

Contents

Introduction 1

About this Guide 1

Using Data. 3

Databases 3

Data types 4

Vector data sources 6

Other vector data sources 8

Working with Census data 11

Working with USGS data 12

Working with state & local GIS data 15

Working with Open Street Map data 16

Raster data 26

Data formats 26

Data types 27

Shaded relief for large-area maps 36

Using USGS raster data 38

Using Open Topography 40

Natural Earth Raster data 42

Other Natural Earth maps 52

Projections 58

Coordinate Reference Systems. 59

Projection Guide 60

Data Scale 62

Tools 63

QGIS 63

Other graphic tools 65

File sizes 65

Layers 66

Getting Started with QGIS 72

Setting up QGIS 72

Adding data. 74

Styling the map 77

Exporting to Illustrator 83

Working in Illustrator 85

Forsyth County Map 87

What we'll learn. 87

Collecting the data 88

Working in QGIS. 92

Changing the appearance 100

Adding labels 107

Exporting the map 112

Working in Illustrator 114

Map of North Carolina 121

What we'll learn. 121

Collecting the data 121

Working in QGIS. 125

Styling in QGIS 140

Exporting the map 145

Working in Illustrator 146

Adding symbols and manual labels 152

USA Historical Trails Map 160

What we'll learn. 160

Collecting the data 161

Working with the shaded relief. 164

Working in QGIS. 165

Working in Illustrator 167

World Data Map 173

What we'll learn. 173

Collecting the data 173

Working in QGIS. 174

Working with projections 181

Labeling cities 185

Exporting to Illustrator 187

Adding the legend. 190

Greensboro Map 191

What we'll learn. 191

Collecting the data 192

Working in Illustrator 202

Exporting from QGIS to Illustrator. . 211

Basics of QGIS exporting. 211

Exporting as an SVG 213

QGIS and Illustrator: A troubled relationship . . 215

Basic Attributes 217

Advanced Attributes 227

Filtering data 227

Splitting a data set 234

Working with Labels 241

What to label 241

Visual Hierarchy. 241

Best practices for labeling 242

Adding labels with QGIS 244

Identifying attributes for labeling 256

Label sizing in QGIS 257

Buffer issues 259

Adding labels in Illustrator. 260

Using symbols 265

Adding buffers in Illustrator 266

Working with Roads 269

Collecting the data 269

Working in QGIS—filter method 270

Split Vector Layer method 274

OSM road data	276	National Geographic Maps	412
Styling roads	283	Collecting the data	413
Styling roads in Illustrator	286	Working in QGIS.	413
Creating fancy roads	291	Working in Illustrator	421
Cleaning up sharp joins	292	National Park Service Maps.	431
Other road problems	293	Working in QGIS.	434
Working with neighborhood streets	295	Working in Illustrator	436
Using shadows and glows	298	Thematic Maps	453
When things go wrong.	299	Business Locator Maps	461
A final word.	299	Using QGIS	461
Working with Water	300	Using Google maps	462
Water data	300	Creating News Maps	469
Working in QGIS.	302	Building the base map	469
Working in Illustrator	307	Working in QGIS.	471
Type	329	Working in Illustrator	480
Sans-serif type	329	Creating Orthographic Maps	510
Serif type	332	Data	511
Useful serif typefaces	332	Shaded relief	521
Google Font alternatives	334	City Attraction Maps	523
Other fonts to consider	335	General points	524
Using Symbols.	337	Building the Base Map.	525
Creating a symbol.	337	Attractions	534
Editing symbols.	338	3D Downtown City Maps	539
Other symbols	340	Collecting the data	539
Georeferencing	341	Working in Illustrator	545
Working with Reference Materials.	349	True Height 3D Buildings	554
Images	349	How this works	554
When sources disagree	351	Data sources	554
How to place images	351	OneGeo	555
Copyright Issues	353	QGIS	558
Working with DEMs	355	Which method should I use?.	562
Coloring and Clipping DEMs	363	Using basemaps	563
Adding solid colors	363	Image trace.	566
Working with color ramps	365	Battlefield Maps	568
Creating a custom color ramp	366	Symbols	569
Clipping the map boundary	374	Terrain	570
NPS-Style Shaded Relief	377	Movement arrows.	571
Examples from the NPS	377	Other issues	581
How they do it	378	Creating Extruded Maps	582
Creating NPS-style relief in QGIS	380	Creating the base map	582
Softening the relief	381	Working in Illustrator	585
Output Resolution	386	Using Graduated Symbols	592
Working with DEMs	386	Using Custom SVG Symbols.	599
Natural Earth files.	391	Creating the base map	599
Maps of the USA.	393	Creating the icons.	601
Editing GEOTiffs in Photoshop	395		
Method 1	396		
Method 2	398		

Adding the symbols to the map	604	Using the Gradient Mesh Tool	685
Exporting to Illustrator	607	Create Gradient Mesh method	686
Using Google Earth Images	609	Mesh Tool method	688
Using Google Earth imagery by itself	609	Finishing Touches	690
Using Google Earth imagery with QGIS	611	Legends	690
Using a Base Map plugin.	614	Scale	691
Using Google Earth imagery directly in QGIS	616	North Arrow/Compass Rose	695
Creating 3D Maps in QGIS.	618	Case Study: Coffee Map	697
Getting started	618	Finding the data	703
Going 3D	619	Working in Illustrator	704
Exporting the map	621	Case Study: Pyramid Map.	711
Line and Halftone Shorelines	624	Finding the data	711
Creating the base map	624	Working in QGIS.	712
Adding Concentric lines	625	Working in Illustrator	716
Halftone shading	630	Case Study: Campus Maps	726
Old-Style Line Halftones	637	Collecting the data	726
Preparing the base map	637	Case Study: U-Boat Map	739
Creating the lines	638	Collecting the data	739
Creating the halftone effect	640	Working in QGIS.	740
Using Contour Lines	647	Working in Illustrator	743
Styling Map Areas	654	Case Study: Silk Road Map	761
Drawing the areas.	654	Creating the base map	761
Styling Ocean areas	664	Adding vector information.	766
Hatch patterns	667	Case Study: Islam Maps	768
Creating a Parchment Effect	672	Collecting the data	769
What you need	672	Creating the base maps	770
Creating the Base Map.	672	Working in Illustrator	775
Adding the parchment	676		