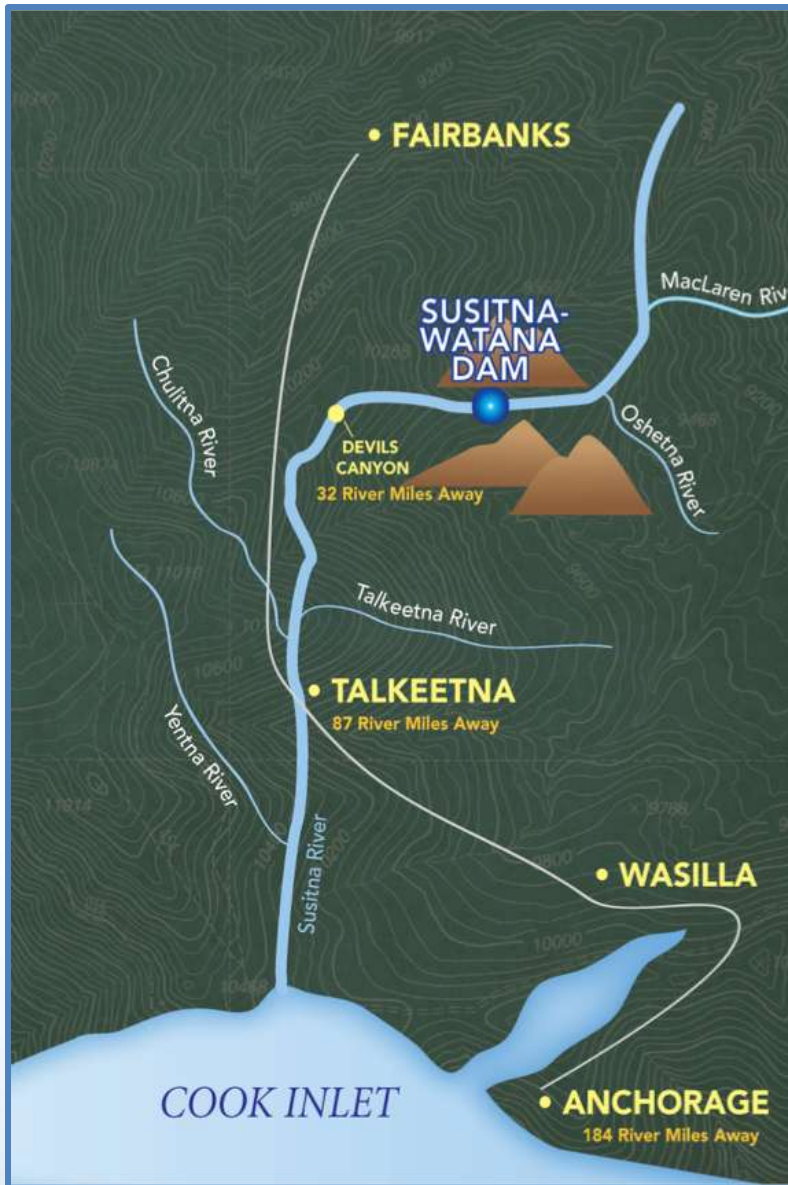


Technical WorkGroup Meeting

Fish Distribution and Abundance Sampling – Upper River

8 February 2013

Prepared by R2 Resource Consultants



Upper River Mainstem Sampling 2

- Oshetna to dam site
- Consistent habitat
- Random systematic transect sampling
 - 20 transect samples (every 2.4 miles)
- Sample habitats that are found
 - Random selection of single habitat unit of each habitat type



Tributaries above Devil's Canyon 3

- Tributaries mapped by HDR + 4 unnamed
- Sampling from mouth up to 3000 ft
- Some tributaries are not accessible
- Accessible tributaries sampled using probabilistic sampling design
- Abundance estimates apply to accessible portions of tributaries only



Sampling Options

- Simple random sample - clump
- Systematic samples would work for tributaries, BUT:
 - Missing samples due to accessibility would leave a hole
- GRTS sampling

Generalized Random Tessellation Stratified₅ (GRTS) Random Sampling

- Stevens, D. L., Jr. and A. R. Olsen (2004). "Spatially-balanced sampling of natural resources." *Journal of American Statistical Association* 99(465): 262-278.
- Spatial coverage and random
- Random sampling on sub-regions of the map
- Routines readily available
- Missing samples do not have large impact on spatial balance of sample

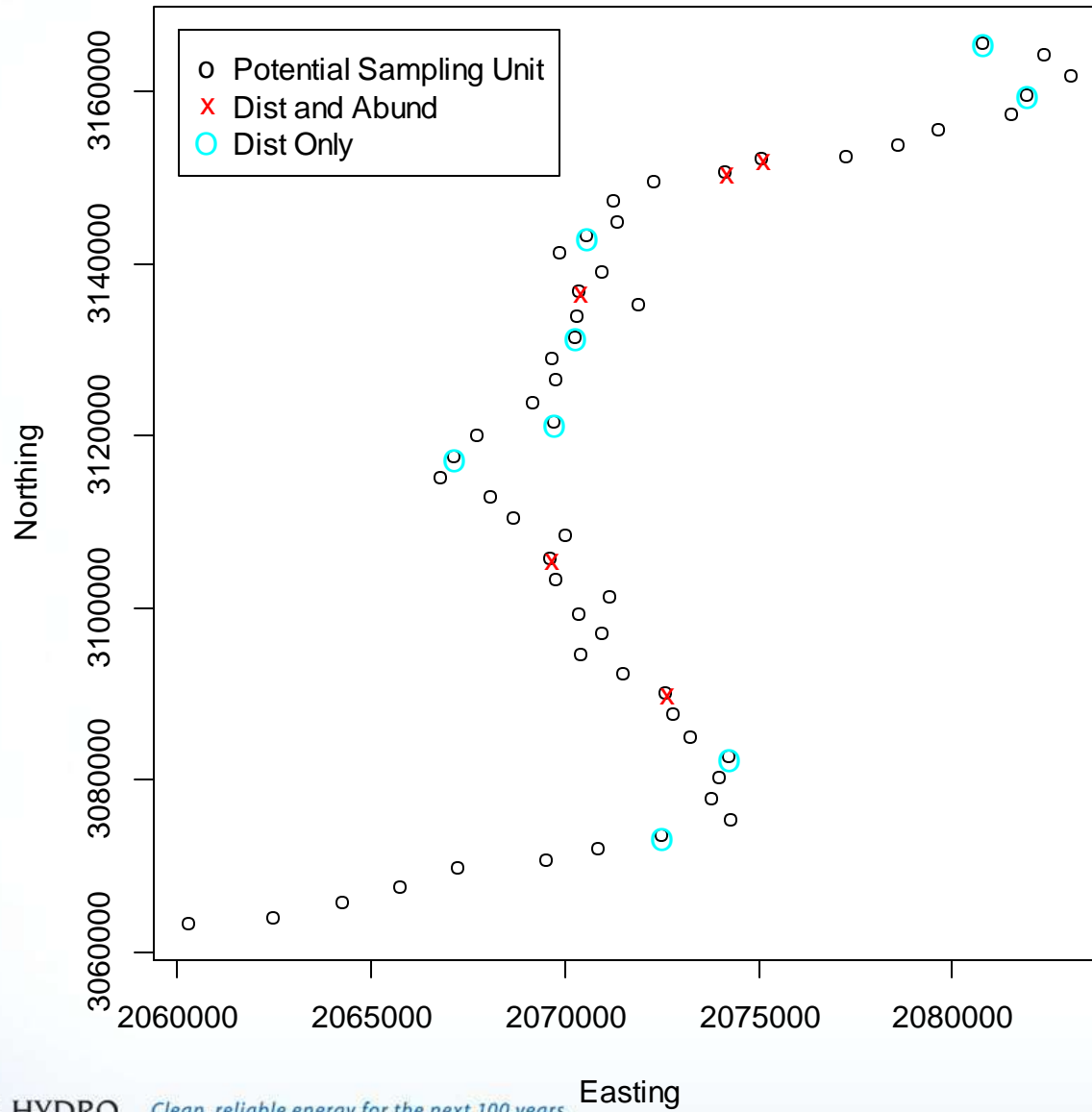


Generalized Random Tessellation Stratified₆ (GRTS) Random Sampling

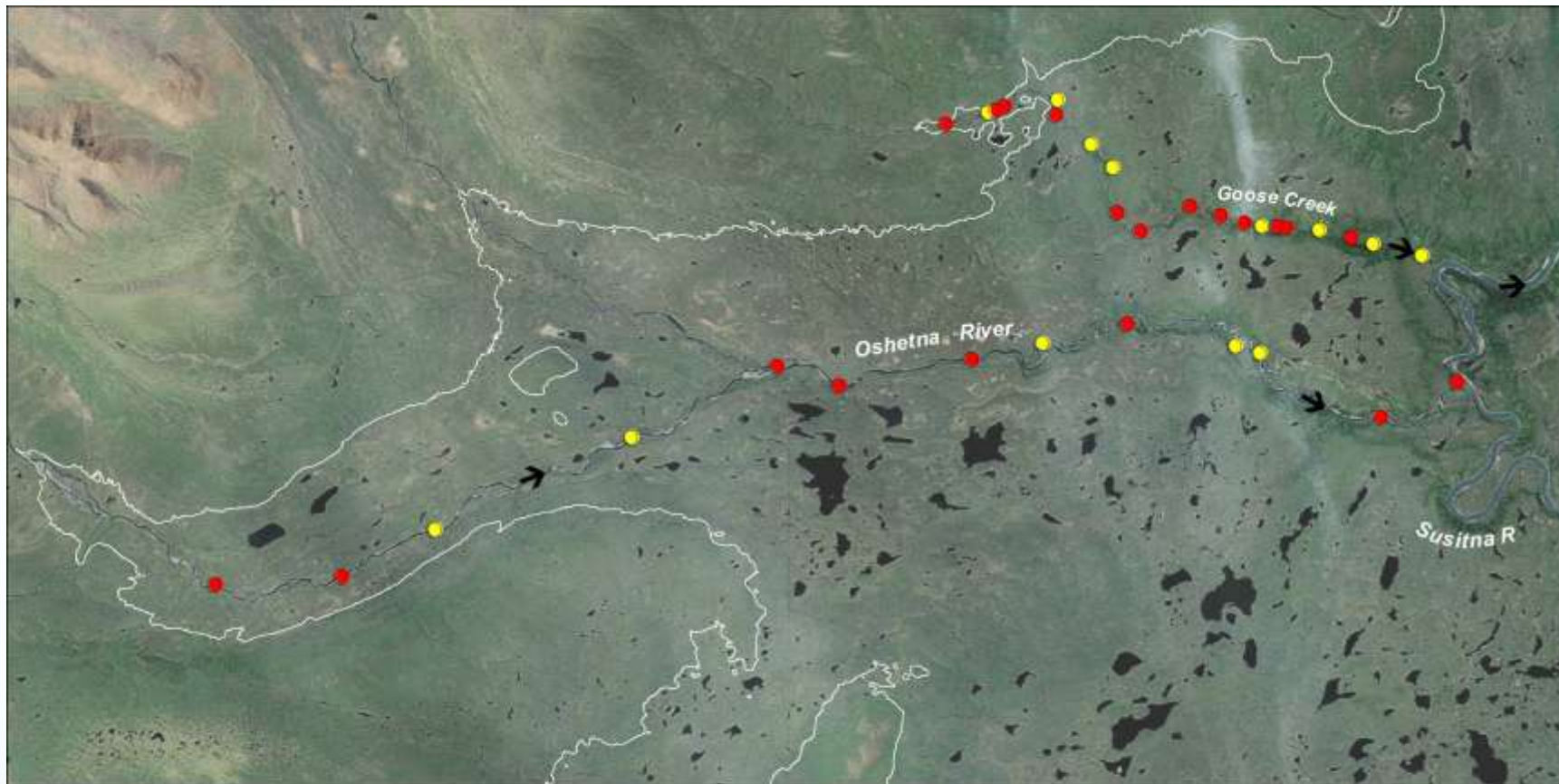
- Accessible tributaries divided into potential sampling units
 - 200m, 400m, 800m
- 15-25% of the sampling units for distribution sampling
- 10% for abundance sampling
- GRTS oversample
 - Missing samples do not compromise spatial coverage



GRTS Sample on the Oshetna River



GRTS Sample on the Oshetna River



Legend

- Distribution Sample
- Distribution/Abundance Sample
- ← Flow Arrow



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Data Sources: See Map References
Orthophoto Source: 2010 MDA Information Systems Inc. NaturalVue Satellite Imagery

Projection: Alaska Albers NAD 1983
Date Created: 1/30/2013
Map Author: R2 - Joetta Zabloney
File: Map_IP_FA_DistAbundTrib_Ok.mxd



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Sampling Within Sampling Units 9

- Selected sampling units reviewed on video
- One habitat unit of each type will be selected at random and 40m section will be sampled

