

Map]; Siena, Archivio di Stato [AS], Comune di Colle di Val d'Elsa, Carte topografiche Morozzi; see Guarducci 2008, 21–24) (fig. 28). Combining on-site surveying with compilation at the drawing board, these maps—homogeneous in scale and content—were joined together in 1784 to form the large manuscript “Carta geografica del Granducato di Toscana” (ca. 1:78,550) (Prague, NA, RAT Map, 146 cc. and 155; Rombai 1993, 149–55).

Morozzi’s contemporaries included Luigi Giachi and his brothers Antonio and Francesco, three draftsmen and land surveyors to the grand duke who, from the 1750s

to the 1790s, produced dozens of manuscript atlases covering the vicariates and dioceses of Tuscany, usually basing their work on Morozzi’s depictions of individual provinces. Luigi Giachi alone produced the 1769 atlas, “Il Granducato di Toscana” (Florence, Biblioteca Nazionale Centrale [BNC], Carte mss. A.I.13), the collections of large-format maps of vicariates and dioceses (1793 and 1799) (Prague, NA, RAT Map, 133–143 and 196–211), the large “Pianta del Granducato di Toscana divisa nelle Diocesi” (1795) (Prague, NA, RAT Map, 147), and the “Pianta della Provincia Inferiore dello Stato Senese



FIG. 28. “VICARIATO DI CERTALDO,” BY FERDINANDO MOROZZI, 1780. The map forms part of a collection of administrative cartography prepared in the 1770s and 1780s for the reform of the provincial and communal districts in the Grand Duchy of Tuscany. Manuscript in ink and watercolor on paper, hand colored. Scale ca. 1:33,000.

Size of the original: 114 × 104 cm. Image courtesy of the Archivio di Stato, Siena (Colle di Val d'Elsa archivi, Carte topografiche Morozzi, 4).

divisa in cancellerie" (1797) (Prague, NA, RAT Map, 209) (Rombai 1993, 115–18, 123).

Like other states, the Grand Duchy of Tuscany also generated numerous maps of individual fiefs and domains, such as the collection commissioned by the sovereign in 1771–72 (Florence, AS, Miscellanea di Piante, 80, 246, 249/b, 260, 551, 660, etc.). The best example is the large "Pianta del marchesato di Castiglioni della Pescaia" (Florence, AS, Piante dello Scrittoio delle R. Possessioni, n. 109) in Maremma, comprising portraits of the towns of Castiglioni and Tirli, prepared in 1780 by the engineer Alessandro Nini, who collaborated with the mathematician Leonardo Ximenes. Similarly, in the Kingdom of Naples, several examples depict fiefs and domains. The "Pianta geometrica delli feudi di Carovigno, Serranova e del Colombo" (1726) (Naples, AS, Allodiali, I serie, fs. 158, pianta n. 1) exhibits on-site measurements in its geometrical structure; Nicola Schioppa's "Mappa dello Stato di Ajello in Calabria Citra" (1771) (Naples, AS, Archivio di Tocco di Montemiletto, b. 131, inc. 24) shows a more advanced approach; the "Topografia de Feudi" (1787) (Naples, AS, Biblioteca-Manoscritti, vol. 127), helped to resolve a dispute regarding the fief of Monte di Mezzo (Martullo Arpago et al. 1987, 90, 58–59, 29 respectively). Six large watercolored ground plans of the fiefs of the Moncada family in eastern Sicily were prepared by local land surveyors at the turn of the eighteenth to

nineteenth century, including Pietro La Piana's "Pianta topografica generale della contea di Aderno Centorbi e Biancavilla" (Palermo, AS, Fondo Moncada, Carte dei feudi; La Piana, n. 9), noteworthy for its accurate relief and detailed rendering of topography (Laudani 2002, 52–55, fig. 26).

The use of maps to exert local control may be seen in the atlas of nine topographical maps (now in a private collection in Florence) produced by the engineer Tommaso Rajola in 1771–73, who performed on-site surveying with a plane table. Commissioned by the Roccella prince Vincenzo Maria Carafa, the maps served to control and administer the fiefdom of Roccella Jonica in Calabria. A fine copy of these working maps was prepared in Naples between 1774 and 1789 (Fuda 1995, 32–37).

Throughout the peninsula, innumerable manuscript or printed maps on a large topographical scale were created to manage rivers or reclaim marshy areas. Produced by technical experts and scientists working for various states, the maps helped analyze the layout and composition of terrain and determine the best interventions. The Venetian Magistratura alle Acque dedicated great attention to such questions. Depictions of the plains of the Veneto and Friuli predominate throughout the Enlightenment period, with hundreds of maps dedicated to the hydrography of the lagoon and lowland areas. As examples, a map of ca. 1670 covers the region's hydro-



FIG. 29. REPRESENTATION OF THE FLUVIAL NETWORK IN THE VENETO BETWEEN ADIGE AND CANALBIANCO, EIGHTEENTH CENTURY. The map represents the topography of the river network along the coast of the territory of the Veneto, combining the hydrographic and road

networks, soil use, settlements, and the boundaries between the communities. Manuscript in ink and watercolor on paper, hand colored.

Size of the original: 134.5 × 272.0 cm. Image courtesy of the Museo Correr, Venice (Cartografia, Mappa Giustinian, 15).



FIG. 30. "TOPOGRAFIA DEL CORSO DELLE ACQUE DEL BASSO TREVIGIANO CON PORZIONE DELLA LAGUNA," BY DOMENICO MARCHETTI (ENGINEER), 1788. This map, concerned with the flow and problems of water and including the remains of archaeological sites, was compiled by the Magistrate of Adige to focus in great detail on

the complex realities of Venetian-Friulian hydrography. Manuscript in ink and watercolor on paper, hand colored. Scale ca. 1:14,500.

Size of the original: 95 × 154 cm. Image courtesy of the Museo Correr, Venice (Biblioteca, Ms. Provenienze diverse C, 840/4).

graphical basin and the Venetian lagoon (Venice, Civico Museo Correr [CMC], Biblioteca, Archivio Lazara Pisani Zusto, Cartografia, 17/60); an eighteenth-century map depicts the river network between the Adige and Canalbianco, providing a detailed topographical account of coastal terrain where marshlands still predominated (fig. 29); Domenico Marchetti's "Topografia del corso delle acque del Basso Trevigiano" (1788) (fig. 30) focuses more sharply on the complex situation of the Venetian and Veneto-Friuli lagoons (Cavazzana Romanelli 2004, 78; Cantile 2004, 96).

Innovative analytic cartography was also produced in Piedmont. Examples include Giovanni Giacomo Cantù's "Corso del Fiume Sesia" (1755), which identifies places and buildings damaged by the river flood of 1755 and shows recent restoration work, and Gioseffo Depauli's "Typo regolare del corso del Fiume Pò" (1758), which helped to plan the canalization of the river (Turin, AS, Corte, Carte topografiche, series III, Sesia; Finanze, Tipi della sez. II, 92) (Comba and Sereno 2002, 2:138–40, pls. 88, 89).

Within Tuscany in the second half of the eighteenth

century, the grand duke's mathematicians, Ximenes and Pietro Ferroni and their collaborators, produced topographical depictions of terrain using innovative surveying methods to achieve accurate content. Ximenes prepared the "Carta topografica generale del Lago di Castiglioni" (1758–59) as part of a project for improving the plain around Grosseto (Florence, AS, Segreteria di Finanze ante 1788, f. 749). Ferroni's "Carta corografica del Valdarno di Pisa" (1774) anticipated his later work on problems posed by the reorganization of other water courses, for which he produced the "Mappa topografica che dimostra lo stato delle acque di Valdinievole" (draftsman: Stefano Diletti) and the "Pianta speciale dei Torrenti, Fossi e Canali frapposti al Lago di Bientina o di Sesto e al Fiume Arno." Both maps accompanied a report (8 June 1780) regarding land reclamation in the wetlands (Florence, AS, Pianta Ponti e Strade, n. 21). Together with his pupils Salvatore Piccioli and Cosimo Zocchi, Ferroni also worked on projects in the southern Val di Chiana, most notably the "Pianta della Pianura di Valdichiana posta tra il Callone Pontificio e il Lago di Chiusi," and created maps of Lake Trasimeno and the

Val di Chiana (draftsmen: Luigi Sgrilli and Antonio Capretti) to explore a possible navigable canal linking the two areas (Prague, NA, RAT Map, 245, 247–248, and 250). Other Ferroni waterway maps include the “Pianta che dimostra l’andamento dei principali fiumi, fossi e strade di tutta la Val di Chiana” (Florence, AS, Camera delle Comunità e Luoghi Pii, f. 1548) and the “Pianta del Valdarno e dell’Usciana” (1780) concerning the Val di Nievole (Florence, AS, Segreteria di Finanze ante 1788, f. 936, ins. 1780).

In addition to hydrographical problems, Ferroni mapped more extensive areas topographically, such as the Maremma di Grosseto, the Casentino, and eastern Tuscany. By the 1780s he turned to road systems with strikingly innovative plans, for example, the “Pianta dimostrativa di una parte del Casentino, la Pianta dimostrativa dei progetti delle due linee di strada che dalla Consuma andrebbero sino al fiume Arno” and the “Pianta dimostrativa delle strade presenti che da Stia e Pratovecchio vanno alla cima dell’Appennino” (Florence, BNC, Cappugi, n. 308). Major road building operations active around the middle of the eighteenth century within the Grand Duchy generated innumerable maps. After the administrative reforms of 1773 a great number of locally focused atlases provided a census of public highways, such as Carlo Maria Mazzoni’s “Campione delle Strade situate dentro il circondario di Pietrasanta” (1783) (Pietrasanta, Archivio Storico Comunale, Stradario Mazzoni) (Boncompagni and Olivieri 2000). The administration of road and travel was central to the collection titled “Viaggi d’Italia” gathered by the Florentine land surveyor Antonio Giachi (Florence, BNC, Ms., II.XI.4). Around 1760 Giachi produced a similar though more detailed version of this manuscript travel atlas titled “Guida per viaggiar la Toscana” (Florence, Biblioteca di Geografia dell’Università degli Studi, and Biblioteca dell’Istituto Geografico Militare) (Cantile 2003).

From late medieval times central authorities in all the Italian states had paid particular attention to communication networks with cartography dedicated to this theme. In the Venetian Republic, Valentino Bartoli provided a road map in his 1650 account of the *Terraglio Vecchio* (Treviso, Biblioteca Comunale, Fondo cartografico, 141). More than seven meters long, this map follows the course of the road from Mestre to Treviso, with different colors identifying different road surfaces (Cantile 2004, 90–91).

In Savoy, the route from Turin via Cuneo to Nice, an important link with the Ligurian Sea, was represented on the “Carta corografica dove dimostrativamente son segnate le strade e calle” (Turin, AS, Corte, Carte topografiche per A and B, Nice n. 8). Dating from ca. 1679, it shows the territory of Piedmont and a projected overall road network that was of great strategic and—above

all—military significance (Sereni 1984; Carassi 1984, 94). Francesco Antonio Bruna’s “Dimostrazione delle strade tendenti da Carignano a Cuneo” (1759) (Turin, AS, Corte, Materie economiche, Ponti e Strade, m. 6, fasc. 1), constructed from on-site surveying, displays features of a twentieth-century thematic map.

From the 1660s onward the Republic of Genoa promoted “ambitious road schemes to improve communications with Lombardy and the East [i.e., Parma and Tuscany]” (Quaini 1984, 225). This effort produced maps like Stefano Scaniglia’s “Descrizione della strada da ristorarsi da Sestri sino alla terra di Riccò” (1688) (Genoa, AS, busta 17, n. 1083) (Quaini 1994, fig. 24) and Giovanni Batta Costanzo’s “Piano della strada nuova dalla Spetia sino a Parma” (1660) (Genoa, AS, Raccolta cartografica, busta 17, n. 1101). Later, Matteo Vinzoni’s “Descrizione delle strade che vengono nel territorio di Savona” (1743) detailed the area’s road network (Genoa, AS, Raccolta cartografica, busta 28 bis, Miscellanea, n. 105) (Quaini 1983, 39).

The maintenance and preservation of woodlands also encouraged administrative cartography. Again, the Venetian Republic took the lead from the beginning of the seventeenth century and especially during the eighteenth by producing thematic maps, which concentrated on state- and community-owned woodlands of tall timber, traditionally used in shipbuilding and in civil and military construction work (Casti and Zolli 1988; Casti 1994). Archival examples display a variety of cartographic approaches to handling different types of woodlands. Geometrically based maps of publicly owned woodlands of Friuli contrast with a more pictorial approach of the woods in the Sauris basin (1752). Pictorial maps show the lots of woods in the Carnic Alps at the time of harvest and the aftereffects of the harvest on Monte Pal (Bianco 2001, figs. 8, 10, 19). Further examples exist for the woods in Carnia, whether held in common or owned by the municipality, and for timber harvests (before and after) in the But Valley and the area of Lumiei (Bianco and Lazzarini 2003, 68, 69, 76, 77, 130). Forest cartography in the Veneto reached its peak at the turn of the eighteenth to nineteenth century with the work of the Republic’s inspector of forests, Candido Morassi. Wide-ranging and systematic cartographic descriptions were prepared to halt the decline and erosion of the woodland stocks in the Belluno and Carnia areas. Giovanni Ongaro’s drawing of the local wood of Chiarascatis di Moggio in 1794 (Bianco and Lazzarini 2003, 129) was produced to create an atlas of all the publicly owned woodland in the Carnia area (ultimately prepared by Antonio Pilizzari) (Bianco 2001, 89). In Piedmont, Cantù and other state-employed technicians produced a map of the woods of the Valle d’Exilles in the upper Susa Valley (1739–40) (Vienna, Kriegsarchiv; see Sereni 1991). From 1752 to 1764, the Ufficio To-

pografico Reale commissioned systematic surveys of the woods of Savoy “in relation to the exploitation of the mines in certain alpine valleys and the associated need to know the nature and extent of forestry resources” (Sereno 2002a, 179; 2002b, 100n113).

In the Grand Duchy of Tuscany the manuscript “Relazione e piante delle boscaglie di S.A.S.” (1654–55) by Zorzi de Negri, head of the Arsenale at Pisa (Pisa, Biblioteca Universitaria) includes an atlas of woodland maps of Maremma in perspective view. A manuscript collection from the mid-eighteenth century (Florence, AS, Magona) shows the coppice woods existing within an eight-mile radius of the grand duke’s metal foundries in the Montagna Pistoiese, Pietrasantino, and Maremma areas. Each of these woods was reserved exclusively as a source of fuel supplies for such facilities and supervised by the iron foundry authority, Magona del Ferro (Valentini 1993, 298). Other eighteenth-century manuscript maps in Florence (AS) treat forests or wooded game reserves—for example, Pigelleto dell’Amiata, Teso in the Montagna Pistoiese area (by Giovanni Caluri, 1797), the Cascine di Firenze farm (by Antonio Bicchi, 1796), and the Massa Marittima game reserve (second half of the eighteenth century).

The Republic of Genoa produced maps of public woodlands, particularly for border areas, such as Vinzoni’s map of the woods of Pertigara (“Selva della Pertegara,” 1711, Genoa, AS, Archivio Segreto, Confinium, 190), the large Savona woodlands (1724), and the Consevola woodlands (1757) (Moreno 1990, 41–48; Quaini 1994, fig. 22). The forestry assets of Savona were mapped anew by Gerolamo Gustavo 1759–60 as “Tipi di tutte le Masserie ed altri ripartimenti” (forty-two manuscript maps, ca. 1:4,850; Savona, Biblioteca Civica, scaffale nuovo, I/1, ms. 19), a collection intended to assess the quantity and quality of local assets. Working with the Piedmont engineer Antoine Durieu, Gustavo later surveyed the boundaries of the Consevola woods in 1770–71, 1790, and 1796. In 1782 he prepared the “Tipo geometrico del Bosco Camerale Ronco di Maglio,” and in 1780, with another Piedmont engineer, Vincenzo Denisio (Denis), compiled the “Carta topografica fatta sopra il luogo . . . che comprende l’intera Regione de’ Selvatici” (Levi 1986, 211–14).

Timber was vital for the mining industry: for constructing tunnels and galleries and as fuel for smelting. Maps aided not only the administration of forests but also the location and exploitation of mineral resources. In the Duchy of Savoy in the 1750s, military engineers took part in surveys intended to give new impetus to the mining industry. Both the “Carta dimostrativa delle vicinanze d’Allagna colla posizione delle Miniere” (1754, by Alessandro Tesauo) and the “Pianta e profilo delle due cave del Rame di S^t. Giacomo e S^t. Giovanni esistenti nel territorio d’Alagna” (1754, by Giovanni Domenico

Ravichio) (Turin, AS, Corte, Carte topografiche, serie III, Alagna) show topographical features, mineral seams, and mining shafts (Comba and Sereno 2002, 2:134–35, pl. 85). The “Carta topografica in misura della Valle d’Anzasca, parte della giurisdizione dell’Ossola superiore e parte Inferiore nell’Alto Novarese” (1758, by Giambattista Sottis, engineer) reveals lead, gold, and iron mines (fig. 31) (Comba and Sereno 2002, 2:135–36, pl. 86).

In the Grand Duchy of Tuscany, the imperial land surveyor, Francesco Antonio Eegat, prepared a series of maps reflecting exploration of the Colline Metallifere from the 1760s onward. The “Carta topografica del territorio compreso tra Montieri, Boccheggiano, Prata e Massa Marittima” and the “Pianta e veduta della miniera e dell’opificio dell’allume situato nel territorio di Monterotondo” located all mines, even those in use in ancient times (Florence, AS, Miscellanea di Piante, 29a, and 29b). The grand ducal engineer Mazzoni produced other maps in the 1760s covering the mines of the Valtiberina and the Apuan Alps: the “Pianta corografica del Capitanato di Pietrasanta” (1762–64) and “Mappa topografica di Val di Tevere” (1767) (Florence, AS, Miscellanea di Piante, 192 and 248); both display remarkable pictorial representations and content not strictly related to mining (Valentini 1993, 299, 301). In 1766, Mazzoni also prepared other thematic depictions of the mining areas in the Apuan Alps (Florence, AS, Miscellanea di Piante, 2/a and 2/b, 86/a and 86/b, 188).

In Habsburg-ruled Lombardy, a reference for patenting mining was provided by the “Carta mineralogica della Valsassina e della Valcavargna” (Milan, AS, Atti di governo, Commercio, p.a., m. 203) prepared in 1779 by the naturalist Ermenegildo Pini, who had been commissioned by the authorities to investigate the extent of mineral resources and the damage caused by mining to woodlands and forests. He used color coding to identify different categories of minerals. Minerology merged with early geology in the *Carta compendiata dello Stato di Milano* (Milan, 1790, engraved by Domenico Cagnoni), a thematic work hand colored by the Olivetan monk Mauro Fornari that identified different rock formations in the territory (Milanesi 1990, 166).

Two related categories of administrative cartography were inspired by the state’s need to exercise military and commercial control over its territory: maps of fortifications and customs boundaries. In Tuscany from 1739 to 1749, Odoardo Warren, a colonel in the engineering corps joined fellow military engineers Andrea Dolcini, Giuliano Anastasi, Gaetano Benvenuti, and Niccola Lotti in compiling the “Raccolta di piante delle principali città e fortezze del Gran Ducato di Toscana” (Florence, AS, Segreteria di Gabinetto, n. 695), around sixty cartographic depictions accounting for the local setting, armaments, and function of specific towers, forts, and fortified urban centers.



FIG. 31. “CARTA TOPOGRAFICA IN MISURA DELLA VALLE D’ANZASCA, PARTE DELLA GIURISDIZIONE DELL’OSSOLA SUPERIORE E PARTE INFERIORE NELL’ALTO NOVARESE, COL DELINEAMENTO DELLE MINIERE ESISTENTI NEI TERRITORI D’ESSA VALLE,” BY GIAMBATTISTA SOTTIS, ENGINEER OF THE UFFICIO DI TOPOGRAFIA REALE, 1758. The map forms part of the administrative sources concerning the use of woodlands in

support of industrial mining. Its topographic detail shows the Valley Anzasca and part of the Val d’Ossola in the northeast Piedmont. Manuscript in ink and watercolor on paper, hand colored. Scale ca. 1:24,000.

Size of the original: 94.5 × 139.3 cm. Image courtesy of the Archivio di Stato, Turin (Corte, Carte topografiche per A e B, Anzasca).

Around the same time a series of maps and perspective views titled “Città e fortezze del granducato and città murate, ville granducali e fortezze di Toscana” (Florence, AS, Segreteria di Gabinetto, n. 696, and Rome, Istituto di Storia e Cultura dell’Arma del Genio, cartella XXII, nn. 1563–1656) covered similar themes, as did the hand-colored atlas “Collezione delle piante e prospetti delle fortificazioni situate lungo il litorale toscano” by the grand duke’s architect Pietro Conti (1793) (Florence, Osservatorio Ximeniano). A series of maps produced in the 1780s and 90s by a group of state architects concerned customs houses and surrounding areas within the grand duchy (Florence, AS, Miscellanea di Piante, 292 bis).

The sovereign of different regions enjoyed exclusive hunting rights, often depicted on maps used for the preservation of royal game reserves. In Piedmont, these included the “Carta topografica della parte della Provincia di Torino serviente al grande distretto delle Regie Caccie,” three manuscript sheets drawn in 1766 by Pietro Denisio (Turin, AS, Corte, Archivio topografico segreto, 15A VI rosso) (Massabò Ricci and Carassi 1987, 306n71). In Tuscany numerous maps of the grand duke’s hunting reserves included the large “Pianta della R. Bandita del Poggio Imperiale” (1793) (Prague, NA,

RAT Map, 269), rendered with almost geometrical precision and topographical detail. In the Bourbon south of Italy, Giovanni Antonio Rizzi Zannoni headed a team to produce the “Carta topografica delle Regie Cacce” (1784) (Naples, BNC, b. 29B/62, 1–2).

In Puglia and Tuscany, transhumance practices were documented in maps showing primarily the areas of winter grazing used by the livestock breeders of the Apennines. The maps are rather similar in character to cadastres, indicating *tratturi*—the grassed routes that shepherds and flocks were required to take when moving from the mountains—and the various areas of restricted grazing (that is, those that were subject to state duties). In Puglia, such maps are exemplified by the topographical map of the territory of Corato in the Bari region, produced in 1753 by the *compassatori* (surveyors) Giuseppe Cuoci, Francesco Antonio Zizzi, and Ignazio Romito (Bari, AS, Atti demaniali, b. 36) (Angelini 1987, 126; Angelini and Carlone 1981, 85); the “Atlante dei tratturi Capecelatro” (1649–52) drawn using visual perspective by Giuseppe de Falco and containing 102 maps of *tratturi* and the buildings located along their route; the “Atlante dei tratturi Crivelli” (1712) by Michele Saracca and Giacomo di Giacomo, with 110 maps; the “Atlante Michele” (1693–97) by Antonio Michele and

Nunzio Michele, with 28 maps; and the “Atlante delle locazioni della Croce” (1735–60) by Agatangelo della Croce, a collection of 23 maps (Iazzetti 1987, 596–611; Valerio 1993, 61–62). In Tuscany, the atlas titled “Pianta delle dogane dell’Uffizio dei Paschi di Siena” (1745) (Florence, AS, Miscellanea di Piante, 748), drawn and hand colored by the engineer Innocenzio Fazzi, covers the territories subject to state duties with 25 maps indicating various different kinds of grazing (Barsanti, Bonelli Conenna, and Rombai 2001, 76).

Finally, administrations then as now responded to natural events, whether lowland river floods caused by extreme weather conditions, mountain landslides, or earthquakes. Although the cartography dedicated to floods and landslides is rather modest in character, referring to specific areas, the maps dealing with far more catastrophic tectonic events fall into the thematic mapping category. A series of on-site inspections by the Carmelite Father Eliseo della Concezione and other technicians immediately after the disastrous Calabrian earthquake of 1783 led to the production of a large atlas with sixty-seven engravings, as part of the *Istoria de’ fenomeni del tremoto avvenuto nelle Calabrie e nel Valdemone nell’anno 1783* (1784) (Bonica 2006, 204).

The range of administrative cartographies throughout the Italian states reflects the increasing sophistication of the state apparatus in responding to the needs of its citizens and government at all levels.

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SEE ALSO: Italian States

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Administrative Cartography in the Netherlands. Although completely eclipsed by the better-known Dutch commercial map trade, institutional cartography in the Netherlands offered the main mechanism for visualizing the Dutch landscape from the sixteenth century (Koeman and Van Egmond 2007). Large-scale property maps produced by local land surveyors and ordered by various institutions (ecclesiastical, academic, and civic) addressed administrative needs of local authorities for taxation, landownership, urban expansion, and judicial resolutions; these mapping efforts are treated elsewhere in this volume. Within the wide-ranging scope of administrative cartography, two main endeavors stand out: polder mapping and river mapping (polders are lands reclaimed for cultivation). Their common focus on managing water means that the results are known generically as *waterstaatskaarten* (*waterstaat* maps), or maps that explain the state of the water in polders and rivers and of the land along the banks of both (Donkersloot-de Vrij 1995; Hamelers 1991).

Polder maps were produced by local and regional *waterschappen* (water management boards) charged with managing water barriers, waterways, water levels, water quality, and sewage treatment in their respective regions. In the western parts of the Seven Provinces, and especially in Holland, powerful *waterschappen*, *heemraadschappen*, and *hoogheemraadschappen* and smaller polder boards undertook surveys to map their territories in detail (fig. 32). The very early history and

importance of the *waterschappen* and the creation of their mostly manuscript maps are described by Cornelis Koeman and Marco van Egmond, who also list twenty-six polder maps printed in the Netherlands before 1650 (2007, 1263–68, 1292–94; Hamelers 1991). This practice continued and improved in the second half of the seventeenth and first half of the eighteenth centuries and expanded from Holland to the other provinces in the Dutch Republic, especially to the area of the Rhine-Meuse-Scheldt delta in Zeeland, Utrecht, Gelderland, and Overijssel, where accurate maps for water management were needed the most.

With this expansion, new surveys were carried out and multisheet maps on larger scales were published. Koeman (1985, 143–48) provides a list of sixty-eight printed polder maps made between 1575 and 1850. Of the twenty-four published before 1650, four were still being printed in the eighteenth century, one as late as 1767. Of the sixteen maps published between 1651 and 1700, seven were reprinted later in the eighteenth century, and one as late as 1818. For instance, the twelve-sheet wall map (ca. 1:30,000) of the *hoogheemraadschap* of Rijnland of 1647 by Jan Jansz. Dou and Steven van Broeckhuysen was printed for the last time in 1746 (Koeman and Van Egmond 2007, 1267n102). Although a century had passed, the topography had hardly changed, but the coats of arms of the board members had to be updated (Hart 1969; Koeman 1985, 138). The unquestioned peak in this map genre is the *T Hooge Heemraed-Schap van Delflant* (1712, 1:10,000), a wall map by the brothers Nicolaas Samuelsz. Cruquius and Jacob Cruquius. Because of its large scale, metrical accuracy, and stunning visual impact, the Cruquius map surpasses all other *waterschap* maps of the period under consideration (Koeman 1985, 139–42), and only its lack of index numbers for the plots of land prevents it from being considered as a cadastral map. That a great number of seventeenth- and eighteenth-century polder maps were treated as commercial products is evident in their inclusion, for example, in the nine-volume *Atlas der Neederlanden*, an *atlas factice* kept in the Universiteitsbibliotheek Amsterdam (Werner 2013).

Waterschappen also created river maps because rivers might run through their territories or affect the state of water management within the polder. Although each province had its own water management plan and was responsible for its own flood protection, some provinces lacked the technical staff and hired surveyors from the *waterschappen*. This decentralization meant a fragmented river management program in the republic, especially problematic given that the major rivers of the Netherlands were in a deplorable condition, mainly as the result of continuous silting. During the eighteenth century, all the rivers that formed part of the dense