**Feed and Water Analyses**

Feed ration formulation and sampling protocol should be developed in consultation with a ruminant nutritionist.

Analyses of feedstuffs and complete mixed rations is the means of quality control for the nutritional program.

Timely, proper sampling is key. Frequency of sampling and analyses of feed commodities will depend, among other things, on the varied origins of commodities, frequency of delivery of commodities to the operation, and stability (i.e. moisture content) of the commodities. Frequency of sampling complete diets will depend on how often ingredients change, stability of ingredients, and confidence in ration mixing and delivery procedures. Additional sampling guidelines can be found in the Appendix.

Water is also a key nutrient. Periodic sampling to monitor water quality can reveal possible issues with mineral levels, nitrates, and other factors that can influence consumption, nutrient absorption and performance.

**Sampling and Analyses**

*Harvested and purchased hay*

Hay sources are sampled \_\_\_ at harvest \_\_\_ at delivery \_\_\_when utilized

Hay sources are sampled \_\_\_ once only \_\_\_ repeated, if so please describe

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Analyses include: \_\_\_ moisture \_\_\_crude protein \_\_\_fiber \_\_\_energy \_\_\_minerals

 \_\_\_ Other, please list \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Harvested and purchased silage*

Silage sources are sampled \_\_\_ at harvest \_\_\_ at delivery \_\_\_when utilized

Silage sources are sampled \_\_\_ once only \_\_\_ repeated, if so please describe

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Analyses include: \_\_\_ moisture \_\_\_crude protein \_\_\_fiber \_\_\_energy \_\_\_minerals

 \_\_\_ Other, please list \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Concentrated feed commodities*

Grain commodities are sampled \_\_\_ at harvest \_\_\_ at delivery \_\_\_when utilized

Grain commodities are sampled \_\_\_ once only \_\_\_ repeated, if so please describe

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*By-product feeds*

Analyses include: \_\_\_ moisture \_\_\_crude protein \_\_\_fiber \_\_\_energy \_\_\_minerals

 \_\_\_ Other, please list \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

By-product feeds \_\_\_ at harvest \_\_\_ at delivery \_\_\_when utilized

By-product feeds are sampled: \_\_\_ once only \_\_\_ repeated, if so please describe

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Analyses include: \_\_\_ moisture \_\_\_crude protein \_\_\_fiber \_\_\_energy \_\_\_minerals

 \_\_\_ Other, please list \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Supplements \_\_\_ rely on manufacturer’s specifications

 \_\_\_ sample and analyze, if so, \_\_\_ once only \_\_\_ repeated, if so please describe

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Total mixed rations*

Mixed rations are sampled \_\_\_ at mixer \_\_\_ from the bunk

Mixed rations are sampled \_\_\_ daily \_\_\_ weekly \_\_\_ other, please describe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Analyses include: \_\_\_ moisture \_\_\_ crude protein \_\_\_ fiber \_\_\_ starch \_\_\_ energy \_\_\_ minerals

 \_\_\_ additive assays Other, please list \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Cattle Water*

Water sources sampled \_\_\_ monthly \_\_\_ semiannually \_\_\_ annually

 \_\_\_ other, please describe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Analyses include: \_\_\_ TDS/Conductivity \_\_\_ sulfates \_\_\_ nitrates \_\_\_ salt

 \_\_\_ Other, please list \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_