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LEAF RIVER NO-RISE ANALYSIS DOCUMENTATION PACKAGE

Technical Development and Handoff Package

PART I: PROJECT CONTEXT AND BUSINESS FRAMEWORK

1. Executive Summary & Project Scope

This documentation package presents the technical development for a No-Rise flood certification on approximately 30 acres near Leaf River in Mississippi. The property owner plans to develop 40 elevated homes on the northern 10 acres of the combined parcels. Federal regulations require proof that this development will not increase flood levels during major flood events.

Current Project Status:

- Complete FEMA data package acquired and organized
- Three computer flood models built and tested
- Technical analysis shows zero measurable increase in flood levels
- Documentation package ready for Professional Engineer review and certification

What This Package Contains:

- Complete FEMA source data in organized folders
- Step-by-step technical methodology documentation
- Three working computer models (effective, interim, and final)
- Results showing no flood level increase (46.73 feet with and without development)

- Ready-to-use file structure for immediate engineer review

Property Details:

- **Location:** Parcels 26700 (2.9 acres) and 26786 (28 acres) near Leaf River
- **Total Area:** Approximately 30 acres combined
- **Development Plan:** 40 manufactured or modular homes elevated on support piers
- **Development Area:** Northern 10 acres only
- **Flood Zone:** Located within FEMA mapped floodplain

Important Note: No design decisions regarding pier count, diameter, spacing, or structural layout are certified in this analysis. Only hydraulic impact of the proposed obstruction pattern has been evaluated.

2. FEMA Data Acquisition and Organization

2.1 Data Request Process

North Star Group submitted a comprehensive data request to the FEMA Engineering Library to obtain all available technical materials for the Leaf River flood study. Payment was authorized for Categories 1, 2, and 3 data to ensure complete access to:

- **Category 1:** Effective computer flood model (geometry, flow data, and results)
- **Category 2:** Topographic mapping used in official flood study
- **Category 3:** Survey notes and field data used in original analysis

Purpose of Request: To obtain the regulatory baseline model required for No-Rise certification and to access all supporting data needed for accurate model reconstruction.

2.2 Raw FEMA Package Structure

FEMA provided archive E2504426, which was extracted into directory structure E2504426.zzz_cleanExtraction20251120/. This package contains exactly what FEMA distributes to consulting engineers working on regulatory flood studies.

Package Contents:

```
None
```

- E2504426.zzz_cleanExtraction20251120/
- ├── E2504426.zip (original archive)
- └── E2504426/
- ├── LEAF_RIVER/ (official FEMA model)

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- `└── LeafRiver_DS_A-B/ (development workspace)`

2.3 File-by-File FEMA Inventory

LEAF_RIVER Directory - Official FEMA Baseline:

File Name	Purpose	Technical Notes
Leaf River.g01	River geometry	Legacy model converted from older format, used as reference
Leaf River.f01	Flow data	100-year flood discharge values only
Leaf River.p01	Analysis plan	Single plan connecting geometry and flows
Leaf River.prj	Project file	Main model file for opening in analysis software
Leaf River.r01	Results	Historical analysis results from effective study
Leaf River.xml	Complete archive	Full model export for transparency
28035C-19900402-LeafRiver.pdf	Flood study report	Provides regulatory baseline water levels
LEAF_RIVER-HEC-2.pdf	Legacy documentation	Original study documentation for reference

2.4 Data Gaps Identified

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The FEMA package does not contain several elements:

- **No terrain data** - Ground elevation information was acquired separately
- **No ineffective flow areas** - Floodplain storage areas not defined
- **No lateral structures** - No levees, roads, or other flood control features
- **No multiple flow scenarios** - Only 100-year flood included, no smaller events
- **No pier or structure data** - No information about obstructions in floodway
- **Limited upstream extent** - Model stops short of property location

These gaps required model extension and enhancement using publicly available data and accepted engineering methods.

PART II: TECHNICAL DEVELOPMENT PROCESS

3. Three-Model Development Strategy

3.1 Effective Model - FEMA Baseline

Purpose: Preserve the exact FEMA model as received for regulatory reference.

Contents: All original FEMA files exactly as provided, with no modifications. This serves as the regulatory starting point that any consulting engineer can reference and verify.

File Location: 01_FEMA_Effective_Model/ directory

Key Point: This model represents the currently effective flood conditions that the proposed development cannot exceed.

3.2 Interim Model - Development and Testing

Purpose: Bridge the gap between FEMA upstream limit and property location.

Development Period: September 2025 exploratory work

Contents:

- Extended river cross-sections upstream to reach property
- Multiple trial geometries testing different approaches
- Terrain integration from public mapping sources
- Cross-sectional alignment verification

Status: These models are preserved for transparency but are not used for certification. They document the exploratory methodology development process.

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File Location: 02_Interim_Development/ directory

3.3 Final Model - Certification Ready

Purpose: Clean, defendable model staying as close as possible to FEMA effective geometry.

Approach:

- Original FEMA geometry was restored completely
- Only minimal upstream cross-sections necessary for property analysis were added
- All original FEMA flow data and hydraulic assumptions were maintained
- Two identical geometries were created: one with piers, one without piers

Results: Water surface elevation of 46.73 feet in both scenarios, showing zero measurable rise. This value is within rounding precision of the effective model's published profile at this location.

File Location: 04_Final_NoRise/ directory

4. Technical Methodology (Step-by-Step Reproducible)

4.1 Terrain Integration

Data Sources:

- United States Geological Survey Digital Elevation Models (1/9 arc second resolution)
- Mississippi Automated Resource Information System topographic data
- Vertical datum: North American Vertical Datum 1988
- Horizontal datum: North American Datum 1983, State Plane Mississippi West Zone

Processing Steps:

1. High-resolution terrain covering Leaf River watershed was downloaded
2. Data was reprojected to match FEMA coordinate system
3. Terrain was clipped to LeafRiver_DS_A-B analysis domain
4. Terrain was integrated with FEMA cross-section data

Note: Exact DEM filenames and download dates are documented in Appendix D.

4.2 Cross-Section Development

FEMA Cross-Section Import:

- S_XS.shp shapefiles were imported from FEMA database
- Stationing and indexing information was extracted
- Incomplete elevation data was handled using terrain integration

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- FEMA cross-sections were aligned with current topography

Bank Station Construction:

- Standard hydraulic rule was applied: high points on each side bracket the active river channel
- FEMA geometry was used for guidance only where data existed
- Gaps were filled using terrain-derived elevations and standard hydraulic principles

4.3 Hydraulic Model Assembly

River Reach Definition:

- S_HYDRO_REACH.shp was imported from FEMA database
- Single-reach system matching effective study extent was rebuilt
- Stationing was verified against baseline water surface profiles in flood study reports

Flow Data:

- FEMA published 100-year discharge was used (regulatory flood)
- Discharge amounts were matched to correct river mile stationing
- No modifications were made to hydraulic parameters such as channel roughness
- All boundary conditions from effective model were preserved

4.4 Pier Obstruction Modeling

Development Assumptions:

- 40 elevated homes distributed across northern 10 acres
- Approximately 9 support piers per home (360 total piers)
- 12-inch diameter reinforced concrete piers
- Minimum spacing: 10 times pier diameter (120 inches = 10 feet minimum)
- Actual spacing typically much greater due to site layout

Hydraulic Modeling Method: Computer flood models use cross-sections drawn perpendicular to river flow. Pier rows follow property lines and do not align parallel to the river. Therefore:

- Cross-sections intersect the pier field diagonally
- Most cross-sections intersect zero piers
- Where intersection occurs, typically only one or two 12-inch piers per cross-section
- Total obstruction represented: 3 feet across entire river width

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Conservative Obstruction Approach: The obstruction representation is intentionally conservative because it removes conveyance in a concentrated band instead of distributing obstruction evenly across the floodway. This method does not underestimate hydraulic impact.

Technical Justification:

- Pier spacing exceeds 10 diameters (prevents wake interference between piers)
- Total blockage ratio less than 0.2% of cross-sectional flow area
- Follows FEMA blocked-obstruction guidance for slender structural elements
- River is extremely wide relative to pier obstruction

Boat Ramp Consideration: A concrete boat ramp exists at the north end of the property but was not included in the model because:

- Boat ramps increase water conveyance (improve flow)
- Pier field already shows zero rise without the ramp
- Including the ramp would further reduce any potential obstruction effect
- Omitting the ramp provides conservative analysis

5. No-Rise Analysis Framework

5.1 Comparison Method

Two-Geometry Approach:

- **Geometry g12:** Baseline conditions (no piers) - exactly matches FEMA effective model
- **Geometry g11:** With piers - identical to baseline except for pier obstructions
- **Everything else identical:** Same flows, boundary conditions, channel roughness, and hydraulic assumptions

5.2 Regulatory Station Selection

Evaluation Location: Extension station 92180.37

Rationale:

- Located within the area where proposed development could potentially impact flood levels
- Matches FEMA profile baseline for regulatory comparison
- Represents the most hydraulically sensitive location for detecting any water level changes

5.3 Results Summary

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Water Surface Elevations:

- **Baseline (no piers):** 46.73 feet above sea level
- **With piers:** 46.73 feet above sea level
- **Difference:** 0.00 feet (no measurable rise)

Regulatory Compliance: No increase in Base Flood Elevation was detected under FEMA regulatory 100-year discharge, meeting No-Rise certification requirements.

PART III: HANDOFF PACKAGE

6. Deliverables Provided

6.1 Organized File Structure

The technical package is organized in a logical directory structure that allows immediate use:

```
None
```

- C:\HEC_Share\
- ├── 01_FEMA_Effective_Model\ (unaltered FEMA reference)
- ├── 02_Interim_Development\ (September development process)
- ├── 03_Notes\ (technical notes, screenshots, decision documentation)
- └── 04_Final_NoRise\ (certification-ready model with results)

File Protection Note: The FEMA effective model and the reconstructed models are preserved in separate directories to avoid accidental overwriting during review.

6.2 Raw FEMA Materials

Complete E2504426 package exactly as received, including:

- All original FEMA model files
- Historical flood study reports (1980, 1990, 2024)
- Legacy documentation for reference
- Unaltered for complete regulatory traceability

6.3 Documentation and Verification Aids

- **Technical Methodology:** Step-by-step explanation of all modeling decisions

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- **Assumption Documentation:** Clear listing of all assumptions and their justification
- **Cross-Section Plots:** Visual verification of geometry and terrain integration
- **Model Screenshots:** Demonstration of pier placement and hydraulic results
- **Directory Tree Output:** Complete file inventory for verification

6.4 Installation Guide for Reviewing Engineer

Simple Installation Process:

1. Download provided ZIP file
2. Unzip directly to C:\ drive (creates C:\HEC_Share\ automatically)
3. Open flood modeling software
4. Load: C:\HEC_Share\04_Final_NoRise\20251121Final.prj
5. Run analysis to verify results
6. Review both geometries: g12 (baseline) and g11 (with piers)

Key Files in Final Model:

- **20251121Final.prj** - Main project file
- **20251121Final.f02** - Flow data (FEMA 100-year flood)
- **20251121Final.g11** - Geometry with pier obstructions
- **20251121Final.g12** - Baseline geometry (no piers)
- **20251121Final.p12** - Analysis plan connecting geometry and flows

7. Engineer Options and Next Steps

7.1 Validation Approach Options

Option A: Review and Verify Existing Work

- Run final model using provided files
- Review methodology and assumptions for regulatory compliance
- Verify results match documentation (46.73 ft both cases)
- Certify the No-Rise analysis using professional review of the model

Option B: Rebuild Using Documentation

- Use organized FEMA data as starting point
- Follow documented methodology as a guide
- Rebuild geometry using preferred technical approach
- Modify assumptions as deemed appropriate for certification

Option C: Hybrid Approach

- Review overall methodology and file organization

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- Make specific technical modifications (channel roughness, ineffective flow areas, etc.)
- Re-run analysis with preferred hydraulic settings
- Certify final results under professional judgment

7.2 Technical Decisions

Modifications by reviewing engineer? Or redo with the organized information?

- **Channel Roughness Values:** Verify Manning's n coefficients for certification
- **Ineffective Flow Areas:** Determine if additional floodplain storage areas should be modeled
- **Pier Abstraction Method:** Confirm blocked-obstruction approach or modify pier representation
- **Boundary Conditions:** Verify upstream and downstream hydraulic assumptions
- **Additional Flow Events:** Decide if 2-year or 10-year flood analysis is needed
- **Cross-Section Spacing:** Add intermediate cross-sections if desired for increased resolution

7.3 Certification Path Forward

What Professional Engineer Will Provide:

- Technical review of methodology and assumptions
- Verification or modification of hydraulic model
- Final stamped No-Rise certification report
- Documentation suitable for regulatory agency submission

Timeline Considerations:

- Model is ready to run immediately upon file download
- No reconstruction work required unless engineer prefers different approach
- Documentation allows quick technical review without guessing methodology

8. Professional Boundaries and Collaboration Framework

8.1 Work Completed vs. Professional Certification Required

North Star Group Role:

- Assembled and organized all FEMA regulatory data
- Built working flood models using established engineering methods
- Documented transparent, reproducible workflow
- Provided complete file package ready for professional review

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PART IV: REQUEST FOR PROPOSAL - CONSULTING ENGINEER SERVICES

Professional Engineering Services Request

This package is provided to support proposal development by licensed Professional Engineers for No-Rise flood certification. Comprehensive technical development has been completed and professional certification is needed for regulatory submission.

Project Summary:

- **Property:** 30 acres near Leaf River, Mississippi (Parcels 26700 and 26786)
- **Development Plan:** 40 elevated homes on northern 10 acres
- **Technical Status:** Complete flood analysis shows zero measurable flood level increase
- **Current Need:** Professional Engineer review or alteration and certification
- Use organized FEMA data as starting point
- Use alter or Rebuild hydraulic model
- Run final analysis and provide stamped certification report

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APPENDICES

Appendix A: FEMA File Inventory

DETAILED FILE DESCRIPTION TABLE — FEMA PACKAGE E2504426

TOP-LEVEL DIRECTORY

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Directory: E2504426/

Item	Description
LEAF_RIVER/	The *official FEMA effective model directory*. Contains the regulatory HEC-RAS dataset (geometry, flows, plan, results, documentation). This is the authoritative FEMA baseline used in all regulatory floodway determinations.
LeafRiver_DS_A-B/	A secondary folder FEMA included containing **profile data, shapefiles, database files, and extended simulations** used in county-level mapping work. Not a complete HEC-RAS model; instead it holds supporting materials (profiles, MDBs, DXFs, shapefiles, and older simulations). Often included for downstream/upstream profile extractions.

DIRECTORY 1 — LEAF_RIVER/ (OFFICIAL FEMA RAS MODEL)

This is the **core regulatory model**.
It includes 12 files: 3 PDFs + 9 model data files.

Files in LEAF_RIVER/

File	Purpose	Technical Description
2007_11_20_ForrestCo_LeafRiver.pdf	County flood study	Historical Forrest County flood study excerpt for Leaf River. Used for reviewer reference—**not** part of the model.
280260-19800415-LeafRiver.pdf	1980 FIS	Old FEMA Flood Insurance Study. Contains early profiles and cross-section charts.

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28035C-19900402-LeafRiver.pdf	1990 FIS	Updated Flood Insurance Study. Provides water-surface profiles and cross-section stationing.
Leaf River.f01	FEMA flow file	Holds the **100-year flood discharges** used by FEMA. Single-event steady flow file.
Leaf River.g01	FEMA geometry file	The **effective FEMA geometry** (cross-sections, bank stations, reach length). Derived from old HEC-2 conversion.
LEAF_RIVER-HEC-2.pdf	HEC-2 legacy doc	Original engineering report from FEMA's pre-RAS modeling era. Useful for verifying legacy XS alignment.
Leaf River.O01	Options file	Old RAS configuration settings (computational options, mapping options). Not critical.
Leaf River.p01	Plan file	Connects geometry `g01` and flows `f01` into a single runnable plan.
Leaf River.prj	Project file	The master HEC-RAS project file. Opening this file loads the effective FEMA model.
Leaf River.r01	Results file	FEMA's calculated WSELs, velocities, and energy grades from the effective model.
Leaf River.txt	Model notes	Usually autogenerated notes or metadata. May include import logs.

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Leaf River.xml	XML project archive	Complete serialized version of the FEMA effective model—useful for verification and version tracking.

Summary:
This directory is the **exact FEMA effective Leaf River model** used for regulatory determinations.
Nothing in here is yours.
This is the baseline to which "no-rise" analyses must compare.

DIRECTORY 2 — `LeafRiver_DS_A-B/`

This folder contains **supporting FEMA study materials**, not a single unified model.

It includes 3 subdirectories:

- **FWDT/**
- **Profiles/**
- **Simulations/**

2.1 Directory: `FWDT/`

File	Description
FWDT_LEAF RIVER-FORREST.xlsx	FEMA “Floodway Data Table” for Forrest County. Contains tabular regulatory data: BFEs, floodway widths, velocities, surcharge allowances.
FWDT_LEAF RIVER-PERRY.xlsx	Same format but for Perry County. Used to verify regulatory surcharge and channel behavior.

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Purpose:
These sheets provide **reference floodway hydraulics** used in mapping.
Not directly used in HEC-RAS, but essential for checking geometry validity.

2.2 Directory: `Profiles/`

Contains engineering drawings, databases, and PDFs for cross-section profiles in both counties.

Profiles/ForrestCounty

File	Description
leaf_river_DS_ForrestCounty.mdb	Microsoft Access database containing structured FEMA profile and XS metadata.
LeafRiver_ForrestCounty.pdf	Official profile sheets showing FEMA WSELs vs. river miles.
leaf_river_forrest.dwg	AutoCAD drawing of FEMA profile lines and cross-section locations.
LeafRiver_Forrest.dxf	Same data as DWG, exported for compatibility.

Profiles/PerryCounty

File	Description
LeafRiver_DS_PerryCounty.dxf	Cross-sections and profile lines for Perry County.
LeafRiver_DS_PerryCounty.pdf	Profile sheet for Perry County floodway mapping.
leaf_river_DS_Perry.mdb	Database of Perry County profile metadata.

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Thumbs.db	Windows indexing file (irrelevant).

Purpose:
These files provide *visual and tabular confirmation* of FEMA cross-section positioning, river mile stationing, and regulatory WSELs.
Useful for aligning your station 92180.37 with the regulatory profile.

2.3 Directory: `Simulations/`

This is the largest and most complex folder — **55 files**.
It mixes shapefiles, trial RAS models, and boundary-condition maps.

Shapefiles (GIS Layers)

Layer	Description
100boundary1016.shp / dbf / shx	100-year flood boundary polygon — study area outline.
*FIRM. (shp/dbf/prj/sbn/sbx)**	Flood Insurance Rate Map floodplain and floodway layers.
FW_DS. / FW_US. (shp/dbf/xml)**	Floodway polygons (Downstream and Upstream segments). Encodes the official surcharge corridor.

These files define official flood boundaries and are typically used to validate XS-Floodway alignment.

Trial/Working RAS Model Components ("Leaf_River_Detailed")

These files **are FEMA workplace artifacts**, not the official effective model.

File	Meaning

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Leaf_River_Detailed.g01 / g05 + .hdf	Geometry variants (probably partial reconstructions by FEMA staff during map maintenance).
Leaf_River_Detailed.f02 / f05	Flow files for alternate recurrence intervals.
Leaf_River_Detailed.p02 / p05 (+.hdf)	Plan files representing different test simulations.
Leaf_River_Detailed.O02 / O05	Option files for those plans.
Leaf_River_Detailed.r02 / r05	Results files.
Leaf_River_Detailed.prj	Project file linking all the “detailed” test files.
Leaf_River_Detailed.rasmap / rasmap.backup	GeoRAS mapping configuration (rasmap) used for spatial WSEL plotting.

Purpose:
FEMA often includes “Detailed” models that were used for county updates or internal mapping QA/QC.
They are **not the effective model**, and you are not required to use them.

Legacy Backup Files

File	Purpose
Backup.g01 / Backup.g01.hdf / Backup.p01	Temporary workspace files created by the FEMA engineer/computer. Not part of the certified model.

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SUMMARY TABLE — WHAT EACH FOLDER IS FOR

Folder	Meaning	Importance to Your Work
LEAF_RIVER/	The **official FEMA effective HEC-RAS model**.	**Critical** – This is your regulatory baseline.
LeafRiver_DS_A-B/	Supporting materials: profiles, floodway tables, GIS layers, and internal trial models.	**Useful for validation** but **not** the effective regulatory dataset.
FWDT/	Floodway Data Tables for County mapping.	Helpful for confirming surcharges and floodway limits.
Profiles/	County-level profile sheets, CAD drawings, and MDB data.	Good for cross-section alignment verification.
Simulations/	Mixed shapefiles and FEMA workspace models.	Helpful but **not authoritative** for No-Rise.

Appendix B: NSG results, Model Screenshots and Cross-Section Plots

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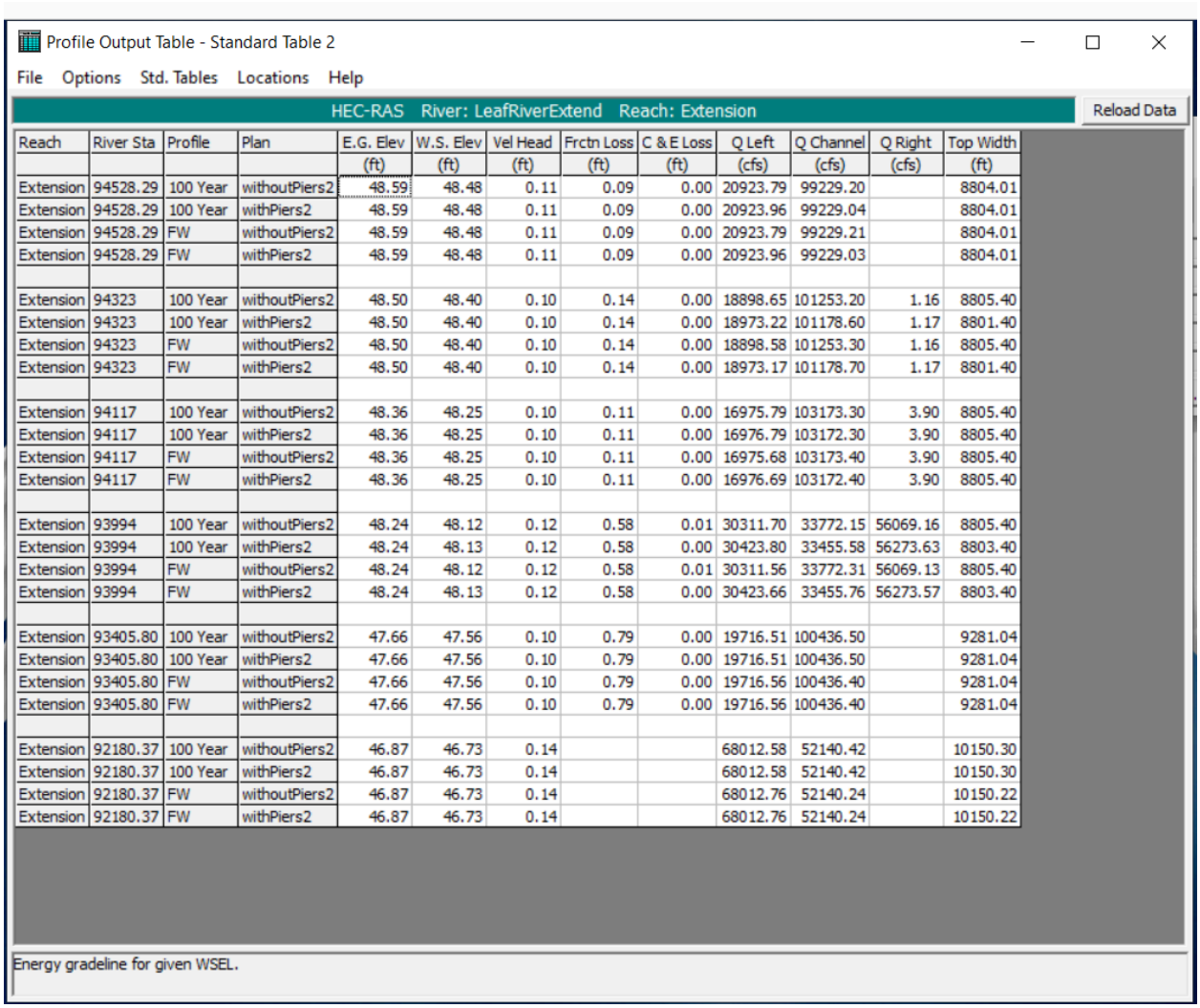

Profile Output Table - Standard Table 2

File Options Std. Tables Locations Help

HEC-RAS River: LeafRiverExtend Reach: Extension

Reload Data

Reach	River Sta	Profile	Plan	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Extension	94528.29	100 Year	withoutPiers2	48.59	48.48	0.11	0.09	0.00	20923.79	99229.20		8804.01
Extension	94528.29	100 Year	withPiers2	48.59	48.48	0.11	0.09	0.00	20923.96	99229.04		8804.01
Extension	94528.29	FW	withoutPiers2	48.59	48.48	0.11	0.09	0.00	20923.79	99229.21		8804.01
Extension	94528.29	FW	withPiers2	48.59	48.48	0.11	0.09	0.00	20923.96	99229.03		8804.01
Extension	94323	100 Year	withoutPiers2	48.50	48.40	0.10	0.14	0.00	18898.65	101253.20	1.16	8805.40
Extension	94323	100 Year	withPiers2	48.50	48.40	0.10	0.14	0.00	18973.22	101178.60	1.17	8801.40
Extension	94323	FW	withoutPiers2	48.50	48.40	0.10	0.14	0.00	18898.58	101253.30	1.16	8805.40
Extension	94323	FW	withPiers2	48.50	48.40	0.10	0.14	0.00	18973.17	101178.70	1.17	8801.40
Extension	94117	100 Year	withoutPiers2	48.36	48.25	0.10	0.11	0.00	16975.79	103173.30	3.90	8805.40
Extension	94117	100 Year	withPiers2	48.36	48.25	0.10	0.11	0.00	16976.79	103172.30	3.90	8805.40
Extension	94117	FW	withoutPiers2	48.36	48.25	0.10	0.11	0.00	16975.68	103173.40	3.90	8805.40
Extension	94117	FW	withPiers2	48.36	48.25	0.10	0.11	0.00	16976.69	103172.40	3.90	8805.40
Extension	93994	100 Year	withoutPiers2	48.24	48.12	0.12	0.58	0.01	30311.70	33772.15	56069.16	8805.40
Extension	93994	100 Year	withPiers2	48.24	48.13	0.12	0.58	0.00	30423.80	33455.58	56273.63	8803.40
Extension	93994	FW	withoutPiers2	48.24	48.12	0.12	0.58	0.01	30311.56	33772.31	56069.13	8805.40
Extension	93994	FW	withPiers2	48.24	48.13	0.12	0.58	0.00	30423.66	33455.76	56273.57	8803.40
Extension	93405.80	100 Year	withoutPiers2	47.66	47.56	0.10	0.79	0.00	19716.51	100436.50		9281.04
Extension	93405.80	100 Year	withPiers2	47.66	47.56	0.10	0.79	0.00	19716.51	100436.50		9281.04
Extension	93405.80	FW	withoutPiers2	47.66	47.56	0.10	0.79	0.00	19716.56	100436.40		9281.04
Extension	93405.80	FW	withPiers2	47.66	47.56	0.10	0.79	0.00	19716.56	100436.40		9281.04
Extension	92180.37	100 Year	withoutPiers2	46.87	46.73	0.14			68012.58	52140.42		10150.30
Extension	92180.37	100 Year	withPiers2	46.87	46.73	0.14			68012.58	52140.42		10150.30
Extension	92180.37	FW	withoutPiers2	46.87	46.73	0.14			68012.76	52140.24		10150.22
Extension	92180.37	FW	withPiers2	46.87	46.73	0.14			68012.76	52140.24		10150.22

Energy gradeline for given WSEL.

Appendix C: Pier Obstruction Details and Calculations

A Sparse Field of Slender Piers

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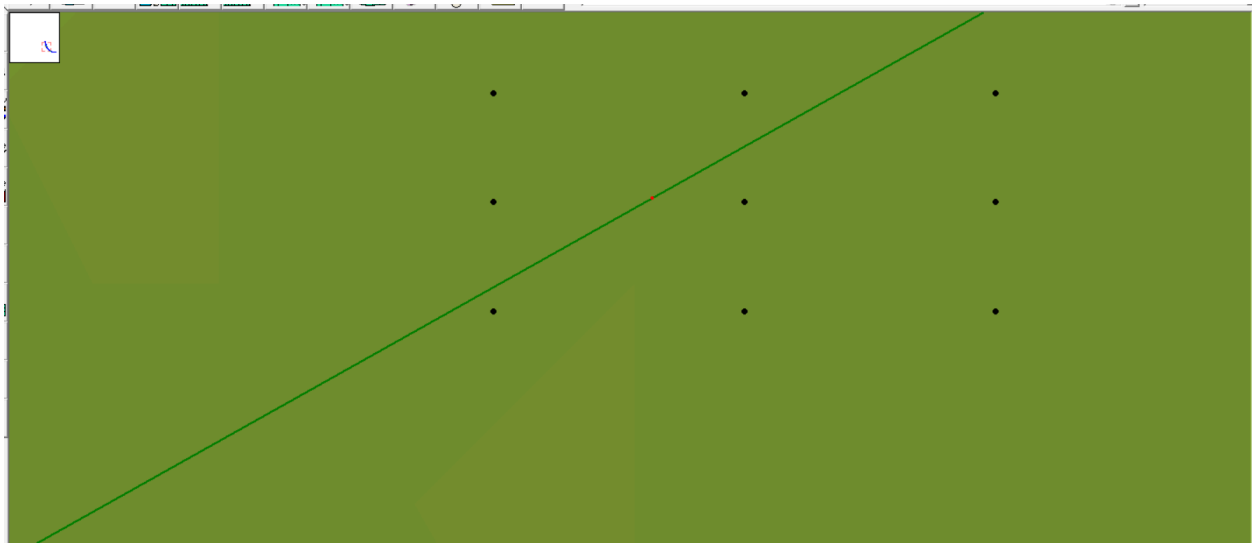

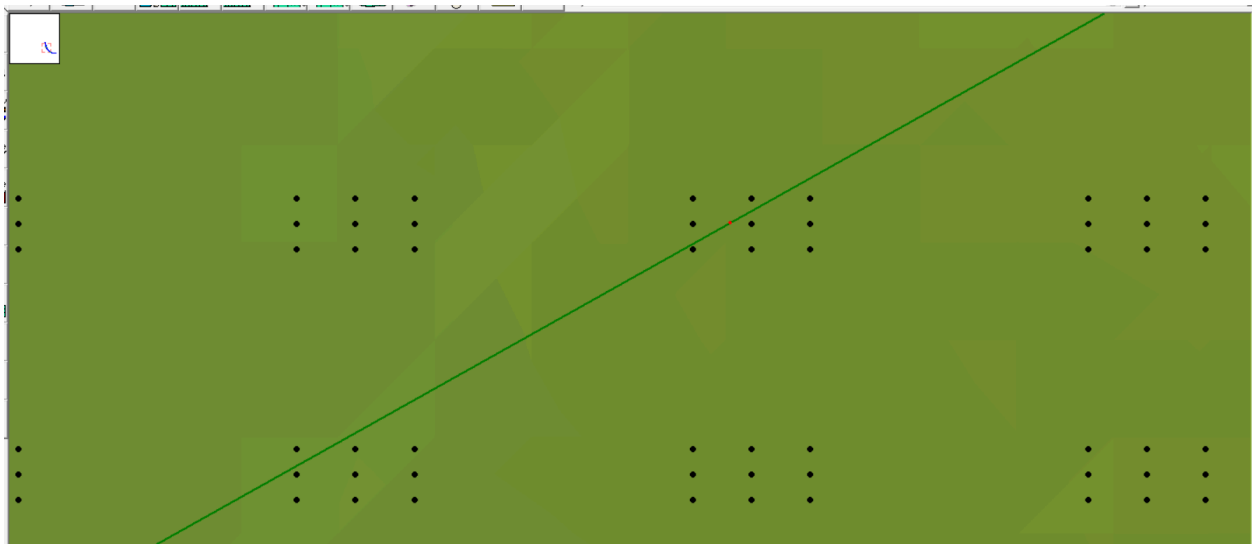

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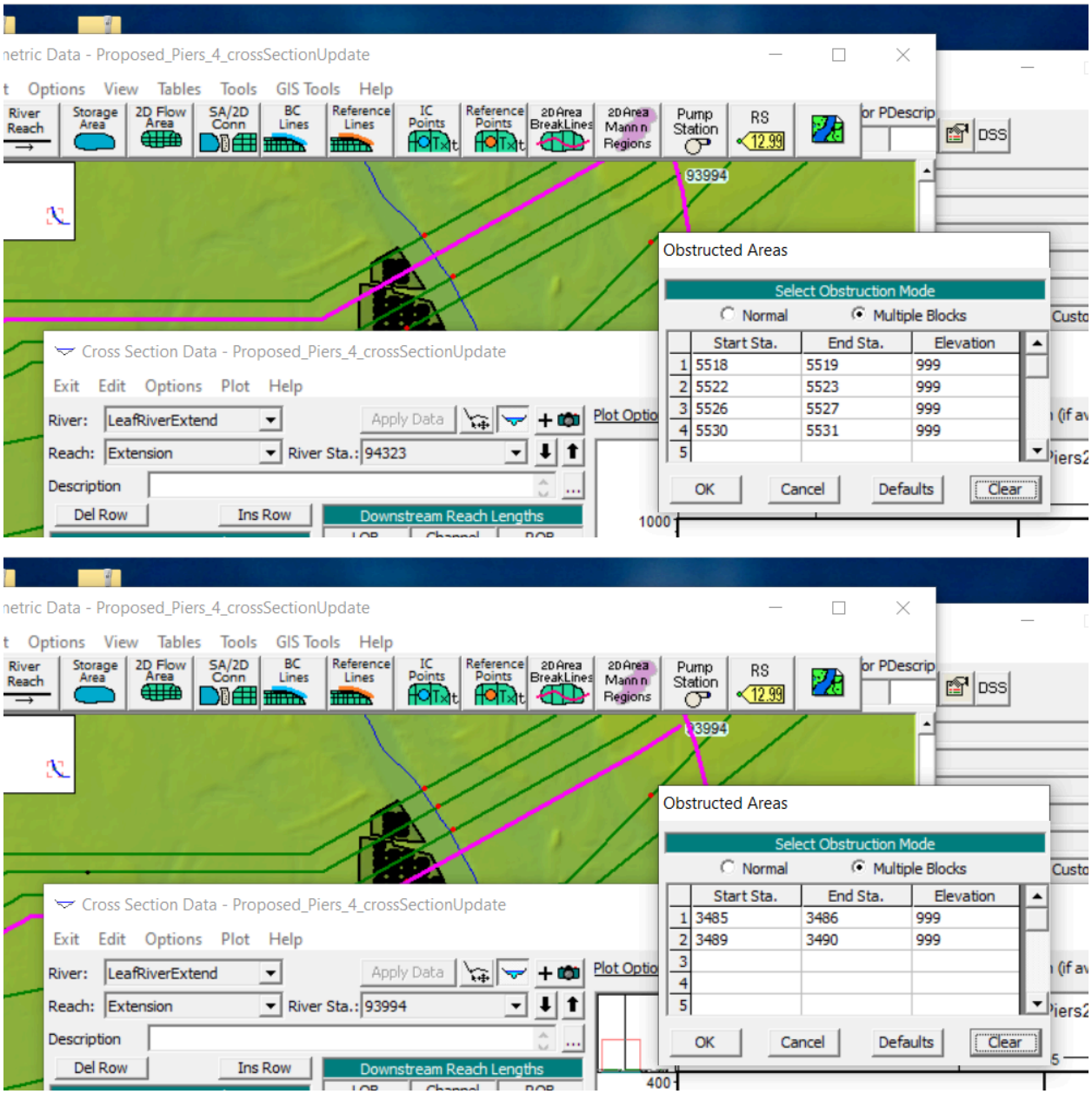

Appendix D: Terrain Data Sources

06_Terrain

| | ├── LeafRiver_DEM_USGS_13.tif

| | ├── Terrain (2).hdf

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│ │ ├── Terrain2LeafRiverDEM_n32w090_StatePlane.tif

│ │ ├── Terrain (2).vrt

│ │ └── Terrain.LeafRiver_DEM_StatePlane.tif

Appendix E: Directory Structure and File Organization

18 directories, 476 files

mh@NSG:/mnt/hec-ras-share$ tree -L 2

.

├── 01_FEMA_Effective_Model

│ ├── 2007_11_20_ForrestCo_LeafRiver.pdf

│ ├── 280260-19800415-LeafRiver.pdf

│ ├── 28035C-19900402-LeafRiver.pdf

│ ├── Leaf River.f01

│ ├── Leaf River.g01

│ ├── Leaf River.g01.hdf

│ ├── LEAF_RIVER-HEC-2.pdf

│ ├── Leaf River.O01

│ ├── Leaf River.p01

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```
│   ├── Leaf River.p01.hdf
│   ├── Leaf River.prj
│   ├── Leaf River.r01
│   ├── Leaf River.rasmap
│   ├── Leaf River.txt
│   └── Leaf River.xml
├── 02_Interim_Development
│   ├── 01_Data
│   ├── 06_Terrain
│   ├── LeafRiver_Development_Models
│   ├── taxmaps
│   └── withoutPiers
├── 03_Notes
└── 04_Final_NoRise
    ├── Final
    ├── Supporting
    └── Terrain
```

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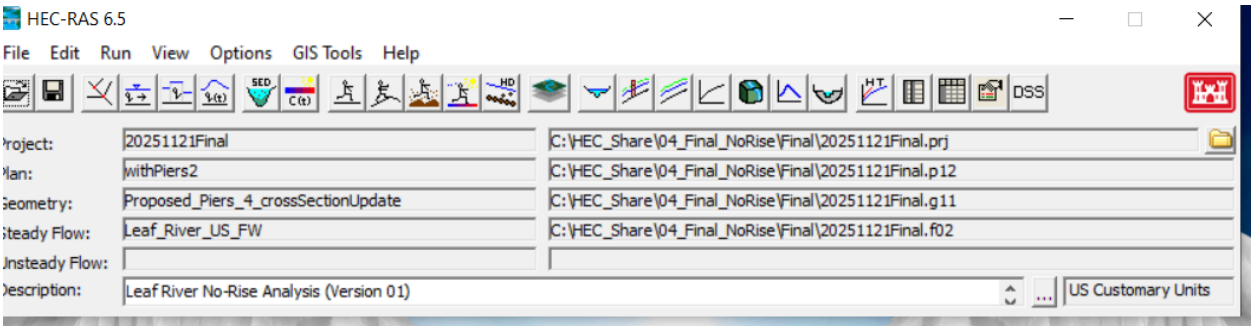

Appendix F: Version History and File Integrity Notes

D	Activity	Notes
[D	FEMA package receipt	E2504426.zzz received from FEMA Engineering Library
[D	Package extraction	Extracted to E2504426.zzz_cleanExtraction20251120/
[D	Final model creation	20251121Final.* files created for certification

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[D	Documentation completion	Package prepared for PE review

Appendix G

FLOOD INSURANCE STUDY (FIS) DATA REQUEST

REQUESTOR INFORMATION

Organization: North Star Group, Inc.

Contact Person: Michael Hoffman

Email Address: mhoffman@nsgia.com

Mailing Address: 19901 Quail Circle, Fairhope, AL 36532

Telephone: (701) 770-9118

Fax: N/A

I am employed by: ☑ Private Firm

COMMUNITY INFORMATION

Complete community name: City of Hattiesburg, Forrest County, Mississippi

Community identification number: 280061

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Name(s) of flooding source(s): Leaf River

FIRM Panel Number: 28035C0109F

Effective date of FIRM: November 19, 2021

SPECIFIC DATA NEEDED

☑ **Category 1** – Hydrologic/Hydraulic Backup (HEC-RAS effective model)

☑ **Category 2** – Topographic Mapping developed during FIS process

☑ **Category 3** – Survey Notes developed during FIS process

☐ **Category 4** – Letters of Map Change (LOMCs)

☐ **Category 5** – Preliminary Map Panels

☐ **Category 6** – Digital LOMR / FIRM Files

☐ **Category 7** – Computer Manuals

PURPOSE OF REQUEST

To obtain the FEMA effective HEC-RAS model and supporting survey/topographic data for the Leaf River in Hattiesburg, MS. Data will be used in preparing a preliminary No-Rise study package for Parcels PPIN 26700 (~2.9 acres) and PPIN 26786 (~28 acres). Final certification will be performed by a licensed Professional Engineer.

PAYMENT INFORMATION

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Type of Request: ☑ EDR application (External Data Request)

Fee Calculation:

- Category 1: $300 + $93 surcharge = $393
- Category 2: $300 + $93 surcharge = $393
- Category 3: $300 + $93 surcharge = $393
- **Total Amount: $1,179.00**

Payment Method: ☑ Credit Card (Master Card)

This document represents a complete technical handoff package designed to facilitate Professional Engineer review and certification of No-Rise flood analysis for regulatory compliance. All work performed by North Star Group Inc. under standard consulting agreement.

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