

# Snake River



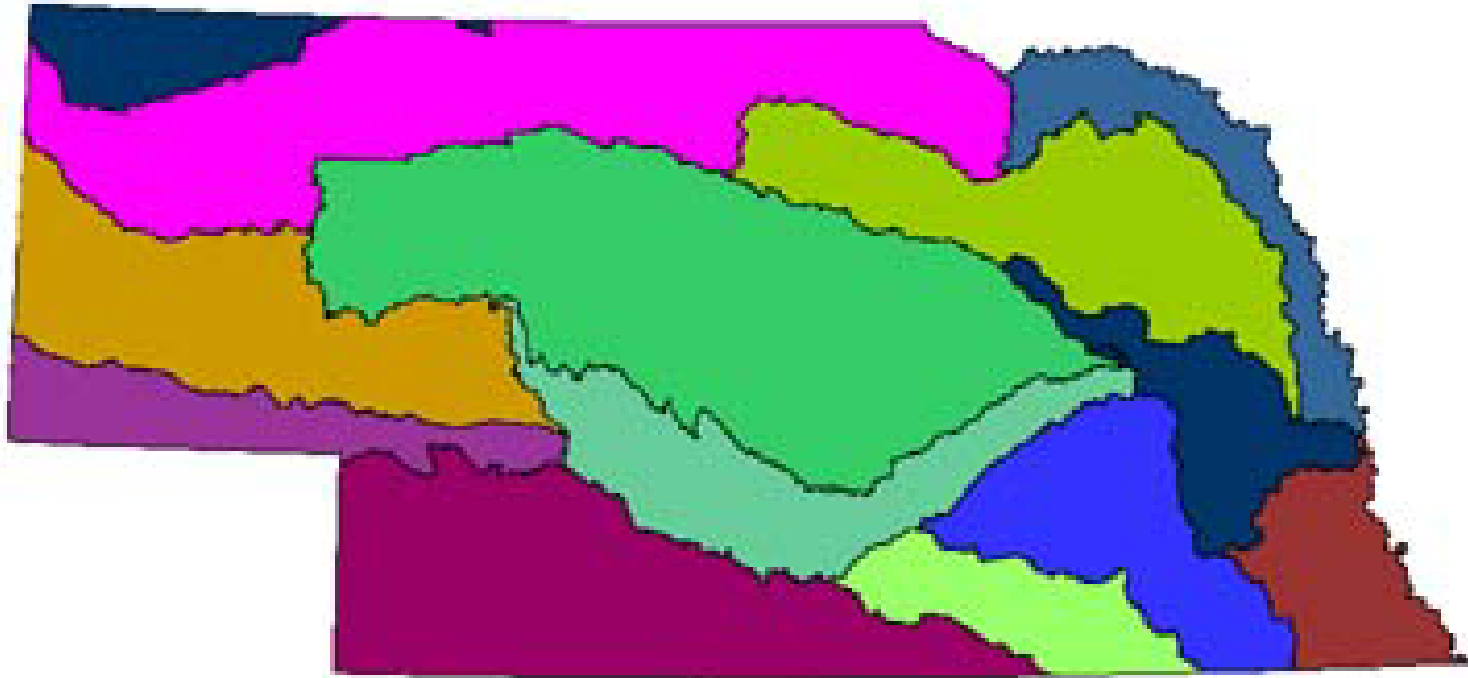
# Merriman Creek



# Logan Creek



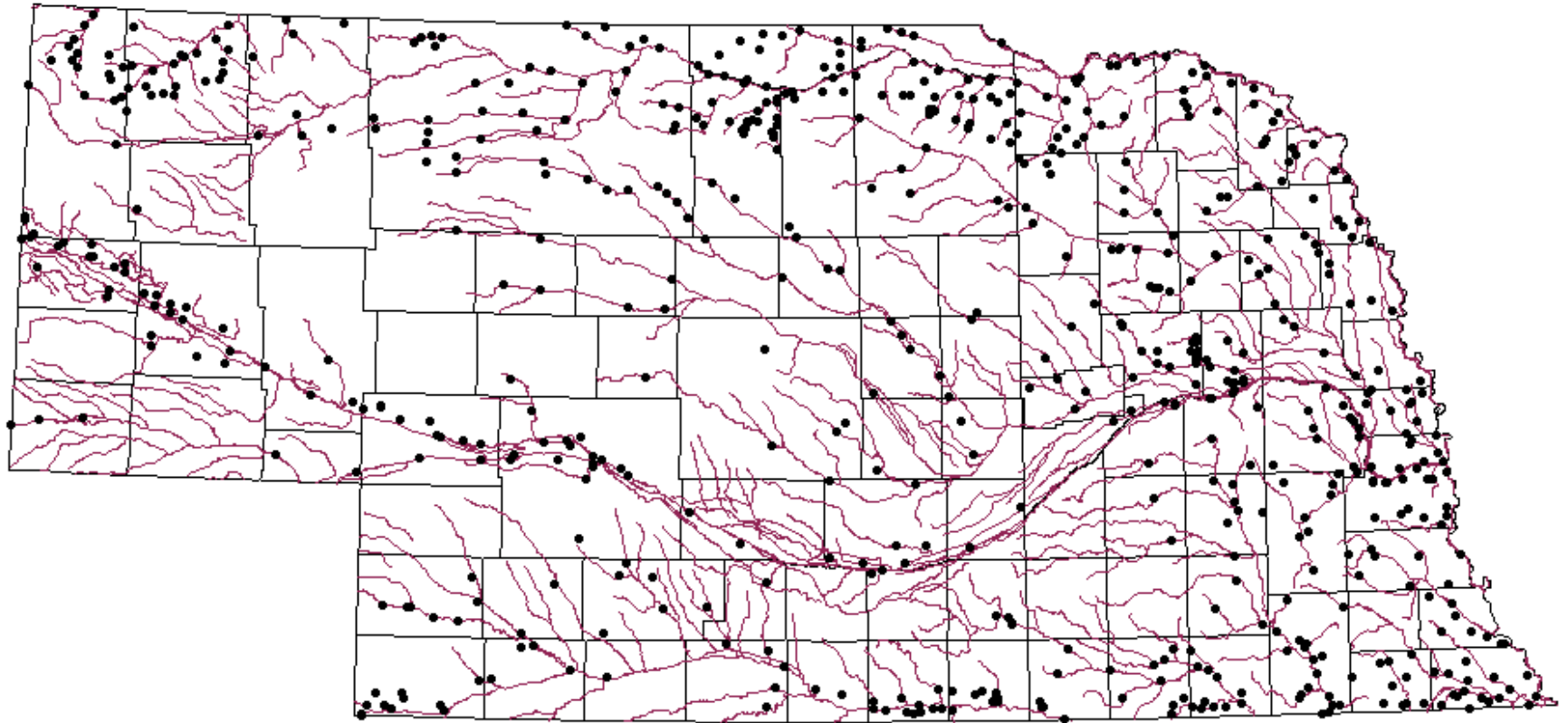
# River Basins



# Biological Site Habitat List

1. Watershed Characteristics
  - a. Topography
  - b. Land use
2. Riparian Characteristics
  - a. Buffer zone
  - b. Streambank vegetation
  - c. Streambank stability
  - d. Grazing damage
  - e. Streambank slope
  - f. Streambank height
3. Stream characteristics
  - a. Channel alterations
  - b. Flow stage
  - c. Average width
  - d. Average depth
  - e. Substrate
  - f. Sand bars
  - g. Riffles and runs
  - h. Pools
  - i. Habitat
  - j. Instream Vegetation
  - k. Stream degradation rating
4. Simple Stream Chemistries
  - a. Temperature, Dissolved Oxygen, Conductivity
5. Biological Samples
  - a. Fish
  - b. Macroinvertebrates

# Biological Sampling Sites



# Nebraska Metrics for Fish

- **Species Richness**
- **Fish per Minute**
- **Native Cyprinid Species**
- **Percent Intolerant Species**
- **Percent Tolerant**
- **Percent Omnivores**
- **Percent Insectivores**
- **Number Diseased Specimens**

# Nebraska Metrics for Macroinvertebrates

- **Species Richness**
- **EPT Richness**
- **Chironomidae Richness**
- **Biotic Index**
- **EPT to EPT and Chironomidae Ratio**
- **Percent Dominant Taxa**
- **Scraper to Collector and Scraper Ratio**
- **Jaccard Index**



# Early Reference Sites (State Wide)

| <u>Stream Type</u> | <u>Site Number</u> | <u>Stream Name</u> |
|--------------------|--------------------|--------------------|
| Warm A - East      | NE2053             | Lores Branch       |
| Warm A - West      | SP10001            | South Platte River |
| Warm B - East      | NE3171             | Russel Creek       |
| Cold B - West      | NP2016             | Clear Creek        |

# Stream Types in Nebraska

## Level 1-Temperature or Ecoregion

### Conditions

### Explanation

Cold

Watercress or trout present

East

Ecoregions 27,45,46,47

Sandhills

Ecoregion 44

West

Ecoregions 25 and 43

# Stream Types in Nebraska

## Level 2-Flow Type

| <u>Conditions</u>       | <u>Explanation</u>          |
|-------------------------|-----------------------------|
| Small Stream (SMLSTRM)  | Flow Class 1 (<1 cfs)       |
| Medium Stream (MEDSTRM) | Flow Class 2-3 (1-10 cfs)   |
| Large Stream (LGESTRM)  | Flow Class 4-6 (10-100 cfs) |
| River (River)           | Flow Class 7-9 (>100 cfs)   |

# Stream Types in Nebraska

## Level 3-Vegetation Type

### Conditions

### Explanation

Watercress (WC)

Watercress common,  
cold water only

Submerged (SV)

Submerged vegetation common,  
no watercress

Emergent (EV)

Emergent vegetation only

None (NV)

No aquatic vegetation common

# Stream Types in Nebraska

## Level 4A-(Cold water only) Trout Presence

### Conditions

### Explanation

No Trout (NT)

No trout collected

Few Trout (FT)

1 to 9 trout collected

Abundant Trout (AT)

10 or more trout collected

# Stream Types in Nebraska

## Level 4b-(Warm water only) Substrate Type

| <u>Conditions</u> | <u>Explanation</u>                       |
|-------------------|--|
| Gravel            | Gravel or larger                         |
| Sand              | Sand                                     |
| Silt-Clay         | Silt or unconsolidated clay              |
| Detritus          | Detritus (unconsolidated organic matter) |
| Hardbed           | Bedrock or hardpan clay                  |



# Reference Site Scoring

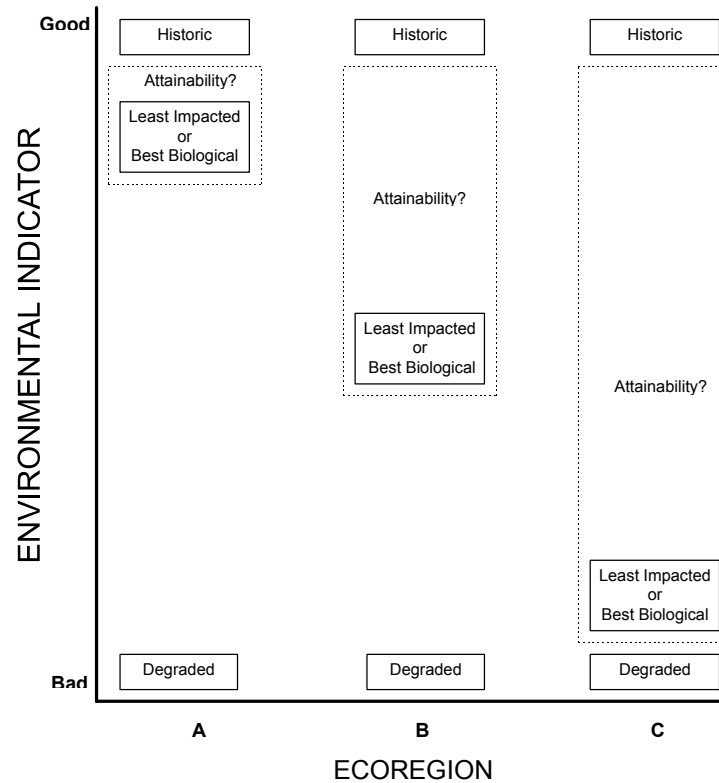
| StmName          | SiteNo | Date    | RipBuff | GrazDam | StmBank | Feedlots | WshdEros | SedFilAg | InstmHab | Screen2 | RefRate1 | RefRate2 |
|------------------|--------|---------|---------|---------|---------|----------|----------|----------|----------|---------|----------|----------|
| Cache Cr.        | EL4027 | 6/26/96 | 2.5     | 3.5     | 2.5     | 2        | 2.5      | 3        | 6        | TRUE    | 16       | 22       |
| Clear Cr.        | LP2028 | 7/16/96 | 3.5     | 1.5     | 1.5     | 2        | 3.5      | 3.5      | 5.5      | TRUE    | 15.5     | 21       |
| Lores Br.*       | NE2053 | 6/22/95 | 3       | 1       | 2.5     | 2        | 3        | 2.5      | 5        | TRUE    | 14       | 19       |
| Republican R.    | RE3091 | 8/1/95  | 2       | 1.75    | 1.75    | 2        | 2.5      | 2.5      | 4        | TRUE    | 12.5     | 16.5     |
| Goose Cr.        | LO2103 | 6/17/92 | 1       | 2       | 1       | 1        | 1        | 1        | 4        | TRUE    | 7        | 11       |
| Ervine Cr.       | NE1208 | 6/26/95 | 1.5     | 1.5     | 2       | 1.5      | 2.5      | 2.5      | 4        | TRUE    | 11.5     | 15.5     |
| Rattlesnake Cr.* | NE2047 | 6/30/92 | 1       | 1       | 1       | 1        | 1        | 3        | 4.5      | TRUE    | 8        | 12.5     |
| Lores Br.*       | NE2053 | 7/1/92  | 2       | 1       | 2       | 1        | 3        | 1        | 3.5      | TRUE    | 10       | 13.5     |
| Otter Cr.*       | NP2015 | 8/20/92 | 1       | 1       | 1       | 1        | 1        | 1        | 1.5      | TRUE    | 6        | 7.5      |
| Clear Cr.        | NP2016 | 8/1/96  | 1.25    | 1.5     | 1.25    | 1        | 1.5      | 1.5      | 2        | TRUE    | 8        | 10       |
| South Platte R.  | SP1010 | 8/13/96 | 1.5     | 1.5     | 1.5     | 2        | 3        | 2.5      | 2.5      | TRUE    | 12       | 14.5     |
| Warbonnet Cr.    | WH2047 | 8/12/93 | 1       | 1       | 1       | 1        | 2        | 2        | 3        | TRUE    | 8        | 11       |



# Stream Classes and Sites Sampled 1984-1995

| Stream Class              | Sites Sampled for Macroinvertebrates | Macroinvertebrate Reference Sites | Sites Sampled for Fish | Fish Reference Sites |
|---------------------------|--------------------------------------|-----------------------------------|------------------------|----------------------|
| Cold-Lgestrm-SV-FT        | 17                                   | 15                                | 19                     | 15                   |
| Cold-Medstrm-NV-FT        | 14                                   | 4                                 | 36                     | 5*                   |
| Cold-River-SV-AT          | 1                                    | 0                                 | 1                      | 0                    |
| East-Lgestrm-NV-SiltClay  | 3                                    | 0                                 | 4                      | 0                    |
| East-Lgestrm-SV-Gravel    | 2                                    | 2                                 | 2                      | 2                    |
| East-Medstrm-NV-Gravel    | 12                                   | 7                                 | 26                     | 11                   |
| East-Medstrm-NV-SiltClay  | 16                                   | 0                                 | 13                     | 0                    |
| East-Smlstrm-EV-SiltClay  | 4                                    | 0                                 | 3                      | 0                    |
| Sandhills-Medstrm-NV-Sand | 17                                   | 0                                 | 9                      | 0                    |
| Sandhills-Medstrm-SV-Sand | 31                                   | 21                                | 33                     | 23                   |
| West-Medstrm-NV-Gravel    | 1                                    | 0                                 | 1                      | 0                    |

# Reference Conditions



Reference Conditions = Ecoregional Expected or Attainable Conditions  
(Pollution meets NPDES requirements and Implementation of BMPs; "Good" Riparian Conditions; Minimal other Human Impacts, i.e., channelization, etc.,)

