SAN ANTONIO
RIVER AUTHORITY
Leaders in Watershed Solutions

Electronic Data Capture

October 20, 2016

Introduction

- Why?

- Considerations
  - Cost
  - Practicality
  - Accessibility
  - Storage of data

Process

- Determine data to be recorded
- Equipment and software
- Data entry forms
- Involve all parties
- TEST TEST TEST, use, repair, repeat

Mobile Demand xTablet T1200

- Rugged case with a tablet built in
- IP65, MIL-STD 810G/F certified. That means your information is safe, even if dropped, shocked or exposed to water and dust.
- Numeric keypad
- Windows operating system
- Bluetooth capable
- Includes camera

Routine COC

SAN ANTONIO RIVER AUTHORITY

Routine Watershed Monitoring Chain-of-Custody

Check for Review by Field Staff (Initial/Date)

Collector(s) Signature(s): ______________________ **Instrument #:** __________

[1]Observed/corrected temperature (ID: C01-096) [2]pH Paper: R010-38-5 Sample Temperature (°C)[1]: ____ / ____ [3]Specify container type for Other

Tag ID	Sample #	Station ID	Collection Date	Collection Time	Program Code	Sample Type	Collection Method	Matrix	End Depth	# of Containers/ Container Type/Container ID	Type of Field Preservation (Circle Appropriate Check)	Requested Analysis	pH <2 (Y/N/NA)[2]
										GC-Gallon Cubitainer	Ice HNO_3 H_2SO_4 Filtered		
	Field Comments:									QC – Quart Cubitainer	Ice HNO_3 H_2SO_4 Filtered		
										LW – Large Whirlpak	Ice HNO_3 H_2SO_4 Filtered		
	Lab Comments:									AB – Amber Plastic	Ice HNO_3 H_2SO_4 Filtered		
										Other[3]	Ice HNO_3 H_2SO_4 Filtered		
										Other[3]	Ice HNO_3 H_2SO_4 Filtered		
										☐ Field Parameters	☐ Flow		
										GC-Gallon Cubitainer	Ice HNO_3 H_2SO_4 Filtered		
	Field Comments:									QC – Quart Cubitainer	Ice HNO_3 H_2SO_4 Filtered		
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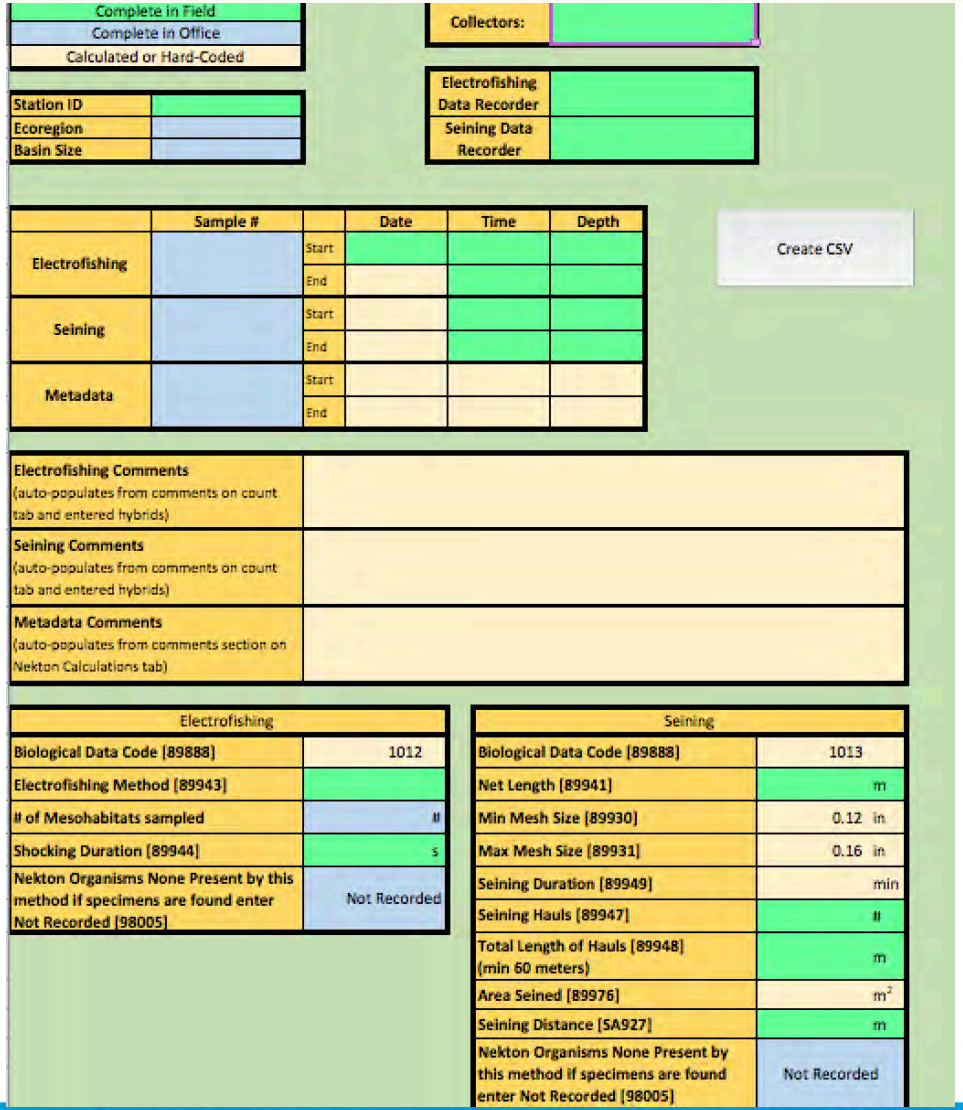
										Other[3]	Ice HNO_3 H_2SO_4 Filtered		
										Other[3]	Ice HNO_3 H_2SO_4 Filtered		
										☐ Field Parameters	☐ Flow		

Routine

	Sample Number		
	Station ID		
	Collection Date		
	Collection Time		
	Sample Collector Initials (All)		
1	Field Dissolved Oxygen	00300	x.x
2	Field Water Temperature	00010	xx.x
3	Field pH	00400	x.x
4	Field Chlorine Residual	50060	
5	Field Conductivity	00094	nearest whole #
6	Secchi Depth	00078	x.x or 0.xx
7	Days Since Last Precipitation Event	72053	<1, 1-75, >75
8	Flow Severity	01351	1=No Flow,2=Low,3=Normal,4=Flood,5=High, 6=Dry
9	Field Water Color	89969	1=BROWN, 2=REDDISH, 3=GREEN, 4=BLACK, 5=CLEAR, 6=OTHER
10	Field Water Odor	89971	1=SEWAGE, 2=OILY/CHEMICAL, 3=H2S, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER
11	Present Weather	89966	1=CLEAR,2=PTCLDY,3=CLDY, 4=RAIN,5=OTHER
12	Contact Recreation Observations	SA699	1 = Primary Observed, 2=Secondary Observed, 3=NonContact observed, 4=Primary contact evidence, 5=Secondary Contact Evidence, 6=Non-contact Evidence, 7=No Evidence
13	Primary Contact, Observed Activity (#)	89978	# OF PEOPLE OBSERVED
14	Evidence of Primary Contact Recreation	89979	1 = OBSERVED, 0 = NOT OBSERVED
15	Field Surfactants (Hach Method)	SA301	
16	Field Ammonia Nitrogen (Hach Method)	SA302	
17	Field Potassium (Hach Method)	SA303	
18	Field Ammonia/Potassium Ratio	SA304	
19	Cattle	SA305	1=Observed, 2=Evidence, 3=Not Observed
20	Bird Rookery	SA306	1=Observed, 2=Evidence, 3=Not Observed
21	Wild Hog	SA307	1=Observed, 2=Evidence, 3=Not Observed
22	Rainfall (inches, Gauge Data) previous 24 hours	46529	
24	Rainfall in 1 day Inclusive Prior to Sam	82553	
25	Instantaneous Flow	00061	
26	Estimated Flow	74069	
27	Flow Method	89835	1=Gage, 2=Electric, 3=Mech, 4=Weir/Flume, 5=Doppler

Nekton



Complete in Field
Complete in Office
Calculated or Hard-Coded

Collectors:	

Station ID	
Ecoregion	
Basin Size	

Electrofishing Data Recorder	
Seining Data Recorder	

	Sample #		Date	Time	Depth
Electrofishing		Start			
		End			
Seining		Start			
		End			
Metadata		Start			
		End			

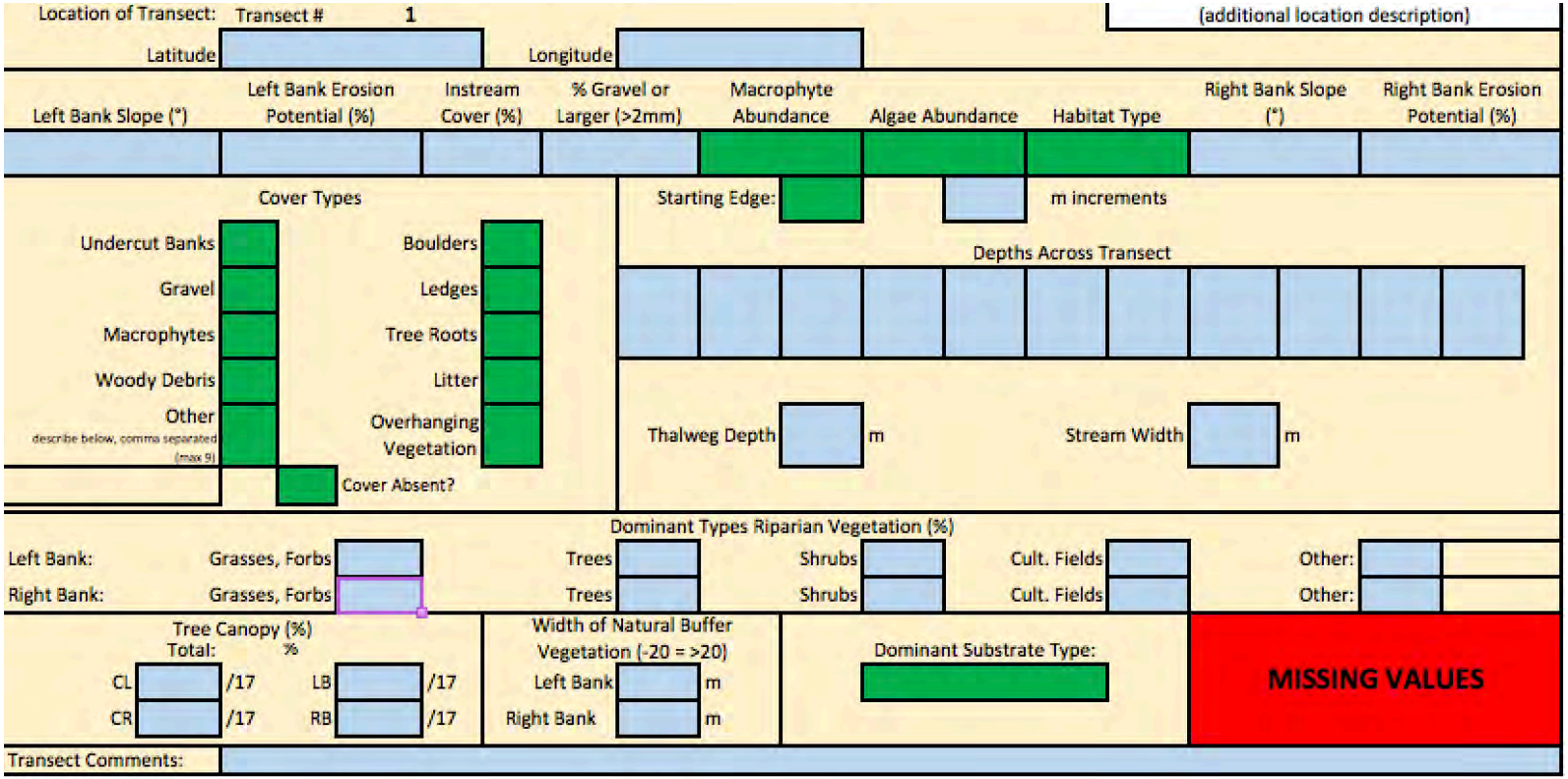
Create CSV

Electrofishing Comments (auto-populates from comments on count tab and entered hybrids)	
Seining Comments (auto-populates from comments on count tab and entered hybrids)	
Metadata Comments (auto-populates from comments section on Nekton Calculations tab)	

Electrofishing	
Biological Data Code [89888]	1012
Electrofishing Method [89943]	
# of Mesohabitats sampled	#
Shocking Duration [89944]	s
Nekton Organisms None Present by this method if specimens are found enter Not Recorded [98005]	Not Recorded

Seining	
Biological Data Code [89888]	1013
Net Length [89941]	m
Min Mesh Size [89930]	0.12 in
Max Mesh Size [89931]	0.16 in
Seining Duration [89949]	min
Seining Hauls [89947]	#
Total Length of Hauls [89948] (min 60 meters)	m
Area Seined [89976]	m^2
Seining Distance [SA927]	m
Nekton Organisms None Present by this method if specimens are found enter Not Recorded [98005]	Not Recorded

Habitat


Location of Transect:
Transect #
1
(additional location description)
Latitude
Longitude
Left Bank Slope (°)
Left Bank Erosion Potential (%)
Instream Cover (%)
% Gravel or Larger (>2mm)
Macrophyte Abundance
Algae Abundance
Habitat Type
Right Bank Slope (°)
Right Bank Erosion Potential (%)
Cover Types
Undercut Banks
Gravel
Macrophytes
Woody Debris
Other
describe below, comma separated (max 9)
Boulders
Ledges
Tree Roots
Litter
Overhanging Vegetation
Cover Absent?
Starting Edge:
m increments
Depths Across Transect
Thalweg Depth
m
Stream Width
m
Dominant Types Riparian Vegetation (%)
Left Bank:
Right Bank:
Grasses, Forbs
Trees
Shrubs
Cult. Fields
Other:
Tree Canopy (%)
Total:
%
CL
CR
LB
RB
/17
Width of Natural Buffer Vegetation (-20 = >20)
Left Bank
Right Bank
m
Dominant Substrate Type:
MISSING VALUES
Transect Comments:

Benthic Macroinvertebrates

Station I.D.:			Sample No.:			Biologist:			
ORDER	FAMILY	GENUS	Non-Insect	Storet Code	# Individuals (A)	Tolerance Values (B)	*F F Group	C=A X B	D=C/D
		Total Number of Individuals (D) {89906}			0				
Functional Feeding Groups - SCR-scraper, CG-Collector gatherer, FC-filtering collector, SHR-shredder, P-predator									
							Biotic Index	{90007}	{sum of E}= 0.0000

Parameter	Codes		VALUES
Total Number of Families (#)	90012	# families	0
EPT Index	90008	# of distinct EPT families	0
Dominant FFG	90010	Ratio, %	#DIV/0!
Predators	90036	Ratio, %	#DIV/0!
Trichoptera as Hydropsychidae	90069	Ratio, %	#DIV/0!
Percent Individuals Chironomidae	90062	Ratio, %	#DIV/0!
Total Taxa Richness, Benthos	90055	Total	0
Collectors-Gatherers	90025	Ratio, %	#DIV/0!
Dominant Taxon	90042	Ratio, %	#DIV/0!
Ratio : Intolerant / Tolerant Individuals	90050	Ratio	#DIV/0!
Non - Insect Taxa	90052	Total	0
% Total Number Elmidae	90054	Ratio, %	#DIV/0!
Eco-Region	89961	N/A	0

Slight differences may occur between the numbers displayed here and those uploaded to LIMS due to the use of scientific rounding on these values before uploading to LIMS. It is not used here due to the fact the formula used for the scientific rounding modifies the actual value of the number whereas changing the displayed number of decimal places in Excel does not affect the value used in calculations. See the "Pre-Dollar" tab (hidden) if you need to verify the actual value vs the rounded value.

Lessons Learned

- Significant undertaking
- Form design
  - Always include a free-form comment section
- Scientific rounding and LIMS
- TEST TEST TEST!!!

Thank you!

Jeanette Hernandez

Quality Assurance Specialist I

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Additional Information

- We currently use LIMS61
- Tablet operating temperature is, -4° F to +140° F (-20° C to +60° C)