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Rethinking Environmental Mitigation Costs

Achieving Cost Reduction and Meeting Environmental Challenges on Chicago's High-Speed Rail Project

Presented by:

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Presentation Outline

- UPRR's Chicago to St. Louis High-Speed Rail Program
- Original Permitting Process Resulting in Extensive Permitting Requirements,Time, and Costs
- UPRR Innovative Impact Assessment & Mitigation Program Approach
- Aligning Permitting and Mitigation with Site-specific Impacts and Special Technical Expertise
- Redefining Impacts and Minimizing Mitigation Costs Through BMPs versus Take Permits

Right-of-way fencing installed within urban areas within Union Pacific Railroad ROW

Chicago to St. Louis High-Speed Rail Route

UNION PACIFIC

BUILDING AMERICA®

Program of more than 20 projects

110 MPH high-speed rail from Chicago to St. Louis

285 miles of high-speed rail (250 miles are UPRR's)

Track & tie replacement, critical sidings, replace aging structures, positive train control

Tracks support both freight and passenger service

Fast-track design, permitting, and construction schedule

Construction start in 2010, end 2017

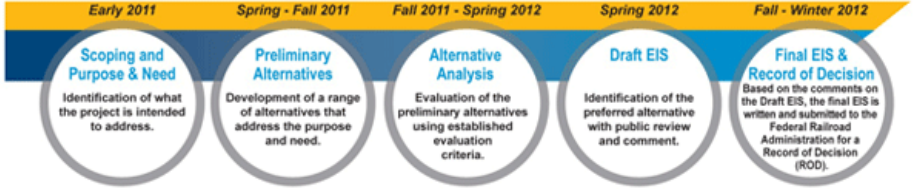
UPRR High-Speed Rail Project Among Most Extensive and Complex in Area History

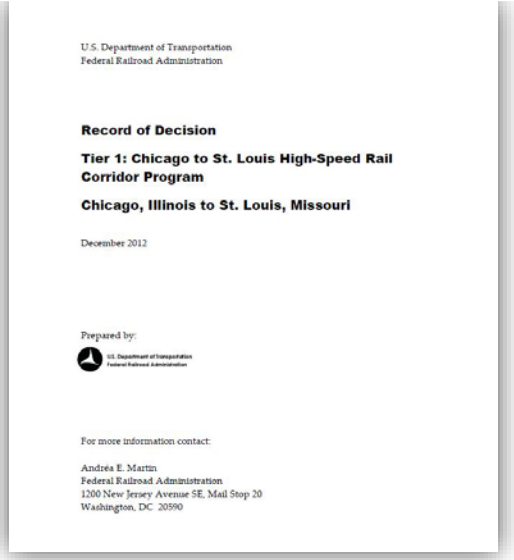
- Funded by American Recovery and Reinvestment Act (ARRA)
- Combined effort of UPRR, IDOT, and FRA
  - UPRR led design, construction, land acquisition, and permitting
  - IDOT and FRA led NEPA, design review, and program management
- FRA tiered NEPA process
- Multiple regulatory permitting agencies
- Covers 11 counties, 3 Corps Districts, 3 USFWS regional offices

Original Permitting Process Based on Preliminary Design Data and NEPA-level Impacts

Resulted in Mitigation and Permit Conditions not Reflective of Project Impacts

- Impact and permit decisions made early to expedite schedule, but resulted in **overly conservative** identification of impacts
- NEPA process favors linear decision-making to determine project impacts and mitigations
- Permits require site-specific impacts and iterative analysis to determine site-specific permit conditions
- Original permits identified solely on basis of NEPA review using 30% preliminary design
- Basing impact levels on early NEPA review captured general regional impacts, not advanced-design & site-specific impacts
- Resulted in **overstatement of impacts and mitigation commitments** for state-listed species formalized in Incidental Take Authorizations (ITAs)
- ITAs based on NEPA-level review early design did not account for micrositing for avoidance
- ITAs imposed conditions for species impacts not reflected by advanced design, resulting in extensive construction impacts and mitigation commitment costs for multiple years.





U.S. Department of Transportation
Federal Railroad Administration

Record of Decision

Tier 1: Chicago to St. Louis High-Speed Rail Corridor Program

Chicago, Illinois to St. Louis, Missouri

December 2012

Prepared by:

U.S. Department of Transportation
Federal Railroad Administration

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Original Mitigation Concepts

Initial Mitigation Based on Preliminary Design Information

- Mitigation was broad, reflecting larger assumed impacts
  - Based on 30% design impacts
  - Agreements made early in project development
- Sometimes costly, restrictive, or better suited for other entities to undertake
  - Construction work restrictions in large areas
  - UPRR property acquisition for non-railroad purposes
  - Environmental management of long-term mitigation commitments

UPRR Iterative Approach Achieves Environmental Stewardship and Manages for Appropriate Mitigation Costs

“Right-Sized” Impact Assessment & Mitigation Approach

- UPRR applies iterative approach to assessing environmental impacts and developing cost-effective and appropriate species mitigation
- Determine mitigation based on understanding of environmental impacts at 60% design or greater
- Agency coordination occurs throughout project development to ensure species protection and regulatory compliance
- Emphasis on avoidance and minimization, which reduces costs.
- Continuity of project leadership from design through construction provides understanding of and follow-through on commitments

UPRR "Right-Sized" Mitigation Informed by Detailed Impacts and Agency Collaboration

Revisiting of Impacts and Mitigation Reduced Costs

- Additional design detail and iterative collaboration with design, environmental, and construction staff created opportunities
  - Reduced impacts lowers mitigation needs
  - BMPs reduce risk
- UPRR coordinated with resource agencies to modify and "right size" mitigation
- Emphasized avoidance and minimization
  - Involved UPRR design, construction, and permitting staff
  - Reduced UPRR's permit ad mitigation costs and long-term monitoring commitments
  - Achieved agency's objectives of protecting sensitive species

Aligning Mitigation with Special Expertise

Original Species Assessment Followed Normal Agency Approach

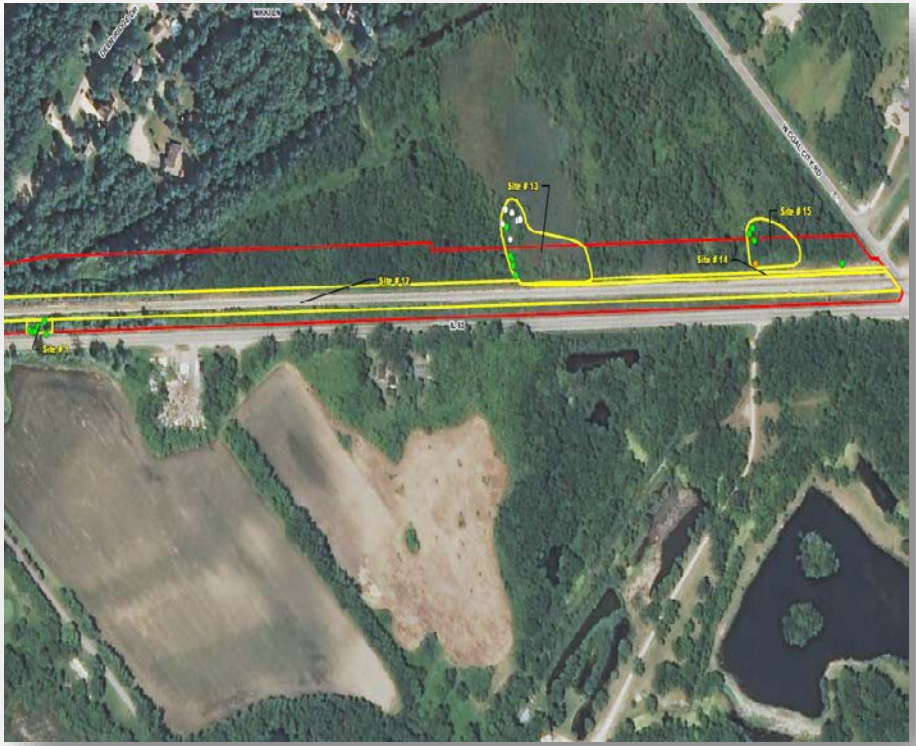
- Host plant (rattlesnake master) for protected moth species identified along the project corridor
  - Only known habitat for state-protected species
- Initial Incidental Take Authorization Permit required UPRR to:
  - Identify and collect rattlesnake master for transplanting
  - Acquire new property to establish habitat
  - Maintain habitat over multi-year period
  - Conduct multi-year surveys on existing UPRR ROW
- **Estimated cost to UPRR for original permit approach > $1,000,000**

Photo source: Illinois Natural History Survey

Rattlesnake Master Host Plant for Erygium Stem Borer

UPRR's Interagency & Site-Specific Approach Protects Species and Reduces Costs

Eryngium Stem Borer Moth



Typical Distribution of Rattlesnake Master Host Plants

- UPRR invited Illinois Department of Natural Resources to collaborate on revising ITA approach with mutual benefits
- ITA modifications included:
  - IDNR responsibility for identifying suitable parcel for mitigation
  - IDNR provides long-term maintenance and monitoring
  - UPRR supports funding for effort
  - UPRR to provide monitoring on its ROW for 4 years

Benefits Achieved for Multiple Stakeholders (Including the Moth!)

Eryngium Stem Borer Moth

- Benefits of revised permit approach
  - Agency with special expertise manages mitigation
  - Funding contribution is directed toward existing IDNR needs
  - Research adds directly to state's knowledge about species
  - Completes UPRR's obligations sooner
  - Absolves UPRR of maintaining a property for non-railroad use
- Cost of revised approach $350,000
- **Savings to UPRR > $650,000**

Photo source: Illinois Natural History Survey

Redefining Impacts and Minimizing Mitigation Costs Through Use of BMPs

Franklin's Ground Squirrel

- Habitat identified in 6 locations along UPRR corridor
- Species known to live along railroad ROWs and burrow and occupy disturbed soils (soil piles)
- Species trapped by agency staff in 1 of the 6 locations; presence in other locations uncertain
- Uncertainty of presence led to abundance of caution by permitting agency

- Agency determined during NEPA process that Incidental Take Authorization required
- ITA processing requirements of 6-plus months put construction schedule at risk
- **Original permit costs: $300,000 or more**

Understanding Work Activities Key to Avoiding Impacts

Franklin's Ground Squirrel

- UPRR initiated agency meetings to review advanced project design
- UPRR proposed and agencies accepted close coordination during construction to avoid take permit and minimize species impacts
  - Minor design changes showed that ground-disturbing activities could be avoided or limited in 5 of 6 possible locations for species areas
  - Access to work areas could be limited
  - Heavy equipment access could be limited
  - Construction could be completed on consecutive days to limit FGS reoccupation of site
  - Exclusionary fencing could be installed to limit construction and FGS access

Source: Illinois Natural History Survey

UPRR's Additional BMPs Further Reduced Risk of Species Impact

Franklin's Ground Squirrel

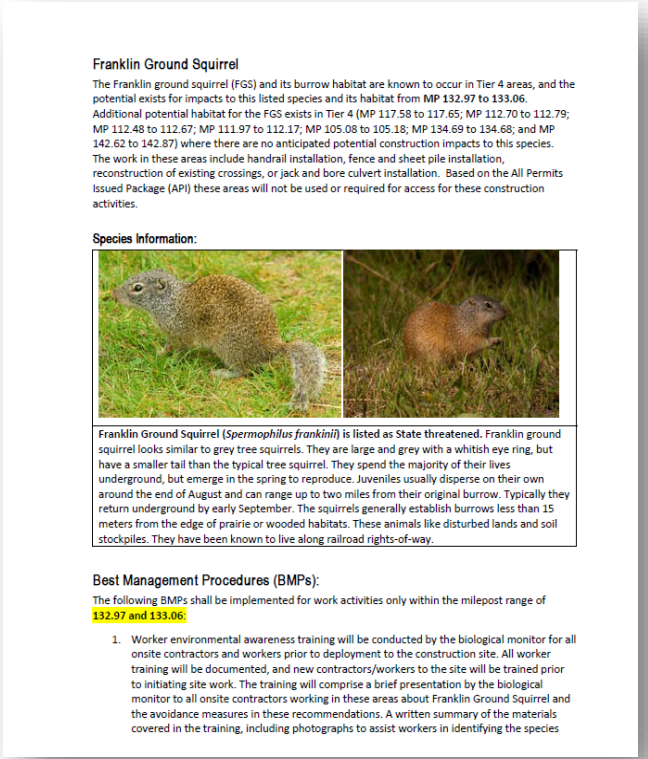
- UPRR conducted worker environmental awareness training
- Deployed onsite biological monitor during required construction activities
  - Conduct preconstruction survey
  - Guide installation of exclusionary fence
  - Monitor for species during construction
- Conduct site visits outside of these time frames to limit inadvertent construction activities in FGS habitat

UPRR's Iterative Process and Construction Coordination Protected Species and Reduced Compliance Costs

Franklin's Ground Squirrel

- UPRR coordinated revisions to FGS management and work restrictions with IDNR
- IDNR concurred with UPRR's proposed BMPs instead of requesting an ITA
  - Avoided permit issuance
  - Avoided construction delays - Saved 6 months to 1 year of schedule
  - Provided required species protection
- **Reduced or eliminated UPRR's permit and mitigation costs of >$300,000**

Worker Training Materials for Species BMPs



Franklin Ground Squirrel

The Franklin ground squirrel (FGS) and its burrow habitat are known to occur in Tier 4 areas, and the potential exists for impacts to this listed species and its habitat from **MP 132.97 to 133.06**. Additional potential habitat for the FGS exists in Tier 4 (MP 117.58 to 117.65; MP 112.70 to 112.79; MP 112.48 to 112.67; MP 111.97 to 112.17; MP 105.08 to 105.18; MP 134.69 to 134.68; and MP 142.62 to 142.87) where there are no anticipated potential construction impacts to this species. The work in these areas include handrail installation, fence and sheet pile installation, reconstruction of existing crossings, or jack and bore culvert installation. Based on the All Permits Issued Package (API) these areas will not be used or required for access for these construction activities.

Species Information:

Franklin Ground Squirrel (*Spermophilus frankinii*) is listed as State threatened. Franklin ground squirrel looks similar to grey tree squirrels. They are large and grey with a whitish eye ring, but have a smaller tail than the typical tree squirrel. They spend the majority of their lives underground, but emerge in the spring to reproduce. Juveniles usually disperse on their own around the end of August and can range up to two miles from their original burrow. Typically they return underground by early September. The squirrels generally establish burrows less than 15 meters from the edge of prairie or wooded habitats. These animals like disturbed lands and soil stockpiles. They have been known to live along railroad rights-of-way.

Best Management Procedures (BMPs):

The following BMPs shall be implemented for work activities only within the milepost range of **132.97 and 133.06**:

1. Worker environmental awareness training will be conducted by the biological monitor for all onsite contractors and workers prior to deployment to the construction site. All worker training will be documented, and new contractors/workers to the site will be trained prior to initiating site work. The training will comprise a brief presentation by the biological monitor to all onsite contractors working in these areas about Franklin Ground Squirrel and the avoidance measures in these recommendations. A written summary of the materials covered in the training, including photographs to assist workers in identifying the species

UPRR Right-Sized Approach Achieved Cost Reduction while Integrating Stewardship

Maximizing Opportunities in Design…

- Close coordination with design and construction staff clarifies work scope and construction methods
- Ongoing agency coordination through design (not just NEPA) reduces surprises
- Collaborative negotiations with regulatory agencies benefits species, agencies, railroad
- Including regulatory commitments in construction documents clarifies expectations
- Considering alternative partners for completing mitigation lowers costs and aids agency missions

UPRR Right-Sized Approach Achieves Cost Reduction while Integrating Stewardship

…And in Construction

- Discussing commitments at pre-bid and pre-construction meetings raises awareness and allows for discussion
- Conducting worker environmental awareness training (WEAT) informs staff at all levels
- Maintaining communication with construction team facilitates change management
- Periodic site visits to observe environmental commitments ensures compliance
- Using biological monitors when habitat for listed species is present, but presence of species is uncertain minimizes risk

Project Successes in Summary

Chicago's High Speed Rail Project

Original Approach

- Original permits identified solely on basis of NEPA review using 30% preliminary design
- Resulted in overstatement of impacts and mitigation commitments
- Did not account for micro siting for avoidance
- Over-estimated construction impacts and mitigation commitment costs for multiple years.

Adjusted UPRR Approach

- Permitting based on 60% or greater design
- Emphasis on avoidance and minimization
- Permitting and mitigation based on real construction impacts, not theoretical worst case impacts
- Continuity through construction to be sure commitments are met
- Overall reduction in permitting and mitigation costs estimated at more than $2M