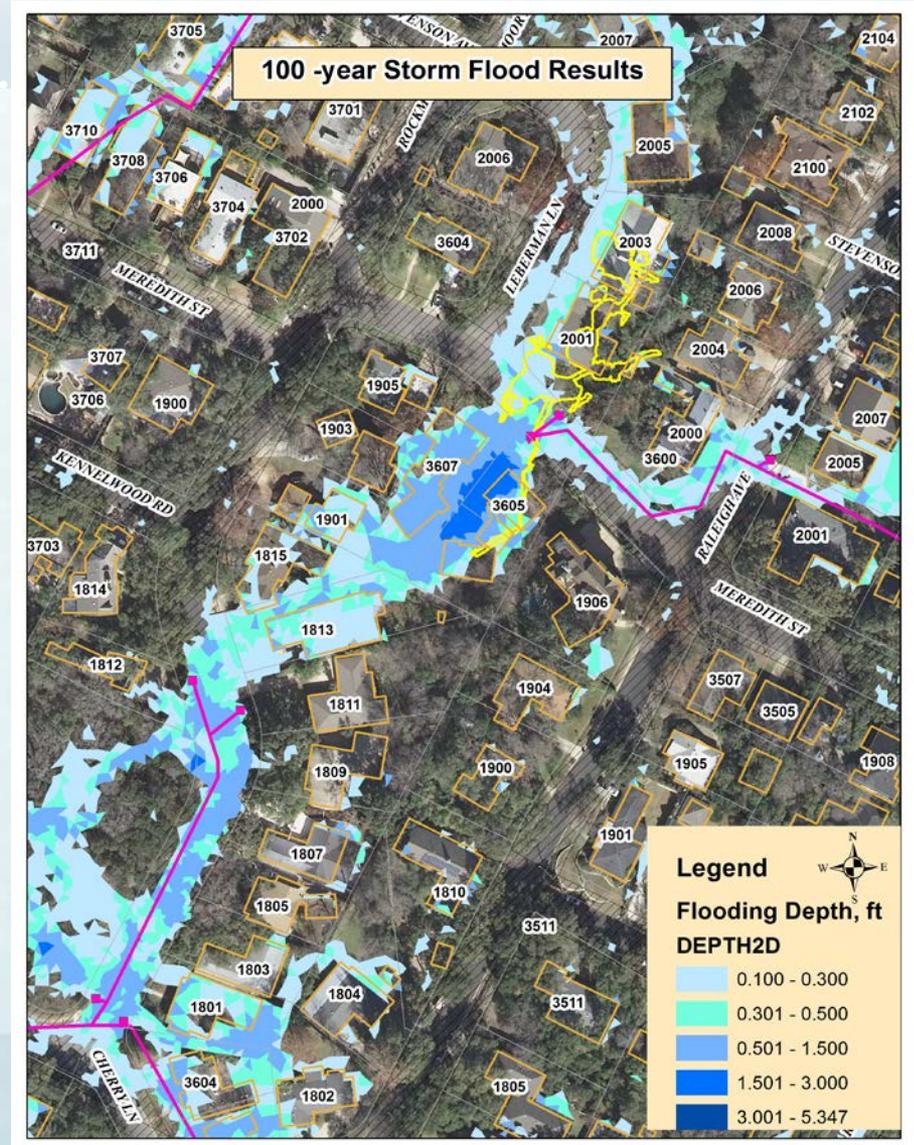


Meredith Storm Drain System

- ❖ Built in 1960s under a different set of standards
- ❖ Is old, undersized and deteriorating
- ❖ Releases rain water into a cave
- ❖ Cave has partially collapsed due to discharge



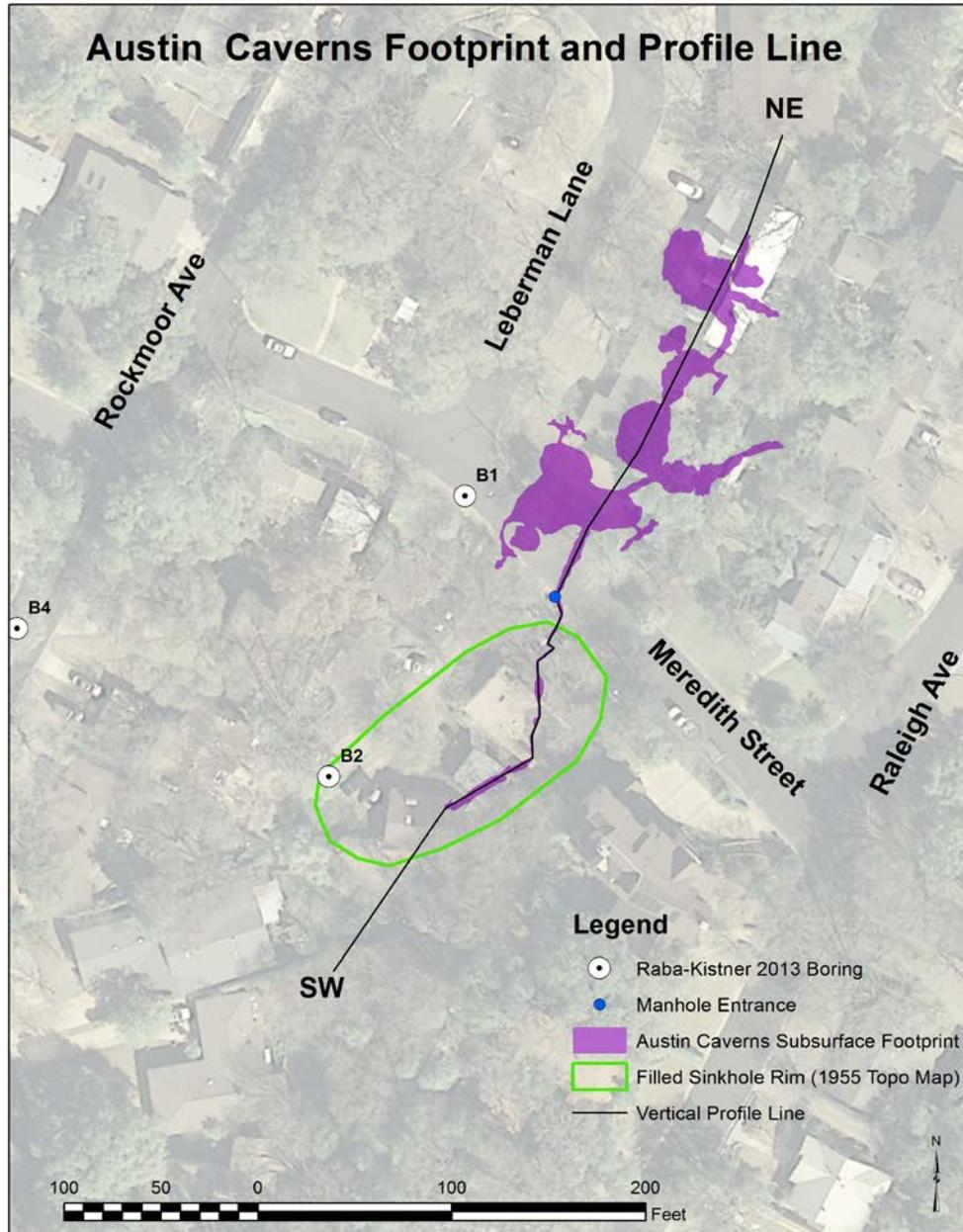
Flooding Problems



Flooding Problems



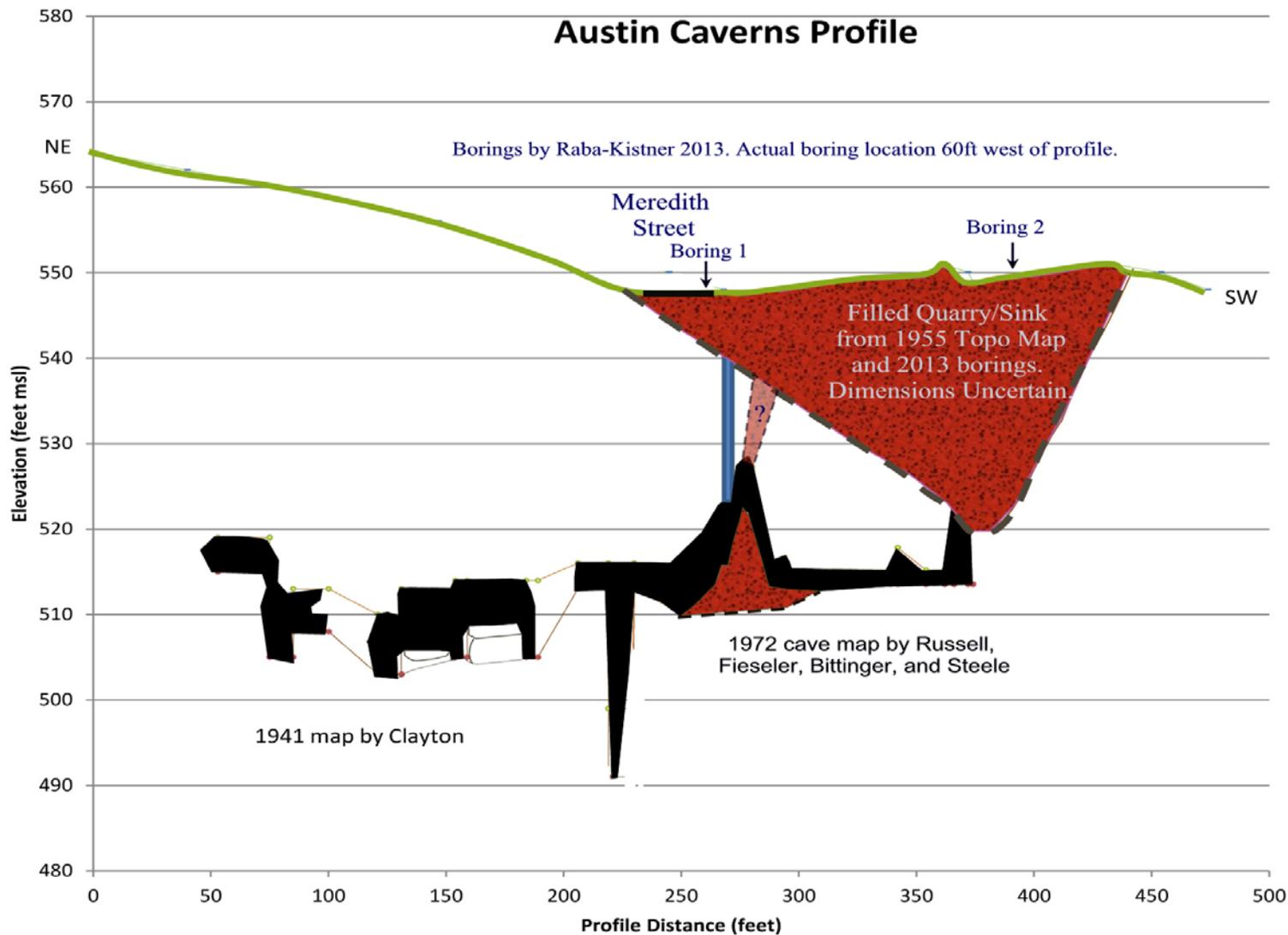
Austin Caverns: Center of Meredith Street Drainage Improvements



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Austin Caverns Profile



Staff compiled cave maps and boring log data to produce this cross-section. Depth of larger cave passages below house to the north is approximately 35 to 40 feet. Narrow south passage is approximately 25 feet below triplexes to the south.



Largest cave chambers to the north (right) are inaccessible.

Current cave entrance is via the curbside inlet at 3605 Meredith Street.



Vertical pipe in the inlet has shifted over 40 years.



Exit of pipe into Austin Caverns south passage on 6/25/04, before project to clean out debris

Before 1998, the northern passage was accessible through a gap in the rocks.



Exit of pipe after debris cleaned out. Corrugated pipe is for ventilation due to carbon dioxide levels.



View of south passage after debris cleaned out. Blocks on floor indicate collapse of ceiling within last 30 years. Contractor was unable to excavate to find 1970s second entrance.

Cave Issues: Storm Drain Discharge

- ❖ Cave impacted by quarrying, blasting cave entrances shut, infrastructure and residential development
- ❖ Unknown if cave passage size, shape or stability has changed
- ❖ Considered a Class V injection well by EPA
- ❖ Changes require compliance with current TCEQ regulations of Class V injection wells
- ❖ Potential aquifer contamination with discharge of storm water from storm drain system

Cave Issues: Deterioration of Pipe

- ❖ Concrete segments are offset; reports of street work near pipe
- ❖ Erosion and settlement undermined pipe at cave floor
- ❖ Cobble backfill has blocked view to assess current conditions
- ❖ Carbon dioxide levels and pipe instability require safety plan and engineering design for inspection entry

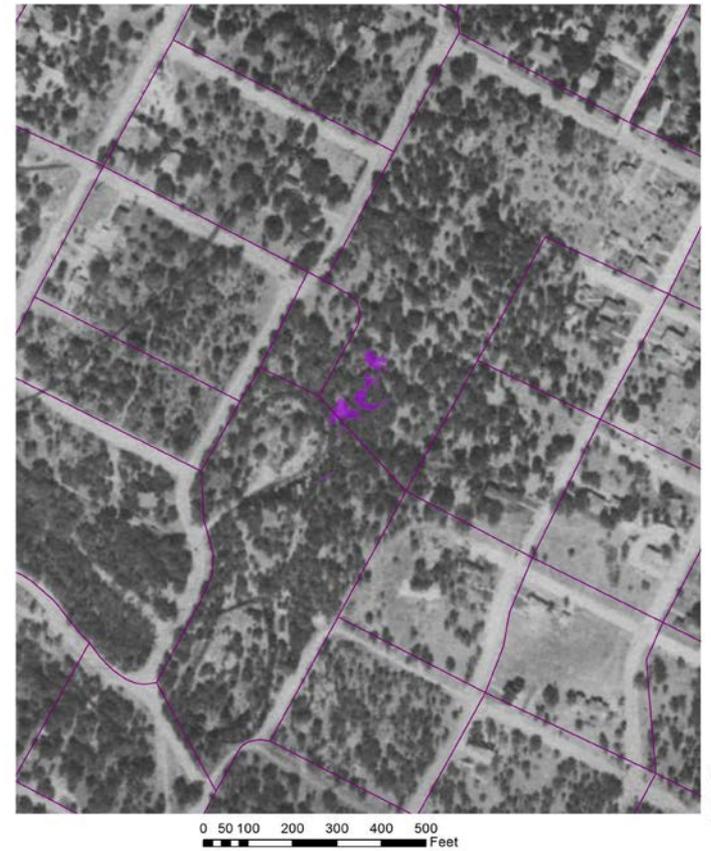
Cave Challenges

- ❖ Flood relief – cave capacity reduced
- ❖ Water quality
 - Water of undesirable quality, potentially impacting nearby springs
 - Water and sewer pipes may be leaking into cave; water discharges observed inside the standpipe
 - TCEQ regulations require treatment of stormwater
- ❖ Safety
 - Unknown if stability of cave affected by stormwater
 - Reduce volume to reduce impact
 - Monitor construction to detect ground movement
- ❖ Doing nothing is not an option

Why Did It Happen?

- ❖ Intense development of neighborhood in 1960s
- ❖ No drainage review during development
- ❖ No regulation on cave recognition or cave protection

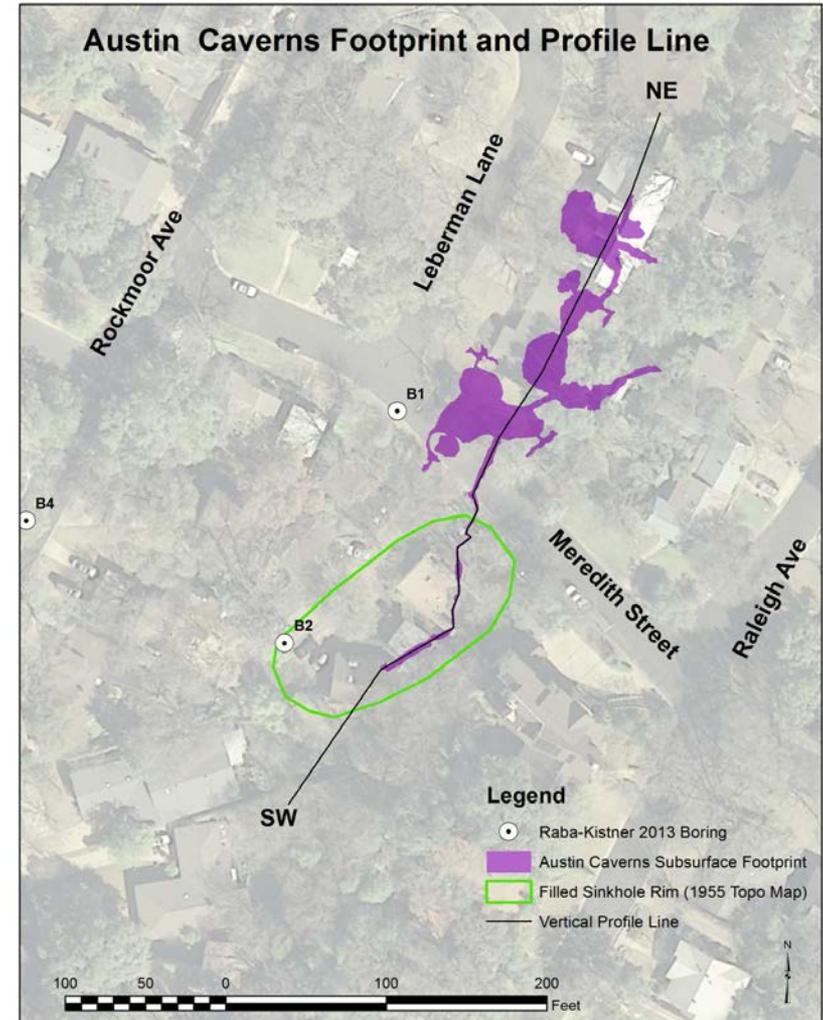
1940 Aerial Photo of Austin Caverns Area



Project Status

- ❖ Public meeting in November to present alternatives and gather input
- ❖ Neighborhood preferred buyouts (Alternative 3)
- ❖ Preliminary Engineering Report is being finalized
- ❖ Alternative 4 recommended in report
- ❖ Needs more internal review before proceeding with design

Recommended Alternative



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Advantages of Alternative 4

- ❖ Avoids construction through the cave, which could affect the cave and compromise residential structures integrity.
- ❖ Reroutes majority of discharge into the cave to help prevent further cave erosion and restore natural balance.
- ❖ Buyouts will not help cave, stabilize cave or restore its ecosystem, undermined by residential development in 1960s.

Alternative 4

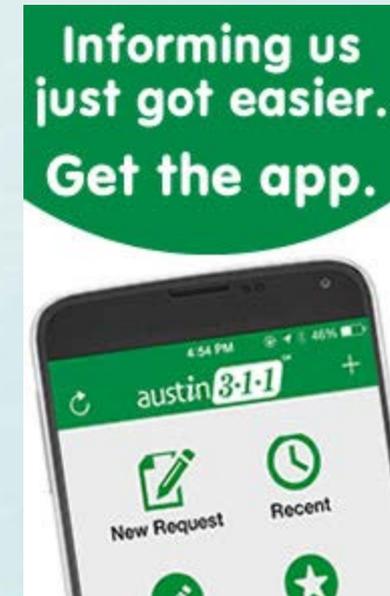
- ❖ Compromise to alleviate flooding and ease the situation with the cave deterioration.
- ❖ Risk is always present – doing nothing is a significant risk.
- ❖ Road closures and construction are temporary disruptions.
- ❖ Public safety is the City priority.

Estimated Project Timeframe

- ❖ Summer 2015: Internal Review
- ❖ Fall 2015 – Summer 2016: Design Phase
- ❖ Fall 2016 – Spring 2018: Construction

Resources Available:

- ❖ Purchase flood insurance.
- ❖ Report flooding and drainage concerns to 3-1-1.
- ❖ Avoid building in drainage easements.
- ❖ Consider flood proofing your home. Email floodpro@austintexas.gov for more information
- ❖ ATXfloods.com



Questions?

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