Upper Iowa Drainage District
Evaluation of Potential Levee System Modifications

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The images depict elevation graphs for the years 2016, 2008, and 2013. Each graph shows the elevation over time, with dates ranging from 08-24 to 08-30 for 2016, 06-8 to 06-16 for 2008, and 06-22 to 06-29 for 2013. The graphs include lines representing different scenarios:

- **Red line**: Existing conditions
- **Blue line**: Dual 1-m culverts (stacked)
- **Green line**: Dual 3-m box culverts (side-by-side)
- **Orange line**: No levee

The graphs also highlight approximate levee elevations and adjacent farm ground elevations. The data is presented in units of meters (NAVD88).
dual 1-m round culverts
(stacked)

elev. 193.8 m
0.5 m
elev. 192.3 m

not to scale

dual 1-m round culverts
(side-by-side)

elev. 192.3 m
1 m
1 m

not to scale

dual 3-m by 3-m culverts
(side-by-side)

elev. 192.3 m
3 m
3 m

not to scale
Existing conditions

• The levee currently provides protection for approximately a 10-percent annual chance flood event

• Less frequent, more severe floods overtop the levee in several locations

• Flood waters become trapped behind the levee and slowly drain through the culvert just upstream of Morgan Bridge Road, extending flood durations
Potential Mitigation Strategies

• Repair and raise the levee to provide the desired protection
  • Cost is dependent upon level of protection
  • May increase flood depths at other locations

• Remove the levee
  • Will eliminate any current flood protection
  • Will allow water to flow freely back into the river

• Increase the capacity of the culvert
  • Will maintain current flood protection
  • Will decrease flood duration
IIHR is a unit of the University of Iowa’s College of Engineering. At IIHR, students, faculty members, and research engineers work together to understand and manage one of the world’s greatest resources—water.
Iowa Flood Center’s Goals

- Provide accurate, science-based information to help Iowans better understand flood risks
- Develop hydrologic models for physically-based frequency estimates and real-time flood forecasting
- Establish community programs to improve flood monitoring
- Develop strategies to mitigate and prevent future flood damage
- Develop Iowa’s workforce in flood-related fields