

APPENDIX VIII

Validation and Analysis Process for Selected Data Themes

Theme (theme name)	What was validated?	Office Validation Process	Field Validation Process	Correction method (final theme) *	Analysis Method **
Aspen and Montane Riparian Forest	Accuracy of mapped polygons depicting aspen or montane riparian forest.	Primarily verified with aerial photographs. Aspen stands not always easily discernible.	Test aerial photo interpretations and compare mapped polygons on theme maps to areas encountered in the field.	100% of errors identified in Nevada County Wildlife Habitats theme corrected based on mapped changed from watershed survey. New polygons added as necessary, and existing polygon attributes updated to reflect actual vegetation. Completely new theme created from aerial photography for foothill riparian woodlands.	Area
Arable Lands from the Nevada Irrigation District (class1ca)	Not validated.			No corrections made.	Area
Bitterbrush	Accuracy of mapped polygons depicting bitterbrush vegetation communities. Extent / distribution.	Eastside scrub located with aerial photographs. However, species composition not discernible.	Determine areas of high bitterbrush dominance from other eastside scrub species. Field check mapped polygons on theme maps. Test aerial photo (office) interpretations.	100% of errors identified in Nevada County Wildlife Habitats theme corrected based on mapped changed from watershed survey. New polygons added as necessary and existing polygon attributes updated to reflect actual vegetation. Bitterbrush combined with Sagebrush in final analysis as Eastside Scrub.	Area
Blue Oak Woodland	Accuracy of mapped polygons depicting blue oak woodlands. Extent / distribution.	Primarily verified with aerial photographs and USGS 7.5 minute topographic maps. Previous knowledge / field survey experience.	Test aerial photo interpretations and compare mapped polygons on theme maps to areas encountered in the field.	100% of errors identified in Nevada County Wildlife Habitats theme corrected based on mapped changed from watershed survey. New polygons added as necessary, and existing polygon attributes updated to reflect actual vegetation. Blue Oak Woodland tracked as part of Foothill Hardwood Woodlands in final analysis.	Area

Theme (theme name)	What was validated?	Office Validation Process	Field Validation Process	Correction method (final theme) *	Analysis Method **
Canals (canals)	Presence/absence of mapped canals on theme maps.	Verified almost exclusively with aerial photographs; canal signature easily discernible. Determine if any errors or omissions exist in database.	Cross reference mapped canals on theme maps when canals encountered in the field.	Additional canals added as mapped in watershed survey, and as mapped on USGS 1:24,000 topographic maps in southwest Nevada County. Attribute data corrected where canals were actually siphons or tunnels.	Line
Caves and Mine Shafts (shafts)	Accuracy of points depicting mine shafts.	No pre-field examinations made.	Majority of mines located on private property, therefore, inaccessible. Verified in a few locations on BLM.	Points added as necessary.	Point
Conifer forest patches with crown size class 5 and 6	Presence/absence of a representative stand of mature or late-successional conifer forest	No office validation process.	Field check areas mapped as late-successional forest. Determine if stand is represented by crown diameters > 40' or generally 30" DBH or greater.	Theme dropped from analysis due to inaccuracy.	N/A
Contiguous tracts of single ownership	Not validated.			Not evaluated. Updated based on Oct. 2001 version of Assessors Parcel Database. Replaced with Contiguous Undeveloped Tracts > 80 Acres in final analysis	Area
Cropland/Pastureland (not orchards or vineyards)	Accuracy, extent, and distribution of mapped areas depicted as croplands.	Almost exclusively verified with aerial photographs. Cropland signature easily discernible.	Cross-referenced mapped cropland areas on theme maps when croplands encountered in the field.	Polygons added and deleted as noted in watershed survey. Supplemented with additional cropland mapping from aerial photography.	Area
Dams in the jurisdiction of the State of CA	Presence/absence of mapped dams on theme maps.	Verified almost exclusively with aerial photographs; dam structures generally visible. Determine if any errors or omissions exist in database.	Cross-reference mapped dam sites on theme maps when dams encountered in the field.	No errors noted. Supplemented with additional theme from the Sierra Nevada Ecosystem Project, which tracks non-jurisdictional dams (damdivnon).	Point

Theme (theme name)	What was validated?	Office Validation Process	Field Validation Process	Correction method (final theme) *	Analysis Method **
Development in Streamside Zone	Accuracy of areas mapped as developed/undeveloped where they exist within stream zones.	Parcel status primarily verified from aerial photographs by the presence/absence of structures, roads and infrastructure.	From public roads, compare field conditions to theme maps and previous office verifications of aerial photographs. Field verified generally in areas of dense canopy where office validation was not possible.	All parcels with structures noted in special theme. Final analysis modified to use mean parcel size in the streamside zone, not extent of development.	Mean
Elevation Range	Not validated. Replaced in final analysis with diversity of wildlife habitat types.			No errors noted, but elevation range theme eliminated from final analysis because it is redundant with habitat type richness. Mean elevation statistic (from grid: nevdemfeet) added to final analysis for general information purposes.	Mean
Gabbrodiorite Soils	Accuracy of areas mapped as, and containing, gabbrodiorite-derived soils.	Cross-reference against Natural Resource Conservation Service Nevada County Area and USDA Tahoe National Forest Soils Surveys.	Check accuracy of theme maps in the field by presence of soil signatures and/or vegetation species and/or structural indicators present.	Theme replaced with more spatially accurate data from the Natural Resource Conservation Service (gabbro).	Area
Important Natural Community Areas (INCA)	Whether habitat and/or habitat quality still exist at INCA portfolio sites.	From previous knowledge, determine if mapped INCA site boundaries are accurate and/or adequately inclusive of important natural community areas.	Visit INCA portfolio sites where they occur on public land. Determine if habitat (or habitat quality) is still present as when site originally mapped.	Boundaries modified as recommended by watershed survey. Boundary corrections to be sent to the Nevada County Conservation Alliance for suggested refinement of original study (final decision can only be made by the study's authors).	N/A
Knobcone Pine Stands	Any errors or omissions in existing database depicting locations of Knobcone Pine Stands.	Map Knobcone Pine stand occurrence using color orthophotos and watershed survey notes.	None.	No corrections made.	Area

Theme (theme name)	What was validated?	Office Validation Process	Field Validation Process	Correction method (final theme) *	Analysis Method **
Lakes and Reservoirs	Any errors or omissions in existing database depicting locations of lakes and reservoirs.	Verified almost exclusively with aerial photographs. Lake and reservoir signature easily discernible.	Cross-reference mapped lakes and reservoirs when encountered in the field.	Minor corrections made to shorelines of Rollins Reservoir. Theme supplemented with lakes and reservoirs from USGS 7.5 minute topographic maps.	Area
Late-Successional Mixed-Conifer and Red Fir Forest (Isogf)	Any commission errors in theme depicting locations of Late-Successional Conifer Forest	Late-Successional conifer forest mapped based on notes from watershed review. Theme checked against US Forest Service vegetation theme and year 2000 color aerial photos	None.	No corrections made.	Area
Leather Oak Chaparral Stands	Commission errors in theme.	Leather Oak Chaparral mapped from watershed survey notes on color orthophotos.	All mapped polygons verified except for stand in the extreme northwest.	No corrections made.	Area
Large Diameter Foothill Hardwood Patches	Presence/absence of mature or late-seral foothill hardwood woodland types.	No pre-field aerial photo work completed.	Field check areas mapped as late-seral. Determine if stand is represented by crown diameters 40' or greater.	Theme dropped from final analysis due to inaccuracy.	N/A
Limestone substrate	Not validated. Dropped from analysis due to overall inaccuracy of source information.			No limestone substrates tracked in final analysis.	N/A
McNab Cypress Stands	Spatial accuracy of theme.	McNab Cypress Stands mapped from watershed survey notes on color orthophotos.	Most, but not all, stand boundaries field verified	No corrections made.	Area
Mines and Mineral Deposits	Accuracy of areas depicting surface mines.	No pre-field examinations made.	Majority of mines located on private property, therefore, inaccessible. Verified in a few locations on BLM.	Theme replaced with mapped hydraulic mines and barren areas (ncwhr) in final analysis.	Area

Theme (theme name)	What was validated?	Office Validation Process	Field Validation Process	Correction method (final theme) *	Analysis Method **
Mixed Paleozoic Metasediment Substrate	Not validated. Dropped from analysis due to overall inaccuracy of source information.			No Paleozoic metasediment substrates tracked in final analysis.	N/A
Modeled Streams	Accuracy of theme maps and the calculated summed length and terminus points of streams.	Topographical maps were used to help locate the stream terminus points where they occurred on public land.	Locate the initial stages of scour and a defined stream channel to determine stream terminus. Compare terminus to terminus points located on theme map.	Theme replaced in final analysis with perennial and intermittent streams from USGS 7.5 minute topographic maps (nevstr24).	Line
Montane Hardwood Patches with Crown Size Class 5 and 6	Presence/absence of a representative stand of mature or late-seral montane hardwood tree species.	No pre-field stand examinations made.	Field check areas mapped as late-seral. Determine if stand is represented by crown diameters 40' or greater.	Theme dropped from analysis.	N/A
Montane Meadows	Accuracy of mapped polygons depicting montane meadows. Extent / distribution.	Almost exclusively verified with aerial photographs, with aid from topographical maps. Previous knowledge / field survey experience.	Test aerial photo interpretations and compare mapped polygons on theme maps to areas encountered in the field.	Many polygons reclassified as Barren, Subalpine Dwarf Scrub, and Montane Riparian, as noted in watershed survey.	Area
Orchards and Vineyards	Accuracy, extent, and distribution of mapped areas depicted as orchards / vineyards.	Verified almost exclusively with aerial photographs. Orchard and vineyard signatures easily discernible.	Cross-reference mapped orchard and vineyard areas on theme maps when encountered in the field.	Polygons added and deleted as noted in watershed survey. Supplemented with additional mapping from aerial photography.	Area
Pacific River Council Aquatic Diversity Areas	Not validated. Included in final analysis for reference purposes only.			Theme from independent scientific process. Assumed valid.	N/A
Parcel Size in the Streamside Zone	Not validated.				Mean
Plant Species Richness by Watershed	Not validated. Dropped from final analysis.			Not comprehensively evaluated. Found accurate wherever checked. No changes made.	N/A

Theme (theme name)	What was validated?	Office Validation Process	Field Validation Process	Correction method (final theme) *	Analysis Method **
Public/Private Lands and Conservation Easements	Accuracy of mapped boundaries and ownerships of public lands and existing conservation easement areas.	From previous knowledge and the use of public agency ownership maps, determine the accuracy of theme map information.	All verification completed in the office.	Parcels added and deleted as necessary based on detailed feedback from watershed survey. Entire theme replaced with public lands from the Oct. 2001 version of the Assessors Parcel Database. New theme checked against findings of watershed survey to assure accuracy. No errors found. Represented by public lands only (publicf) and private lands (privatef) themes in final analysis.	Area
Red and Yellow List Animal Occurrences (verts)	Accuracy of information supporting Red and Yellow List species occurrences.	Search of California Natural Diversity Data Base (CNDDB) and other lists and tables of animal species occurrence information specifically for the project.	Verify that habitat types and/or habitat requirements are met at the site. Perform habitat quality evaluations for written accounts.	Four points added and deleted from theme as noted in watershed survey. Field reviewed theme combined into Red/Yellowlist species (plants and animals) in final analysis.	Point
Red and Yellow List Plant Occurrences (plantsn)	Accuracy of information supporting Red and Yellow List species occurrences.	Search of California Natural Diversity Data Base (CNDDB) and other lists and tables of plant species occurrence information specifically for the project.	Check to see if habitat types and/or habitat requirements are met at the site. Perform habitat quality evaluations for written accounts.	Records added and deleted based on personal knowledge of botanists on the watershed survey team. Field reviewed theme combined into Red/Yellowlist species (plants and animals) in final analysis.	Point
Richness of California Wildlife Habitat Types	Determine if the number, extent and distribution of mapped major vegetation communities are present and/or accurate.	Primarily verified with aerial photographs. Some vegetation types less discernible. Establish field verification checkpoints.	Test aerial photo interpretations and compare mapped polygons on theme maps to vegetation communities encountered in the field.	Statistics regenerated from final Natural Heritage 2020 wildlife habitats theme after all updates completed.	Variety

Theme (theme name)	What was validated?	Office Validation Process	Field Validation Process	Correction method (final theme) *	Analysis Method **
Roadless Areas	Accuracy of mapped polygons depicting tracts 250 acres or larger of roadless land.	Primarily verified from aerial photographs except in areas of dense forest or woodland canopy coverage.	From public roads compare to theme maps and previous office verifications of aerial photographs. Field verified in areas of dense canopy.	New roads added as noted in watershed survey. Location of roads further refined by checking theme against US Geological Service 7.5 minute digital orthophoto quadrangles. Comprehensive validation completed at the 1:24,000 scale. Roadless area theme recreated from corrected road data.	Area
Roads in Streamside Zone (rds_sed)	Accuracy of mapped roads and streams. Determine if stream is perennial.	Primarily verified by aerial photographs, except where dense forest/woodland cover exists.	Test aerial photo interpretations. Compare mapped areas to areas encountered in the field. Field verified in areas of dense canopy cover.	New roads added as noted in watershed survey.	Line
Sagebrush	Accuracy of mapped polygons depicting sagebrush vegetation communities. Extent / distribution.	Eastside scrub located with aerial photographs. However, species composition usually not discernible.	Determine areas of sagebrush dominance from other eastside scrub species. Test aerial photo interpretations made in the office.	Polygons added and deleted as noted in watershed survey. Sagebrush combined with Bitterbrush in final analysis as Eastside Scrub.	Area
Serpentine Soils (serp)	Spatial accuracy of Serpentine-based soils	100% review by local botanists familiar with field distribution of serpentine based soils	No formal field validation.	Polygons added south of town of Washington.	Area
Slope / Steepness (nevs1p50)	Not validated.				Mean
Springs, Seeps and Fens	Spatial accuracy of spring, seep and fen points.	Theme compared on-screen to US Geological Survey 1:24,000 Digital Raster Graphics and USFS 1:24,000 fen maps.	No formal field validation	Springs and fens added in southwest and central Nevada County	Point

Theme (theme name)	What was validated?	Office Validation Process	Field Validation Process	Correction method (final theme) *	Analysis Method **
The Nature Conservancy Portfolio Sites	Whether habitat and/or habitat quality still exist at TNC portfolio sites.	From previous knowledge, determine if mapped TNC sites boundaries are accurate and/or adequately inclusive of target communities and/or habitats.	Visit TNC portfolio sites where they occur on public land. Determine if habitat (or habitat quality) is still present as when site originally mapped.	Theme validated by comparing target species and resources for the portfolio site to the resources present. Boundaries also checked against actual changes in vegetation or land use. Where errors found, corrections reported directly to The Nature Conservancy.	N/A
Transportation Corridors	Determine if any errors or omissions exist in database.	Verified almost exclusively with aerial photographs. Transportation corridors easily discernible.	Cross-reference mapped transportation corridors on theme maps when encountered in the field.	100% correction of noted spatial errors. Theme dropped from final analysis.	N/A
Ultramafic Substrate (geo_um)	Accuracy of areas mapped as, and containing, serpentine derived soils.	Cross-reference against Nevada County NRCS and USDA Tahoe National Forest Soils Survey.	Check accuracy of theme maps in the field by presence of soil signatures and/or vegetation species and/or structural indicators.	Theme replaced with higher precision data from the Natural Resource Conservation Service (serp).	N/A
Unimproved Private Parcels (unimproved)	Development status of parcels.	Primarily verified from aerial photographs except in areas of dense forest or woodland canopy cover.	Determine status when and where encountered while driving along public roads.	All parcels with structures noted in special theme. Special theme used in conjunction with Oct. 2001 version of Assessors Parcel Database to create updated theme of unimproved parcels. Not directly used in final analysis, but used as verified input to theme "Contiguous Unimproved Tracts > 80 Acres" (unimp_tract)	Area
Urban	Accuracy, extent, and distribution of mapped areas depicted as urban.	Verified almost exclusively with aerial photographs. Urban signature easily discernible.	Cross-reference mapped urban areas on theme maps when encountered in the field.	Additional urban areas added as noted based on watershed survey. New urban theme created from Oct 2001 version of Assessors Parcel Database and used to supplement existing urban lands themes in final analysis.	Area

Theme (theme name)	What was validated?	Office Validation Process	Field Validation Process	Correction method (final theme) *	Analysis Method **
Utility Corridors (utilitya)	Determine if any errors or omissions exist in database.	Verified almost exclusively with aerial photographs. Utility corridors generally visible.	Cross-reference mapped utility corridors on theme maps when encountered in the field.	Discontinuous utility corridors corrected and updated based on US Geological Service digital orthophotos. Dropped from final analysis.	N/A
Valley Oak Woodlands (valleyoak)	Accuracy of mapped polygons depicting valley oak woodlands. Extent / distribution.	Preliminarily verified with aerial photographs, with aid from topographical maps. Previous knowledge / field survey experience.	Test aerial photo interpretations and compare mapped polygons on theme maps to areas encountered in the field.	Polygons added as noted in watershed survey. Streamside Valley Oak stands reclassified as Foothill Riparian Woodlands.	Area
Volcanic Lava Caps and Mudflows (lavacaps)	Spatial accuracy of theme	Verified with color orthophotos and NRCS Nevada County Area Soil Survey	Most, but not all, mapped polygons verified via windshield surveys	All polygons above 3000 feet deleted based on input from local botanists familiar with distribution of this small-patch ecosystem.	Area
Whitebark Pine Stands (Whitebark)	Spatial accuracy of theme. Extent/distribution.	Verified by comparing theme with 1:24,000 Whitebark Pine maps from US Forest Service	No field validation.	No errors corrected.	Area
Large-Patch Ecosystem cover type maps by watershed (ncwhr). Includes: Annual Grassland, Aspen Woodlands, Barren (including cliffs and hydraulic diggings), Cropland, Eastside Pine Forest, Eastside Riparian Woodlands, Eastside Scrub, Foothill Chaparral, Foothill Hardwood Woodlands, Foothill Riparian Woodlands, Fresh Emergent Wetlands, Lacustrine Ecosystems, Lodgepole Pine Forest, Mixed-Conifer Forest, Montane Chaparral, Montane Hardwood Woodlands, Montane Meadow, Montane Riparian Woodlands, Oak-Foothill Pine Woodlands, Orchards, Ponderosa Pine Forest, Red Fir Forest, Riverine Ecosystems, Subalpine Pine Forest, Subalpine Conifer Forest, Subalpine Dwarf Scrub, Urban, and Vineyards	Overall accuracy of watershed vegetation maps.	Almost exclusively verified with aerial photographs, with aid from topographical polygons on theme maps.	Test aerial photo interpretations and compare mapped polygons on theme maps to areas encountered in the field.	100% of errors identified in watershed surveys corrected, both random and systematic. New polygons added as necessary, and existing polygon attributes updated to reflect actual vegetation.	Area

*Every effort was made to ensure accuracy of all GIS themes used. All known errors were corrected. Some themes were created late in the science process using aerial photo interpretation only. These themes, including foothill riparian woodlands and fresh emergent wetlands, were not subject to field validation. 100% accuracy of all themes is not implied or guaranteed. None of these themes should be used in lieu of project level biological inventories.

** See Chapter 2: Methods, for a description of the analysis methods referenced here.