



MAP
CHANGE

Finding your way out of the
map revision wilderness

Brian Chaille, P.E., CFM
Chris Hanstad, E.I.T., CFM

Man vs. Map Change



Les Stroud



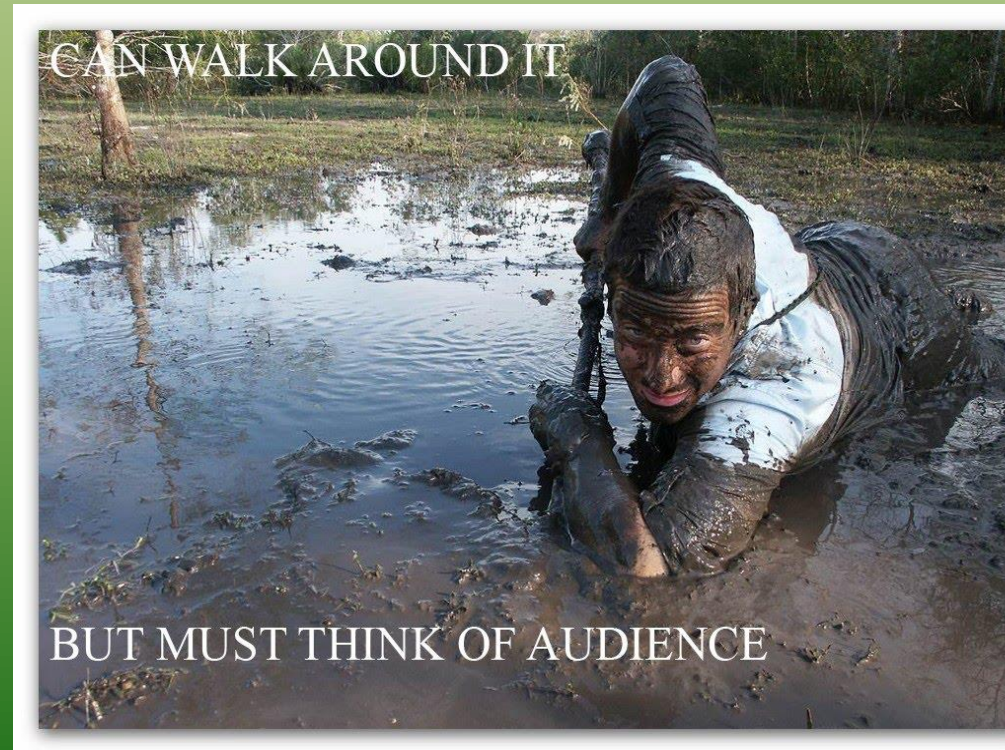
Bear Grylls

Do I Really Need a Map Change?

- Map changes are often required when...
 - A proposed project will affect hydrologic or hydraulic conditions in a regulatory flood zone
 - Better data which changes BFEs becomes available (CFR 44 part 65.3)
 - A conditional map change may be required by a community even when N.F.I.P. does not
- In general, a proposed project inside a regulatory flood zone requires a map change

Do I Really Need a Map Change?

- Map changes are often desirable when...
 - The effective regulatory models contain errors or natural changes have occurred since the models were developed
 - Structures on natural grade above BFE are incorrectly shown in the floodplain



Types of Map Changes

MT-1 Map Changes

- Letter of Map Amendment (LOMA)
- Conditional letter of Map Amendment (CLOMA)
- Letter of Map Revision Based on Fill (LOMR-F)
- Conditional Letter of Map Revision Based on Fill (CLOMR-F)

MT-2 Map Changes

- Letter of Map Revision (LOMR)
- Conditional Letter of Map Revision (CLOMR)
- Physical Map Revisions (PMR)

Letters of Map Amendment LOMAs/CLOMAs

- Existing/proposed structures or property where **Natural Grade** is above base flood elevation (BFE)
- Correct areas inadvertently included in regulatory flood zones
- Engineered fill placed *before* the area was first identified in a regulatory flood zone is considered natural grade
- Conditional LOMAs not required by NFIP but may be required by community

Letters of Map Revisions Based on Fill LOMR-Fs / CLOMR-Fs

- Existing/proposed structures or property elevated above BFE by placement of **fill**
- Not allowed in for areas within the regulatory floodway
- Conditional LOMR-Fs not required by NFIP but may be required by community

LOMRs / CLOMR / PMRs

- Changes in either hydrologic or hydraulic conditions result in changes in BFEs
 - New study/methodology/error correction
 - Proposed projects cause changes in BFEs
- Redefines the regulatory flood zones
- Results in revised annotated maps or reissued map panels
- CLOMRs are required when a proposed project increases BFEs

LOMR vs. PMR

- LOMR – Letter that supersedes a portion of the effective map panel



- PMR – Issues a new map panel



Surviving the CLOMR/LOMR/PMR jungle...

- Where to go to find and teach yourself what you need to know
- Where to find tools that may help
- An outline of a very complicated process

We will not cover ...

- H & H 101 through graduate school
- Every FEMA regulation and requirement

Understand Your Environment:

Title 44: Code of Federal Regulations (CFR)

- PART 59 — GENERAL PROVISIONS
- PART 60 — CRITERIA FOR LAND MANAGEMENT AND USE
- PART 65 — IDENTIFICATION AND MAPPING OF SPECIAL HAZARD AREAS
- PART 70 — PROCEDURE FOR MAP CORRECTION
- PART 72 — PROCEDURES AND FEES FOR PROCESSING MAP CHANGES



CFR 44

- www.access.gpo.gov/nara/cfr/waisidx_02/44cfrv1_02.html
- e-CFR *Disclaimer*: “It is not an official legal edition of the CFR. The e-CFR is an editorial compilation of CFR material and Federal Register amendments produced by the National Archives and Records Administration's Office of the Federal Register (OFR) and the Government Printing Office. The OFR updates the material in the e-CFR nearly every day. **The current update status appears at the top of all e-CFR web pages**”
- www.ecfr.gov

Gear-Up!

Basic Sources of Guidance

- MT-2 Forms and Instructions
 - www.fema.gov/plan/prevent/fhm/frm_form.shtm
- HEC-RAS Users Manual & Hydraulic Reference Manual
- Guidelines and Specifications (G&S) for Flood Hazard Mapping Partners
 - Apndx C: www.fema.gov/library/viewRecord.do?id=2206
 - Procedure Memorandums (supersede G&S)
 - www.fema.gov/plan/prevent/fhm/gs_memos.shtm

NEW!

Online Letter of Map Change!

- Soon, applicants will be able to request all types of LOMCs online:

CLOMA	CLOMR	CLOMR-F
LOMA*	LOMR	LOMR-F

***Available now!**

- FEMA will phase-in the rest throughout 2013
- When phase-in is complete, Online LOMC may be used in place of the MT-EZ, MT-1 and MT-2 forms
- Differs from e-LOMA, **no professional license to required to register**

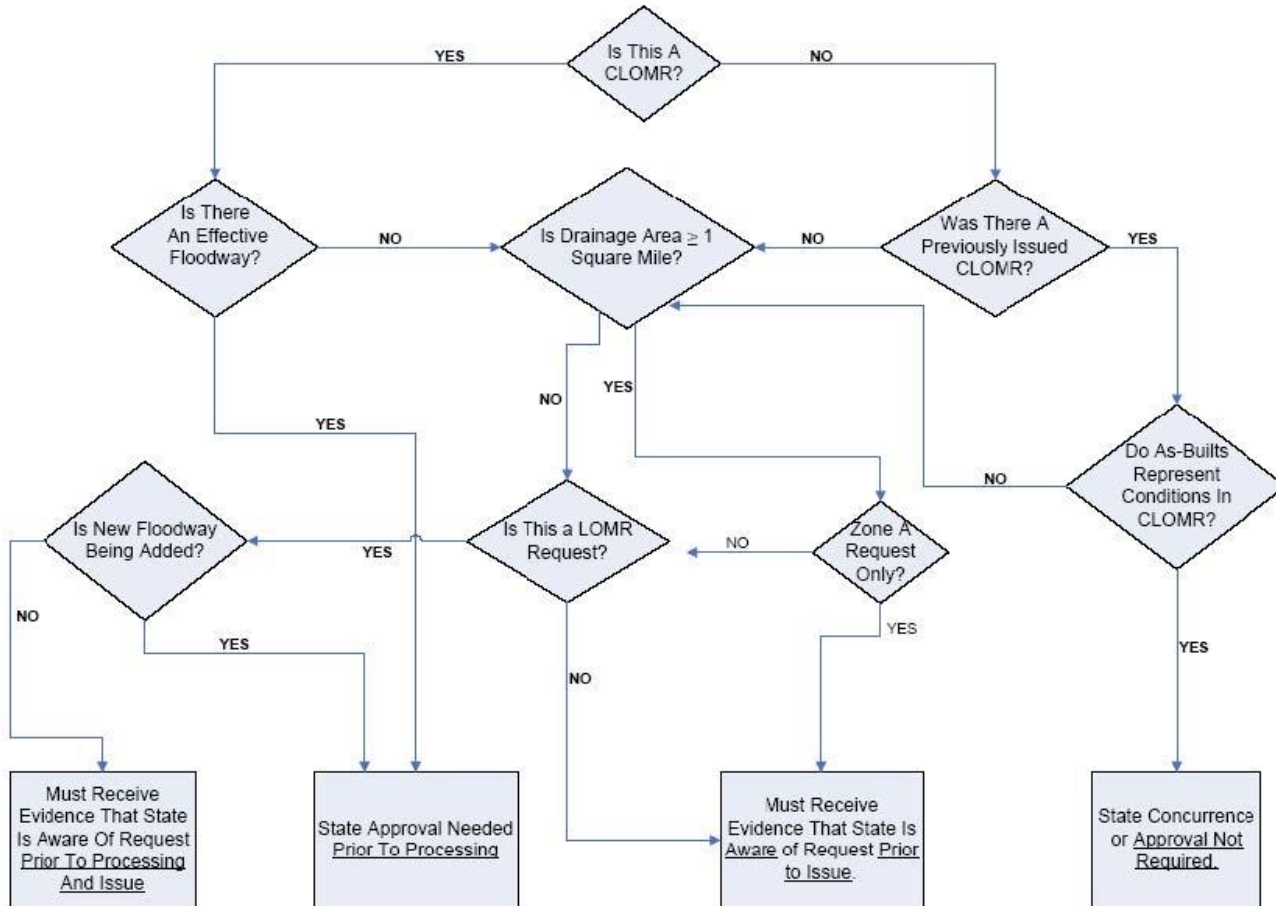
Initial Review

(Inventory of submitted data)

- Maybe less than 5% of Applications include everything in the first submittal
- Most Common Omissions:
 - **Fee**
 - All Forms Required
 - Community Acknowledgement (**Adjacent Impacted Community**)
 - **Compliance with Section 7 of Endangered Species Act**
 - **All models in an executable digital file format**
 - Topo Work Maps and Watershed Boundary Maps
 - **Public Notice of Floodway and BFE Changes**
 - **IDNR-OWR Concurrence**
- Typically we will request additional data in the form of a 316-AD letter. This officially puts the “ball in your court”.

IDNR-OWR Concurrence

ILLINOIS DEPARTMENT OF NATURAL RESOURCES (IDNR) APPROVAL RELATED TO THE LOMR PROCESS



See: <http://www.illinoisfloodmaps.org/>

Dam!

For regulatory purposes the Illinois Department of Natural Resources Office of Water Resources (IDNR-OWR) defines a dam as:

“All obstructions, walls, embankments or barriers, together with their abutments and appurtenant works, if any, constructed for the purpose of storing or diverting water or creating a pool.”

IDNR-OWR has regulatory authority over dams in the state, independent of contributory drainage area, normal pool elevation, height, class or impoundment. Some small Class III dams do not require a permit. If a permit is required, (either formal or general permits) Section D of Form 3 is required in full. At a minimum a Jurisdictional Determination is required from the IDNR-OWR Dam Safety Permit Program.

Detailed Review

- **Effective Conditions and Models**
- Hydrology (*beware!*)
- Hydraulics
- Section 7 Compliance Endangered Species Act

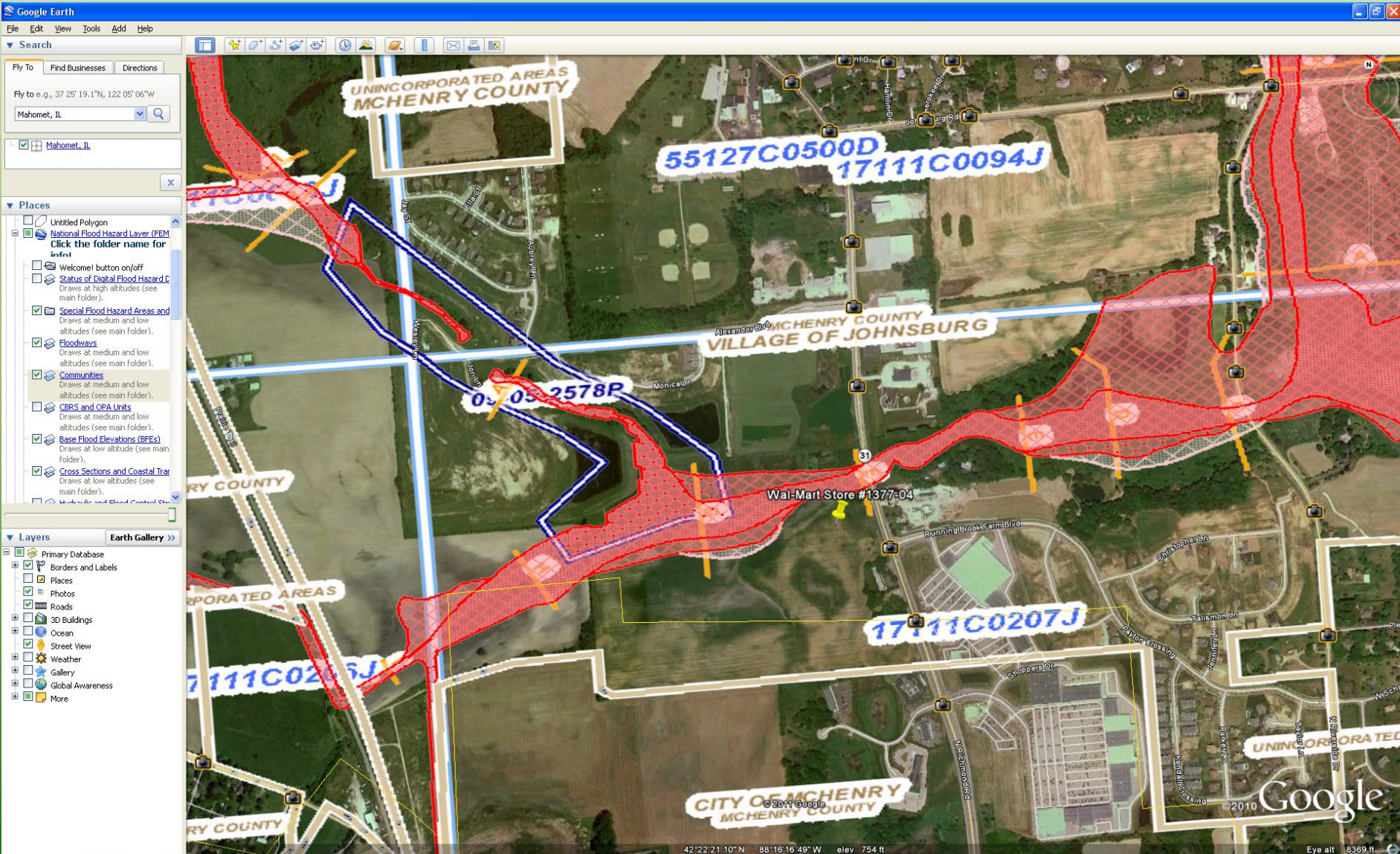
Floodway
Encroachment?



Effective Conditions and Models

- Useful tools to research the effective maps and models (how to find LOMC's)
- **National Flood Hazard Layer Web Map Service (NFHL-WMS) in Google Earth™**
 - <https://hazards.fema.gov/femaportal/wps/portal/NFHLWMSkmzdownload>
- The National Flood Hazard Layer (NFHL) contains information used to make flood hazard maps and allows you to view data from the National Flood Hazard Layer as an overlay in Google Earth. NFHL is available only as D-FIRMS go effective.
- See: <http://www.illinoisfloodmaps.org/>

(NFHL-WMS) in Google Earth™



FEMA

Mapping Information Platform (MIP)

- www.hazards.fema.gov/femaportal/wps/portal/
- Map Viewer (similar results as Google Earth)
- Web Map Service (WMS) for the FEMA National Flood Hazard Layer (NFHL) for GIS Software
 - www.fema.gov/library/viewRecord.do?id=3292
- Engineers, Surveyors, and Architects
 - www.fema.gov/engineers-surveyors-architects
- LOMC Clearinghouse
- (Please don't send your applications here! Requests take an extra 2-weeks to arrive and come unbound)

Obtaining Effective Models

- FEMA Engineering Library
 - http://www.fema.gov/plan/prevent/fhm/st_order.shtml
- Illinois State Water Survey
 - Bill Saylor: (217) 333-0447
wsaylor@illinois.edu
 - Bill often has the original documents and a thorough understanding of the history of effective studies (ISWS is phasing out of repository duties).
- Original study contractor or LOMC engineer

FEMA Acceptable Models

http://www.fema.gov/plan/prevent/fhm/en_hydro.shtm

http://www.fema.gov/plan/prevent/fhm/en_hydra.shtm

The image shows a screenshot of the HEC-RAS website and its software interface. On the left is the website's navigation menu, and on the right is a windowed view of the HEC-RAS software.

Website Navigation:

- US Army Corps of Engineers
- HEC-RAS
 - Features
 - What's New
 - Download
 - Documentation
 - Demo
- HEC-GeoRAS
 - Downloads
 - Known Issues
- Support
 - Bug Report
 - Suggestions

HEC-RAS Software Interface:

- Windows title bar: HEC-RAS - River Analysis System
- Menu bar: File, Options, Help
- Navigation toolbar with icons for file operations and analysis.
- Project information: River: Beaver Creek, River Data: 54, BRD.
- Section view: Geom: Beaver Cr - Bridge - RW, Flow: Beaver Cr - 3, Result: Flooded, River Sta: 54, BRD.
- Flow plot: Geom: Beaver Cr - Bridge - RW, Flow: Beaver Cr - 3, Plot Type: First Tail.
- X-Y-Z Perspective Plot: Upstream RS: 5.0, Downstream RS: 5.0, Plot Type: First Tail.
- Legend: WS: 100 ft, CR: 100 ft, Ground.

Hydrologic Review

- Hydrologic Revision may have a big impact on the scope of a mapping revision request
- Only significant increases are considered
 - Change greater than 1 standard deviation
 - Change greater than 0.5 ft. in water surface due to change in hydrology
- Expect to carry hydrologic and hydraulic modeling to a point where effective and proposed discharges and water surfaces can tie in smoothly (and < 0.5 ft of effective)

“What right do I have to ‘map in’ the Sisters of Perpetual Vigilance?”



Hydraulic Review

- All applicable models submitted? (Nearly all requests include Hydraulic Models, not all include hydrologic models)
- Hydraulic Models Required
 - Duplicate Effective
 - Corrected Effective
 - Existing / Pre-project
 - Post-project / Proposed
- Digital format: Executable (Make Sure They Run!)

Hydraulic Review

- Why all the models?
 - Isolate Changes
 - Identify Corrections
 - Evaluate Comparisons
 - Potential Violations
- Effective FIS data vs. Duplicate Effective
 - Should match within 0.1 foot at all locations
 - 0.5 ft if effective model is not available
 - Ensures:
 - The correct model is being used
 - The data was transferred correctly to the requestor's equipment
 - Revised data integrated into effective



FEMA Software

- cHECK-RAS (You gotta do it!)
 - <http://http://www.fema.gov/software>
 - Def: a tool that identifies areas (or may be the source) of potential error or concern
 - [Good News! cHECK-RAS Version 1.4 and Version 2.0.1 Beta are available](#)

Model Comparison

- Effective vs. Existing/Pre-project vs. Proposed/Post-Project
 - Prepare comparison Excel spreadsheet
 - BFEs
 - Floodplain top-widths
 - Floodway top-widths
 - BFEs must tie-in within 0.5 feet (effective vs. proposed)
 - Top-widths must agree within 5% of the effective map scale
- Include preliminary FIS data in comparison, if necessary

Endangered Species Act (ESA) and CLOMCS (CLOMR & CLOMR-F)

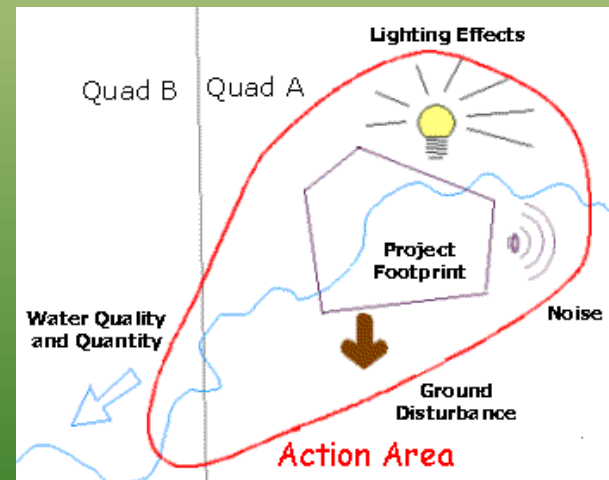
- Congress passed the Endangered Species Act (ESA) in 1973
- The Services implement ESA
 - The U.S. Department of Interior's **Fish and Wildlife Service** and the U.S. Department of Commerce's **National Marine Fisheries Service** (collectively known as "the Services")
- Differs from the Illinois State Endangered Species Act and List. **EcoCAT does not suffice**, but may be useful documentation.

Demonstration of Compliance

- Incidental Take Permit
- Incidental Take Statement
- “Not Likely to Adversely Affect” determination from the Services
- An official letter from the Services concurring that the project has “No Effect” on listed species or critical habitat
- BUT...USFWS Midwest Region is prohibited from providing an official letter concurring with a determination of “No Effect”

So ...

<http://www.fws.gov/midwest/Endangered/section7/s7process/index.html>



What We Covered ...

- Rules
- Guidance & Resources
- Tools & Checklists
- Effective Condition and Models
- Hydrology (if revised)
- Hydraulics
- Section 7 Compliance Endangered Species Act

Questions?



Why Bear, why?