

IFA Water Audit Review SOP/Checklist

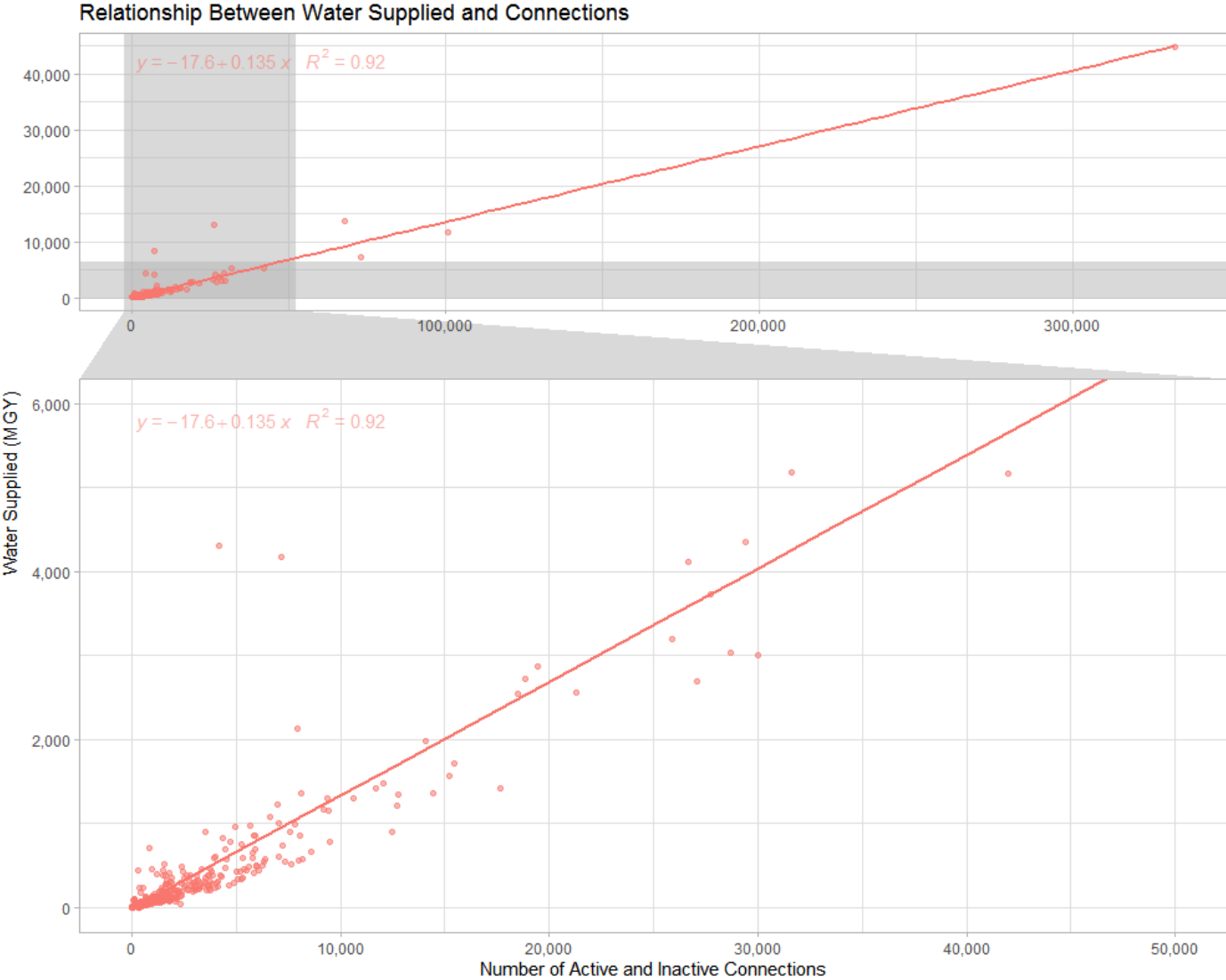
The IFA will perform a brief red-flag check on submitted validated water audits to supplement the validator's review. If the IFA discovers a possible error, the IFA will contact the utility and suggest revisions. The utility can then decide whether to revise and resubmit their audit and certificate of validation.

The IFA will review the following items:

1. Correct volume units used. For instance, the Volume from Own Sources may be 23,114.893 MGY (million gallons per year) or 23,114,893 MGY when it should be 23.115 MGY. This common error happens because the water audit requires certain volumes be entered in million gallons, not gallons or thousand gallons — two other common water volume units.
 - a. For average water supplied values, see Appendix A
2. Percentages in the Master Meter and Supply Error Adjustment fall between normal ranges— typically 0–15%.
3. Customer metering inaccuracy is not 0% or 0 MG, unless test evidence demonstrates otherwise. The IFA recommends a default value of 5% if a utility does not have data for this input.
4. Length of Mains entered in miles, not feet, yards, or meters.
 - a. For average length of mains values, see Appendix B
5. Customer Retail Unit Cost falls within the expected range: about \$2 to \$17 per thousand gallons
6. Variable Production Cost falls within the expected range: about \$200 to \$4,000 per million gallons. Systems which purchase water will typically exhibit higher costs.
7. Error messages displayed on the Reporting Worksheet
8. Unusual data validity scores —for instance, a score of 10 on each entry is extremely unlikely.
9. Performance Indicators for red flags— for instance, an ILI of less than 1.
 - a. See Appendix C for additional red flags

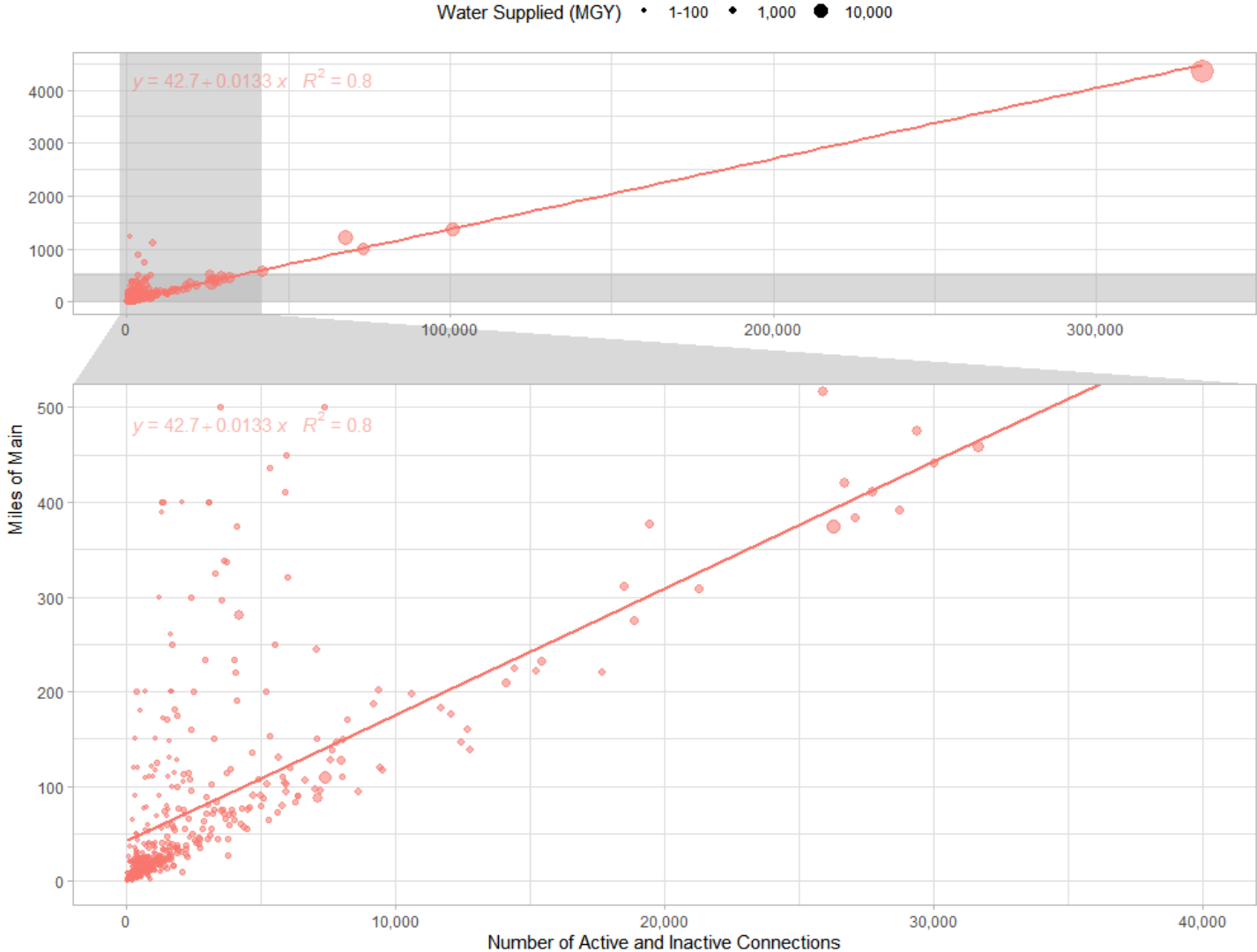
Appendix

Appendix A: Distribution of Indiana water utilities' water supplied by number of active and inactive connections
(Source: 2016 Why-Fi Water Loss Study)



Appendix B: Distribution of Indiana water utilities' main lengths by number of active and inactive connections
(Source: 2016 Why-Fi Water Loss Study)

Relationship between Connections and Miles of Main



Appendix C: Expected ranges for selected Indiana water loss audit entries

	Audit Entry	Red Flag Values	Typical Values	Common Sources of Errors
Performance Indicators	Non-Revenue Water as a percent by cost of operating system	NRW < 0% or NRW > 100%		Volumetric inputs, cost inputs
	Apparent loss/connection/day	Apparent losses < 0 gallons/connection/day	1 – 40 gallons/connection/day	Volumetric inputs
	Real losses/service connection/day	Real losses < 0 gallons/connection/day	20 – 100 gallons/connection/day	Volumetric inputs
	Real losses/length of main/day			
	Real losses/ service connection/day/PSI pressure			
Infrastructure Leakage Index	ILI < 1.0		Volumetric inputs, infrastructure inputs, average system operating pressure	
Reporting Worksheet	Water Supplied	Six-figure volume (i.e. 113,813 MG)		Unit conversion error or missing decimal
	Master Meter Error Adjustments	No data	Default to 0% if unknown	Enters meter calibration instead of flow testing
	Customer metering inaccuracies	0%	Default to 5% if unknown	Enters meter calibration instead of meter testing
	Length of Mains	Length > 5,000 miles		Units in feet instead of miles
	Customer Retail Unit Cost	CRUC > \$20 kgal	\$2/kgal < CRUC < \$20/kgal	Cost inputs, divide by water supplied rather than billed metered volume
	Variable Production Cost	VPC > \$4,000	\$200 < CRUC < \$800 if producing own water; up to \$4,000 if importing water	Cost inputs, volumetric inputs