2024 Region II Regional Water Supply Plan

Northwest Florida Water Management District

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Choctawhatchee River

2024 Regional Water Supply Plan

for Region II

(Okaloosa, Santa Rosa, and Walton Counties)

DRAFT

Water Resources Assessment 24-XX

December 2024

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

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EXECUTIVE SUMMARY

The Northwest Florida Water Management District (NWFWMD or District) completes Districtwide water supply assessments (WSAs) with a 20-year planning horizon every five years in accordance with s. 373.036(2)(a), F.S., to determine the need for regional water supply planning. Based on the 2023 WSA update, the District's Governing Board determined that regional water supply planning for Region II (Okaloosa, Santa Rosa, and Walton counties) should continue. This Region II regional water supply plan (RWSP) updates the water supply development (WSD) and water resource development (WRD) components for the 20-year planning horizon through 2045. The expected outcome of plan implementation is that sufficient water will be available for all existing and future uses and natural systems.

Region II is the District's largest and fastest growing water supply planning region. The 2020 seasonally adjusted population estimate for Region II of 521,991 is expected to climb 33 percent to 691,940 by 2045. Walton County has the fastest growing population in the District and its population is projected to increase approximately 58 percent above 2020 estimates by the end of the planning period. Water use across the region totaled 76 million gallons per day (mgd) in 2020 and is projected to increase by 40 percent (or 30.8 mgd) to 106.8 mgd by 2045 during an average year. Projected demands for a 1-in-10 year drought are estimated to reach 119 mgd by 2045. Public supply and self-supplied recreational water uses are expected to remain the largest use sectors.

Groundwater pumpage from the Floridan aquifer dating back to the 1940s has resulted in significant drawdowns and created the risk of saltwater intrusion in coastal areas of Region II. Due to saltwater intrusion concerns, the first RWSP for Region II was developed in 2000. This plan represents the fourth update. The development of inland wellfields during 2000 through 2010 and the redistribution of some coastal pumpage to inland areas enabled Floridan aquifer levels to partially recover between 2000 and 2017. This recovery has slowed but not eliminated the risk of saltwater intrusion. Increased inland pumping from the Floridan aquifer during the past decade has expanded the area of aquifer drawdowns and has recently caused water levels to decline to below sea level in central Walton County. Unless alternative water sources are developed, additional withdrawals from the Upper Floridan aquifer will increase aquifer drawdowns and the rate of saltwater movement during the 2025 to 2045 planning horizon.

Groundwater flow modeling simulations of projected withdrawals from the Upper Floridan aquifer indicate the potential for 85 feet of additional drawdown near Ft. Walton Beach and 49 feet of drawdown near Niceville by 2045. The area where aquifer levels are below sea level is estimated to expand north of Crestview. The cone of depression near Ft. Walton Beach could deepen and approach 150 feet below sea level, exceeding drawdowns measured in 2000. Projected aquifer level declines would increase groundwater flow velocities and saltwater migration. There is uncertainty with respect to the rate of saltwater migration and additional exploratory drilling and data collection are planned to refine saltwater intrusion risks. Rates of groundwater movement are projected to remain relatively low (< 500 ft/year) during the next 20 years and it is anticipated that there will be sufficient time for local governments and utilities to develop alternative water supplies and lessen saltwater intrusion risks.

This updated RWSP identifies water supply and water resource development project options and provides planning level estimates of the funding needed to meet future water demands and sustain water resources and natural systems through 2045. Implementation of water supply and water resource development projects by utilities, local governments, the District, and other project partners will require a substantial investment of financial and human resources. Alternative water supplies, including surface water, are the preferred water supply options and will be needed to meet growing demands and reduce reliance on the Upper Floridan aquifer system. Expanding reuse systems and water conservation programs are also essential to meet future water demands.

A total of 114 water supply development projects were proposed by Region II utilities and self-suppliers at a total estimated cost of $517.5 million with the potential to develop 27.8 mgd of water. About 17.7 mgd represents alternative water supplies, e.g. surface water, reuse of reclaimed water and conservation. An additional 3.4 mgd of supply is proposed from the sand-and-gravel aquifer, which is anticipated to have sufficient availability through 2045. Utilities have also proposed to withdraw an additional 6.7 mgd from the Upper Floridan aquifer, which has limited resources and may not have sufficient quantities of water available to meet future needs. Based on the total projected increase in demand of 30.8 mgd for an average year, the projects submitted by utilities may meet much of the future need. However, the proposed expanded use of the Upper Floridan aquifer is uncertain given the potential for increased saltwater intrusion risk.

Water resource development projects identified by the District may provide additional options to meet future water needs. For this RWSP update, the District initiated an evaluation of potential future surface water supply sources in Walton County. The Choctawhatchee River was identified as a potential source. The Choctawhatchee River is the 3rd largest river in Florida in terms of flow, with a watershed spanning portions of Florida and Alabama. The median flow at the U.S. Geological Survey station near Bruce, Florida is 3,830 cubic feet per second (cfs) (or approximately 2,061 mgd) based on the 1994 to 2024 period of record. However, the river is designated as Critical Habitat for the Gulf Sturgeon. Although a specific withdrawal schedule protective of aquatic habitat for this river remains to be determined, a yield of 10 mgd would comprise less than 0.5 percent of the median flow and may be technically feasible. Planning level costs for a 10 mgd water supply project vary depending on the withdrawal point(s), storage type and capacity, treatment plant location, and utility delivery point(s). Storage options could include an offline reservoir or aquifer storage and recovery. A direct withdrawal without storage may be more cost-effective but additional analyses are needed to refine estimates of yield and reliability. Planning level estimates of capital costs for a project that delivers 10 mgd of treated surface water range from $231 million to $498 million, depending on the storage option. On a unit cost basis, the planning level estimates range from $5.09 per kgal to more than $9 per kgal, including capital and operations and maintenance costs, depending on the project configuration (Hazen and Sawyer, 2024a).

Additional water resource development projects include exploratory drilling and data collection for the Lower Floridan aquifer system and Bucatunna Clay confining unit to refine saltwater intrusion risks; the development of minimum flows and minimum water levels (MFLs) for the Shoal River and Morrison Spring; re-evaluation and establishment of minimum aquifer levels for the Upper Floridan aquifer;

continued hydrologic and water quality data collection; and continuing support for development of reclaimed water and conservation projects.

There is a significant unmet funding need in Region II that is estimated to exceed $232 million for the 2025 through 2045 planning horizon. Funding needs for water supply and water resource development projects include:

- $200 million for the Shoal River Water Supply Project;
- $2.2 million for Lower Floridan Aquifer Enhanced Data Collection;
- $13.8 million for planned reuse projects, from Alternative Water Supply Grant applications submitted in 2024; and
- $16.7 million for potential future water conservation programs (rebate programs, retrofits and other measures).

Although a Choctawhatchee River water supply project has not yet been proposed for implementation, the capital costs for this project, which are not included above, are estimated to range from $231 million to $498 million.

To meet future demands and ensure resource sustainability, water supply development strategies for Region II focus on:

1. Continuing to reduce reliance on the Floridan aquifer;
2. Ensuring appropriate and efficient use of all water resources;
3. Expanding the reliance on alternative water supplies, including reclaimed water, surface water and water conservation; and
4. Expanding system interconnections and providing sufficient water storage capacity.

To successfully achieve the above strategies, the following activities are recommended:

- Continue to collaborate with local and regional entities to develop alternative water supplies to meet future needs and reduce reliance on the Upper Floridan aquifer.
- Implement the Lower Floridan Aquifer Enhanced Data Collection Project to refine saltwater intrusion risks.
- Seek funding in cooperation with local governments and utilities to further evaluate the Choctawhatchee River as a future supply source.
- Identify opportunities to further reduce Upper Floridan aquifer pumpage in the Water Resource Caution Area.
- Explore the potential for managed aquifer recharge to offset groundwater withdrawals and enhance the sustainability of the Upper Floridan aquifer.
- Add the Upper Floridan aquifer in coastal Region II re-evaluation to the MFL Priority List and Schedule.
- Continue hydrologic and water quality data collection and the refinement of regional groundwater flow and solute transport models to assess saltwater intrusion risks.

Extensive collaboration and coordination with local utilities, enhancing multijurisdictional cooperative frameworks for alternative water supply project implementation, and securing significant funding sources will be needed to advance water resource protection and meet the future water supply needs in Region II.

CONTENTS

Appendices

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AR	Aquifer Recovery
ASR	Aquifer Storage and Recovery
AWS	Alternative Water Supply
BEBR	Bureau of Economic and Business Research (University of Florida)
BMP	Best Management Practices
FDEP	Florida Department of Environmental Protection
F.A.C.	Florida Administrative Code
FCSC	Florida Community Services Corporation of Walton County, dba Regional Utilities
FDACS	Florida Department of Agriculture and Consumer Services
FRUS	Fairpoint Regional Utility System
F.S.	Florida Statutes
gpd	Gallons per Day
GWUP	General Water Use Permit
IWUP	Individual Water Use Permit
MFL(s)	Minimum Flow and Minimum Water Level(s)
mgd	Million Gallons per Day
OCWS	Okaloosa County Water and Sewer
RUA	Regional Utility Authority
RWSP	Regional Water Supply Plan
USGS	U.S. Geological Survey
WPSPTF	Water Protection and Sustainability Program Trust Fund
WRCA	Water Resource Caution Area
WRD	Water Resource Development
WSA	Water Supply Assessment
WSD	Water Supply Development
WWTP/WWTF	Wastewater Treatment Plant/Wastewater Treatment Facility

1. INTRODUCTION

Section 373.036, Florida Statutes (F.S.), requires water management districts to perform an assessment every five years to determine the need for regional water supply planning. The assessments must examine all water use categories and determine if existing and reasonably anticipated future water sources are sufficient to meet future water demands for a 20-year planning horizon under average year and 1-in-10 year drought conditions. The Northwest Florida Water Management District (NWFWMD or District) completed the Water Supply Assessment (WSA) update in 2023 for the 2025 to 2045 planning horizon. In December 2023, based on the results of the WSA update, the District's Governing Board determined that regional water supply planning for Region II (Okaloosa, Santa Rosa, and Walton counties) should continue.

This updated Regional Water Supply Plan (RWSP) for Region II (Figure 1) is intended to guide current and future water supply decisions by the District, utilities, and self-suppliers. Groundwater sources are limited within the region and alternative water supplies will be needed to meet increasing demands. This plan provides a brief review of the Region II RWSP background and accomplishments, a summary of the 2023 WSA, updated groundwater flow and solute transport modeling to assess saltwater intrusion risks, proposed and potential water supply development (WSD) and water resource development (WRD) projects, funding strategies, and coordination efforts. The expected outcome of this plan's implementation is that sufficient water will be available for all existing and future uses and natural systems over the 20-year planning period through 2045, and that any adverse effects stemming from competition for water supplies are avoided.

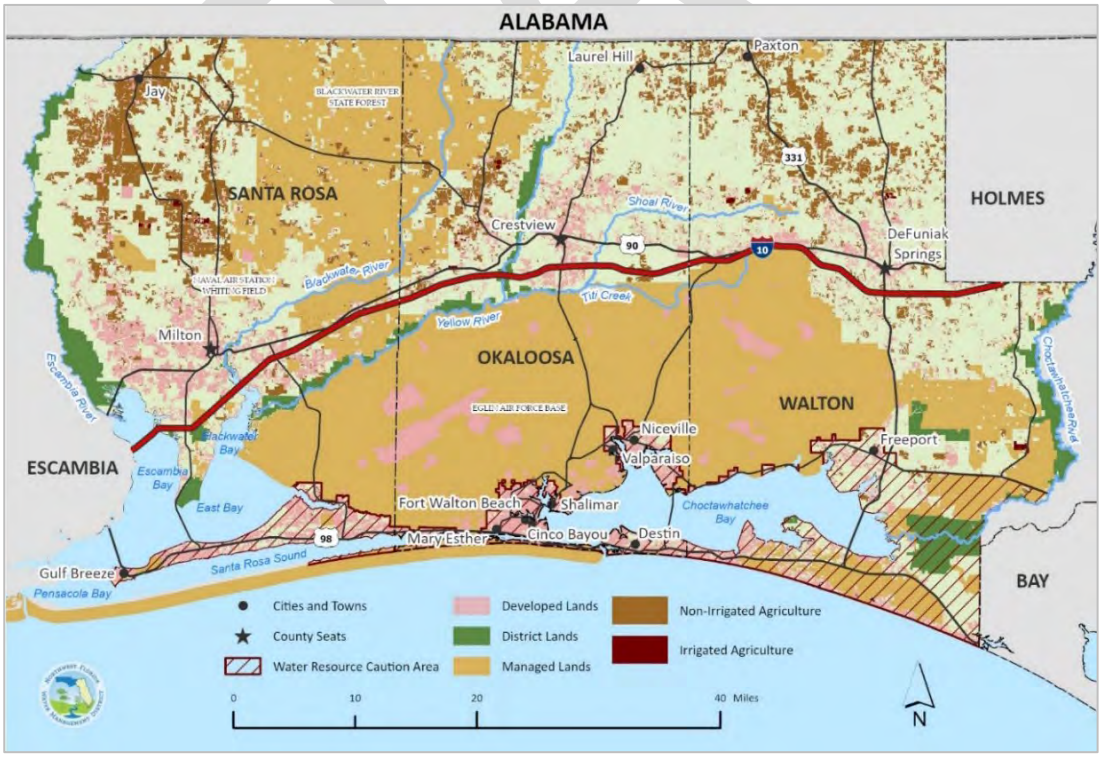

Figure 1. Region II - Santa Rosa, Okaloosa, and Walton Counties

1.1 Background

Drawdown of water levels in the Upper Floridan aquifer and groundwater quality concerns in coastal areas of Region II began as early as 1940. Resource evaluations, water management plans, consumptive use regulation, and cooperative water supply development initiatives advanced over subsequent decades to address these issues. The 1998 WSA (Ryan, et al., 1998) identified the need for the first Region II RWSP.

The first Region II RWSP (Bartel, et al., 2000) included water use estimates for the base year of 1995 and water demand projections to the 2020 planning horizon. Plan recommendations included Floridan aquifer groundwater sustainability modeling, sand-and-gravel aquifer analysis, surface water feasibility studies, water conservation and reuse analysis, and feasibility studies of aquifer storage and recovery (ASR). Desalination of sea and brackish waters was also evaluated. Subsequent RWSP updates were completed in 2006, 2012, and 2019. This 2024 RWSP represents the fourth update.

For statewide consistency and for the purposes of s. 403.064, F.S., all of Region II is considered a WRCA for planning purposes only. This statute is within the jurisdiction of the Florida Department of Environmental Protection (FDEP) and refers to permitting for wastewater treatment and the need for feasibility studies.

1.2 Regulatory Framework

To address limited potable water resources, increasing water use demands, and historically significant reductions in groundwater levels, the coastal areas of Region II (Figure 1) are designated a Water Resource Caution Area (WRCA). This WRCA designation provides for stricter water use permitting criteria such as more stringent thresholds for general water use permits (GWUPs) and a prohibition of new and expanded uses of the Floridan aquifer for golf course, recreation, landscape irrigation, and other non-potable uses. Permits are conditioned with higher conservation requirements to ensure optimal water conservation, and conservation plans are evaluated on their effectiveness to reduce water demand and promote efficient use of the area's water supplies. Reclaimed water is not only encouraged, but also promoted through permit conditions. In addition, the standard individual water use permit (IWUP) duration of twenty years may be lessened by special factors to provide for the protection of the resource and existing legal uses where there are localized water resource concerns.

1.3 Accomplishments

Regional water supply planning has been ongoing in Region II for more than 20 years. Major accomplishments to date include the development of several inland wellfields, transmission pipelines, and associated facilities; the development and expansion of water reuse systems; implementation of water conservation measures; and reductions in gross per capita water use. These actions have enabled Upper Floridan aquifer water levels to partially recover and slowed the rate of saltwater intrusion. Additionally, expanded data collection efforts and the continued refinement of groundwater flow and solute transport models have facilitated improved assessments of saltwater intrusion risks.

2. Water Use Estimates and Projections

The technical data, modeling tools, and methods used to support and develop the water use estimates and projections presented in this Region II RWSP are described in the District's 2023 WSA update (NWFWMD, 2023).

Region II is the District's largest and fastest growing water supply planning region. Eglin Air Force Base (AFB) encompasses significant land across southern portions of all three counties and the Blackwater River State Forest covers over 210,000 acres in northern parts of Santa Rosa and Okaloosa counties. Nearly 13,300 acres of the Bay-Walton Sector Plan, an area of planned regional development, are located in southeastern Walton County.

The 2023 WSA provided water use estimates for 2020 and projections for future reasonable-beneficial uses through 2045. Projections for both an average year and 1-in-10-year drought conditions address the level-of-certainty planning goal. Population estimates include seasonal resident adjustments. The water use estimates and demand projections presented in this plan are from the 2023 WSA, except that updated Florida Statewide Agricultural Irrigation Demand (FSAID) data were used for the 2045 agriculture water demand projections (FDACS, 2024), per Chapter 62-40.531, F.A.C.

2.1 Population

The 2020 permanent population estimate for Region II was 463,328 (BEBR, 2021), which represents a 10 percent increase since 2015. The 2020 seasonally adjusted population estimate was 521,991 and this is expected to climb nearly 33 percent to about 691,940 by 2045. Most seasonal residents are in coastal areas. Walton continues to be the fastest and Santa Rosa the second-fastest growing counties Districtwide. In the 2020 BEBR report, Walton County was the fourth-fastest growing county in the State of Florida from 2020 to 2025. Updated population estimates and projections illustrate ongoing growth and increasing shares of Santa Rosa and Walton counties populations (Figure 2).

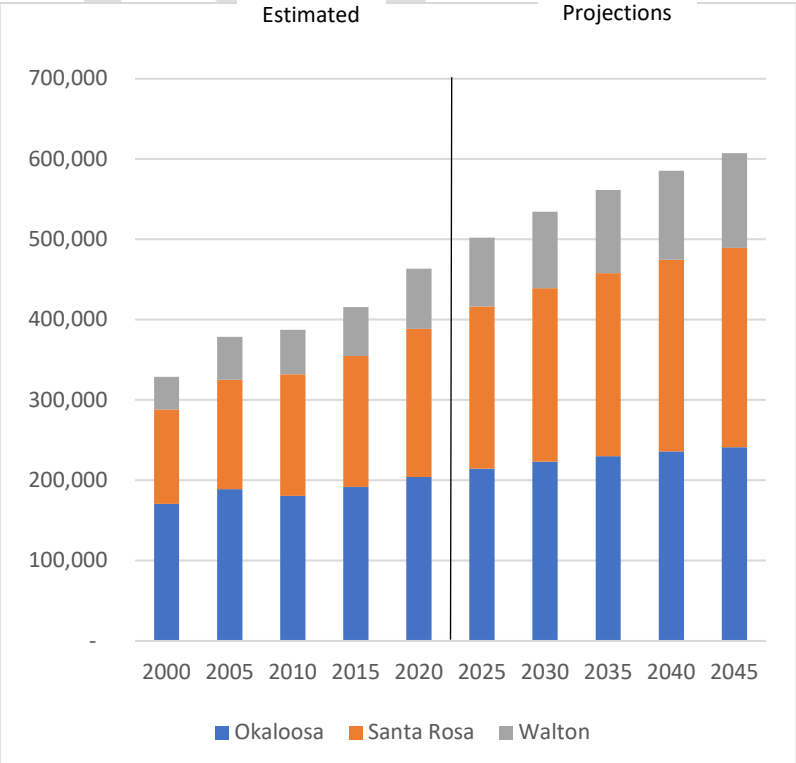

Figure 2. BEBR Population Estimates 2000-2020 and Future Projections through 2045

2.2 Water Use Estimates and Projections

In 2020, public supply comprised 71 percent of Region II estimated water use and recreational water use accounted for 16 percent of the 76.0 mgd total (Table 1 and Figure 3). Agricultural water use is relatively minor at less than 4 percent but is projected to increase through 2045, from 2.9 to 8.0 mgd. Power generating facilities serving industrial uses are included in the industrial, commercial, and institutional (ICI) water use category. The smallest use category is domestic self-supply (DSS), which accounted for approximately 2 mgd in 2020 and is projected to decrease to 1.3 mgd by 2045 as more residents connect to public water supply systems. The overall projected increase in demand by 2045 is 30.8 mgd for an average year.

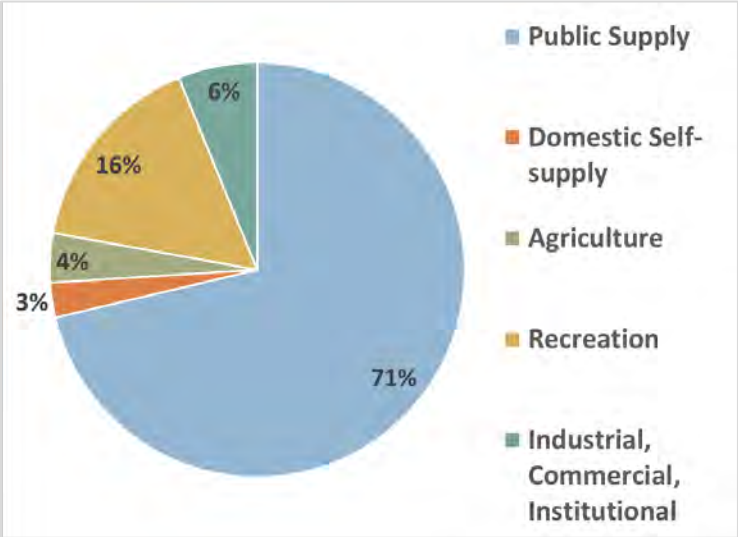

Figure 3. Region II 2020 Water Use Estimate

Table 1. 2020 Estimated Water Use and 2025-2045 Demand Projections (mgd) – Average Year

Use Category	Estimates	Future Demand Projections - Average Conditions					2020-2045 Change	
	2020	2025	2030	2035	2040	2045	mgd	%
Public Supply	54.17	59.70	64.06	67.88	71.46	74.90	20.73	38.3%
DSS	2.07	1.80	1.74	1.62	1.46	1.27	-0.79	-38.5%
Agriculture	2.92	5.90	6.32	6.87	7.46	8.02	5.11	175.1%
Recreational	12.14	13.30	14.28	15.09	15.82	16.49	4.35	35.8%
ICI	4.69	4.99	5.55	5.87	6.07	6.07	1.38	29.4%
Power	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a
TOTALS	75.98	85.69	91.95	97.32	102.27	106.75	30.76	40.5%

The water use category exhibiting the largest increase between 2020 and 2045 is public supply. Walton County is expected to experience the largest increase in both public supply (9.6 mgd) and in overall water use (13.3 mgd) by 2045 (Table 2). Domestic self-supply is expected to decrease during the 2025 to 2045 planning period in all three counties. Agricultural water use is expected to increase the most in Santa Rosa County (3.4 mgd) with marginal increases projected in Okaloosa and Walton counties. Recreational water use is expected to increase by 2.6 mgd in Walton County, and by 1.0 and 0.8 mgd in Okaloosa and Santa Rosa counties, respectively. Industrial, commercial, and institutional water uses are expected to decrease marginally in Walton County and to increase by 0.6 and 0.8 mgd in Okaloosa and Santa Rosa counties, respectively. There are no water use estimates for large power generation facilities within the region.

Table 2. 2020 Estimated Water Use and 2045 Demand Projections (mgd) by County

Use Category	2020 Estimates			2045 Projections			2020-2045 Change		
	Okaloosa	Santa Rosa	Walton	Okaloosa	Santa Rosa	Walton	Okaloosa	Santa Rosa	Walton
Public Supply	24.10	18.39	11.67	28.96	24.61	21.32	4.86	6.22	9.65
DSS	0.89	0.75	0.43	0.39	0.63	0.25	(0.50)	(0.12)	(0.18)
Agriculture	0.41	1.89	0.61	0.84	5.29	1.89	0.43	3.40	1.28
Recreational	5.45	2.21	4.48	6.45	2.97	7.07	0.99	0.76	2.59
ICI	1.67	2.93	0.09	2.29	3.73	0.05	0.62	0.80	(0.04)
Power	-	-	-	-	-	-	n/a	n/a	n/a
TOTALS	**32.52**	**26.17**	**17.29**	**38.93**	**37.24**	**30.59**	**6.40**	**11.06**	**13.30**

The total drought year water demand projection for 2045 is 119 mgd (Table 3). Agriculture and recreational irrigation water uses are most affected by drought and are therefore projected to have the highest percentage increases in demand under drought year conditions. Public supply and recreation remain the largest water use categories and account for about 86 percent of total drought year demand.

Table 3. 2020 Estimated Water Use and 2025-2045 Demand Projections (mgd) - Drought Year

Use Category	Estimates	Future Demand Projections - Drought Year Events					2020-2045 Change	
	2020	2025	2030	2035	2040	2045	mgd	%
Public Supply	54.17	63.88	68.54	72.63	76.46	80.14	25.97	47.9%
DSS	2.07	1.92	1.86	1.73	1.56	1.36	(0.71)	-34.2%
Agriculture	2.92	6.75	7.30	7.95	8.68	9.35	6.44	220.8%
Recreational	12.14	17.83	19.13	20.22	21.20	22.10	9.95	82.0%
ICI	4.69	4.99	5.55	5.87	6.07	6.07	1.38	29.4%
Power	-	-	-	-	-	-	n/a	n/a
TOTALS	**75.98**	**95.37**	**102.39**	**108.40**	**113.97**	**119.02**	**43.03**	**56.6%**

2.3 Demand Projections by Category and Source

This section provides additional details regarding projected increases in water demands by use category and water source.

Agriculture

Irrigated agricultural lands are located across northern areas of all three counties. Projected growth is focused in Santa Rosa County northwest of Milton where the sand-and-gravel aquifer is the primary water source. Regional agricultural water use is projected to increase between 5.1 and 6.4 mgd for an average and drought year, respectively (Table 1 and Table 3). Santa Rosa County agricultural water use is expected to contribute to the growth by an estimated increase of 3.4 and 4.2 mgd for average and drought year conditions, respectively. Because of the sand-and-gravel's productive and high recharge characteristics, and due to the relatively small quantities needed, agricultural water supply demands are anticipated to be met with current sources provided that IWUP requirements are met.

Domestic Self-Supply (DSS)

Outside of Eglin AFB, DSS wells are somewhat evenly distributed across the region and are generally assumed to withdraw from the same aquifer as nearby public supply utilities, generally either the sand-

and-gravel aquifer or the Upper Floridan aquifer. As public supply utilities expand their service areas, water demand decreases in this category are anticipated.

Industrial-Commercial-Institutional (ICI)

The projected increase in ICI demand is 1.4 mgd by 2045, increasing from 4.7 mgd in 2020 to 6.1 mgd in 2045 and no significant demand variations are anticipated during drought events. Projected increases in ICI demand are anticipated to be met by existing permitted allocations.

Public Supply

The projected increase in public supply water demand by 2045 is 20.7 mgd for an average year and 26 mgd for drought conditions. About 33 percent of Region II public supply and DSS needs in 2020 were provided by the sand-and-gravel aquifer and 67 percent by the Floridan aquifer.

Since the development of inland wellfields, the permitted groundwater allocations of many Region II utilities and regional suppliers may provide adequate amounts of water to meet public water supply needs through 2045. However, due to a substantial and persistent cone of depression in the Floridan aquifer along the coast and the recent depression of water levels below sea level in central Walton County, alternative water supplies may be needed to meet future demands and facilitate additional water level recovery to ensure the long-term sustainability of water resources. Estimated 2020 water use and projected demands are summarized by public water supply utility and county in Appendix A.

Recreational Irrigation

Recreational self-supply irrigation includes golf courses, landscape irrigation, water-based recreation, aesthetic use, residential irrigation, and other outdoor uses. Recreational and landscape irrigation water demand is projected to increase by 4.3 mgd (10.0 mgd in drought conditions) over the planning period. Recreation irrigation estimates include both IWUP and GWUP water users. Most Region II self-supplied recreational water use permittees with an IWUP already have restrictions on use of the Floridan aquifer and are encouraged through permit conditions to conserve water and utilize reclaimed water or other alternative sources, where available. Recreational water use estimates for 2020 and 2045 projections for both average year and 1-in-10-year drought conditions are summarized by source in Appendix B.

For recreational uses with IWUPs, roughly 58 percent of water use is from groundwater sources and roughly 42 percent from surface water or other sources. Of groundwater sources, 86 percent is from the sand-and-gravel aquifer (approximately 3.9 mgd). Surface water sources, such as ponds for golf courses, may include complex water flow systems and co-mingling with reclaimed water. In 2020, a total of 9.2 mgd of reclaimed water was used for recreation irrigation uses in Region II. A portion of this amount is in addition to the 7.9 mgd of use from groundwater and surface sources. However, in cases where reclaimed and stormwater/surface water are mixed in golf course ponds, it is difficult to separately quantify the use of each source.

In the WRCA, the source of GWUP recreational water supplies is generally the surficial aquifer or sand-and-gravel aquifer, as the use of the Floridan aquifer is prohibited for new non-potable uses. Figure 4 displays the locations of recreational IWUPs and indicates if the permitted value is less than 1 mgd or

more than 1 mgd. The majority of recreational IWUPS are located near the coast. Most IWUPS greater than 1 mgd are located within Walton County.

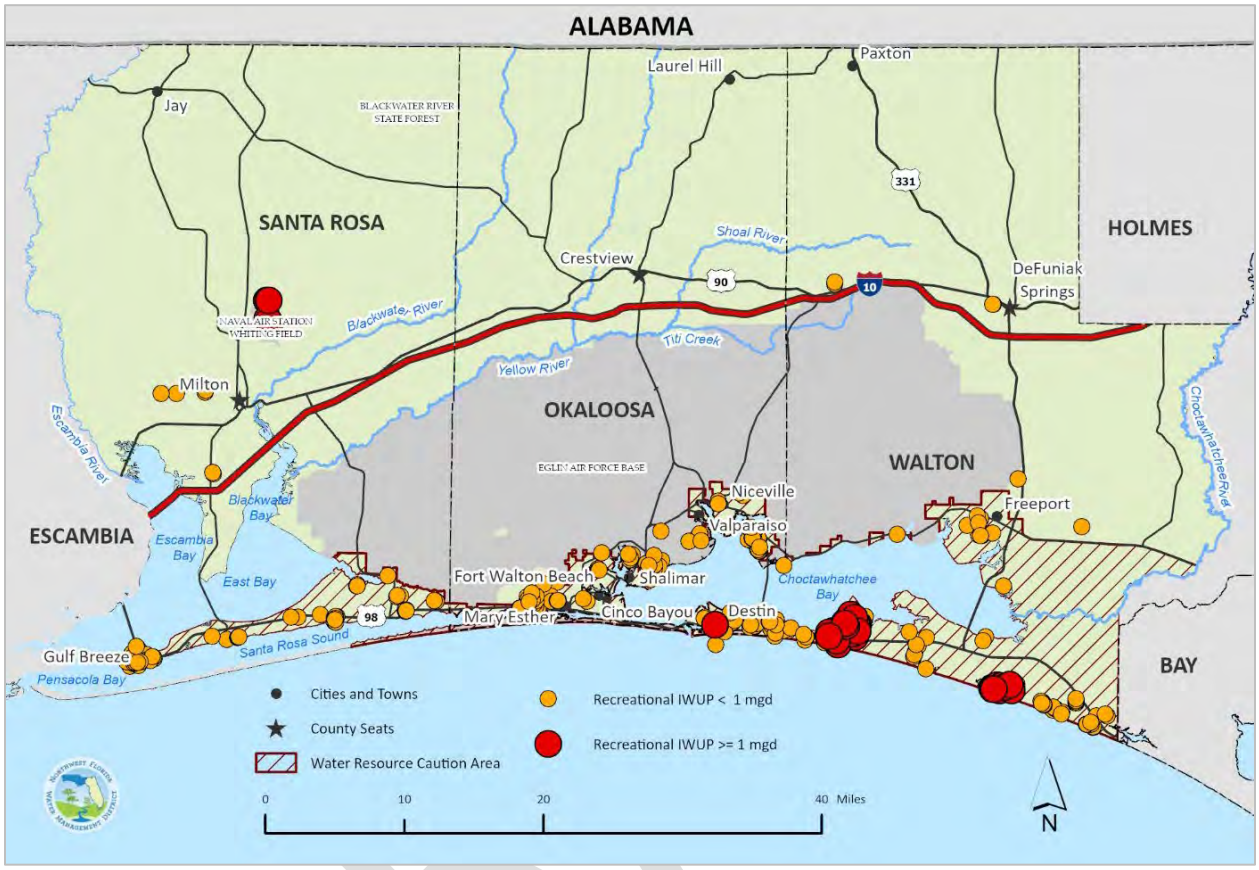

Figure 4. Sites with Individual Water Use Permits for Recreational Irrigation

3. Resource Assessment And Sustainability Analyses

3.1 Background

Within Region II, groundwater is the principal source of supply for virtually all uses. The primary groundwater resources are the sand-and-gravel aquifer in Santa Rosa County and the Upper Floridan[1] aquifer in Okaloosa and Walton counties. In 2020, groundwater from the sand-and-gravel aquifer provided approximately 36 percent of the water used in the region. The Floridan aquifer provided approximately 58 percent of the water used.

The sand-and-gravel aquifer is productive with a high rate of local recharge and capable of providing regionally significant quantities of water. At the same time, its unconfined nature and high recharge rates also make the sand-and-gravel aquifer susceptible to pollution. The Upper Floridan aquifer is part of the Floridan Aquifer System which extends throughout the southeastern United States. In the western panhandle, the Floridan Aquifer System transitions from the undifferentiated Upper Floridan aquifer in the east to the Upper and Lower Floridan aquifers being separated by the Bucatunna Clay middle confining unit in the west. Most groundwater withdrawals from the Upper Floridan aquifer are from limestone formations that are deeply buried and well confined throughout most of Region II. As of 2020, 96 percent of Region II Floridan aquifer water use was in Okaloosa and Walton counties.

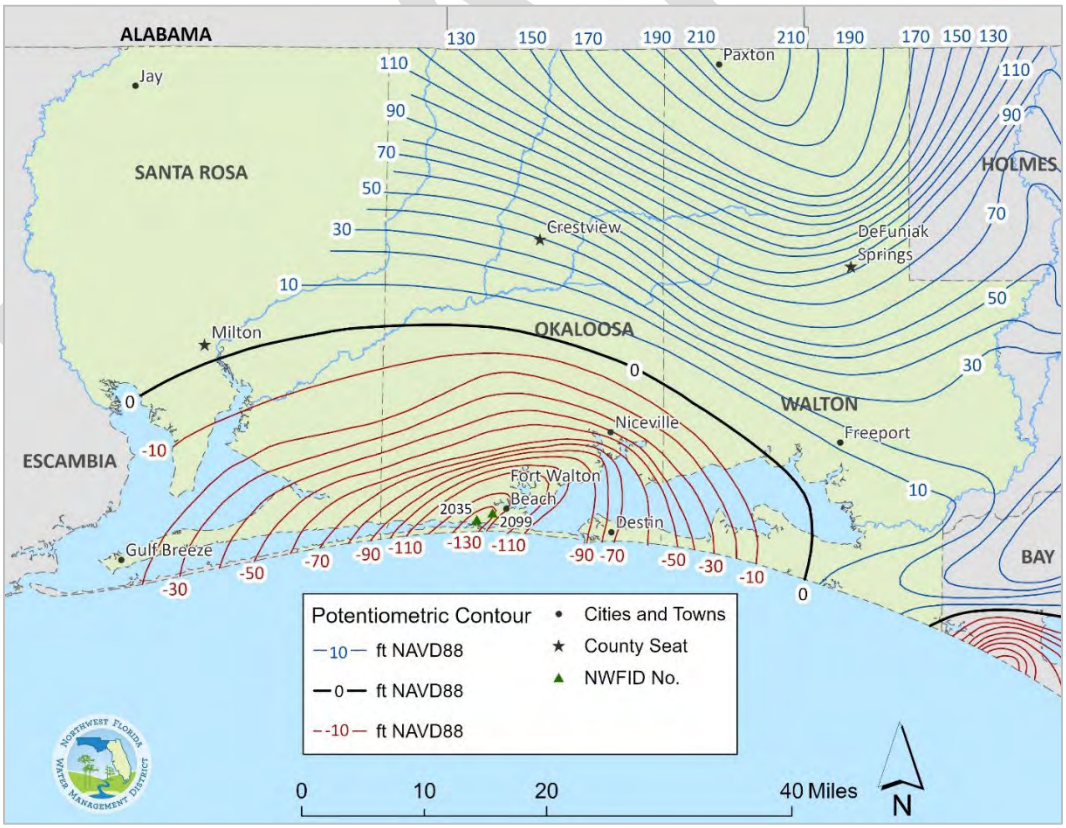

Figure 5. Potentiometric Surface of the Upper Floridan Aquifer in June 2000

[1] The 'Upper Floridan' and 'Floridan' terms are interchangeable for the purpose of this Region II RWSP.

A steady decline in Upper Floridan aquifer water levels between 1940 and 2000 resulted in a loss of as much as 185 feet of head pressure on average from pre-development levels along the coast, with aquifer levels declining from about 50 feet above mean sea level to -135 feet below mean sea level. Up to 20 feet of additional drawdown associated with seasonal pumping was observed in some wells. The potentiometric surface of the Upper Floridan aquifer as interpolated from water levels measured during June 2000 is presented in Figure 5. This depression in the potentiometric surface of the Upper Floridan aquifer was centered on Ft. Walton Beach and Mary Esther and changed the coast from an area of natural freshwater discharge to an area of induced recharge. Induced recharge occurs when pumping reverses the direction of groundwater flow and causes the unnatural movement of groundwater into the production zone. Areas of naturally occurring, poor-quality Floridan aquifer groundwater include coastal Walton County near the eastern extent of Choctawhatchee Bay and more mineralized water just west of the Midway area near Navarre Beach. Some public supply wells in these areas of poor-quality water due to elevated salinity have reduced pumping or eliminated withdrawals altogether due to recurring exceedances in salinity water quality standards.

The shift from coastal to inland withdrawals and progress toward recovery of Floridan aquifer water levels is associated with inland wellfield development primarily during the 2000-2010 decade. Coastal Floridan pumping was reduced from approximately 29 mgd in 2000 to approximately 15 mgd in 2021, while inland Floridan water use more than doubled (Figure 6). Regional inland suppliers are:

- Fairpoint Regional Utility System (FRUS) in Santa Rosa County (sand-and-gravel withdrawals);
- Okaloosa County (inland Floridan aquifer withdrawals); and
- Walton County (inland Floridan aquifer withdrawals):
    - *South Walton Utility Company (SWUC); and*
    - *Florida Community Services Corporation (FCSC) dba Regional Utilities.*

Coastal areas of Santa Rosa County are now primarily served by the FRUS sand-and-gravel aquifer inland wellfield. An IWUP was issued to FRUS in 2001 and the first record of pumping was about 2.8 mgd in 2004, which grew to 4.06 mgd in 2010 and approximately 6.21 mgd by 2021 (Figure 6). An infrastructure line break in 2014 temporarily contributed to higher Floridan aquifer and lower sand-and-gravel aquifer water use by utilities obtaining groundwater from the FRUS inland wellfield while the water line was being repaired.

Total Floridan aquifer withdrawals have remained relatively static over the 23-year period from 1998 to 2021 (Figure 6). Total Floridan use was about 35.7 mgd in 1998, 39.4 mgd in 2021, and averaged just less than 38 mgd throughout the 1998-2021 period. From 2010-2021, the trends in total Floridan aquifer withdrawals have been slightly variable while FRUS withdrawals from the sand-and-gravel aquifer increased by approximately 53 percent over the same timeframe.

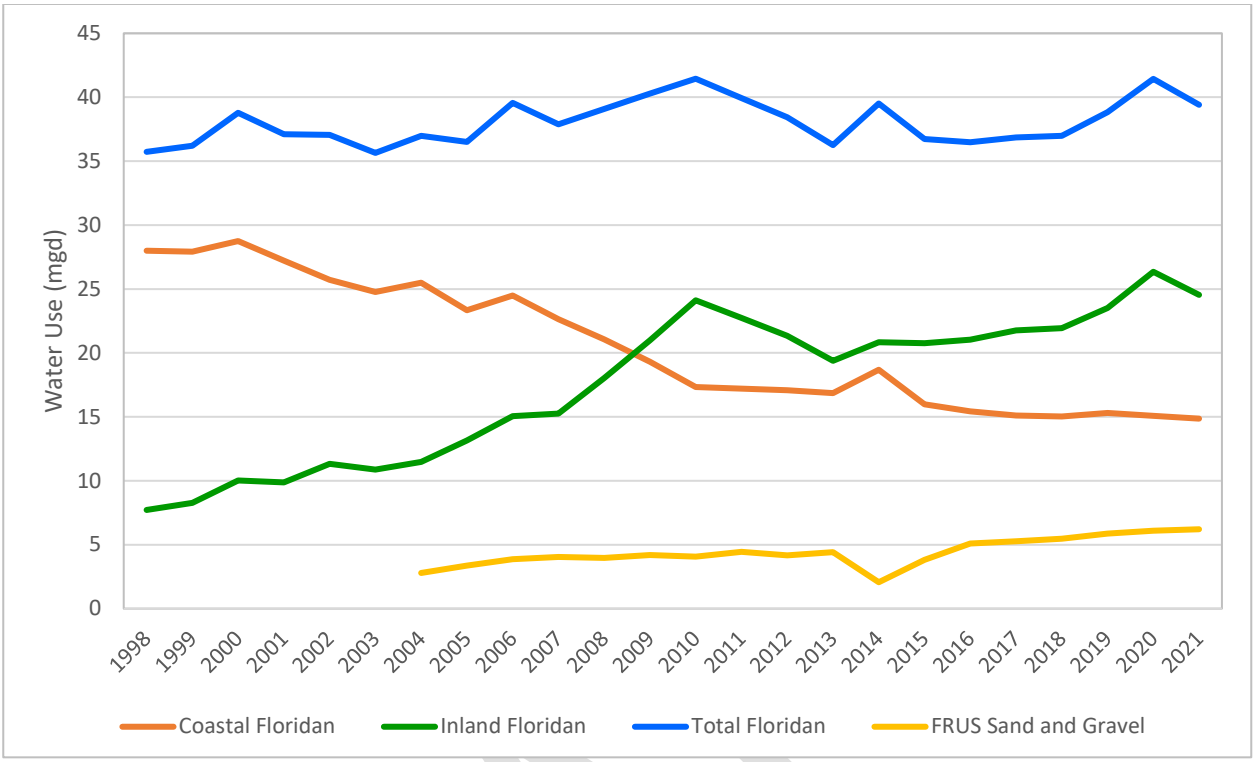

Figure 6. Region II Floridan Aquifer and FRUS Sand-and-Gravel Water Use (mgd)

Substantial investments in alternative water supply development and reductions in coastal pumping in the Upper Floridan aquifer have enabled water levels to recover approximately 60 to 65 feet in coastal Okaloosa County since 2000. Water level recovery in this area is reflected in the hydrographs for wells NWFID 2035 and NWFID 2099 (Figure 7) located near Mary Esther and Ft. Walton Beach, respectively (Figures 5 and 8). Upper Floridan aquifer recovery trends are positive through 2017, but water levels have leveled off since and are currently about 70 to 75 feet below mean sea level near the center of the large cone-of-depression (Figure 7). These successful recovery efforts have slowed, but not eliminated, the rate of saltwater intrusion. A significant cone-of-depression in the Upper Floridan aquifer potentiometric surface is still present and long-term concerns related to saltwater intrusion remain. Monitoring data and results of numerical groundwater flow and transport modeling indicate that water exceeding drinking water standards for the salinity parameters sodium, chloride and/or total dissolved solids (TDS) may be moving towards some potable water supply wells, and saline water within the Upper Floridan aquifer below the Gulf of Mexico may be moving laterally landward.

Also, there appears to be less water level recovery since 2010 in well NWFID 2099 than in well NWFID 2035 (Figure 7). This suggests increased coastal pumping in the Ft. Walton Beach and Niceville areas since 2010 is further depressing the potentiometric surface and expanding the center of the large cone-of-depression to the east. The September 2019 interpolation of the potentiometric surface for the Upper Floridan aquifer (Figure 8) shows expanded drawdown around Niceville.

Figure 8 also shows the presence of a small cone-of-depression with water levels below zero ft NAVD88 in the vicinity of the inland Walton County wellfield. The Upper Floridan aquifer is currently potable from

top to bottom in the vicinity of the inland wellfield, however saline groundwater is present at the base of the aquifer in coastal Walton County south of Freeport and modeling results indicate potential northward movement under permitted and projected pumping conditions. Inland Floridan aquifer supply wells may be "at risk" of saline water up-coning from deeper within the aquifer if the potable water interface moves beneath the production zone of the wells. As previously evaluated, wells are considered "at risk" of saline water up-coning if groundwater exceeding drinking water standards is present within the aquifer below a well's production zone. Efforts to stabilize or reduce coastal Floridan withdrawals and develop alternative water sources have been partially successful but need to continue in Region II to further slow the rate of saltwater movement.

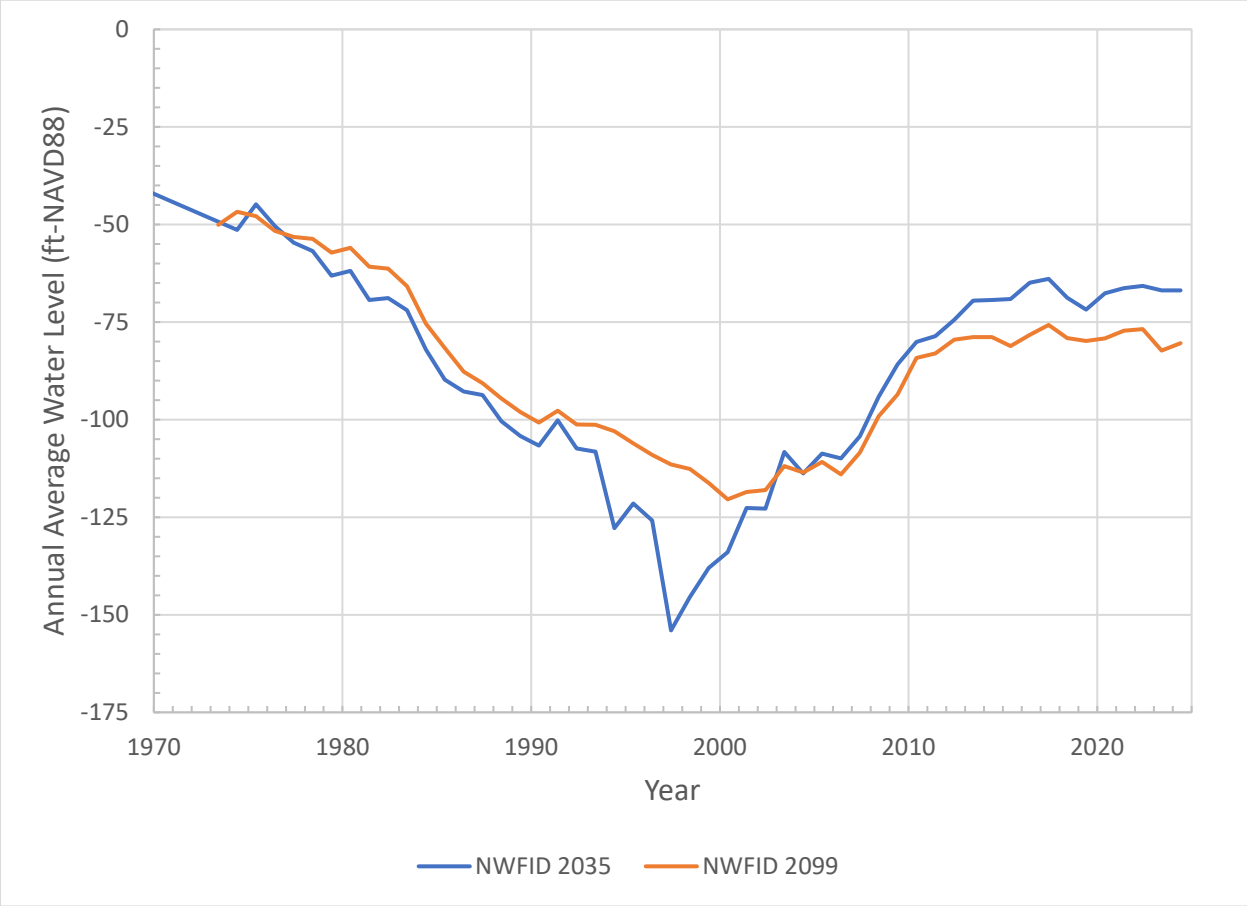

Figure 7. Hydrographs of Two Wells in Coastal Okaloosa County

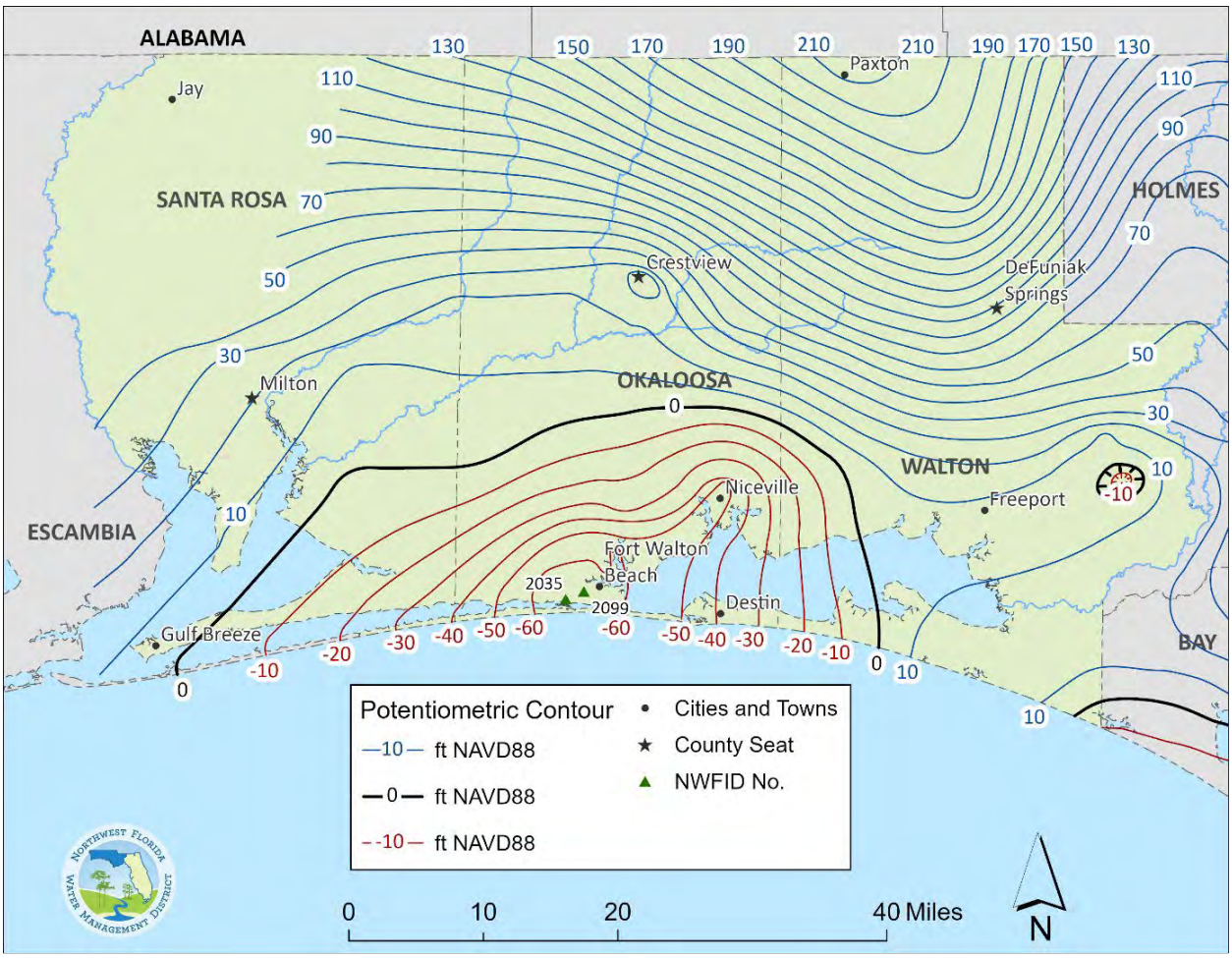

Figure 8. Potentiometric Surface of the Upper Floridan Aquifer in September 2019

Saltwater intrusion within the Upper Floridan aquifer is evaluated based on the movement of the saltwater/freshwater interface which is greatest where significant drawdowns create steep hydraulic gradients near concentrated pumping centers. Groundwater flow and transport modeling results as presented in the 2023 WSA indicate rates of saltwater intrusion along coastal Region II are low, but spatially variable as Upper Floridan aquifer pumping has been redistributed. Under projected pumping conditions, approximately 6.18 mgd (13 percent) of major, regional Upper Floridan aquifer pumping was previously evaluated to be “at risk” of saline water up-coning (upward flow from below) and exceeding drinking water standards by 2040. Independent water quality trend analyses performed by the District indicated that several “at risk” wells currently exceed drinking water standards and some showed increasing trends in salinity parameters; although no additional wells were expected to exceed drinking water standards by 2040. Regional water use projections were updated as part of the 2023 WSA update, and the revised Upper Floridan aquifer pumping was applied to regional models as part of this RWSP update. Results of the updated groundwater resource evaluations, including revised Upper Floridan aquifer modeling are presented below.

3.2 Floridan Aquifer Sustainability and Saltwater Intrusion Risk

The rate of movement of the saltwater interface in coastal areas of all three counties has decreased as regional groundwater pumping is redistributed from coastal to inland areas. The general effect of reducing pumping along the coast is increased aquifer levels and decreased offshore gradients that drive saltwater intrusion. Shallower head gradients result in reduced groundwater velocities and lower rates of saltwater intrusion. However, currently projected increases in coastal water demands have the potential to reverse the recovery of Floridan groundwater levels and increase the associated threat of saltwater intrusion to coastal fresh water supplies.

Additional groundwater flow and transport modeling was performed as part of this RWSP update. The regional MODFLOW model (R2MF) and sub-regional SEAWAT model (CR2SWT) were used to evaluate drawdowns and saltwater intrusion rates from updated water use estimates and projections developed as part of the 2023 WSA. Also, the permitted average annual daily rates scenario presented in the previous MFL evaluation was updated and simulated, as well as an alternative that evaluated the reduction in coastal Floridan aquifer pumping needed to recover aquifer levels to sea level at the coast.

The following four pumping scenarios were performed:

- Scenario 1 – Permitted annual average daily pumping rates;
- Scenario 2 – 2023 WSA projected pumping for the planning period 2025 – 2045;
- Scenario 3 – 2023 WSA projected pumping for 2025 – 2045 with sea level rise; and
- Scenario 4 – 2023 WSA projected pumping for inland wells with incremental reduction in coastal pumping to recover Upper Floridan aquifer water level elevations to sea level.

Pumping scenarios 1 through 3 were simulated through year 2100 to evaluate the long-term impacts to drawdowns and the rate of saltwater intrusion by permitted and projected pumping which increase through 2045 and then are held at the 2045 rate through the end of the simulation. By contrast, Scenario 4 was only run until the Upper Floridan aquifer heads near the center of the large cone-of-depression in the vicinity of Ft. Walton Beach were simulated to be just above sea level. Although increased pumping in Region II under any scenario results in additional simulated drawdown, the results of the evaluation focused on two areas of interest near the coast. These areas were previously identified as part of the prior evaluation to assess the need to establish minimum aquifer levels for the Upper Floridan aquifer in coastal Region II. Area 1 is within the large cone-of-depression along the Bucatunna Clay pinch-out zone in the vicinity of Ft. Walton Beach and Niceville. Area 2 includes the eastern end of Choctawhatchee Bay and the inland Upper Floridan aquifer wellfield in Walton County. The simulated results for 2020 (WSA base year) were used as the reference for comparison to results for 2045 and 2100 in the two areas. Modeling results indicate that current permitted and projected Floridan aquifer water use may increase the risk of saltwater intrusion and up-coning to fresh groundwater supplies along the coast in Region II. This threatens the long-term sustainability of the Upper Floridan aquifer as a potable water source. A summary of the scenarios and results is provided below. Appendix C provides graphical results for scenarios 1 through 3. Scenario 4 did not require graphical output to evaluate simulation results.

Scenario 1 – Permitted Annual Average Daily Pumping Rates

Scenario 1 simulated the effects of increasing regional Upper Floridan aquifer withdrawals to currently permitted annual average daily rates (ADRs) over the planning period. Starting from the latest year of reported pumping data for each system (typically 2021 or 2022), simulated pumping was increased annually through the year of permit expiration, with subsequent pumping held constant through 2100. Simulated total 2020 and 2045 pumping rates were 39.4 mgd and 61.3 mgd, respectively. Most of the increase in pumping occurred between 2020 and 2028 as many existing permits expire around that time. By 2041, the remaining systems reach their ADRs and simulated pumping was subsequently held constant through 2100.

Upper Floridan water levels observed near Ft. Walton and Niceville (Area 1) were approximately -68 feet and -20 feet below sea level (NAVD88), respectively in 2020. Approximately 69 feet and 53 feet of additional water level drawdown were simulated between 2020 and 2045, respectively. Approximately 36 feet and 56 feet of additional drawdown, respectively, were simulated for the Lower Floridan aquifer at the same location. In Area 2 (inland Walton County wellfield), the observed Upper Floridan water levels averaged just above sea level in 2020. Approximately 14 feet of additional water level drawdown was simulated in Area 2 for both the Upper Floridan and Lower Floridan between 2020 and 2045. Because pumpage rates were held constant after 2041, less than two inches of additional drawdown were simulated in the Upper Floridan and Lower Floridan (both Areas 1 and 2) between 2045 and 2100.

In Area 1, simulated 2020 Upper Floridan horizontal seepage velocities, which reflect the rate of groundwater movement, ranged between 10 ft/yr and 113 ft/yr with groundwater flow toward the center of the potentiometric depression along the Bucatunna Clay pinch-out zone. By 2045, simulated seepage velocities increased by 20 percent to 136 ft/yr where the hydraulic gradient was the steepest within the large cone-of-depression near Ft. Walton Beach. In Area 2, simulated 2020 Upper Floridan horizontal seepage velocities ranged between 13 ft/yr and 236 ft/yr, with the highest velocities near the inland Walton County wellfield. By 2045, simulated seepage velocities increased by nearly 190 percent to 446 ft/yr in the wellfield area as increased pumping creates more drawdown and steeper hydraulic gradients.

Scenario 1 results also indicate increased Upper Floridan salinity in Area 1 along the Bucatunna Clay pinch-out zone where a simulated, enclosed 500 mg/L TDS iso-concentration line expands between 2020 and 2100 suggesting up-coning of saline water near the center of the cone-of-depression. The greatest simulated horizontal movement of the TDS iso-concentration line in Area 1 is beneath Choctawhatchee Bay northwestward toward Niceville. Increased movement of the simulated Upper Floridan TDS iso-concentration lines is also apparent in Area 2 east of Choctawhatchee Bay. This movement is north toward the inland Walton County wellfield between 2020 and 2100. In all, the results of Scenario 1 indicate increased aquifer drawdowns, higher groundwater velocities, and an expanded area where TDS concentrations exceed 500 mg/L.

Scenario 2 – WSA 2023 Projected Pumping for 2025 to 2045 Planning Period

Scenario 2 simulates the 2045 water demand projections provided in the 2023 WSA. This scenario reflects the best estimate of future pumpage and associated impacts. Starting from the latest year of available reported pumping data for each system (typically 2021 or 2022), simulated pumping was adjusted

annually through 2045 based on the 2023 WSA projections, with subsequent pumping rates held constant through 2100. Under Scenario 2, the simulated 2045 major Upper Floridan aquifer pumpage in Region II totaled 57.4 mgd. Scenario 2 modeling results indicate additional water level drawdowns in Areas 1 and 2 due to increases in regional pumping. An estimate of the potentiometric surface of the Upper Floridan aquifer under 2045 projected pumping conditions is presented as Figure 9.

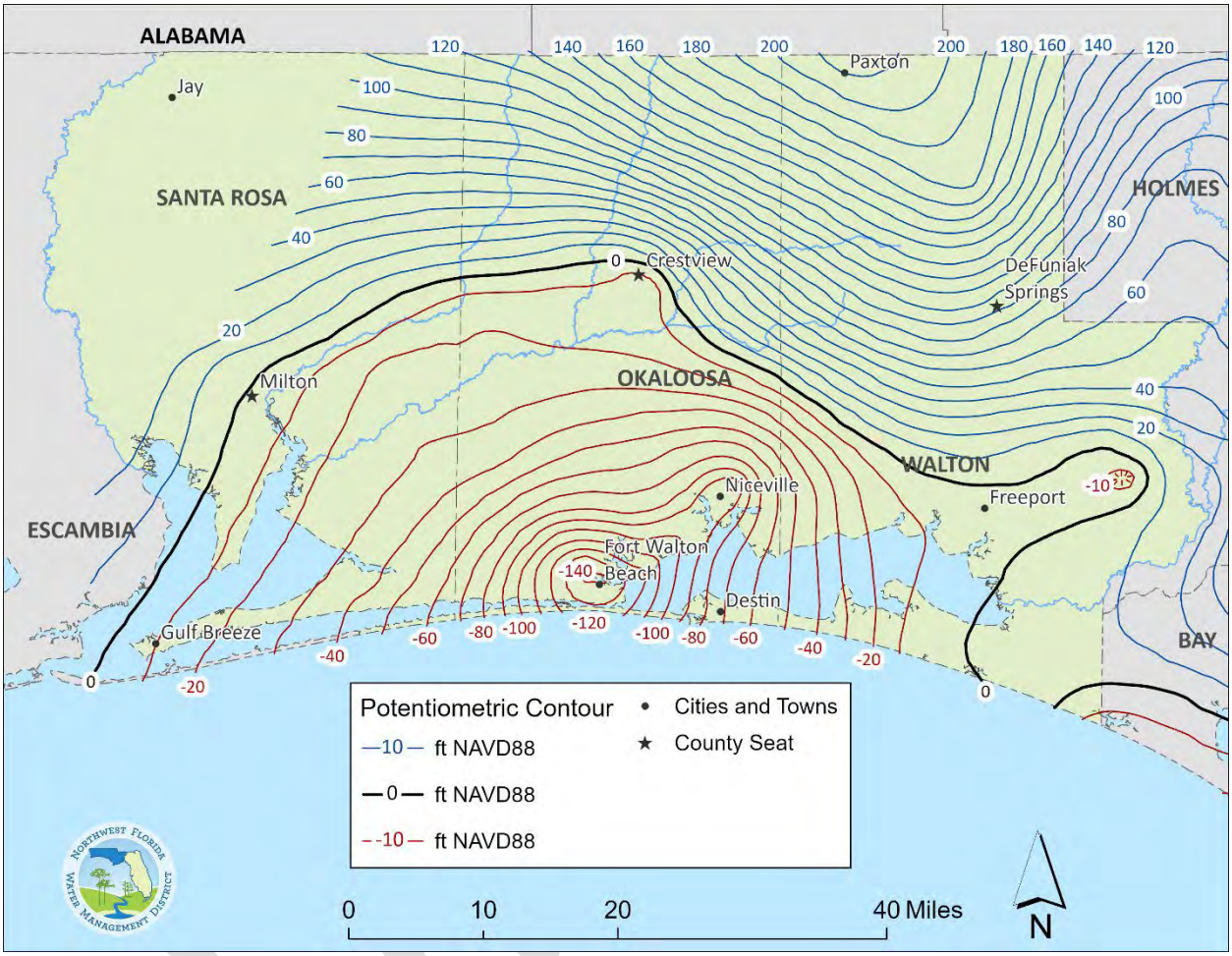

Figure 9. Estimated Upper Floridan Aquifer Potentiometric Surface under 2045 Projected Pumping

Approximately 85 feet and 49 feet of additional water level drawdown were simulated for the Upper Floridan aquifer in the vicinity of Ft. Walton Beach and Niceville (within Area 1), respectively, between 2020 and 2045. Water levels in the center of the cone-of-depression would be almost -150 feet, NAVD88 (Figure 9). Approximately 42 feet and 47 feet of additional water level drawdown, respectively, were simulated for the Lower Floridan aquifer in the same locations.

Approximately 14 feet of additional water level drawdown was simulated for both the Upper Floridan and Lower Floridan northeast of Freeport (Area 2) between 2020 and 2045. Under 2045 projected pumping conditions, it is estimated that the large cone-of-depression centered at Ft. Walton Beach will expand and merge with the smaller depression located near the inland Walton County wellfields. The area with water

levels below sea level is predicted to extend as far inland as Crestview. It is important to understand that the extent and depth of the depression in the potentiometric surface of the Upper Floridan aquifer would exceed that which existed during the year 2000, prior to the development of the inland wellfields.

In Area 1, simulated 2020 Upper Floridan horizontal seepage velocities ranged between 10 ft/yr and 113 ft/yr with groundwater flow directed toward the center of the potentiometric depression along the Bucatunna Clay pinch-out zone. By 2045, simulated horizontal seepage velocities increased by more than 150 percent to 178 ft/yr where the hydraulic gradient of the potentiometric surface is the steepest within the cone-of-depression near Ft. Walton Beach, increasing the risk of saltwater intrusion.

In Area 2, simulated 2020 Upper Floridan horizontal seepage velocities ranged between 13 ft/yr and 236 ft/yr, with the highest velocities near the inland Walton County wellfields. By 2045, simulated seepage velocities increase by 180 percent to 435 ft/yr in the wellfield area due to steeper hydraulic gradients. Vertical leakage between the Upper Floridan aquifer and adjacent hydrogeologic units is greatest in the vicinity of the Choctawhatchee River where aquifer hydraulic conductivity values are high, and simulation results suggest induced downward leakage of water from the river.

Scenario 2 modeling results also indicate increased Upper Floridan salinity in Area 1 along the Bucatunna Clay pinch-out zone where a simulated, enclosed 500 mg/L TDS iso-concentration line expands between 2020 and 2100 suggesting up-coning of saline water near the center of the cone-of-depression. The largest horizontal movement of the simulated Upper Floridan TDS iso-concentration lines in Area 1 is beneath Choctawhatchee Bay northwestward toward Niceville. Increased relative movement of the simulated Upper Floridan TDS iso-concentration lines is also apparent in Area 2 east of Choctawhatchee Bay. This movement is north toward the inland Walton County wellfield between 2020 and 2100.

Scenario 2 – Analysis of Wells at Risk of Exceeding Saline Drinking Water Standards

An updated evaluation of potable water supply "at risk" of exceeding saline drinking water standards for the salinity parameters sodium, chloride, and TDS was performed using the Scenario 2 results. For the evaluation, a well was considered "at risk" of saline water up-coning if water quality exceeding drinking water standards for one or more salinity parameters was simulated as being present below the well (i.e., at the base of the Upper Floridan aquifer production zone). Simulation results indicate that 24 supply wells representing approximately 13 percent (4.97 mgd) of reported 2020 regional Upper Floridan aquifer pumping were potentially "at risk" of exceeding drinking water standards due to saline water up-coning. For 2045, simulation results indicate 25 supply wells (e.g., one additional well) representing approximately 15 percent (8.57 mgd) of projected pumpage would be "at risk." When projected 2045 pumping rates are held constant through year 2100, a total of 28 wells (e.g., three additional wells) representing approximately 17 percent (9.65 mgd) of simulated pumping would be "at risk." These results suggest that pumping-induced saltwater intrusion and up-coning may further reduce coastal Upper Floridan aquifer groundwater availability in the future.

Scenario 3 – Projected Pumping for 2025 – 2045 with Sea Level Rise

Scenario 3 simulates the effects of modifying Upper Floridan aquifer withdrawals based on estimated 2025 to 2045 demand projections from the 2023 WSA with the addition of sea level rise. The simulated pumping rates were identical to Scenario 2. Sea level rise was simulated by annually increasing the

elevations of coastal bays and the Gulf of Mexico in model layer 1. The rate of annual increase was based on intermediate estimates of local sea level rise developed by the Florida Flood Hub (Florida Flood Hub, 2024). The intermediate estimate represents approximately 38 inches of increase in sea level between 2000 and 2100.

Scenario 3 results indicate the combined effects of the 2023 WSA pumping projections and sea level rise do not produce any notable differences as compared to Scenario 2 results. The simulated Upper Floridan aquifer heads, drawdowns and TDS concentrations results for Scenario 3 are virtually identical with those for Scenario 2. It is likely that the effects of sea level rise are very small compared to the magnitude of the initial drawdown in the Upper Floridan aquifer and any simulated change in water levels due to pumpage. The leakance of the confining unit between the surficial aquifer (layer 1) and the Upper Floridan aquifer is low and the Upper Floridan aquifer is well confined. Under initial model conditions there was a difference of over 100 feet between the surficial aquifer and the Upper Floridan aquifer which increased through time as simulated pumping increased. Over the relatively short simulation period, the small rise in sea level has little effect on the pumping-related drawdowns and rates of intrusion.

Scenario 4 – Reduced Coastal Region II Pumping to Recover Upper Floridan Aquifer Water Levels

Scenario 4 simulates the effects of incrementally reducing annual average pumping rates by two percent for 89 Upper Floridan aquifer supply wells located within the Water Resource Caution Area (WRCA). These wells have historically been described as coastal pumping from the Floridan aquifer. For the simulation, the reduced coastal pumping is not redistributed to inland Floridan aquifer wells but is assumed to be replaced by a non-Floridan aquifer, alternative water supply source such as surface water. Simulated pumping for wells outside of the WRCA were based on the 2023 WSA demand projections for each system as described in Scenario 2. The simulation was run until water levels in the vicinity of Ft. Walton Beach (within the center of the large cone of depression) recovered to just above sea level.

Results indicate a 55 percent reduction of approximately 9.31 mgd from the 2020 simulated pumping of 16.88 mgd for the 89 Upper Floridan supply wells within the WRCA could recover water levels within the cone-of-depression to just above sea level. Simulated recovery took approximately 40 years at the two percent annual reduction rate. Over this same time, an additional 6.35 mgd of 2023 WSA projected increased demands is not simulated from these coastal Floridan aquifer wells and is also assumed to be provided by alternative water supply sources. As a percentage of total withdrawals from the coastal Floridan wells, the assumed two percent yield reduction per year is considered a modest change over time. However, the reduction rate could differ depending on how quickly alternative water supply sources can be developed to offset the total 15.66 mgd of coastal Floridan aquifer pumping needed to achieve the recovery goal.

3.3 Sand-and-Gravel Aquifer Sustainability

Pumpage from the sand-and-gravel aquifer in Region II totaled approximately 27.57 mgd in 2020, with approximately 24 mgd of this pumpage occurring in the northern two-thirds of Santa Rosa County. Withdrawals in this area account for nearly all the public supply and ICI water use, and most of the domestic self-supply and agricultural water use from the sand-and-gravel aquifer in Region II. Based on a model-simulated recharge of 688 mgd in this area, the 24 mgd of pumpage represents approximately 3.5

percent of the estimated sand-and-gravel aquifer water budget. Sand-and-gravel aquifer withdrawals in Region II are projected to increase from 24 mgd to 37.8 mgd by 2045, with approximately 33 mgd withdrawn from the northern two-thirds of Santa Rosa County. This total represents approximately 4.8 percent of the estimated sand-and-gravel aquifer water budget in this area. Local streams and major rivers are the primary discharge areas for the sand-and-gravel aquifer. Other discharge components include leakage (recharge) to the underlying Floridan aquifer, pumpage, and outflow to surrounding areas such as the coastal bays. The sand-and-gravel aquifer in Santa Rosa County is a productive aquifer system and, due to its high rate of recharge, can provide regionally significant quantities of water to meet demands provided localized impacts to surface water features are minimized. Expanded sustainability modeling of the inland sand-and-gravel aquifer is proposed as a water resource development project.

Groundwater availability from the sand-and-gravel aquifer along the coast is more limited. A preliminary analysis of groundwater availability from the sand-and-gravel aquifer along the coast in Region II was completed as part of the first RWSP update (Bartel, et al., 2000). Based on limited information, it was estimated that the aquifer had the potential to produce 300,000 gallons per day from a single supply well and that a network of wells along coastal Santa Rosa and Okaloosa counties could produce up to 4.5 mgd. Further analysis by the District determined availability may be more limited and identified 1.8 mgd to 2.4 mgd of potential availability from the sand-and-gravel aquifer in the vicinity of Ft. Walton Beach (DeFosset, 2004). This more detailed analysis used specific assumption about the number of wells and their placement (e.g., co-locating proposed sand-and-gravel wells with existing Floridan aquifer wells) and recommended site-specific testing to characterize aquifer properties and water availability. In addition, it was recognized that the susceptibility of the sand-and-gravel aquifer to contamination by certain land use activities would require water quality evaluations to identify potential contamination sources in developed areas. Permitted sand-and-gravel water use allocations in the study area totaled approximately 1.4 mgd in 2004.

Available water use permitting and well construction information was used to evaluate current availability from the sand-and-gravel aquifer along the coast. Since the District's study in 2004, IWUP allocations from the sand-and-gravel aquifer in the Ft. Walton Beach area have dropped by approximately 300,000 gpd to 1.1 mgd suggesting additional groundwater availability beyond prior estimates. However, in the last 20 years approximately 2,540 sand-and-gravel aquifer irrigation wells have been permitted for construction in the area covered by the study. Assuming that all these wells have been constructed and the pumping rate used to estimate general recreation water use in the 2023 WSA (76 gpd), the wells are potentially withdrawing up to 193,040 gpd and utilizing some of this additional available groundwater from the sand-and-gravel aquifer along the coast. The proximity to existing users and the potential for water quality issues in developed areas continues to make groundwater availability from the sand-and-gravel aquifer along the coast in Region II limited.

4. WATER RESOURCE AND WATER SUPPLY DEVELOPMENT

The continuing goal of this RWSP is to ensure sufficient water supplies for water users through the 2045 planning horizon, while sustaining water resources and associated natural systems. This goal is anticipated to be met through the continued implementation of water supply and water resource development projects. Water supply development is primarily the role of local governments and utilities, and defined[2] as:

> *"… the planning, design, construction, operation, and maintenance of public or private facilities for water collection, production, treatment, transmission, or distribution for sale, resale, or end use."*

Water resource development is primarily the role of water management districts, and defined[3] as:

> *"… the formulation and implementation of regional water resource management strategies, including the collection and evaluation of surface water and groundwater data; structural and nonstructural programs to protect and manage water resources; the development of regional water resource implementation programs; the construction, operation, and maintenance of major public works facilities to provide for flood control, surface and underground water storage, and groundwater recharge augmentation; and related technical assistance to local governments, government-owned and privately owned water utilities, and self-suppliers."*

Water resource development projects support water supply development and water resources and related natural systems. Examples of water resource development projects include water supply feasibility studies, hydrogeologic investigations, data collection, and groundwater modeling activities. Water resource development projects do not typically produce water supply quantities. However, managed aquifer recharge projects that may be implemented in cooperation with water management districts can offset groundwater withdrawal impacts and enhance the sustainability of aquifer systems.

Water provided through the implementation of water supply and water resource development projects is intended to meet future water demands through 2045, with consideration given to:

- The potential for water conservation and other demand management measures;
- Water resource constraints; and
- Any adopted minimum flows and minimum water levels and water reservations.

The WSD and WRD projects identified in a RWSP should include, based on available information:

- Estimates of the amount of water to become available;
- Implementation timeframes and estimated planning level costs;
- Funding needs and the identification of possible funding sources; and
- Identification of implementation entity and the status of project implementation.

[2] Section 373.019(26), F.S.
[3] Section 373.019(24), F.S.

This section describes water supply development projects, including groundwater and alternative water supply options, proposed by utilities and other self-suppliers. Alternative water supplies (AWS) can include reclaimed water, seawater or brackish water, surface water, supply made available through the addition of new storage capacity, stormwater, and any other water supply source designated as nontraditional in this RWSP.

4.1 Water Supply Development

Overview

Local governments, utilities, regional and multi-jurisdictional water suppliers, and other self-suppliers may choose from WSD project options to meet their future needs. Water conservation and alternative water supply development projects, such as surface water and reuse, meet the goals of this RWSP and are therefore the preferred options. Proposed groundwater and surface water supply projects are subject to review by the District during the consumptive use permitting process.

Outreach to public supply utilities and other self-suppliers requesting information on planned WSD projects occurred between January 2024 and April 2024. Public supply utilities were provided a questionnaire with fillable categories for project type, water source, location, water quantity saved or supplied, project implementation dates, and estimated costs. A total of 114 water supply development projects were proposed by Region II utilities and self-suppliers. Projects submitted included water supply projects, interconnections, conservation, reuse projects, storage tanks, and other infrastructure upgrades. Based on utility responses, the proposed WSD projects, estimates of the amount of alternative water supply (AWS) and non-AWS (traditional sources) and estimated capital costs are summarized in Table 4. A list of the submitted projects, including capital and operations and maintenances costs, is provided in Appendix D.

In total, 27.8 mgd of additional water supply development is proposed by utilities, including 5 mgd of surface water, 11.9 mgd of reuse, 10.1 mgd of groundwater, and 0.8 mgd of conservation savings at a total cost of about $517.5 million (Table 4). In addition, analysis performed in support of this RWSP indicates that 4.3 mgd of conservation savings may be achieved by 2045 through “passive” water savings. This savings is estimated to result from homeowners replacing existing plumbing fixtures with newer low volume fixtures and is included in Table 4. Additional details by project type are provided in the subsequent sections.

Water Conservation

The overall water conservation goal of the State is to prevent and reduce wasteful, uneconomical, impractical, or unreasonable use of water resources (s. 373.227(1), F.S.). Conservation strategies can be implemented through various means. Regulatory conservation measures are addressed by the District in specific conditions contained in an Individual Water Use Permit (IWUP). Conservation conditions often found in IWUPs include use of the lowest quality water source feasibly available, per capita water use targets, and water loss goals. In the coastal WRCA, additional conservation measures may be required.

Table 4. Summary of Water Supply Development (WSD) Project Options

Project Type	Description	AWS Annual Average Quantity (mgd)[1]	Non-AWS Annual Average Quantity (mgd)[2]	Timeframe	Estimated Capital Costs
Conservation	Conservation projects proposed by utilities through infrastructure improvements, meter upgrades	0.78	N/A	2025 – 2045	$6,630,245
	Passive water savings through water fixture replacements by consumers[3]	4.3	N/A	2025 – 2045	N/A
Reuse	Development or expansion of reclaimed water facilities and infrastructure	11.90	N/A	2025 – 2035	$99,500,000
Shoal River Surface Water Supply	Shoal River water supply source development, treatment, storage, and conveyance infrastructure	5.00	N/A	2035 – 2045	$200,000,000
Sand-and-gravel aquifer	Proposed new sand-and-gravel aquifer wells, system interconnections, and replacement wells in Santa Rosa and Okaloosa counties	N/A	3.40	2025 – 2045	$13,900,000
Floridan Aquifer	Proposed new Floridan wells, system interconnections, and replacement wells	N/A	Up to 6.68	2025 – 2045	$47,850,000
Storage	New capacity created through storage tank or pond facilities	7.50	4.10	2025 – 2045	$61,550,625
Transmission/ Distribution[3]	New capacity created through planned transmission mains or distribution infrastructure`	See note 4	See note 4	2025 – 2045	$88,115,318
	Total Water Sources	**22[5]**	**Up to 10.08[4]**		**$517,546,188**

[1] Estimates of potential alternative water to be made available.
[2] Proposed water withdrawals from non-AWS traditional sources.
[3] Passive water savings were not utility-proposed projects but are anticipated to result from consumer fixture replacements.
[4] The capacity for traditional and reclaimed water transmission and distribution systems is included under the Project Types listed above. For example, AWS Annual Average Quantity for reuse reflects the anticipated increase in capacity.
[5] Water supply quantity totals do not include storage capacity.

Water conservation can also be achieved through infrastructure improvements such as replacing older leak-prone distribution systems with newer materials and improving water-using technology such as appliance and plumbing fixture upgrades. For this RWSP update, the focus was on addressing water conservation within the public supply sector. Innovative practices and facility designs can also be effective for other water use categories including agriculture and industrial/commercial/institutional self-supply uses.

Most public supply utilities within Region II have implemented water conservation measures due to regulatory requirements and incentives established within the WRCA, and some utilities have implemented programs exceeding permit conditions. To assess current conservation efforts in Region II, annual conservation and compliance reports submitted to the District from 2020 to 2022 were examined, as well as ordinances from local governments. Water conservation projects and initiatives currently being implemented include: annual water loss audits, water loss targets, leak detection, meter calibration and replacement, residential per capita targets, conservation rate structures, tap fees, educational materials, public outreach, Florida Friendly Landscaping and conservation landscaping, irrigation efficiency ordinances, plumbing retrofit programs, separate irrigation meters, and water reuse. For further details on existing water conservation programs, see Appendix E.

Gross and residential per capita water use provides a consistent method for evaluating water use efficiency across utilities. The most common gross per capita water use target set by the District is 110 gallons per capita per day (gcpd). However, some permits within the WRCA have a target of 100 gcpd. Over a five-year period (2017-2021), Region II's average gross per capita water use was 114 gcpd, while the residential per capita water use averaged 75 gcpd. Per capita water use figures are impacted by various factors such as rainfall, availability of reclaimed water, population, and water conservation practices. Residential per capita water use in Region II has steadily declined in recent years partially due to the conservation practices referenced above.

Future Water Conservation Opportunities

The submitted WSD projects questionnaires, described in Section 4.1, identified many proposed projects related to water conservation. Projects identified related to water conservation include 30 water distribution upgrade projects estimated at $53 million and 13 conservation projects estimated at $6.6 million. The conservation projects submitted include maintenance of current distribution systems, pressure testing, meter replacements, meter upgrades, and SCADA system upgrades. These projects once completed are estimated to reduce current demand by 0.8 mgd. For further details relating to conservation projects, see Appendix D.

To quantify the additional public supply water conservation potential within Region II, the District contracted with Hazen and Sawyer to identify cost-effective measures which could be implemented. The analysis utilized the Alliance for Water Efficiency (AWE) water conservation tracking tool. The AWE Tracking Tool is an analytical platform for defining a suite of potential programs and measures and for estimating water savings, costs, and benefits. The tool comes equipped with default savings rates that apply to most urban water conservation strategies, which are tailorable with local information where available. Water conservation plans were developed for each county within Region II to identify cost-effective water savings opportunities during the planning horizon (2025-2045). Measures or programs with costs less than or equal to $4/kgal were included as potential options for implementation. Water conservation savings determined for this evaluation reflect expected water conservation to be achieved, factoring in assumed program participation or penetration rates from the eligible customer base for each conservation measure evaluated. With increased participation or incentives, additional water conservation savings could be realized.

Conservation programs examined within the AWE tool include single and multi-family toilet fixture upgrades, clothes washer rebates, residential irrigation system upgrades, water use audits, and dishwasher rebates. Passive water conservation consists of the amount of water saved by the replacement or upgrading of water using fixtures and appliances from older, less water efficient models when they have reached the end of their lifespan with newer, more efficient models. Passive water conservation in this analysis is referred to as tier one savings. Passive tier one savings are estimated to reduce baseline demand in 2045 by 4.3 mgd. The estimated passive savings of 4.3 mgd is included within the water supply development options provided in Table 4.

Active water conservation includes utility or local government incentivized programs in addition to that achieved by passive conservation alone. Active conservation was evaluated in two tiers, tier two and tier three, assuming different levels of customer participation. The increase in participation rates between tiers could result from different programs and strategies implemented to achieve the desired amount of participation. Implementation of active conservation tier two strategies over the 2025 to 2045 planning period are estimated to reduce 2045 baseline demand by an additional 1.7 mgd.

The total tier two savings, including both passive and active water conservation, was estimated as 6 mgd. The total expenditures over the twenty-year planning horizon to fully implement all tier 2 programs would total approximately $16.7 million for all three counties in Region II and would require implementing more than 5,000 individual measures annually throughout the planning horizon. The potential future conservation savings of 1.7 mgd are included in Table 9 under water resource development options. Possible funding sources for the implementation of conservation programs include local funds or utility revenues, state grants, USDA Rural Development and other federal grants.

Tier three water conservation assumed a higher participation rate and, thus, yielded the most water conservation savings. However, tier three active savings also would require considerable additional financial investment. Therefore, the tier two savings were utilized as a potentially feasible level of achievable water conservation within the planning region. While the programs examined in active water conservation tier 2 and 3 strategies provide rebates for upgraded plumbing fixtures or irrigation systems, there are still some additional costs that must be covered by the property owner (Hazen and Sawyer, 2024b).

Table 5. Region II Conservation Potential 2025-2045

Potential tier 1 passive and tier 2 passive and active water conservation potential for each five-year interval of the planning period.

County	Tier 1 Passive Water Conservation (MGD)					Tier 2 Passive & Active Water Conservation (MGD)				
	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045
Okaloosa	0.67	1.08	1.35	1.55	1.69	0.71	1.3	1.73	2.05	2.31
Santa Rosa	0.74	1.24	1.60	1.89	2.13	0.78	1.44	1.95	2.36	2.71
Walton	0.90	1.47	1.95	2.36	2.77	0.93	1.68	2.30	2.84	3.36
Region II	**2.31**	**3.79**	**4.90**	**5.80**	**6.59**	**2.42**	**4.41**	**5.98**	**7.25**	**8.38**

The District continues to encourage water conservation through public information and outreach. Water conservation resources for homeowners, business, agriculture, and industry are provided on the District's website. More targeted outreach includes responding to individual requests or providing information at

public events. Public information and outreach activities are expected to continue during the planning horizon.

Reclaimed Water

The continued development and expansion of reuse systems is an important component to meeting future demands in Region II. Reclaimed water is commonly used to irrigate landscaping, golf courses, sports complexes, and aesthetic waterbodies and is often reused at industrial facilities and water treatment plants. The District continues reuse data compilation, review and analyses, intergovernmental and utility coordination, and the implementation of an alternative water supply grants program to provide funding assistance. Reuse information is updated annually by FDEP and used to evaluate trends and potential future uses in the context of water supply planning. Reuse feasibility studies are required of water use permittees within the WRCA. These planning and regulatory activities are expected to continue through the 2025-2045 planning horizon.

Estimates and projections of future reclaimed water availability are based on estimates of 2020 reuse flows, which include public access irrigation, toilet flushing, fire protection, and industrial uses. The 2020 estimated reuse flows that offset potable uses, future availability, wastewater treatment facility (WWTF) data, and reuse utilization rates are summarized in Table 6. The 2020 potable offset reuse flow reflects that amount of reuse that offsets water that would otherwise be withdrawn from surface or groundwater sources. The amount includes reuse for golf course and landscape irrigation uses as well as water reuse at industrial facilities but excludes reclaimed water applied at sprayfields and rapid infiltration basins. Other reuse flows include reclaimed water applied to wetlands and reuse at treatment plants. The reuse flows by type are summarized in Table 7. The potential future reuse availability for years 2025 through 2045 was estimated as the projected total wastewater flow for a specific year minus the 2020 reuse flow. Projected wastewater flows were developed for the 2023 WSA (NWFWMD 2023).

Table 6. Reuse and WWTF Flow 2020 and Future Potential Reuse Availability (mgd) 2025-2045

County	Potable Offset Reuse Flow 2020	Potential Future Reuse Availability					Total 2020 WWTF Active Systems		
		2025	2030	2035	2040	2045	No. of	Flow	%*
Okaloosa	3.92	13.36	14.04	14.57	15.05	15.45	9	16.14	23%
Santa Rosa	3.28	4.18	4.70	5.14	5.55	5.91	8	6.83	48%
Walton	2.34	4.94	5.75	6.44	7.06	7.65	8	6.33	37%
TOTALS	**9.54**	**22.48**	**24.49**	**26.16**	**27.65**	**29.01**	**25**	**29.30**	**33%**

**Percent of Potable Offset Reuse to Total WWTF Flow*

Twelve reclaimed water projects are planned by local governments and utilities within Okaloosa, Santa Rosa, and Walton counties. Reclaimed water infrastructure may include, but is not limited to, new or upgraded treatment trains in WWTFs, reclaimed water transmission mains, connections to customers, and other improvements. The District has an active role in four reclaimed water projects, the Okaloosa Reuse Project, South Santa Rosa Reuse Initiative, Pace Water System Reuse Project, and City of Niceville Reuse Project. Projects planned by local entities and the District are estimated to create and reuse up to 11.9 mgd of reclaimed water by 2035. The capital costs for these projects total $99.5 million.

The Okaloosa Reuse Project was completed in the fall of 2023 and consisted of roughly 11 miles of reclaimed water transmission main. The transmission main connected the Arbennie Pritchett Water Reclamation Facility to the City of Niceville and extended a service lateral for future use on Eglin Air Force Base. The South Santa Rosa Reuse Initiative is currently under construction and consists of connections between the Holley-Navarre Water System, Santa Rosa County, Eglin AFB, and the City of Gulf Breeze. The project includes transmission mains, WWTF upgrades, RIBS, and future connection opportunities for customers. Pace Water System's Project is in the beginning stages of construction and will consist o

f the construction of a 2.0 MG storage tank and booster pump station to service nearby customers and a sports field. The City of Niceville is expected to begin construction in the winter of 2025 and the construction consists of refurbishing an 18 MG storage pond and approximately 4.3 miles of reclaimed water transmission main to supply a future development of approximately 3,700 lots at build out. These projects are being implemented in cooperation with local partners, FDEP and the District. Funding sources include city and county funds, local impact and capacity fees, capital improvement project (CIP) funds, state appropriations or grants, federal grants, and potentially USDA and other available grants and loans.

Table 7. 2020 Estimated and 2045 Projected Reclaimed Water

County	2020 Estimate						
	Beneficial Reuse				Total Beneficial Reuse	WWTF Flow	Available WWTF Flow
	Potable Offset		Additional Reuse[1]				
	Public Access	Golf Course	Treatment Plant	Wetland			
Okaloosa	3.03	0.89	0.53	0.41	4.87	16.14	11.27
Santa Rosa	1.51	1.77	0.20	-	3.48	6.83	3.35
Walton	-	2.34	0.02	-	2.36	6.33	3.97
Region II Totals	**4.54**	**5.00**	**0.75**	**0.41**	**10.71**	**29.30**	**18.59**

County	2045 Projection						
	Beneficial Reuse Flow[2]	Permitted Reuse Capacity	Reuse Capacity in Planning	Possible Reuse Capacity	WWTF Flow	Available WWTF Flow[3]	Percent WWTF Permit Utilization
Okaloosa	5.75	34.83	8.00	42.83	19.08	13.32	57.81%
Santa Rosa	4.68	14.99	4.16	19.15	9.19	4.51	72.85%
Walton	3.73	18.52	3.15	21.67	9.99	6.27	57.68%
Region II Totals	**14.16**	**68.34**	**15.31**	**83.65**	**38.26**	**24.10**	**60.79%**

Data Source: Northwest Florida Water Management District's 2020 Reuse Report.

Note: Some reclaimed water use is unreported. An example is when a pond is used to store a mix of reclaimed water and well or surface water.

[1] Additional reuse is not included in potable offset. Wetland application and reuse at the treatment plant are included in beneficial reuse.

[2] 2045 projection is calculated utilizing the BEBR medium growth rate and the 2020 reuse flow.

[3] Available WWTF flow calculation is the increase in WWTF flow minus the increase in beneficial reuse flow utilization. The BEBR medium growth rate is used as the rate of growth.

In total, the twelve ongoing WSD projects submitted by utilities in support of this RWSP update and completed utility feasibility studies indicate a potential of up to 11.9 mgd of additional reclaimed water may be available and utilized to meet future demands during the 2025 to 2045 planning horizon. The District continues to work with utilities and local governments to identify opportunities for reuse expansion and for more integrated reuse management strategies. Implementation of projects are subject to funding availability and if funded are expected to continue through the planning period.

In 2020, the total reuse flow for irrigation was estimated to be 9.5 mgd (Table 7 public access and golf course total) and is expected to rise to 12.4 mgd by 2045 (based on the BEBR medium growth rate) which is a 29.6 percent increase. As reclaimed water infrastructure is constructed it may become available to meet additional recreational water use demands in future years. It is important to note that reclaimed water availability may not meet the demand of customers under some situations.

The planning and implementation of reclaimed water infrastructure is important to enable reclaimed water to be utilized effectively. Figure 8 displays the current and future plans for reclaimed water infrastructure. This map includes all infrastructure known to the District and may not include all infrastructure present. As more people have the opportunity to connect to reclaimed water, the more this resource may be utilized, reducing the use of potable water sources. Planning efforts are ongoing. Future projects may also include interconnects between utilities that allow the sharing of the reclaimed water resource.

Surface Water

As discussed in Section 3.1, Okaloosa County Water & Sewer (OCWS) has proposed long-term plans to develop the Shoal River as an alternative water supply during 2035 to 2045. The Shoal River project is a continuation of one of the more important strategies identified in the first Region II RWSP in 2000. The proposed project includes 3,400 linear feet of raw water line, a 155-acre reservoir and pump station, 5 mgd treatment plant expandable up to 20 mgd, and about 3.3 miles of water transmission mains. The project plan is to augment potable water supplies to both the Mid-County service area around the City of Crestview and the Main Garniers service area in the vicinity of Fort Walton Beach. These two service areas are now connected with water distribution infrastructure and were combined into one IWUP in 2018. The anticipated time frame for implementation is 2035-2045 and the preliminary estimated cost is $200 million. Specific funding sources have yet to be determined.

Although not yet proposed as a water supply development project by local governments or utilities, preliminary planning level analysis indicates that 10 mgd of additional surface water supply could be developed from the Choctawhatchee River. Additional information regarding this potential supply source is provided under the Water Resource Development section of this plan.

Groundwater

Groundwater supply development projects utilizing either the Floridan aquifer or sand-and-gravel aquifer were submitted by utilities located in Region II. Utilities submitted projects that include the construction of up to 13 new or replacement Floridan aquifer supply wells over the planning period. Many of the submitted well projects would increase existing system capacity.

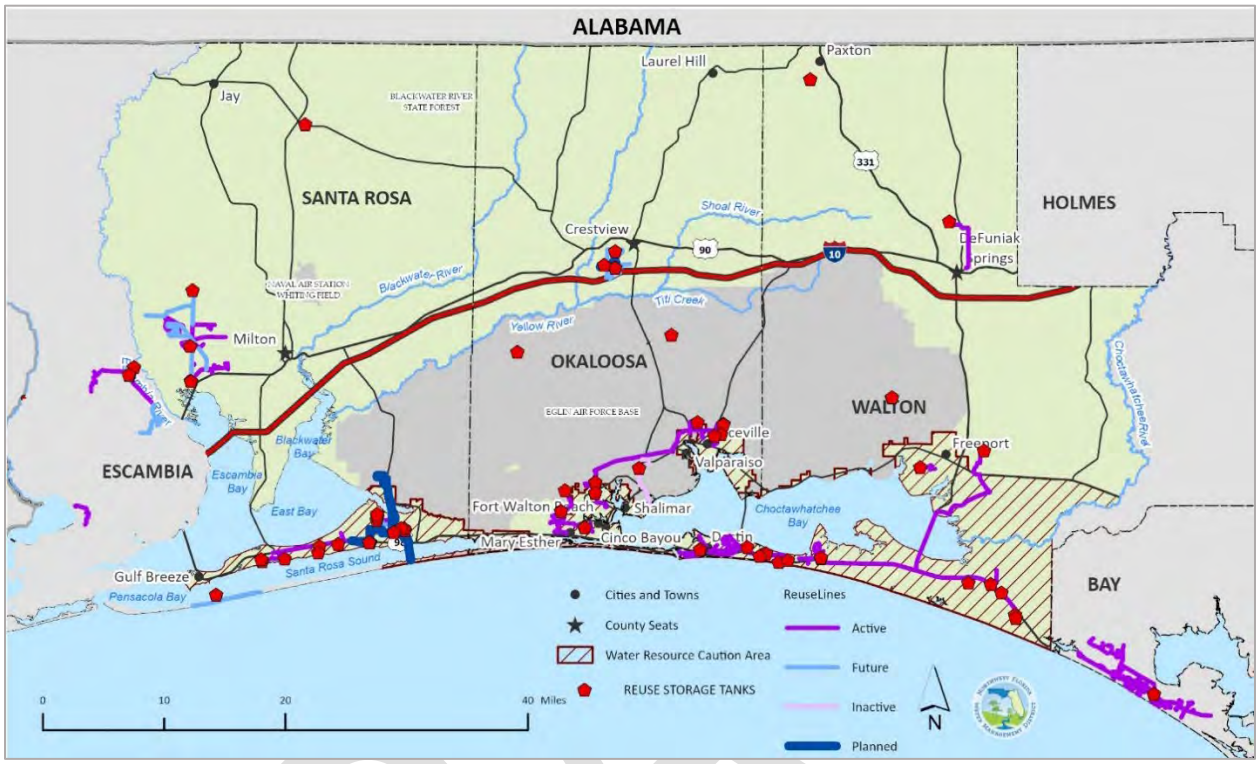

Figure 10. Region II Reuse Transmission Line Map

The proposed Floridan aquifer well projects are proposed to withdraw an additional 6.68 mgd of water with an estimated capital investment of $47.85 million. Permittees may be required to perform groundwater modeling for these proposed projects to demonstrate that the proposed withdrawals will not cause harm from saltwater intrusion to existing legal uses.

East Milton Water System proposes to construct three new water supply wells in the sand-and-gravel aquifer. One of the proposed projects will replace a current water supply well with one of higher capacity. Fairpoint Regional Utility System also proposes to construct two new water supply wells in the sand-and-gravel aquifer. The proposed wells would provide an additional 3.4 mgd of water with an estimated capital investment of $13.9 million. In addition, Midway Water System plans to investigate the potential for a new sand-and-gravel aquifer well. The timeframe for this project has yet to be determined. Proposed Floridan aquifer and sand-and-gravel aquifer water supply projects are subject to review by the District during the permitting process. The expanded groundwater capacity proposed by public supply utilities totals approximately 10.1 mgd. Additionally, there is remaining permitted groundwater capacity within many IWUPs within Region II. For additional information regarding these projects, please reference Appendix D.

Within both Okaloosa and Walton counties, the current total permitted capacity for public supply utilities exceeds the projected 2045 future demands, not including the additional 6.68 mgd of planned

groundwater capacity. However, the Upper Floridan aquifer is the primary source of potable water for these two counties and due to the continued threat of saltwater intrusion, the development of alternative water supplies is needed to further reduce Floridan aquifer pumpage and meet future needs. Efforts to further shift Floridan aquifer production to the north and reduce pumpage near the coast may also be needed to sustainably meet future needs. As indicated in the Water Resource Development section, the District plans to continue data collection and groundwater evaluations to refine the saltwater intrusions risks.

Storage and Distribution

This category of WSD projects includes multiple ground and elevated water storage tanks and infrastructure improvement projects. Pipeline and distribution projects increase the system's supply capacity while also providing conservation benefits, by reducing water losses, when replacing older compromised water supply pipes; the total estimated cost for these projects is around $88 million. Ground and elevated water storage tank projects help supply the system with additional water in times of high demand. The storage projects submitted will increase water storage by 11.6 mgd and will cost an estimated $62 million. Potential timeframe for storage and distribution projects is 2022-2045. Funding sources include local impact and capacity fees, state appropriations or grants, USDA, and other available grants and loans.

4.2 Water Resource Development

This section describes water resource development projects and activities planned for the 2025 through 2045 planning period. Although these activities are primarily led by the District, project development, funding, and technical support may also be provided by utilities and other project partners. Water resource development strategies include data collection and analysis; hydrogeologic investigations; groundwater flow and transport modeling; MFL technical assessments, and other technical evaluations, such as feasibility studies, that support water supply development. Ongoing and planned water resource development activities, estimated costs, and implementation timeframes are provided in Table 9. Costs for ongoing activities were obtained from the District's FY 2024 – 2025 Five Year Water Resource Development Work Program and thus underestimate costs for the full 20-year planning period.

Table 8. Summary of WRD Projects and Activities

Activity	Description	Timeframe	Project Cost
Reuse and Conservation Planning and Technical Support	District coordination for water reuse projects, grants, and programs.	Ongoing[2]	$423,700
	District coordination and technical support for water conservation projects and programs as well as evaluation of the potential future water savings.	Ongoing[2]	$143,180
	Potential 1.7 mgd of water conservation savings through appliance and plumbing fixture upgrades and replacements, and residential potable irrigation efficiency improvements.	2025 – 2045	$16.7 million

Surface Water Evaluations	Evaluations of potential surface water sources and coordination with utilities and local governments regarding funding and future implementation.	Ongoing[2]	$865,240
	Choctawhatchee River 10 mgd water supply project	TBD	$231 - $498 million
Aquifer Storage and Recovery (ASR) and Managed Aquifer Recharge	Technical support and evaluations of feasibility of aquifer storage and recovery (ASR) and managed aquifer recharge (AR).	2025 – 2045	TBD
Lower Floridan Aquifer Enhanced Data Collection	Data collection to better define the nature and extent of the confining unit that restricts saline groundwater within the Lower Floridan aquifer from moving vertically into the potable production zone of the Upper Floridan aquifer.	2025 – 2027	$2.3 million
Groundwater Evaluations	Identify potential options to reduce groundwater production near the coast and shift production north, including utility interconnections, to reduce or stabilize the cone of depression in the Floridan aquifer and the rate of saltwater intrusion.	Ongoing[2]	$1.5 million
	Sand-and-gravel aquifer resource evaluations and modeling analyses to update alternative water supply assessments.		
	Floridan aquifer resource evaluations with refined groundwater flow and solute transport models to inform water availability.		
Establishment of Minimum Flows and Minimum Water Levels	Minimum flows will be established for the Shoal River and Morrison Spring.	2025 – 2033	$2.2 million
	The need to establish minimum aquifer level(s) for the Upper Floridan aquifer in Region II will be re-evaluated.	2025 – 2035	$1.5 to $2.0 million
Data Collection and Analysis	District led hydrologic data collection, monitoring, and analyses.	Ongoing[2]	$1.8 million
	Water use data, analyses, planning, and WSD support.	Ongoing[2]	

[1] Estimates of water available or potential to be made available.
[2] Five-year cost from the FY 2024-2025 Water Resource Development Work Program
TBD = To be determined

Reuse and Conservation Planning, Coordination and Technical Support

The District plans to continue data collection, technical evaluations, intergovernmental coordination and support for water reuse and conservation projects. An important component of the water resource development strategy is the continued implementation of the Alternative Water Supply Grants Program, in cooperation with the Florida Department of Environmental Protection.

Surface Water Evaluations

Previous surface water investigations and analyses have focused on the Shoal River as a potential alternative water supply source for Okaloosa County and the region (PBS&J 2006). The District has supported cooperative efforts to evaluate alternatives, funding options, and site plans with Okaloosa County and project partners that have included Eglin AFB and the U.S. Army Corps of Engineers. From

2011 to 2015, Okaloosa County successfully acquired more than 1,600 acres of land along the Shoal River near Interstate 10 for future development of an offline reservoir and for water resource protection. The District and Okaloosa County will continue coordinating on this project through the planning period.

In 2024, the District initiated work to assess the upper reaches of the Shoal River and the portion of the Choctawhatchee River within Florida as potential water supply sources. The Choctawhatchee River is the 3rd largest river in Florida in terms of flow, with a watershed that spans portions of Florida and Alabama and exceeds 3 million acres. The median flow at the USGS station near Bruce, Florida, based on the 1994 to 2024 period of record is 3,830 cfs (approximately 2,061 mgd). The Choctawhatchee River is designated as Critical Habitat for Gulf Sturgeon and several listed mussel species occur along the river. Flows from the river support a diverse and productive estuary. Although a specific withdrawal schedule protective of aquatic habitat for this river system remains to be determined, a yield of 10 mgd would comprise less than 0.5 percent of the median flow and is likely to be technically feasible.

Planning level costs for the implementation of a 10 mgd water supply project vary depending on the storage capacity, treatment plant location, and utility delivery point(s). Storage options could include an offline reservoir or potentially aquifer storage and recovery (ASR). A direct withdrawal with minimal storage may be more cost-effective but additional technical analyses are needed to refine estimates of yield and reliability. Planning level estimates of capital costs for a project that delivers 10 mgd of treated surface water range from $231 million to $498 million. Unit cost estimates range from $5.09 per kgal to more than $9 per kgal, depending on the project configuration (Hazen and Sawyer, 2024a). Projects with a direct withdrawal are the least costly, followed by projects with ASR, and projects with offline reservoir storage. Due to project and market uncertainties, planning level costs include a 60 percent contingency in construction costs.

Future collaboration will be needed among local governments, utilities, and other relevant parties to identify project participants and determine raw water withdrawal locations, treatment plant site, transmission main capacities and routes, treated water delivery points, storage components, and a conceptual design. A water supply project of this scale will require partnerships among utilities, as well as considerable state and/or federal grant funding for implementation. Coordination with the USFWS, FWC, the Choctawhatchee Bay Estuary Program, and other relevant parties is also anticipated.

Although the Shoal River is currently proposed as a source by Okaloosa County, with a proposed withdrawal site downstream, it was included in the study to provide information regarding the potential yield further upstream in the watershed. Completion of the Shoal River MFL technical assessment and adoption of minimum flows by 2033 are expected to protect key water resource values such as water-based recreation and fish and wildlife habitats. The MFL analyses will also inform future IWUP permitting decisions regarding withdrawal schedules and potential future surface water allocations.

Aquifer Storage and Recovery (ASR) and Managed Aquifer Recharge Evaluations

Depending on hydrogeologic characteristics, aquifer storage and recovery (ASR) has the potential to store large quantities of water for subsequent use. One ASR system in coastal Okaloosa County has an IWUP to withdraw 1.12 mgd from the sand-and-gravel aquifer for landscape irrigation. A few aquifer-recharge (AR)

projects in NWFWMD are for groundwater remediation and restoration due to poor-quality or contaminated waters. These AR projects are not estimated to create any new water.

Aquifer storage and recovery within the Upper Floridan aquifer was considered as part of the evaluation of the Choctawhatchee River alternative water supply option. Surface water treated to meet primary and secondary drinking water standards may serve as source water for an ASR system. Based on a preliminary assessment of limited information, an ASR system co-located with a surface water treatment plant could supply up to 10 mgd of treated water. However, the required data, field investigations, and technical feasibility of using ASR in Region II would need to be further evaluated. Managed aquifer recharge to offset existing groundwater pumping or to provide resource protection as a salinity barrier was also evaluated, however, it was determined that additional site specific hydrogeologic investigations would be needed to determine the feasibility of this approach.

Lower Floridan Aquifer Enhanced Data Collection

Hydrogeologic and water quality data are needed to better estimate the number of Upper Floridan aquifer supply wells at risk of exceeding drinking water standards and the potential decrease in water supply capacity due to up-coning of higher salinity water from the Lower Floridan aquifer. In FY 2025-2026, a deep test boring, one Lower Floridan aquifer monitoring well, and one Upper Floridan aquifer monitoring well near the pinch-out zone of the Bucatunna Clay confining unit in Okaloosa County will be constructed. Water quality data and aquifer levels will be collected at varying depths within the Upper Floridan aquifer and Lower Floridan aquifer to determine the position of the saltwater interface. An aerial electromagnetic survey is proposed, if feasible, to map subsurface high conductivity features, such as saltwater in the aquifer, to help determine the optimal site for the wells. Completed monitoring wells will serve as sentinels to changes in water quality and enable long-term monitoring of saltwater interface movement. Data collected will improve predictions by existing groundwater models regarding the sustainability of the Upper Floridan aquifer under future pumping and sea level rise conditions.

Groundwater Evaluations

The District has ongoing groundwater evaluation programs that include groundwater modeling, MFL technical assessments, and WSA resource assessments. A WRD project evaluating the feasibility and benefits of redistributing Upper Floridan aquifer withdrawals and the potential interconnections of public water supply utilities is also planned. Comprehensive groundwater modeling efforts are ongoing or planned that encompass the Floridan, Intermediate system, sand-and-gravel, and surficial aquifer systems from Escambia County, throughout Region II, and including counties east of Region II to the Apalachicola River. Groundwater models will be updated and refined as needed to support WSAs and MFL assessments through the planning horizon 2025-2045.

Evaluation of Pumpage Redistribution

Prior to water supply planning, regional groundwater supplies were developed near the area of demand. Drilling wells and building infrastructure to access local sources keeps the costs of supplying water low. However, this has been problematic from a resource perspective as population centers and growth have historically been concentrated along the coast in Region II. The magnitude and spatial distribution of groundwater withdrawals from the Upper Floridan aquifer impact water levels within the aquifer when

pumping is concentrated over a small area. The results have been the significant drawdown of water levels within the Upper Floridan aquifer at the coast, the reversal of the natural groundwater flow direction from offshore to onshore, and the increased risk of saltwater intrusion and up-coning into the potable water supply production zone. Water supply planning projects developed in the early 2000s have successfully recovered over 70 feet of water level drawdown by reducing groundwater pumping at the coast and moving planned withdrawals to inland alternative water supply sources. Further shifting of pumpage to the north and reducing withdrawals along the coast may achieve additional recovery. Such reductions could be achieved through additional groundwater development to the north and interconnections with utilities near the coast. The District plans to further evaluate the potential costs and benefits of pumpage redistribution projects.

Sand-and-Gravel Aquifer

The District plans to refine the representation of the sand-and-gravel aquifer in the larger regional groundwater model and further evaluate the capacity of the sand-and-gravel as an alternative water source. Existing hydrologic, water quality and water use data will be compiled, summarized and evaluated to identify data gaps. Expanding water level monitoring and water quality sampling efforts in the sand-and-gravel aquifer may be necessary to fill gaps.

Floridan Aquifer

The Floridan aquifer functions as one regional system across inland and coastal areas. The Upper Floridan aquifer has effective confining units such as the intermediate confining unit and the Bucatunna Clay confining unit that separate the productive unit from the overlying surficial aquifer and underlying Lower Floridan aquifer, respectively. Designation of Upper Floridan aquifer withdrawals as “coastal” or “inland” facilitate water use and planning evaluations. However, Upper Floridan aquifer withdrawals in inland areas can affect Floridan aquifer water levels near the coast. Data collection for the Region II coastal Upper Floridan MFL technical assessment began in 2015. Groundwater flow and transport models were developed and calibrated in 2019 and 2020 to evaluate the need to establish minimum aquifer levels for the Upper Floridan aquifer in Region II. Although the MFL evaluation determined, at the time, that minimum aquifer levels were not needed, subsequent increases in projected water demand as identified in the 2023 WSA and increased drawdowns at the coast suggest that regional threats to Upper Floridan aquifer water supplies persist. Sustainability modeling will continue by verifying model predictions and recalibration, if needed, using data collected since initial model development. Water quality trend analyses will also be updated with newer data.

Establishment of Minimum Flows and Minimum Water Levels

To date, there are no adopted MFLs and therefore no recovery or prevention strategies in Region II. Further, there are no waterbodies subject to water reservations. Currently, two waterbodies in Region II are on the District’s 2023 MFL Priority List and Schedule: Morrison Spring, a second-magnitude spring in Walton County, and the Shoal River. Rule adoption for these waterbodies is scheduled for 2031 and 2033, respectively. It is recommended that the need to establish minimum aquifer levels for the Upper Floridan aquifer be re-evaluated. If recovery or prevention strategies are needed in the future, the RWSP will describe how identified WSD and WRD projects support such strategies. The District’s MFL Priority List and Schedule is updated annually and posted on the District website: www.nwfwater.com.

Data Collection and Analysis

Hydrologic Data

Hydrologic data collection, monitoring, and hydrologic analyses are essential to multiple District functions and programs. In Region II, the District continues operating and maintaining a network of rainfall gauges and monitoring wells and contracts with the USGS for streamflow monitoring. The District Trend Network is comprised of a set of wells that are periodically sampled to monitor groundwater quality. Data collected by the District and USGS are augmented by groundwater data provided by water use permittees. Current hydrologic and long-term trend data provide valuable information for resource evaluations, including groundwater modeling, MFL technical assessments, and WSAs. Hydrologic data activities are ongoing year-round and anticipated to continue through 2025-2045. Planned improvements include increased real-time monitoring stations and additional shallow wells to better monitor vulnerability to compound flooding.

Geophysical Logging and Discrete Water Quality Sampling

Groundwater quality monitoring is necessary to protect the coastal Floridan aquifer from long-term saltwater intrusion. The position of the saltwater interface and the rate of intrusion are influenced by the magnitude of regional groundwater pumping. The degree of pumping in Region II varies seasonally throughout the year due to the summer influx of tourists along the coast. Mapping the position of the potable water interface can provide insight into the position of the saltwater interface. A sub-network of coastal Upper Floridan aquifer monitoring wells will continue to be logged and sampled annually to detect changes in the vertical distribution of water quality that may indicate landward movement of saltwater within the aquifer. Geophysical logs include fluid conductivity and temperature, electrical and dual-induction formation resistivity, and natural gamma radiation. Water quality samples will be collected and analyzed for the saline-related parameters sodium, chloride and TDS. The information obtained will assist with the verification of a sub-regional, transient saltwater intrusion model which was calibrated as part of the Region II minimum aquifer level evaluation.

Water Use Data and Planning

Water use data are vital, ongoing inputs to multiple District and state programs and reporting requirements. Water use data is analyzed to prepare estimates and metrics annually and future demand projections are generated every five years in conjunction with WSAs. The next Districtwide WSA is scheduled for 2028. If the District's Governing Board approves a WSA determination that there is the need for a new RWSP or the continuation of an existing RWSP, a plan will be developed or updated.

Other Project Opportunities

Region II will continue to benefit from multi-jurisdictional approaches and joint project collaboration among public utilities, local governments, the District, regional water supply authorities and other recreational, agricultural, industrial, commercial, and institutional self-suppliers. This RWSP recognizes that AWS options for agricultural self-suppliers are limited; however, expanded use of agricultural ponds, reuse of reclaimed water, and crop and irrigation conservation practices (BMPs) have successfully reduced demands in many parts of Florida. Additional water supply development projects may arise during the implementation of this RWSP. Strategies for water supply sustainability in Region II are provided in Table 10.

Table 9. Region II Strategies for Water Supply Sustainability

Strategies	WSD/WRD Project Options
1. Continue reducing reliance on coastal Floridan aquifer resources.	Additional projects in the WRCA or that reduce water use in the WRCA, and other areas with aquifer drawdowns, including interconnections, pumpage redistribution, water conservation, and development of AWS.
2. Enhance appropriate and efficient use of all water resources.	Promote and encourage water conservation plans, programs, measures, and projects. Provide resources and technical support to quantify water conservation savings.
3. Continue implementing and investigating additional alternative water supplies and conservation.	Continue implementation of water conservation and reuse projects to reduce reliance on the Floridan aquifer. Evaluate ASR and managed aquifer recharge to provide alternative water supplies, recharge aquifer resources, and/or provide salinity barriers. Further investigate surface water development, capture of wet-weather flows, stormwater, or mixed-water blending, including "one water" concepts.
4. Add interconnections and water storage capacity.	Particularly in the WRCA and coastal communities with aquifer drawdown and/or areas vulnerable to storm impacts.

5. FUNDING AND COORDINATION

This chapter summarizes funding needs and identifies possible funding options for both WRD and WSD projects, including project coordination needs.

5.1 Funding Needs

Funding is needed in Region II to assist local entities in the implementation of WSD projects to meet future demands and to continue WRD projects to support future alternative water supply development and monitor and assess potential saltwater intrusion.

Of the $517 million in WSD projects (Table 4), several have no identified source of funding, including the $200 million Shoal River surface water development project. About $67.9 million or about 13 percent of the total WSD costs would be implemented with in-house or local funds, the remainder relying on multiple funding sources (Table 11). Potential sources include FDEP SRF, FDEP alternative water supply grants, other state grants, USDA Rural Development, the District, legislative appropriations, and other federal grant programs such as the Water Infrastructure Finance and Innovation Act (WIFIA).

Table 10. Proposed WSD Projects, Estimated Costs, and Sources of Funding

County	In-House/Local	Multiple Sources	TOTAL
Okaloosa	$48,740,000	$324,847,000	$373,587,000
Santa Rosa	$19,143,825	$37,520,363	$56,664,188
Walton	$50,000	$87,245,000	$87,295,000
Totals	**$67,933,825**	**$449,612,363**	**$517,546,188**

The cost for WRD project implementation is estimated annually in the District's Five Year Water Resource Development Work Program (WRDWP). The estimate for the FY 2025-2029 timeframe is $7.7 million or an average of about $1.5 million per year. This includes $2.2 million needed for the Lower Floridan Aquifer Enhanced Data Collection project, which will enable the District to refine saltwater intrusion risks associated with existing and future pumping from the Upper Floridan aquifer. Additional funding will be needed by the District to perform technical evaluations of potential water supply development options, including feasibility studies for new surface water sources and hydrogeologic investigations of aquifer storage and recovery and/or managed aquifer recharge.

Within Region II, there is a significant unmet funding need that is estimated to exceed $232 million for the 2025 through 2045 planning horizon. Funding needs for planned water supply and water resource development projects include:

- $200 million for the Shoal River Water Supply Project,
- $2.2 million for Lower Floridan Aquifer Enhanced Data Collection;
- $13.8 million for planned reuse projects, based on Alternative Water Supply Grant applications submitted in 2024; and
- $16.7 million for potential future water conservation programs (rebate programs, retrofits, and other measures).

Although the Choctawhatchee River Water Supply Project has not yet been proposed for implementation, capital costs for this project which are not included on the list above, are estimated to range from $231 million to $498 million, depending on the project configuration, participants, and water delivery points.

5.2 Funding Options for WRD and WSD

Financial resources are needed for both water resource and water supply development. Funding for the development of alternative water supplies is a shared responsibility pursuant to s. 373.707 and 373.709, F.S., with the State of Florida and water management districts responsible for funding assistance. Sources of possible funding are summarized below.

Interlocal Partnerships

The basic principle of interlocal partnerships is cost sharing but may also include sharing of technical expertise, assets, and the burden of risk. Partnerships may be formed between funding organizations and local implementation entities; between different water users and processes, for example industrial or commercial reuse of reclaimed water from a water utility's WWTP; and between private business interests and those providing a public service such as clean water supply. Cost-sharing partnerships may be at any level and potentially combined together with any of the funding options and resources listed below.

Local Resources

Utility charges for water supply and wastewater treatment provide basic revenue to operate and maintain water supply systems. A utility may have additional resources to fund infrastructure expansion in response to growth and development but is typically limited in their ability to finance alternative water supplies. Utilities may levy connection or tap fees, impact fees, minimum charges, and inclined block rate or volume charges; and issue and secure bonds and incur debt to develop water supplies. Regional water supply authorities, community development district's (CDDs), and special water supply or sewer districts have additional authority to apply special assessments and levy local taxes.

NWFWMD

The state constitution limits the NWFWMD to 1/20th (0.05 mills) of one mill, significantly less than the ad valorem taxing authority afforded the other four water management districts. This substantially limits the amount of revenue available to support implementation of major WRD and WSD projects and initiatives, including alternative water supply projects. To support both programmatic activities and WSD capital projects, the District relies on outside funding sources such as state appropriations and grant funding; and may apply any available reserve funds for priority projects.

A funding strategy for WRD projects (s. 373.709(2)(d), F.S.) shall be reasonable and sufficient to pay the cost of constructing or implementing all listed projects. For the WRD component of this RWSP, the District relies on funding sources identified annually in the District's budget and further highlighted in the Five-Year Water Resource Development Work Program (s. 373.536, F.S.).

State Level

Funding assistance from the State of Florida has historically included dedicated trust funds, revolving fund programs, and small community grants. The Water Protection and Sustainability Program Trust Fund

(WPSPTF) was created by the Florida Legislature in 2005[4] to fund alternative water supply and water storage facilities. The WPSPTF is primarily for water supply projects implemented by local governments or water supply entities. Applicability to WRD is in the cooperative efforts in the development of water supplies and AWS.[5]

The State of Florida has two State Revolving Fund (SRF) programs:

1. The Drinking Water SRF program provides funding assistance to eligible cities, counties, authorities, special districts, and other privately owned, investor-owned, or cooperatively held public water systems. Low interest loan funding is based on a priority system of public health considerations, compliance, and affordability. Affordability includes the evaluation of median household income, population affected, and small public water systems, which serve a population of 500 people or fewer. For rate-based public water systems, pre-construction and construction loan funds are available; and pre-construction and construction grants are available for small, financially disadvantaged communities.
2. The Clean Water SRF program provides low-interest loans for planning, designing and constructing water pollution control facilities under Chapter 62-503, F.A.C., for wastewater, stormwater, and certain energy and other types of projects. Loan funds are made available for planning, design and construction. Small, disadvantaged communities may also be eligible for grants, which, once qualified, can significantly reduce the amount owed on a SRF loan. The loan terms include a 20-year amortization and low-interest rates. Financing rates vary based on the median household income, the poverty index, and the unemployment index.

The Small Community Wastewater Construction Grants program assists small communities and wastewater authorities pursuant to Chapter 62-505, F.A.C. An eligible small community must have a total population of 10,000 or less and have a per capita income less than the State of Florida average. The highest priority is given to projects that address a public health risk and projects that are included in a Basin Management Action Plan (BMAP). All projects must receive a Clean Water SRF loan to receive these grant funds.

The 1999 Florida Forever Act created the Florida Forever Trust Fund (s. 259.1051, F.S.) to acquire and preserve land and watershed resources, and up to half of the program funding may be used for certain capital improvement projects including water resource development projects on public lands, such as groundwater recharge and stormwater management. Typically, WRD or WSD projects are allowed if MFLs have been established for applicable waters (s. 259.105, F.S.).

<u>FDEP Alternative Water Supply Grants Program</u>

The State of Florida has invested in alternative water supply and the protection of Florida's natural systems since Fiscal Year 2019-2020 by funding projects that prioritize regional projects in the areas of greatest need as well as projects that provide the greatest benefit. FDEP and the state's five water management districts share a responsibility to identify and implement conservation, reuse and other alternative water supply and water resource development projects. Special consideration is given to those

[4] Sections 403.890 and 403.891, F.S.
[5] Sections 373.707 and 373.475, F.S.

AWS projects contained in District Regional Water Supply Plans, recovery or prevention strategies for minimum flows and minimum water levels, or projects otherwise benefiting MFLs. This focus will not only further AWS development efforts in areas of established priority but should also encourage communities to submit projects due to the availability of enhanced funding consideration.

FDEP Local Water Supply Pilot Grants Program (Northwest Florida)

This grant program was available to local governments for water supply infrastructure (including distribution and transmission facilities) in the Northwest Florida Regional Water Supply Planning Regions I or II. To be eligible, the project must be located within Escambia, Santa Rosa, Okaloosa, or Walton counties. The grant application window closed in September 2024.

2010 Deepwater Horizon

Settlements from the 2010 Deepwater Horizon oil spill and the enactment of the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies (RESTORE) of the Gulf Coast Act of 2012 made available several special restoration programs and funding opportunities. These include the Gulf Coast Restoration Trust Fund, Natural Resources Damages Act (NRDA) Restoration Program, National Fish and Wildlife Foundation and Gulf Environmental Benefit Fund, Triumph Gulf Coast, Inc. (TRIUMPH), and other individual settlement funds. Projects that meet the specific goals of these funding sources, such as reclaimed water projects that help eliminate coastal discharges or stormwater treatment facilities also used as storage, may be eligible for funding.

Federal

The United States Environmental Protection Agency (USEPA) administers the following programs:

- The Water Infrastructure Finance and Innovation (WIFIA) Act established a financing mechanism to accelerate investment in regionally or nationally significant WRD projects. The WIFIA program is closely correlated with states SRF programs.
- State and Tribal Assistance Grants provide funding assistance through cooperative agreements with 45 percent in matching funds from local government cooperators.

Following appropriation of WIFIA funds by congress, a Notice of Funding Availability (NOFA) is issued to provide credit assistance for up to 49 percent of eligible project costs. The national or regional significance criteria is evaluated with respect to economic and public benefits. Minimum project size is $20 million for large communities and $5 million for small communities (population of 25,000 or less).

The United States Department of Agriculture's Natural Resources Conservation Service provides technical and financial assistance to agricultural producers through the Environmental Quality Incentive Program (EQIP) for the installation or implementation of structural and management practices to improve environmental quality on agricultural lands. Water supply and nutrient management through detention/retention or tailwater recovery ponds can also be implemented through this program.

5.3 RWSP Coordination

This section addresses coordination elements not covered in other parts of this RWSP.

Public Interest and Cost Savings

Water supply development projects are intended to serve the public interest or save costs overall (s. 373.709(2)(e), F.S.) by preventing the loss of natural resources or by avoiding greater future expenditures. Pursuant to s. 373.016(4)(a), F.S., the use of water from sources nearest the area of use or application is encouraged, whenever practical. In coastal areas of Region II this has not been possible or practical where groundwater pumpage has caused significant Floridan aquifer drawdown near the coast and increased the risk of saltwater intrusion. This issue prompted the need for significant investments in alternative water supplies and the development of inland wellfields.

The RWSP with a 20-year outlook, five-year updates, and participatory planning process provides opportunities to plan, prepare for, and implement WSD projects before natural resources are diminished and before urgent water supply needs result in more costly expenditures. The implementation of this Region II RWSP since 2000 has resulted in a partial recovery of coastal Floridan water resources but efforts need to continue to ensure that water resources are sustainable and that the public interest is served in the most cost-effective manner possible.

RWSP Partnerships

The Walton-Okaloosa-Santa Rosa Regional Utility Authority (RUA) was established in 1986 to address water supply needs and protection of water resources on a regional level. The RUA board is comprised of the three Region II counties and municipalities of Destin, Fort Walton Beach, Gulf Breeze, Mary Esther, and Niceville. The RUA and its representative utilities and local governments have been instrumental to the successes of alternative water supply projects developed to date in Region II.

Local Coordination

Water supply development project options listed in a RWSP (s. 373.709(7-8), F.S.) are not required to be selected by local entities but RWSP data and information may be referenced in reviewing permit applications. Where the WSD component shows the need for one or more alternative water supply projects, the District notifies affected local governments. Potential follow-up actions may include educating and involving local public officials toward solutions, and presentations of findings and recommendations. Affected local governments notify the District of projects or options developed or to be developed and provide annual updates by November 15 of each year. Programs and projects may need to be incorporated into local comprehensive plans, pursuant to s. 163.3177(6)(c), F.S.

Watershed and Reuse Coordination

In addition to water supply, many of the activities and project options within this plan also have water quality and watershed benefits. Region II includes portions of the Pensacola Bay System, Choctawhatchee River and Bay, and St. Andrew Bay watersheds. Surface Water Improvement and Management (SWIM) plans for these and other priority District watersheds were last updated in 2017-2018. Cross-cutting strategies from SWIM plans to this Region II RWSP include reuse of reclaimed water projects, water conservation, and watershed projects that support surface water protection and enhanced aquifer recharge. The District coordinates and collaborates with the Pensacola & Perdido Bays Estuary Program and the Choctawhatchee Bay Estuary Program to implement projects focused on watershed restoration,

protection, and resilience. Additional information on SWIM Plans is available at: https://www.nwfwater.com/Water-Resources/Surface-Water-Improvement-and-Management.

Public Outreach

This Region II RWSP and WSD projects were developed jointly (s. 373.709(3), F.S.) with regional water supply authorities, utilities, self-suppliers, and local governments. During development of the District's 2023 WSA, surveys were distributed to invite review and feedback on population and water use estimates and future demand projections. Both in-person and online public forums presented draft 2023 WSA findings with opportunities for public comment. Technical data and modeling tools were presented at public workshops in July 2023. Further information on the 2023 WSA outreach and public involvement efforts is on the District website: https://nwfwater.com/Water-Resources/Water-Supply-Planning/Water-Supply-Assessments.

In December 2023, the District's Governing Board determined in a public meeting that regional water supply planning for Region II should continue. An informational public meeting was held in February 2024 followed by outreach to individual public supply and regional utilities with requests to submit WSD projects. An informational presentation was given at the October 10, 2024, District Governing Board meeting, which is an advertised public meeting. In November 2024, information regarding the Draft 2024 Region II RWSP and upcoming public meetings was sent to permittees, advertised, and posted on the District website. Two public workshops were held on December 3, 2024. The draft plan was posted on December 3, 2024, and a public comment period remained open through December 27, 2024.

6. CONCLUSIONS AND RECOMMENDATIONS

Region II is the District's largest and fastest growing water supply planning region. The 2020 seasonally adjusted population estimate for Region II of 521,991 is expected to climb 33 percent to 691,940 by 2045. Walton County has the fastest growing population in the District and its population is projected to increase approximately 58 percent above 2020 estimates by the end of the planning period. Water use across the region totaled 76 million gallons per day (mgd) in 2020 and is projected to increase by 40 percent (or 30.8 mgd) to 106.8 mgd by 2045. Public supply and self-supplied recreational water uses are expected to remain the largest use sectors.

Groundwater pumpage from the Floridan aquifer has resulted in significant drawdowns and created the risk of saltwater intrusion in coastal areas of Region II. The development of inland wellfields by local and regional utilities, in cooperation with the District, during 2000 through 2010 enabled some coastal pumpage to be shifted inland. Floridan aquifer levels partially recovered between 2000 and 2017, which has slowed but not eliminated the risk of saltwater intrusion. Increased inland pumping from the Floridan aquifer during the past decade has expanded the area of aquifer drawdowns and has caused water levels to regularly decline below sea level in central Walton County since 2018.

Unless alternative water sources are developed, continued reliance on the Upper Floridan aquifer is projected to expand and deepen aquifer drawdowns and increase the rate of saltwater movement during 2025 to 2045. Modeling of projected withdrawals from the Upper Floridan aquifer indicate the potential for 85 feet of additional drawdown near Ft. Walton Beach and 49 feet of drawdown near Niceville by 2045. The area where aquifer levels are below sea level is estimated to expand to north of Crestview. The cone of depression near Ft. Walton Beach could approach 150 feet below sea level. Additional aquifer level declines would increase groundwater flow velocities and the rate of saltwater migration. However, there is uncertainty with respect to the rate of saltwater migration and additional exploratory drilling and data collection are needed to refine saltwater intrusion risks. Rates of groundwater movement are projected to remain relatively low (< 500 ft/year) during the next 20 years and it is anticipated that there will be sufficient time for local governments and utilities to develop alternative water supplies.

Implementation of water supply and water resource development projects will require regional partnerships and a substantial investment of financial resources. Alternative water supplies, including surface water, are the preferred water supply options and will be needed to meet growing demands and reduce reliance on the Upper Floridan aquifer system. Expanded reuse systems and water conservation programs are also essential to meeting future water needs.

A total of 114 water supply development projects were proposed by Region II utilities and self-suppliers at a total estimated cost of $517.5 million, with the potential to develop 27.8 mgd of water. About 17.7 mgd represents alternative water supplies, e.g. surface water, reuse of reclaimed water and conservation. An additional 3.4 mgd is proposed from the sand-and-gravel aquifer, which is anticipated to have sufficient availability through 2045. Utilities also have proposed to withdraw an additional 6.7 mgd from the Upper Floridan aquifer, which has limited resources and may not have sufficient quantities of water available to meet all future needs.

Water resource development projects can provide or support additional options to meet future water needs. As part of this RWSP update, the District initiated an evaluation of potential surface water sources in Walton County. The Choctawhatchee River was identified as a potential water source. Although a specific withdrawal schedule protective of aquatic habitat for this river system remains to be determined, a yield of 10 mgd would comprise less than 0.5 percent of the median flow and may be technically feasible. Planning level estimates of capital costs for a project that delivers 10 mgd of treated surface water range from $231 million to $498 million. On a unit cost basis, the planning level estimates range from $5.09 per kgal to more than $9 per kgal, including both capital and operations and maintenance costs, depending on the project configuration (Hazen and Sawyer, 2024a). Cost estimates vary depending on the withdrawal point(s), storage type and capacity, treatment plant location, and utility delivery point(s). Storage options include an offline reservoir or potentially aquifer storage and recovery. A direct withdrawal with minimal storage may be more cost-effective but additional analyses are needed to refine estimates of yield and reliability.

Additional water resource development projects include exploratory drilling and data collection for the Lower Floridan aquifer system and Bucatunna Clay confining unit to refine saltwater intrusion risks; the development of minimum flows and minimum water levels (MFLs) for the Shoal River and Morrison Spring; re-evaluation of the needs for minimum aquifer levels for the Floridan aquifer in coastal Region II; continued hydrologic and water quality data collection; and continuing support for development of reclaimed water and conservation projects.

There is a significant unmet funding need in Region II that is estimated to exceed $232 million for the 2025 through 2045 planning horizon. Funding needs for water supply and water resource development projects include:

- $200 million for the Shoal River water supply project;
- $2.2 million for Lower Floridan Aquifer Enhanced Data Collection;
- $13.8 million for planned reuse projects, based on Alternative Water Supply Grant applications submitted in 2024; and
- $16.7 million for potential future water conservation programs (rebate programs, retrofits, and other measures).

Although a Choctawhatchee River water supply project has not yet been proposed for implementation, capital costs for this project which are not included above, are estimated to range from $231 million to $498 million, depending on the project configuration, participants, and water delivery points.

In summary, Region II water supply development strategies include (1) continue reducing reliance on the Floridan aquifer, (2) ensure appropriate and efficient use of all water resources, (3) continue developing alternative water supplies, including reclaimed water, surface water, and water conservation; and (4) maintain and expand system interconnections and provide sufficient water storage capacity. To successfully achieve these strategies, the following activities are recommended:

- Obtain $2.2 million in funding to implement the Lower Floridan Aquifer Enhanced Data Collection Project to improve saltwater intrusion risk assessments.

- Continue to collaborate with local governments and utilities and other relevant parties and seek state and federal funding to develop alternative water supplies to meet future needs and reduce reliance on the Upper Floridan aquifer.
- Seek funding in cooperation with local governments and utilities to perform feasibility studies of the Choctawhatchee River as a future supply source.
- Identify opportunities to further reduce Upper Floridan aquifer pumpage in the Water Resource Caution Area.
- Explore the potential for managed aquifer recharge to offset groundwater withdrawals and enhance the sustainability of the Upper Floridan aquifer.
- Continue hydrologic and water quality data collection and the refinement of regional groundwater flow and solute transport models to refine saltwater intrusion risks.

Extensive collaboration and coordination with local governments and utilities, enhancing multijurisdictional cooperative frameworks for project implementation, and securing significant funding sources will be needed to continue advancing water resource protection and meet future water supply development needs in Region II.

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Appendix A.

Public Supply Water Use Estimates and Projections by Utility

APPENDIX A. PUBLIC SUPPLY WATER USE ESTIMATES AND PROJECTIONS BY UTILITY

Public Water Supply Utility	Source	Allocation	Estimated 2020	Projected Water Production				
				2025	2030	2035	2040	2045
Auburn Water System	IFAS	3.080	2.303	2.423	2.521	2.597	2.665	2.723
Baker Water System	IFAS	0.300	0.250	0.263	0.274	0.282	0.290	0.296
Blackman Community Water System, Inc.	IFAS	0.094	0.035	0.035	0.035	0.035	0.035	0.035
Crestview, City of	IFAS	5.740	2.553	2.774	2.923	3.047	3.161	3.261
Destin Water Users	CFAS	1.770	1.307	1.770	1.770	1.770	1.770	1.770
Fort Walton Beach, City of	CFAS	3.000	2.604	2.740	2.850	2.937	3.014	3.079
Holt Water Works, Inc.	IFAS	0.186	0.240	0.252	0.262	0.270	0.277	0.283
Laurel Hill, City of	IFAS	0.160	0.132	0.132	0.133	0.134	0.135	0.135
Mary Esther, City of	CFAS	0.620	0.412	0.412	0.417	0.420	0.421	0.421
Milligan Water System	IFAS	0.285	0.145	0.145	0.147	0.148	0.148	0.148
Niceville, City of	CFAS	3.000	2.615	2.752	2.862	2.949	3.026	3.092
OCW&S - Bluewater (Raintree)	CFAS	1.500	1.272	1.339	1.393	1.435	1.472	1.504
OCW&S - Main (Garniers) Office Well Plant	CFAS	9.120	6.389	6.722	6.992	7.205	7.393	7.553
SWUC (Okaloosa County portion)	CFAS, IFAS	-	-	-	-	-	-	-
Valparaiso, City of	CFAS	0.600	0.475	0.483	0.495	0.504	0.512	0.516
OKALOOSA TOTAL		**29.455**	**20.733**	**22.243**	**23.075**	**23.735**	**24.319**	**24.815**

Public Water Supply Utility	Source	Allocation	Estimated 2020	Projected Water Production				
				2025	2030	2035	2040	2045
Bagdad-Garcon Point Water System	S&G	0.680	0.725	0.754	0.792	0.822	0.847	0.868
Berrydale Water System	S&G	0.336	0.281	0.292	0.307	0.319	0.329	0.336
Chumuckla Water System	S&G	0.493	0.369	0.403	0.432	0.455	0.477	0.497
East Milton Water System	IFAS, S&G	2.270	1.810	1.979	2.117	2.234	2.340	2.436
Fairpoint Regional Utility System (FRUS)	S&G	6.734	6.095	6.657	7.143	7.558	7.940	8.286
Gulf Breeze Water Department (Service Area)	-	-	-	-	-	-	-	-
Holley-Navarre Water System, Inc.	CFAS, S&G	1.300	0.605	0.605	0.605	0.605	0.605	0.605
Jay, Town of	S&G	0.290	0.153	0.159	0.167	0.173	0.179	0.183
Midway Water System	CFAS, S&G	0.682	0.635	0.635	0.635	0.635	0.635	0.635
Milton, City of	S&G	2.530	1.858	2.030	2.172	2.292	2.401	2.500
Moore Creek-Mt. Carmel Utilities, Inc.	IFAS, INT, S&G	0.375	0.321	0.351	0.376	0.396	0.415	0.432
Pace Water System, Inc.	S&G	6.100	4.634	5.179	5.591	5.954	6.296	6.616
Point Baker Water System, Inc.	S&G	1.120	0.893	0.976	1.044	1.101	1.154	1.201
Navarre Beach - Santa Rosa BOCC	CFAS	0.040	0.013	0.018	0.018	0.018	0.018	0.018
South Santa Rosa Utilities (Service Area)	-	-	-	-	-	-	-	-
SANTA ROSA TOTAL		**22.950**	**18.391**	**20.037**	**21.397**	**22.561**	**23.637**	**24.613**

Public Water Supply Utility	Source	Allocation	Estimated 2020	Projected Water Production				
				2025	2030	2035	2040	2045
Argyle Water System	IFAS	0.096	0.063	0.064	0.065	0.066	0.067	0.068
DeFuniak Springs, City of	IFAS	1.810	1.224	1.407	1.564	1.697	1.816	1.931
FCSWC / Regional Utilities	IFAS	8.590	5.579	7.052	8.179	9.287	10.391	11.577
Freeport, City of	IFAS	2.396	1.003	1.153	1.282	1.391	1.489	1.583
Freeport, City of, North Bay Water System	CFAS	0.156	0.135	0.155	0.172	0.187	0.200	0.213
Inlet Beach Water System, Inc.	CFAS, INT	0.325	0.236	0.280	0.280	0.280	0.280	0.280
Mossy Head Water Works, Inc.	IFAS	0.340	0.294	0.338	0.375	0.407	0.436	0.463
Paxton, City of	IFAS	0.265	0.163	0.166	0.168	0.171	0.173	0.176
SWUC - Rockhill Inland Well Field	IFAS	8.600	5.351	5.672	6.368	6.967	7.522	8.050
SWUC - Coastal Wells	CFAS	1.130	0.998	1.130	1.130	1.130	1.130	1.130
WALTON TOTAL		**23.708**	**15.045**	**17.417**	**19.584**	**21.582**	**23.505**	**25.471**
REGION II TOTAL		**76.113**	**54.169**	**59.697**	**64.056**	**67.878**	**71.460**	**74.899**

Source: Inland Floridan Aquifer System (IFAS), Coastal Floridan Aquifer System (CFAS), Intermediate (INT), and the Sand and Gravel (S&G).

Appendix B.

Recreational Water Use Estimates and Projections by Source

Table B-1. Average Year Conditions

County	2020 Estimate						
	Inland Floridan	Intermediate	Sand-and-Gravel	Surficial	Total Ground Water	Surface Water	Total Water Use
Okaloosa	2.751	-	0.564	-	3.315	2.138	5.453
Santa Rosa	-	-	1.719	-	1.719	0.489	2.208
Walton	0.424	0.045	2.546	0.158	3.172	1.311	4.483
Region Totals	**3.175**	**0.045**	**4.828**	**0.158**	**8.206**	**3.938**	**12.144**
County	**2045 Projection**						
	Inland Floridan	**Intermediate**	**Sand-and-Gravel**	**Surficial**	**Total Ground Water**	**Surface Water**	**Total Water Use**
Okaloosa	3.253	-	0.666	-	3.919	2.528	6.446
Santa Rosa	-	-	2.314	-	2.314	0.658	2.972
Walton	0.669	0.071	4.016	0.249	5.005	2.068	7.074
Region Totals	**3.921**	**0.071**	**6.996**	**0.249**	**11.238**	**5.254**	**16.492**

Source: Northwest Florida Water Management District's 2020 Water Supply Assessment and 2020 Reuse Report

Table B-2. 1-in-10-Year Drought Conditions

County	2020 Estimate						
	Inland Floridan	Intermediate	Sand-and-Gravel	Surficial	Total Ground Water	Surface Water	Total Water Use
Okaloosa	2.751	-	0.564	-	3.315	2.138	5.453
Santa Rosa	-	-	1.719	-	1.719	0.489	2.208
Walton	0.424	0.045	2.546	0.158	3.172	1.311	4.483
Region Totals	**3.175**	**0.045**	**4.828**	**0.158**	**8.206**	**3.938**	**12.144**
County	**2045 Projection**						
	Inland Floridan	**Intermediate**	**Sand-and-Gravel**	**Surficial**	**Total Ground Water**	**Surface Water**	**Total Water Use**
Okaloosa	4.359	-	0.893	-	5.251	3.387	8.638
Santa Rosa	-	-	3.100	-	3.100	0.882	3.982
Walton	0.896	0.095	5.382	0.334	6.707	2.772	9.479
Region Totals	**5.255**	**0.095**	**9.375**	**0.334**	**15.059**	**7.040**	**22.099**

Source: Northwest Florida Water Management District's 2020 Water Supply Assessment and 2020 Reuse Report

Appendix C.

Graphical Results for Groundwater Modeling Scenarios 1 - 3

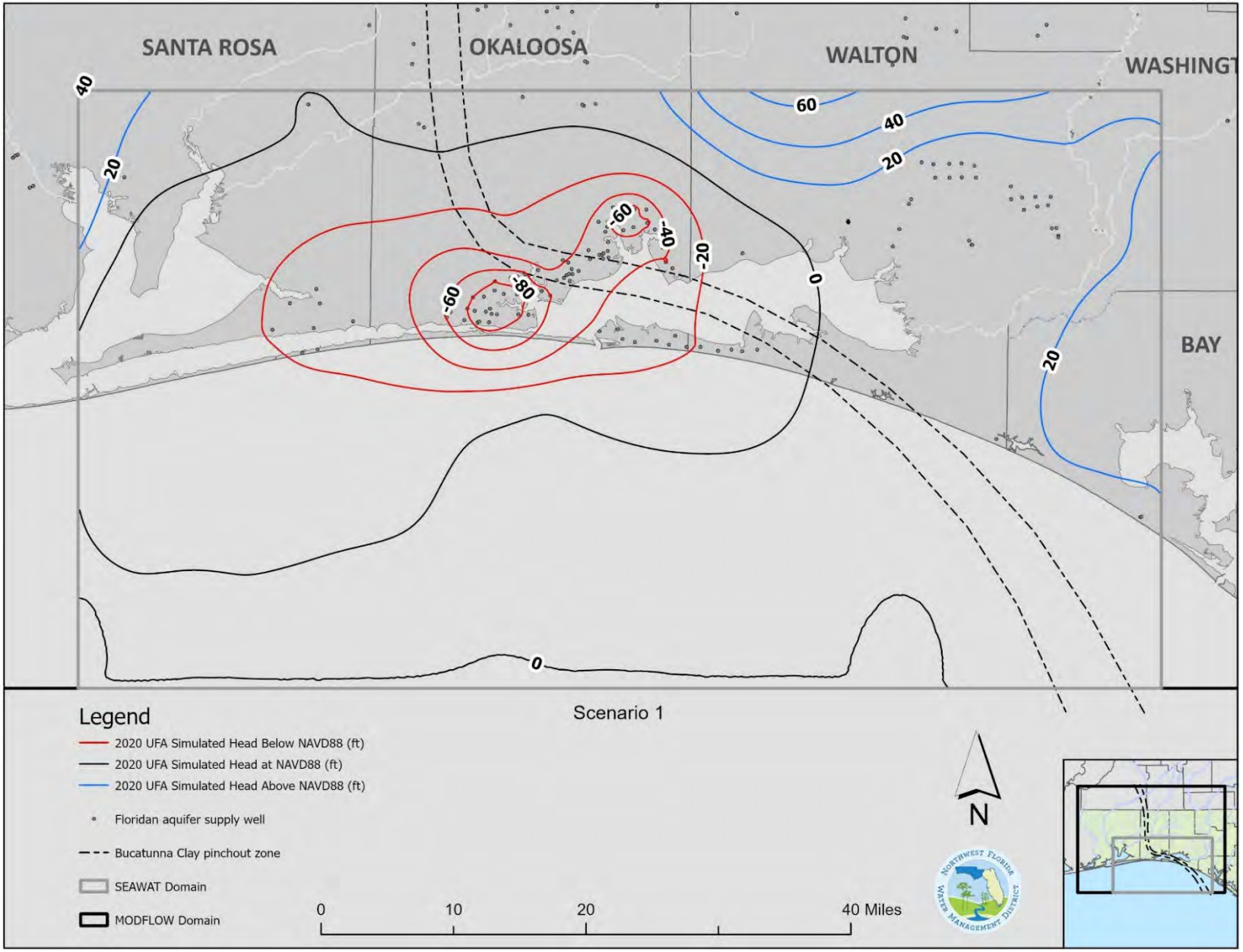

Figure 1. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2020

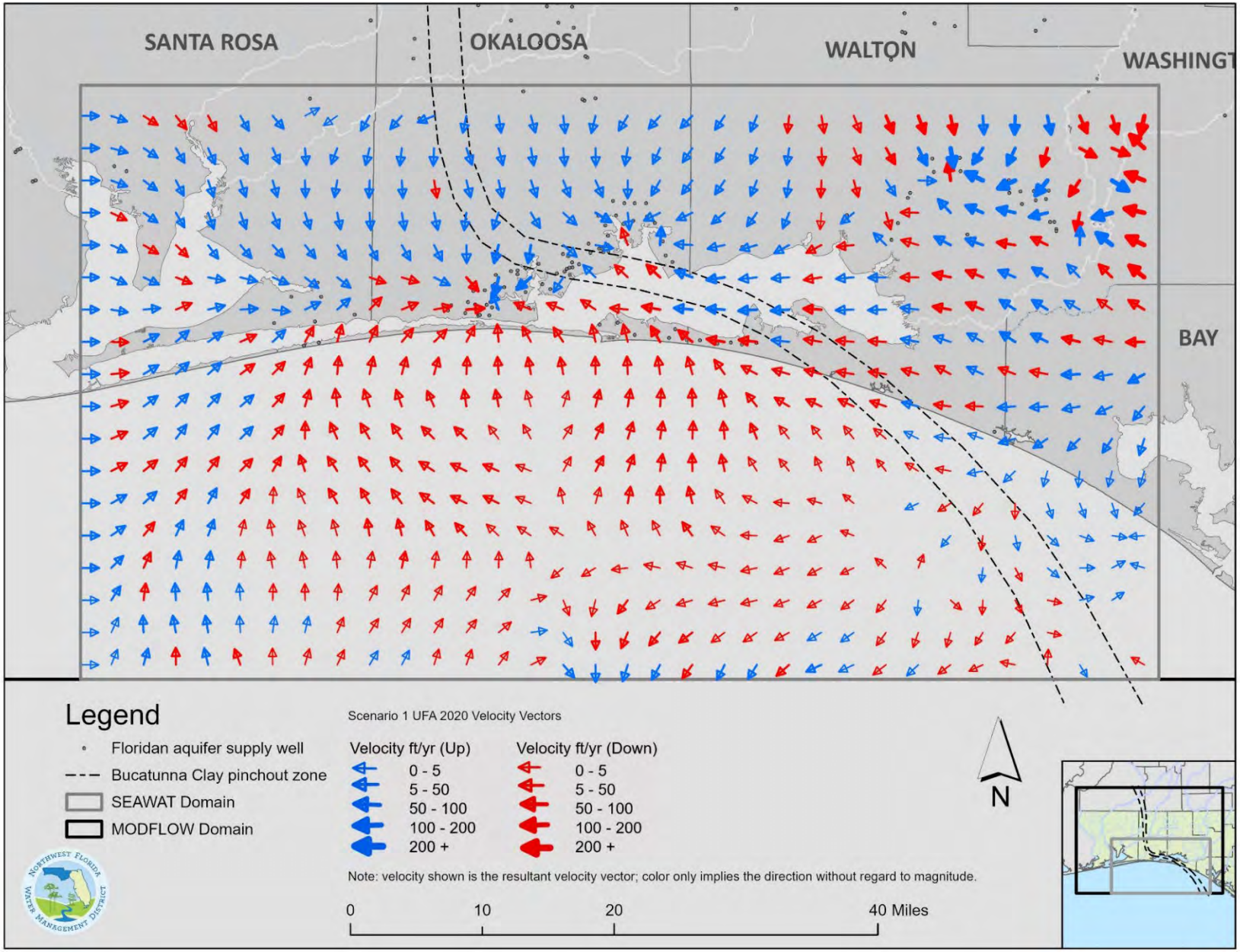

Figure 2. Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2020

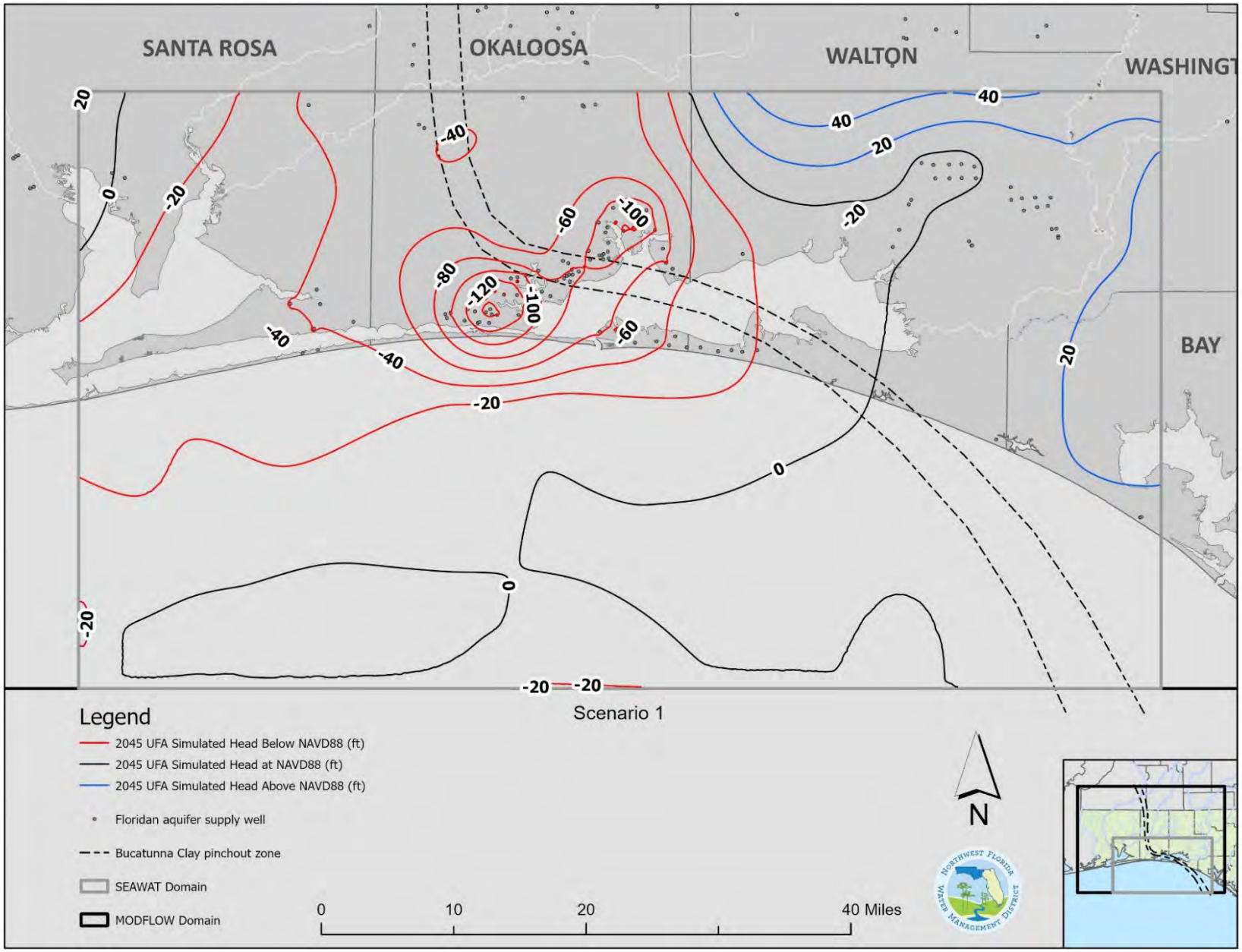

Figure 3. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2045

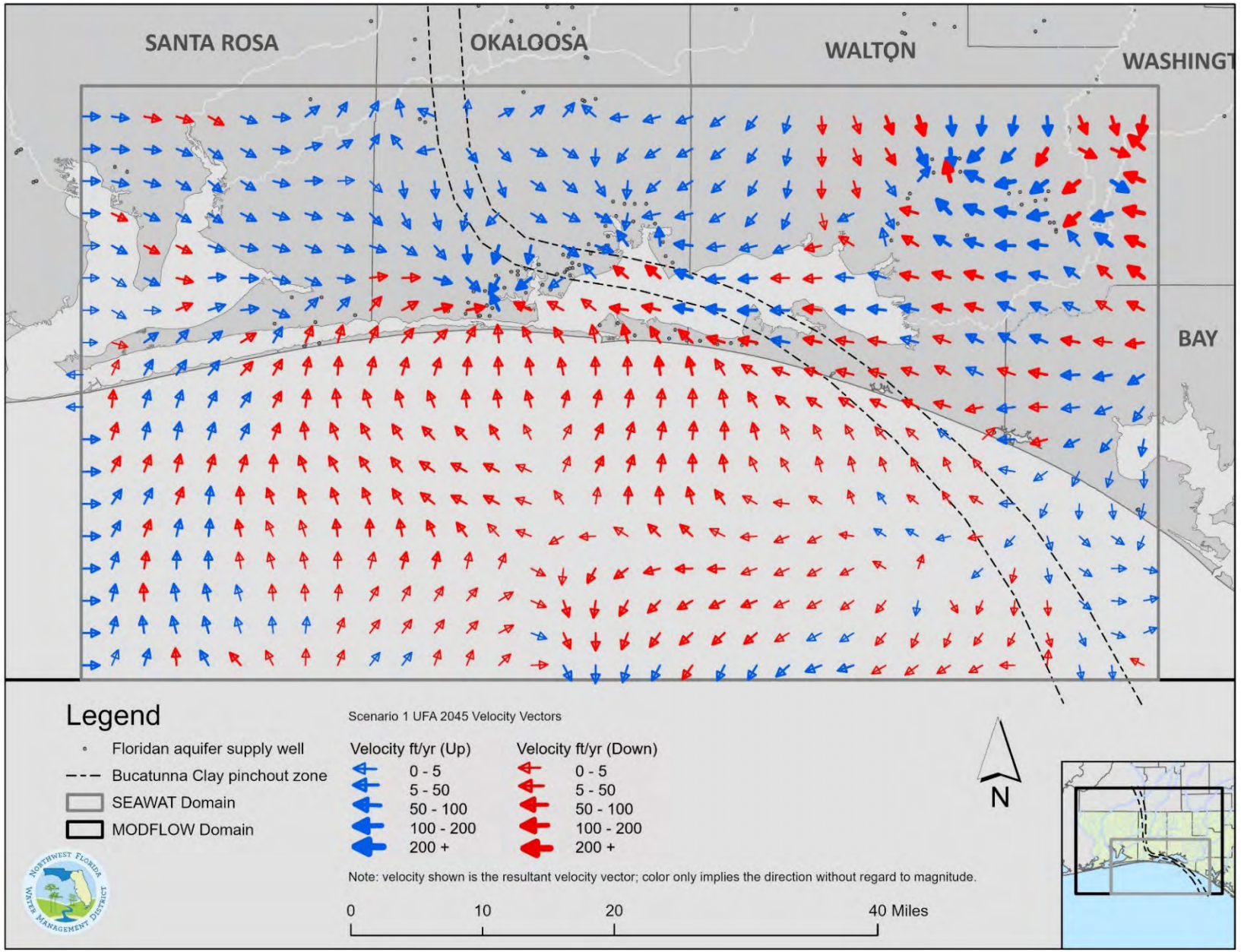

Figure 4.Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2045

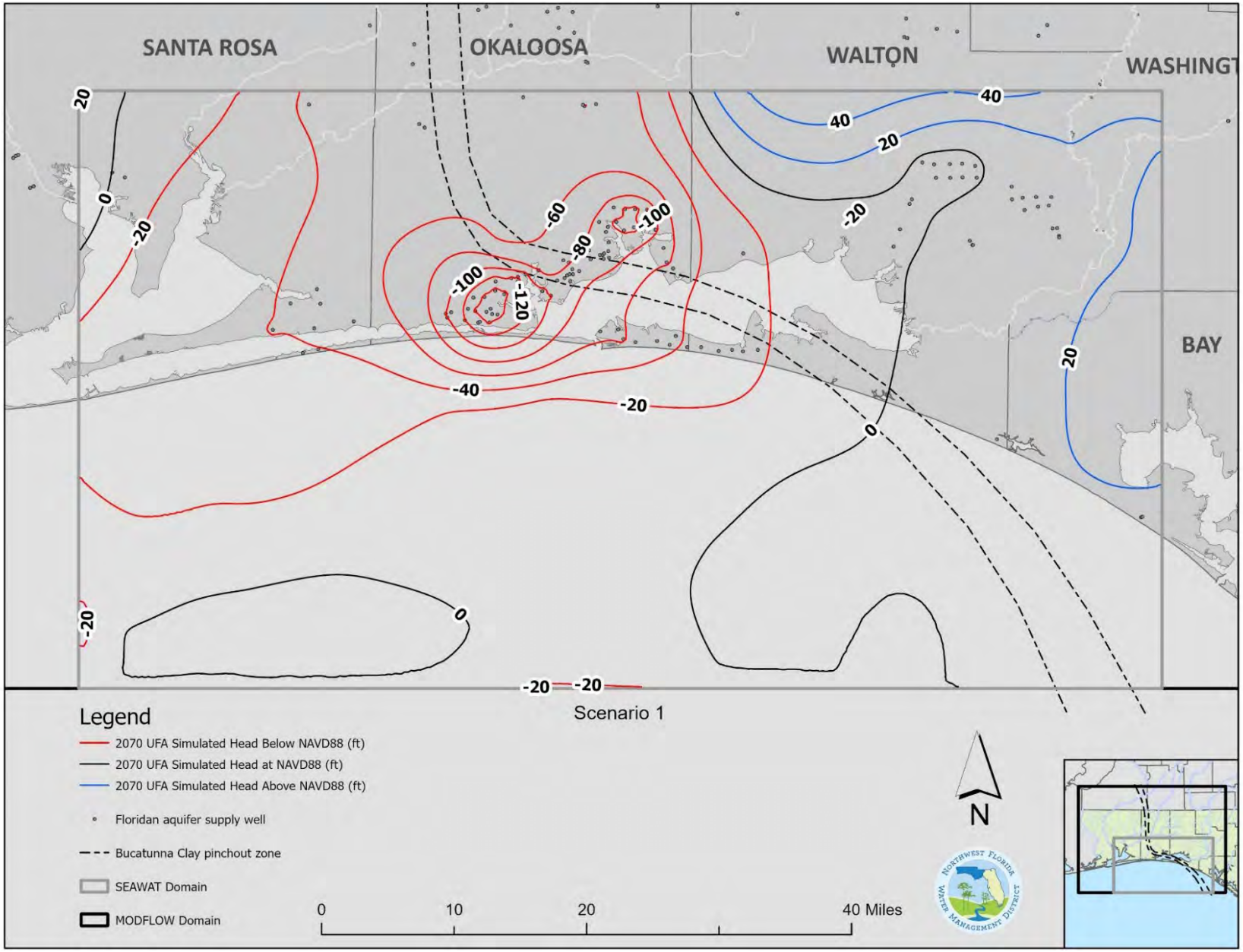

Figure 5. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2070

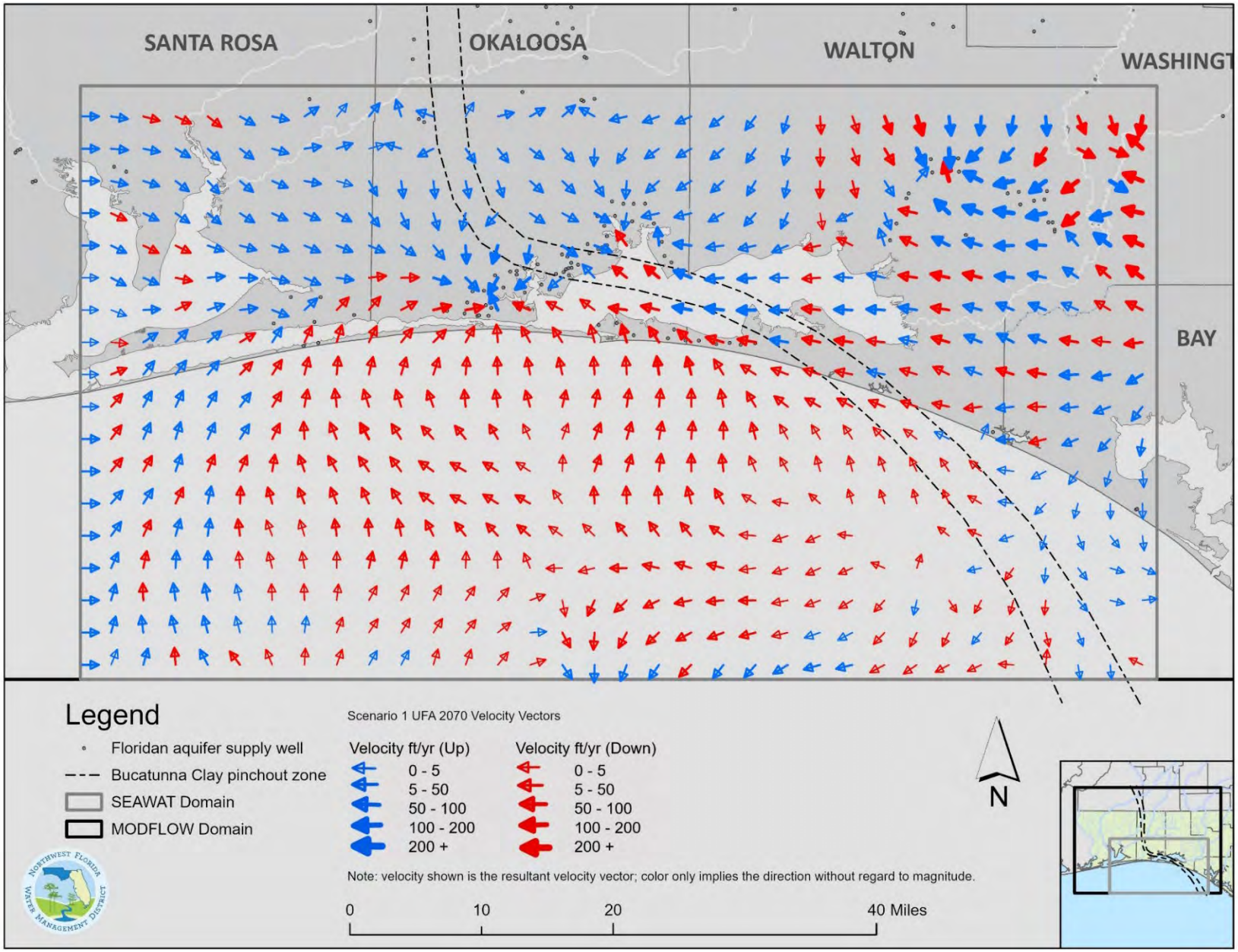

Figure 6. Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2070

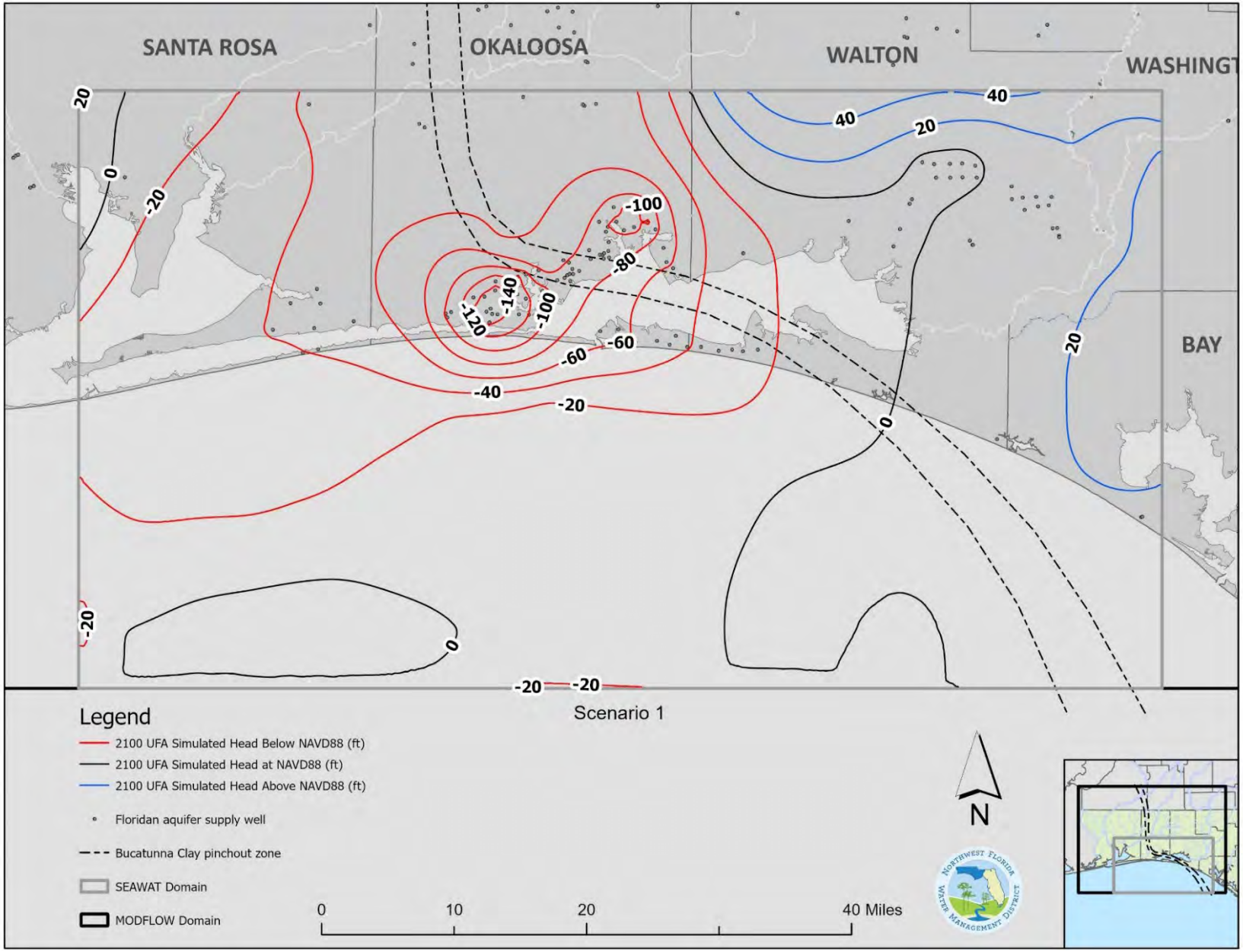

Figure 7. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2100

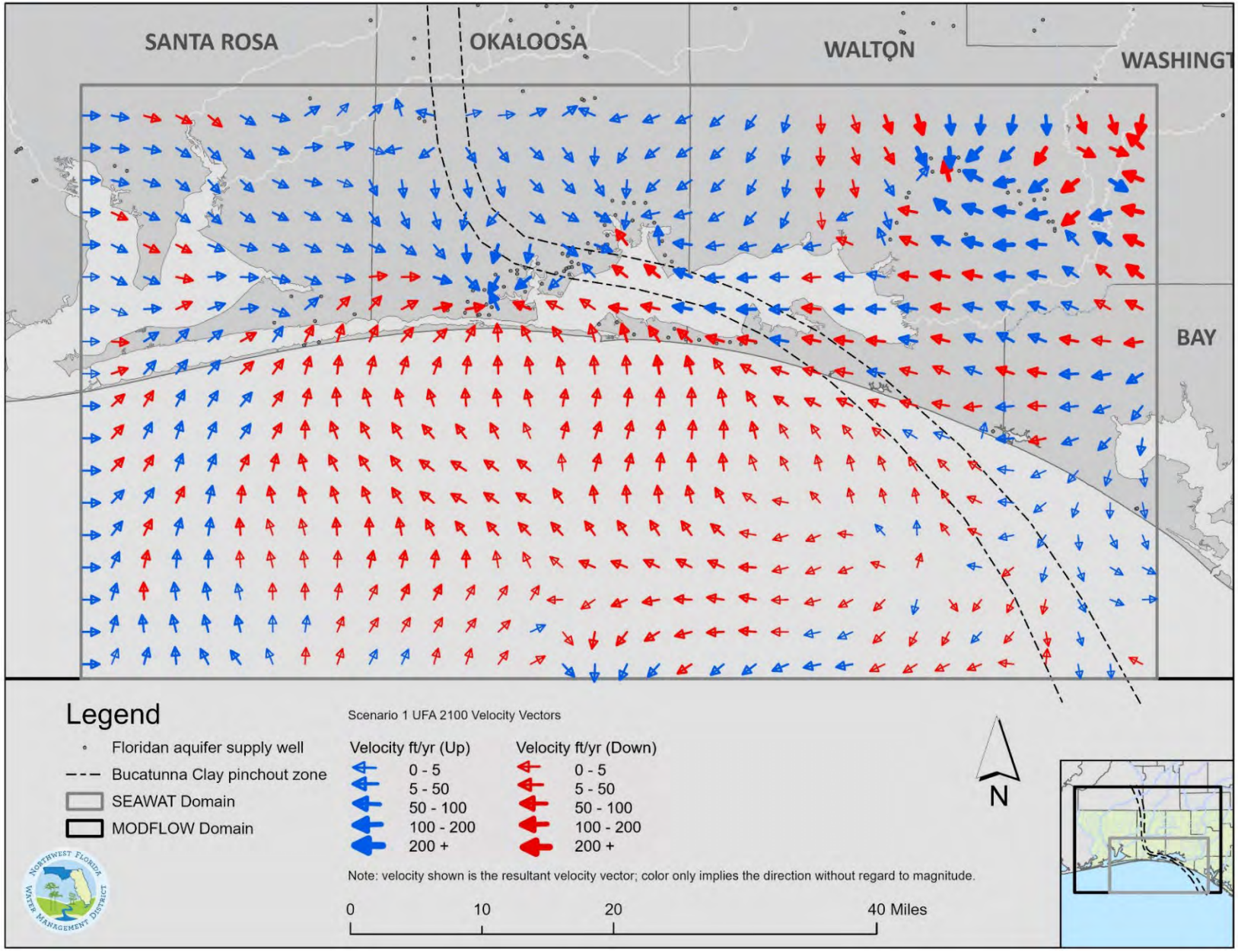

Figure 8. Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2100

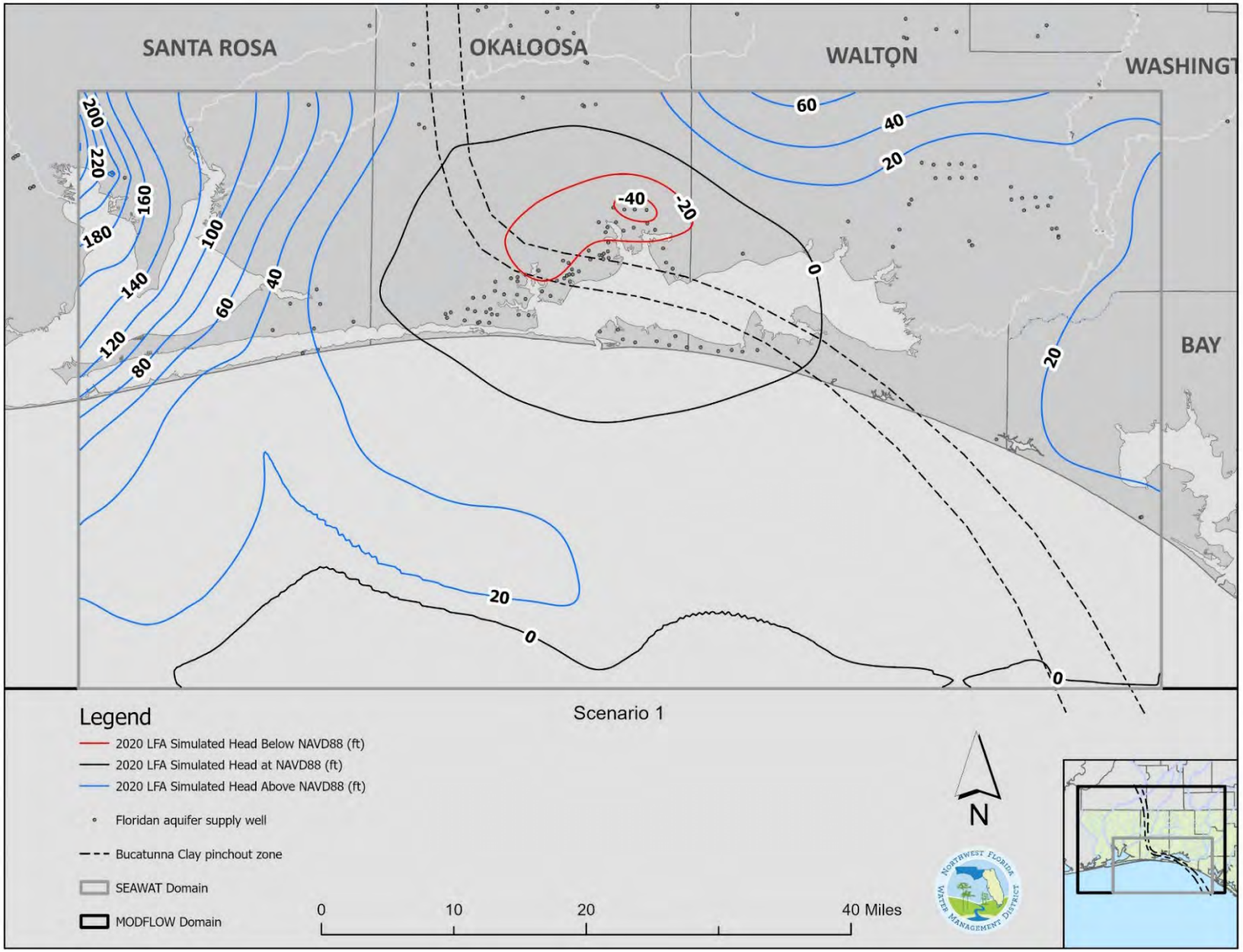

Figure 9. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2020

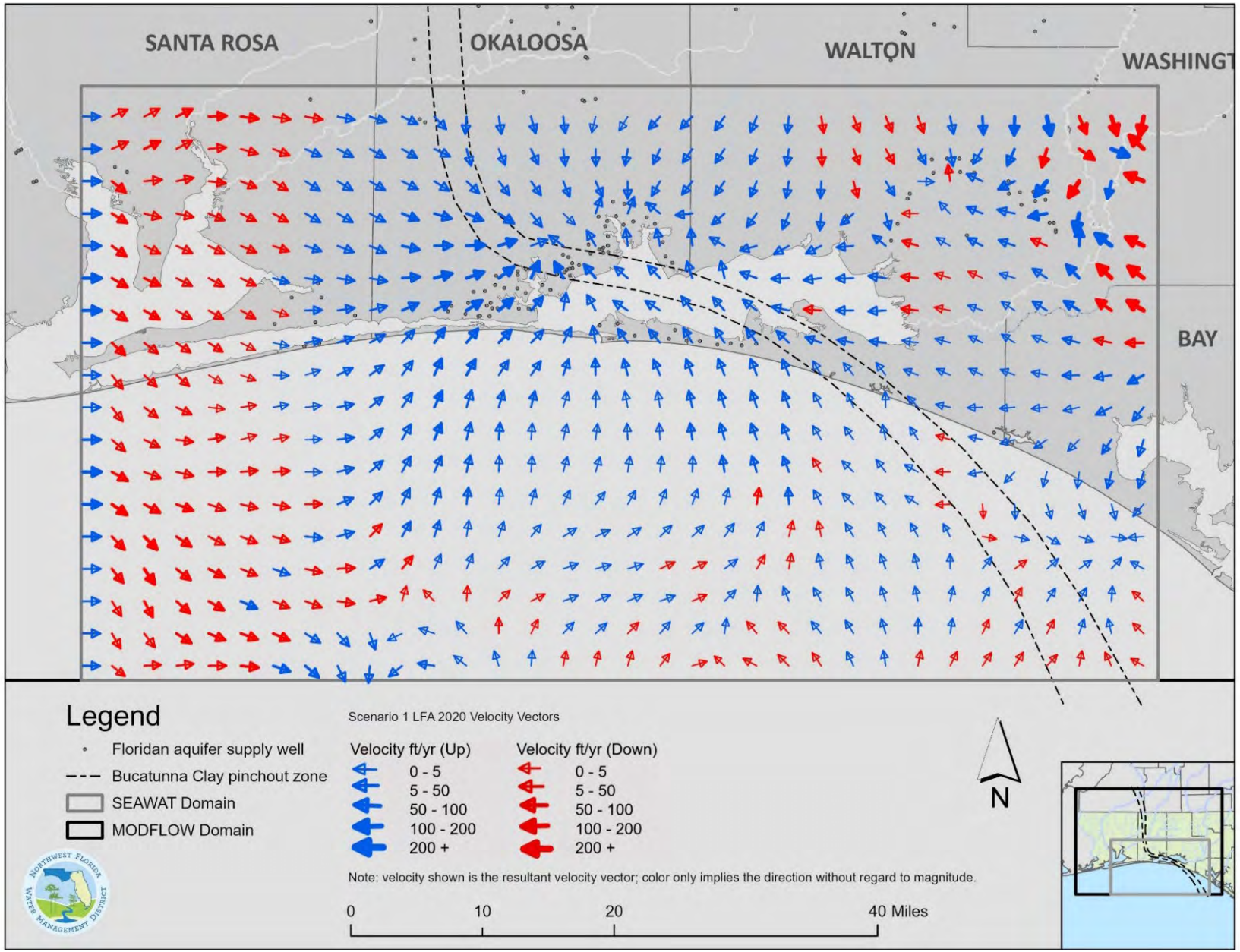

Figure 10. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2020

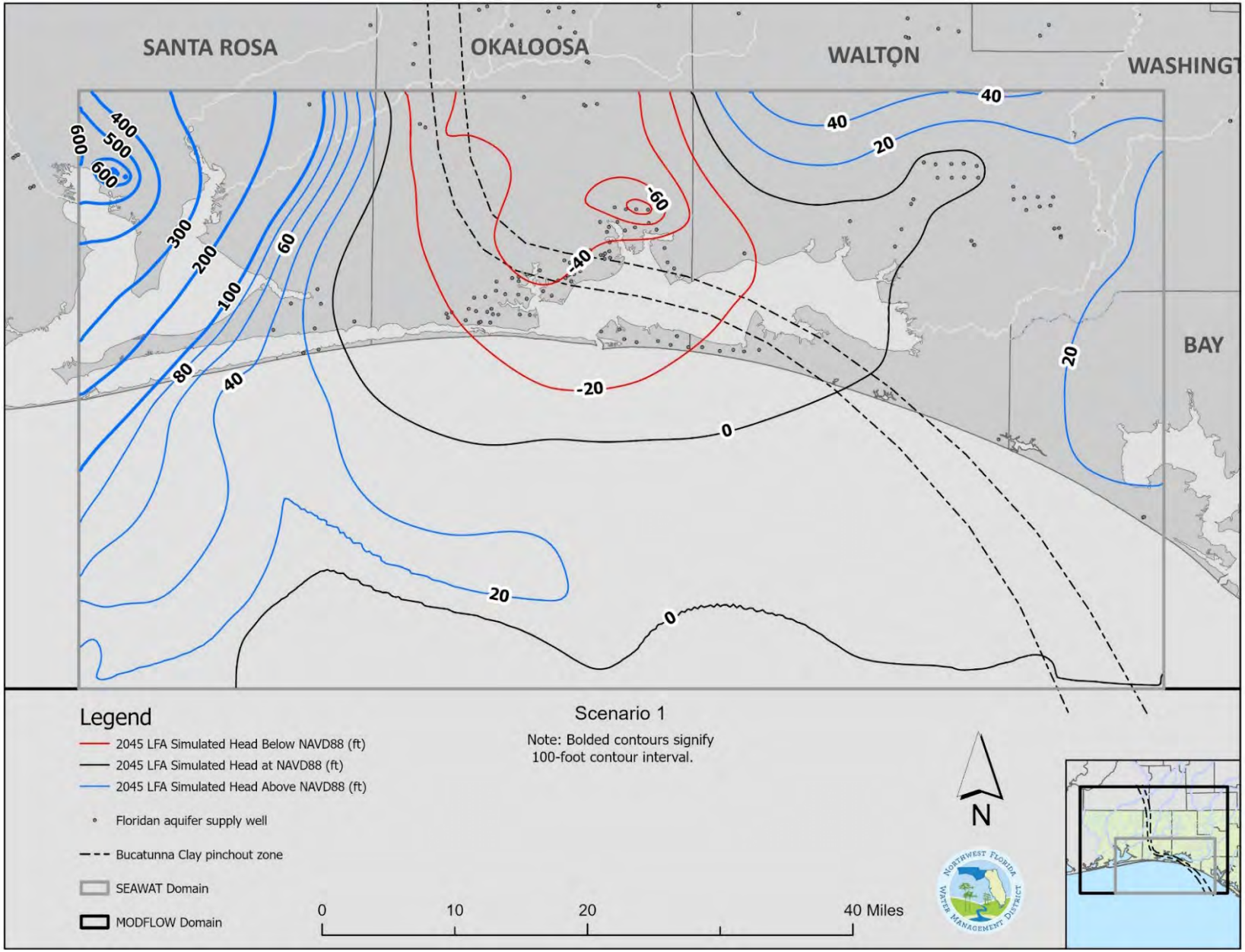

Figure 11. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2045

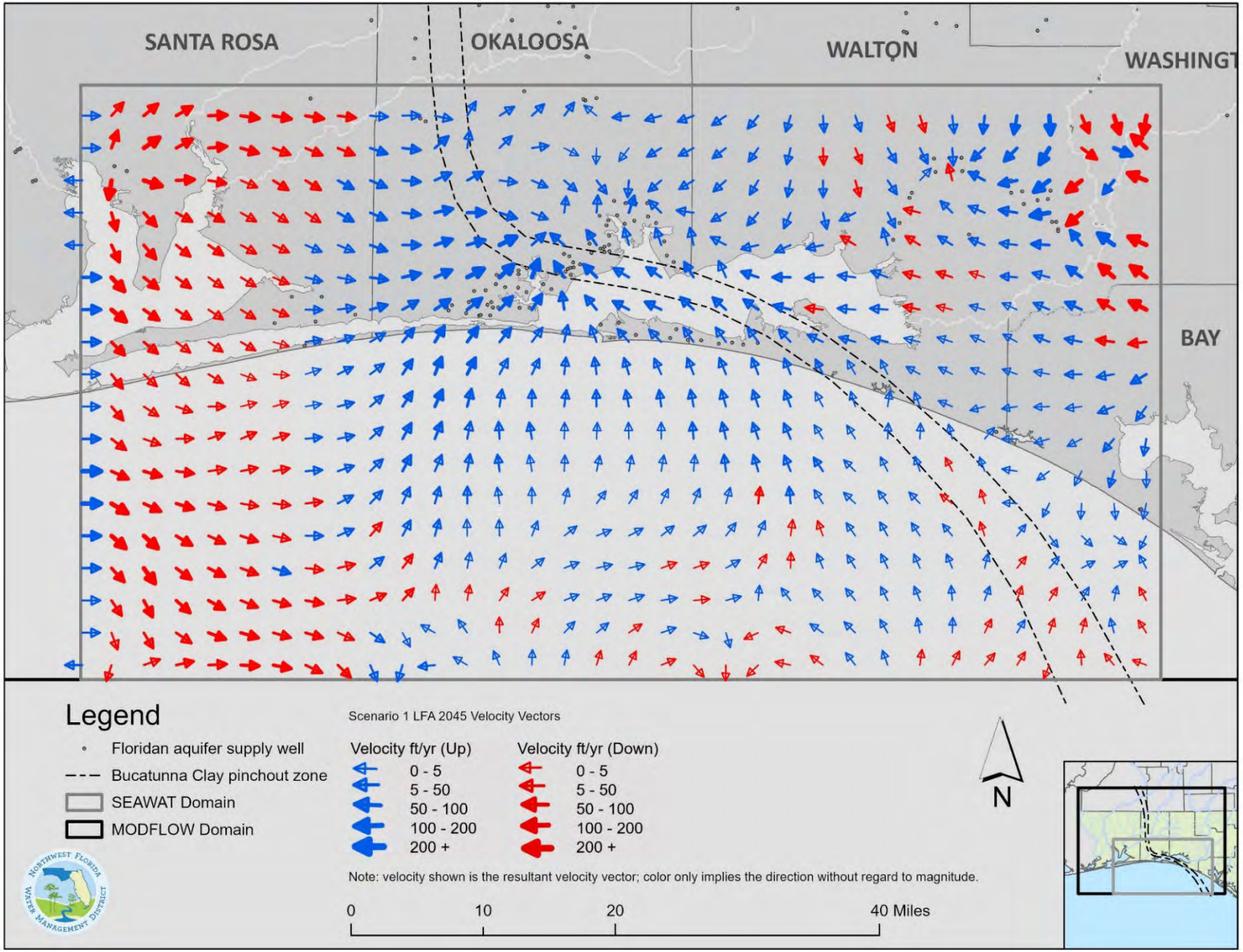

Figure 12. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2045

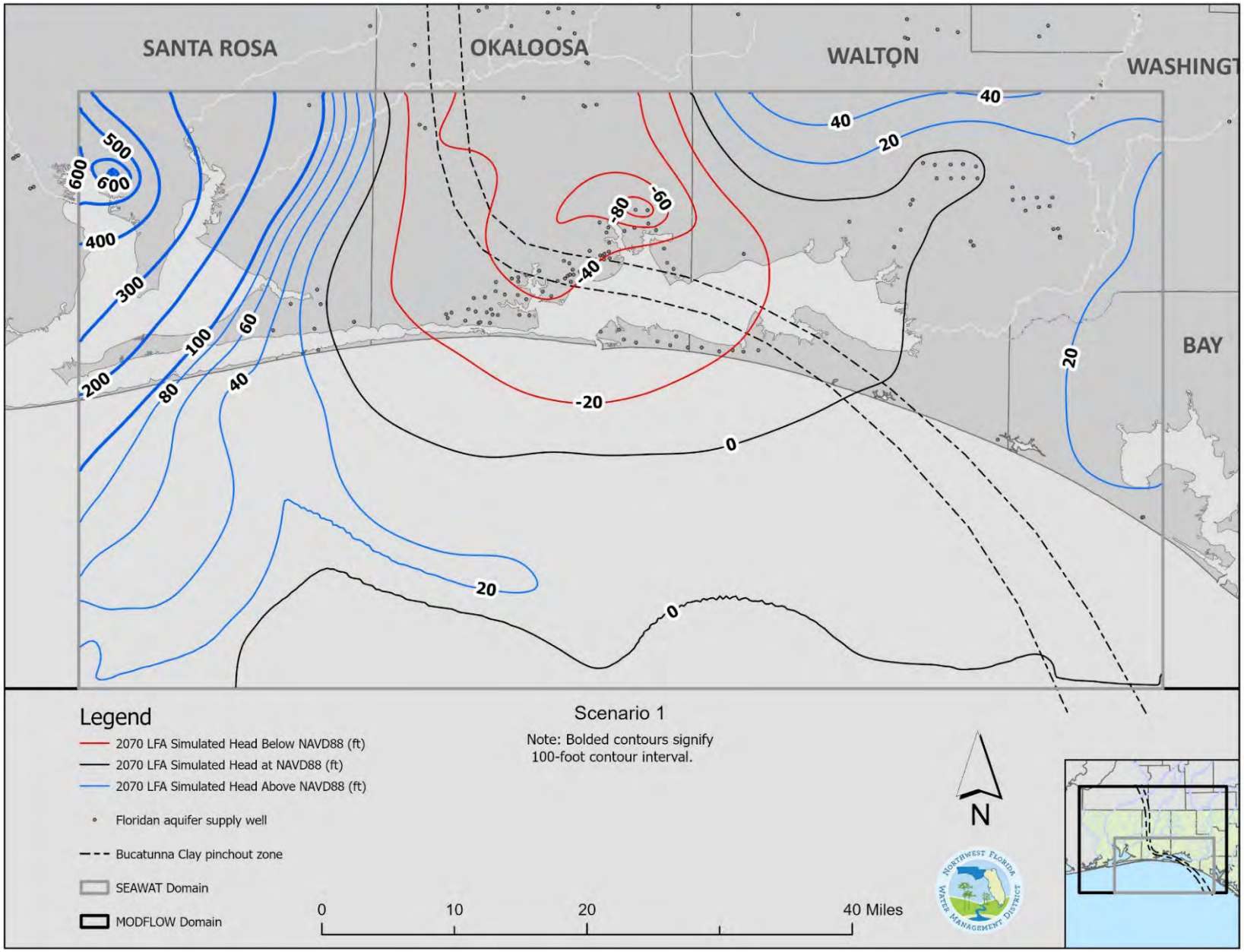

Figure 13. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2070

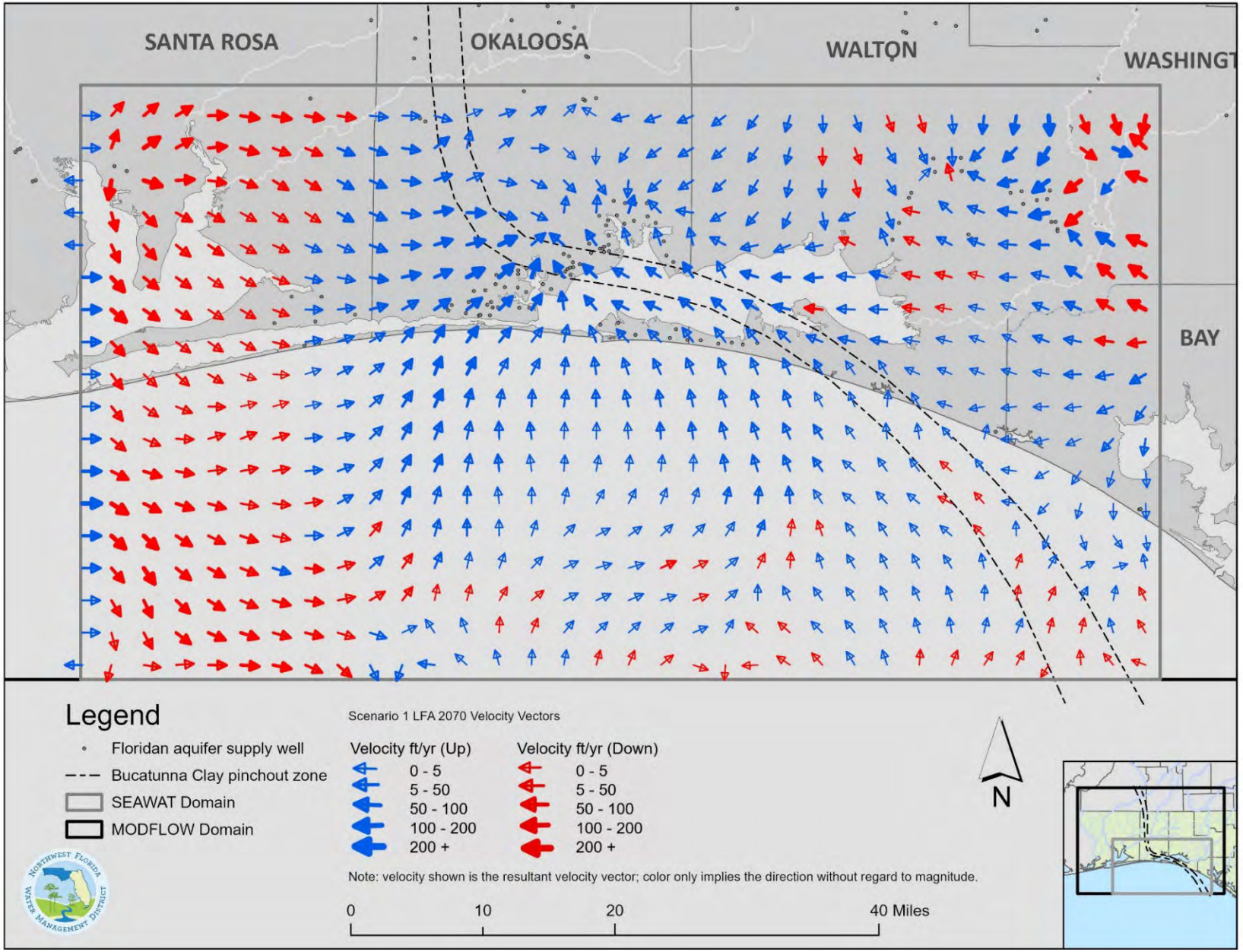

Figure 14. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2070

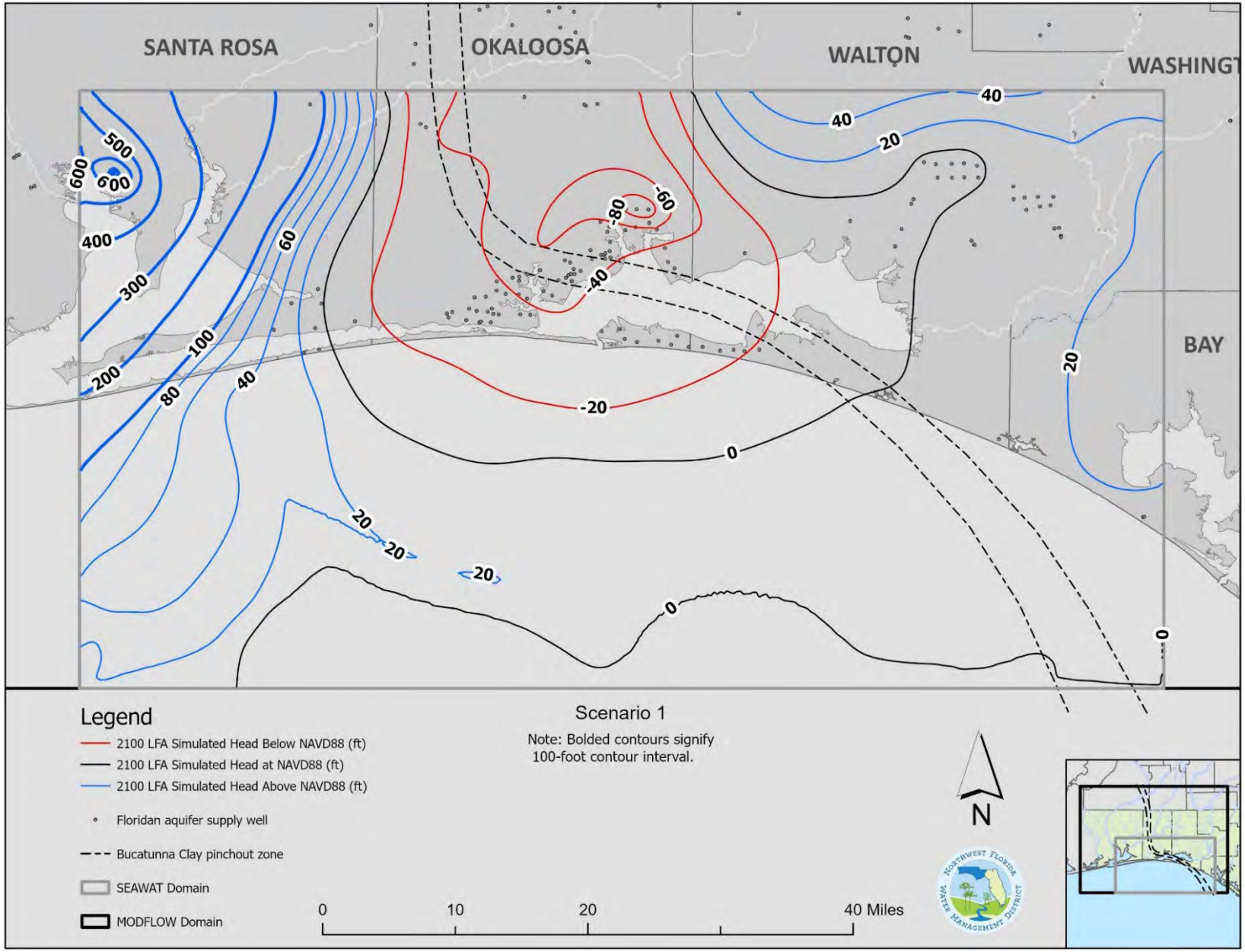

Figure 15. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2100

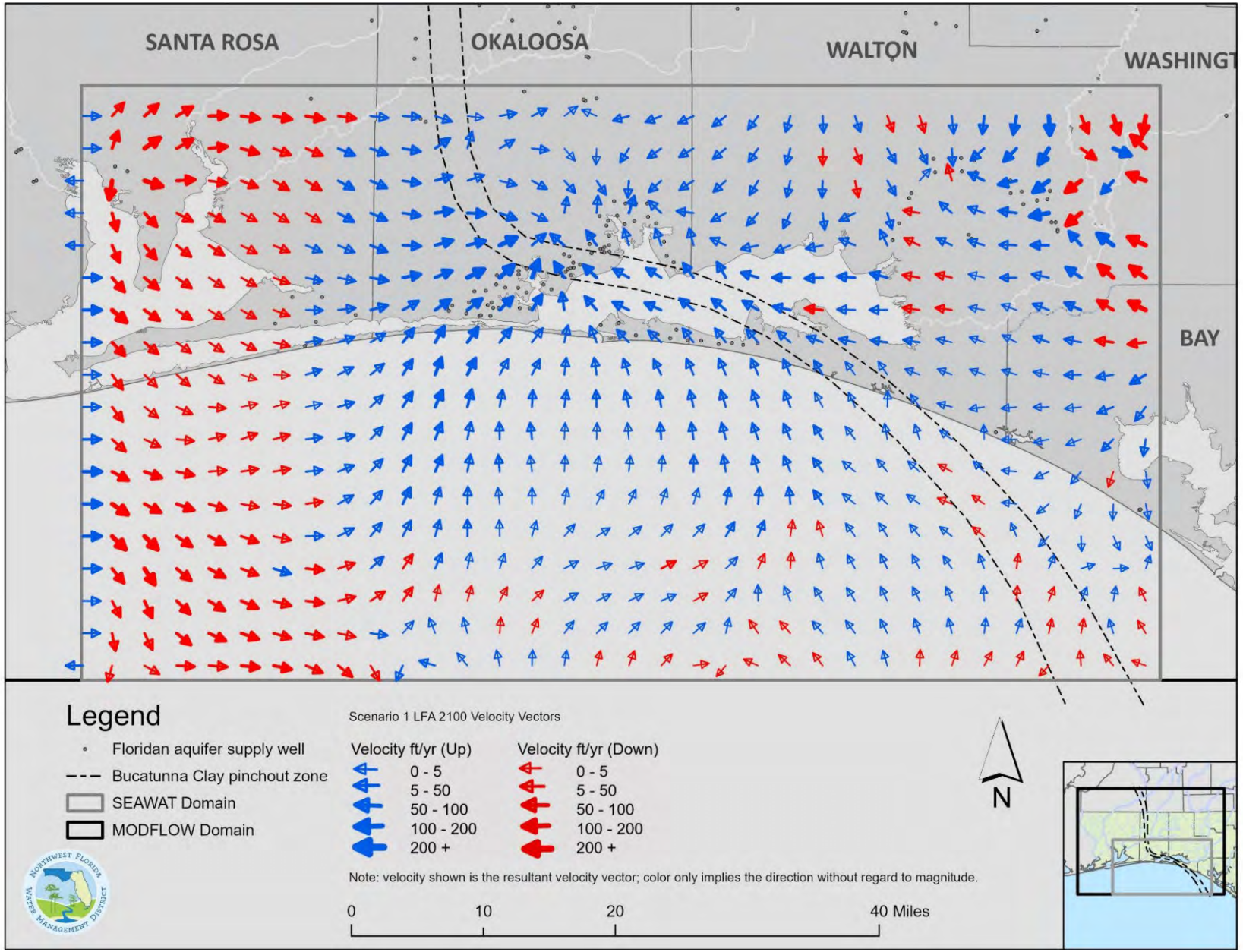

Figure 16. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2100

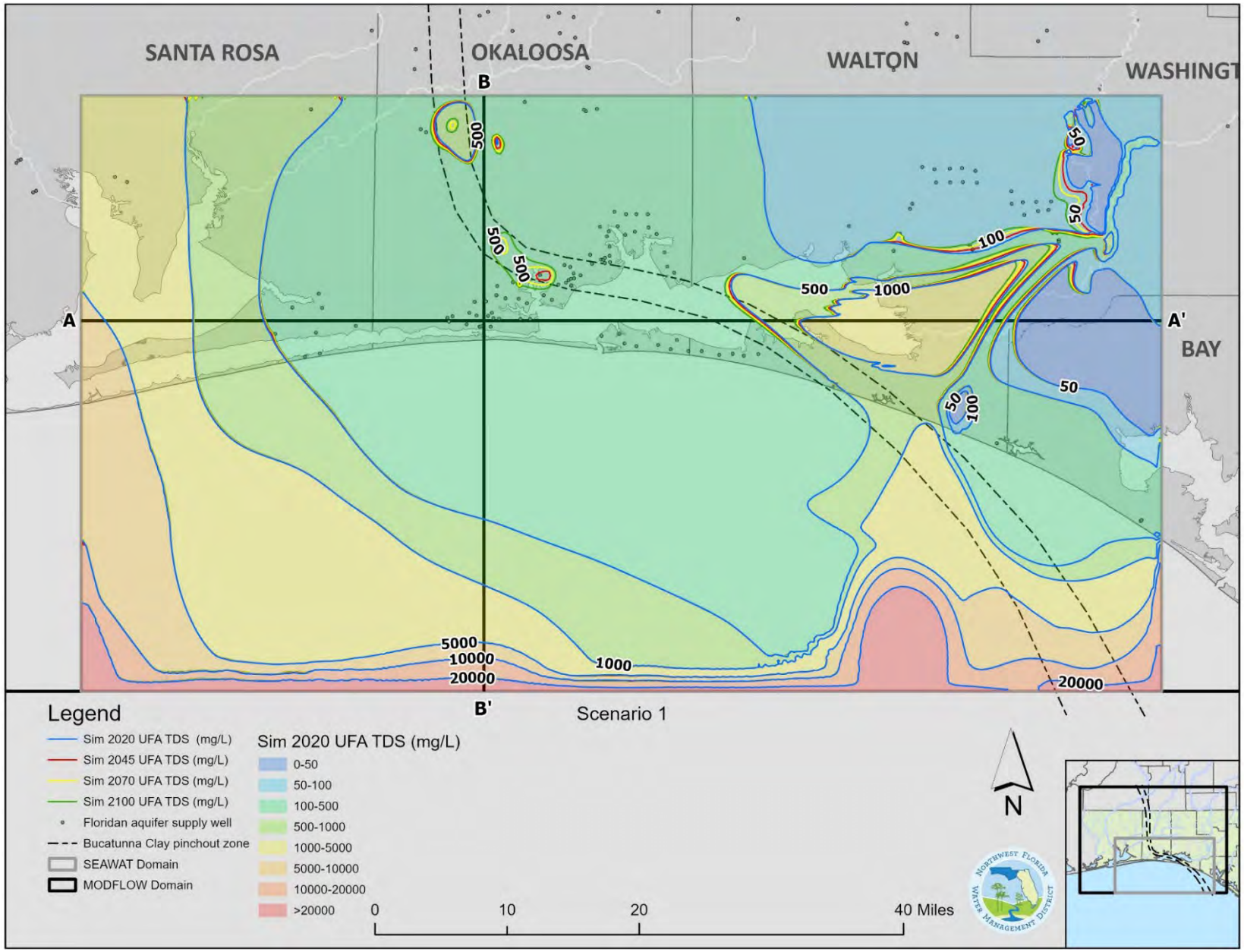

Figure 17. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) in the Upper Floridan aquifer (2020 – 2100)

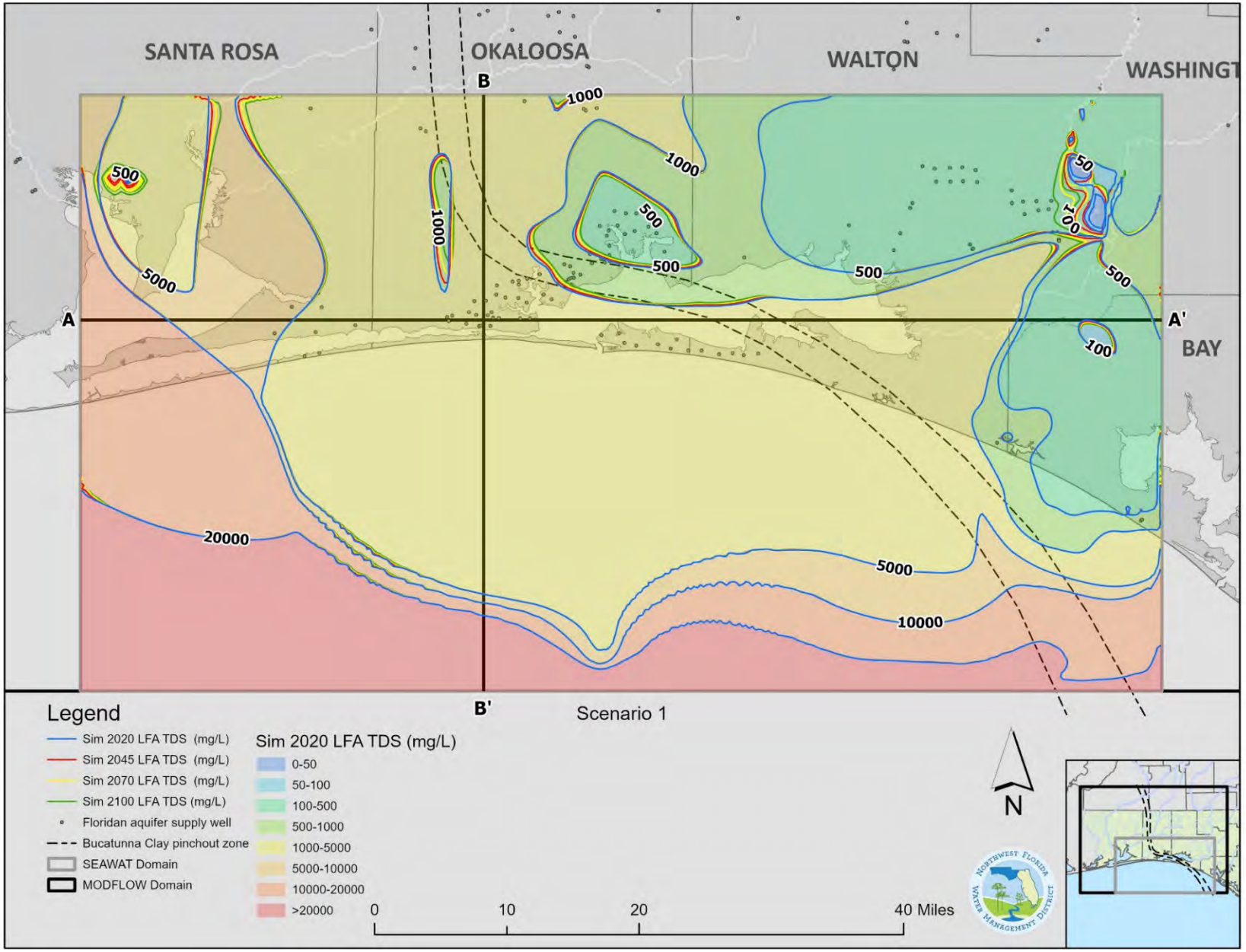

Figure 18. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) in the Lower Floridan/lower undifferentiated Floridan aquifer (2020 – 2100)

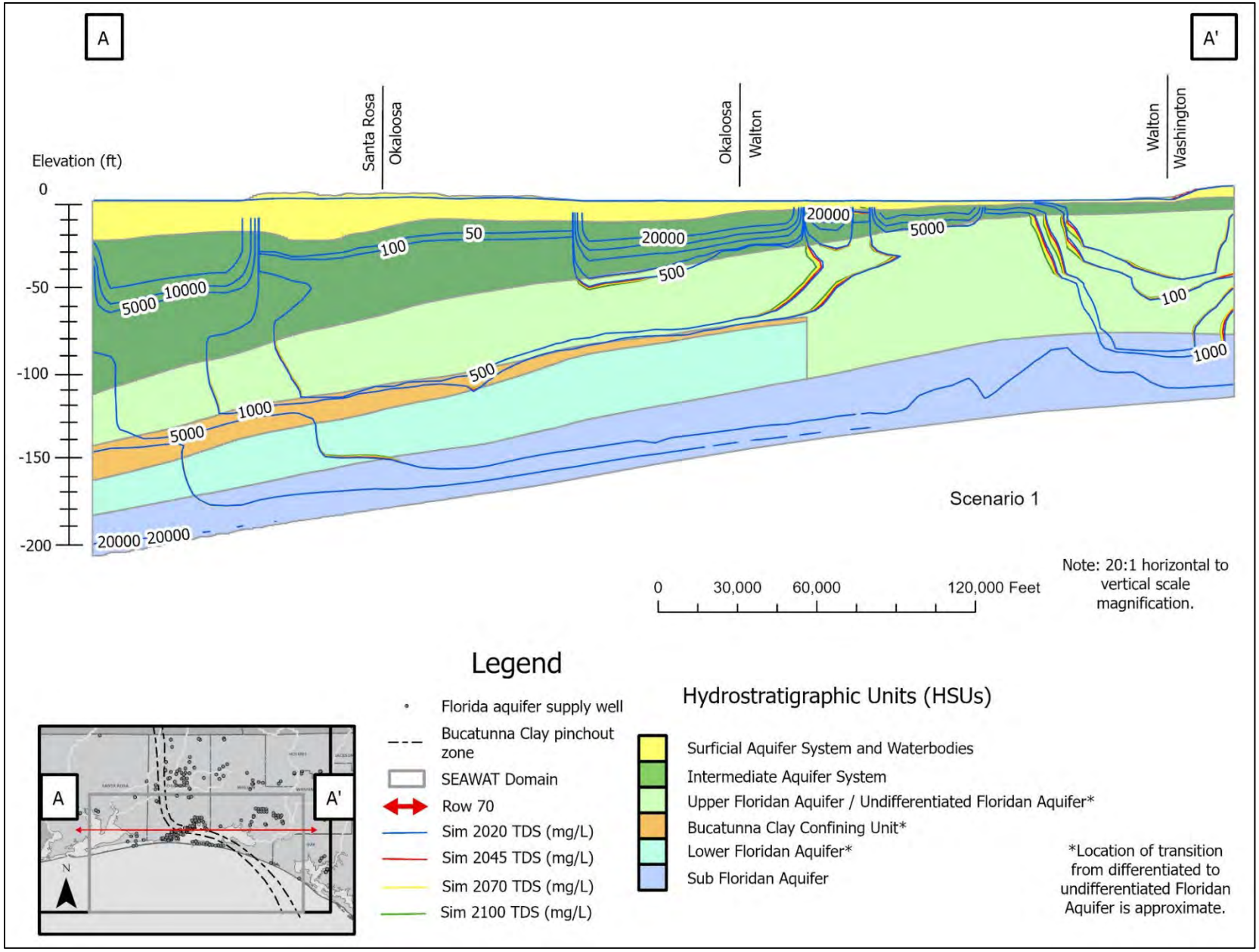

Figure 19. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) along transect A - A' (2020 - 2100)

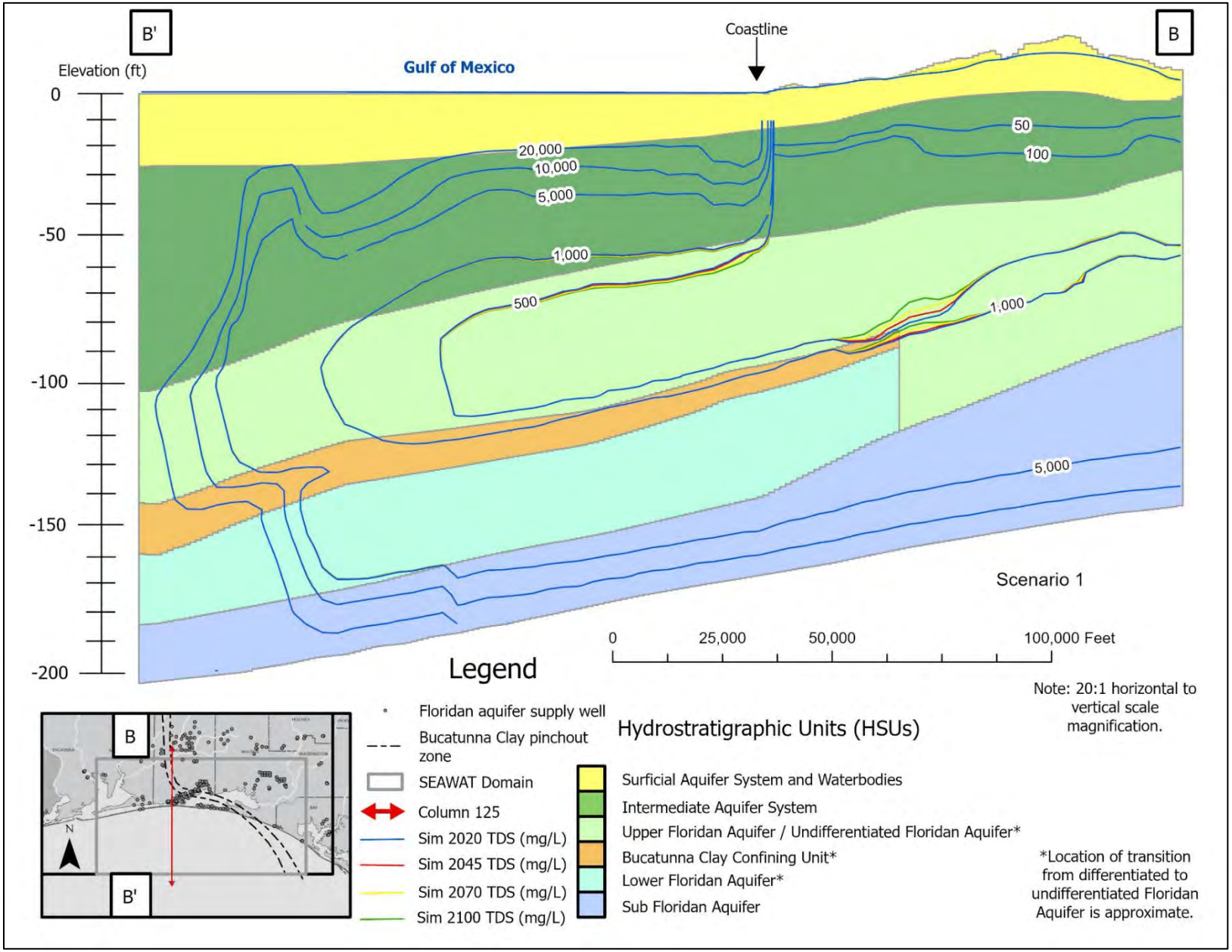

Figure 20. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) along transect B - B' (2020 - 2100)

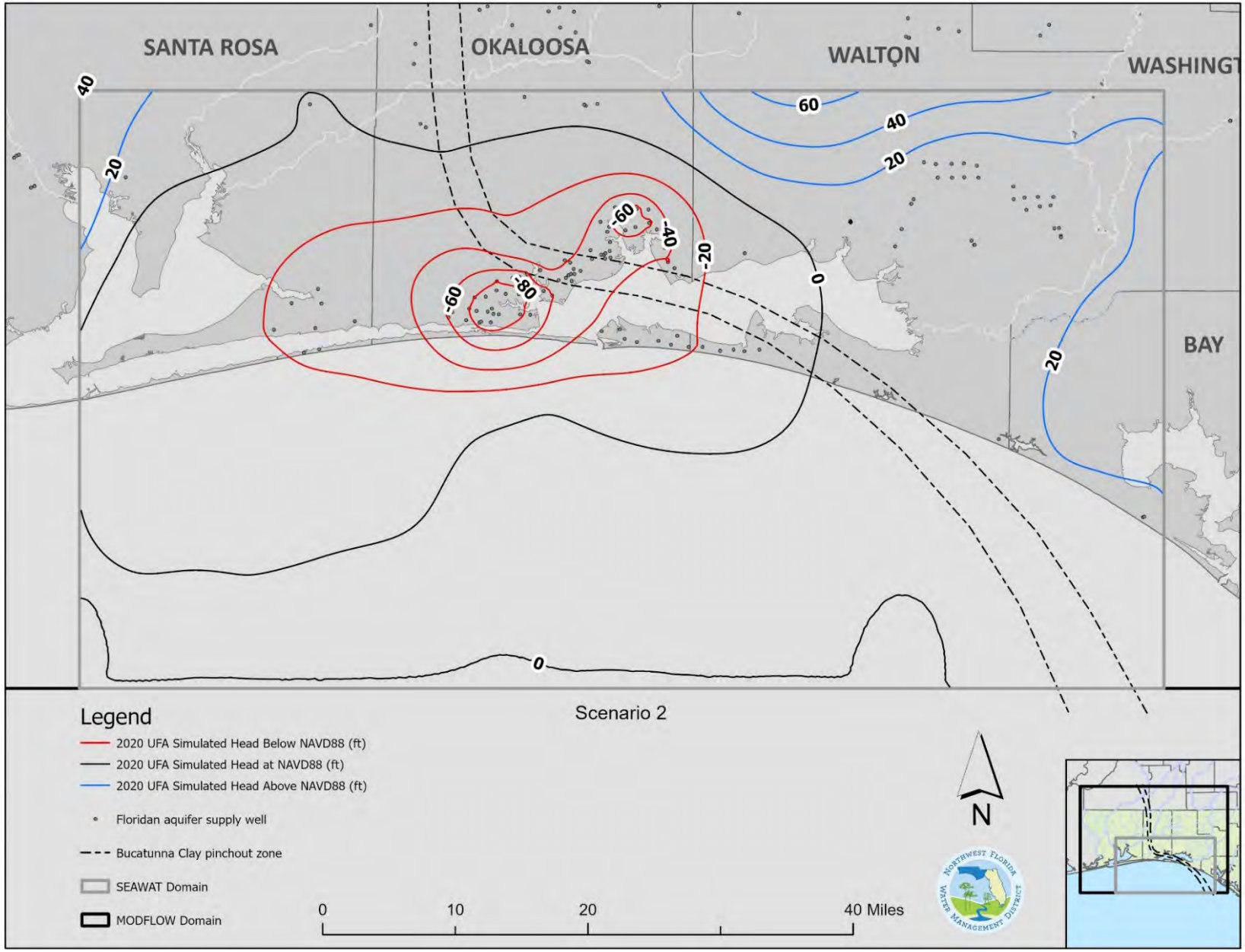

Figure 1. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2020

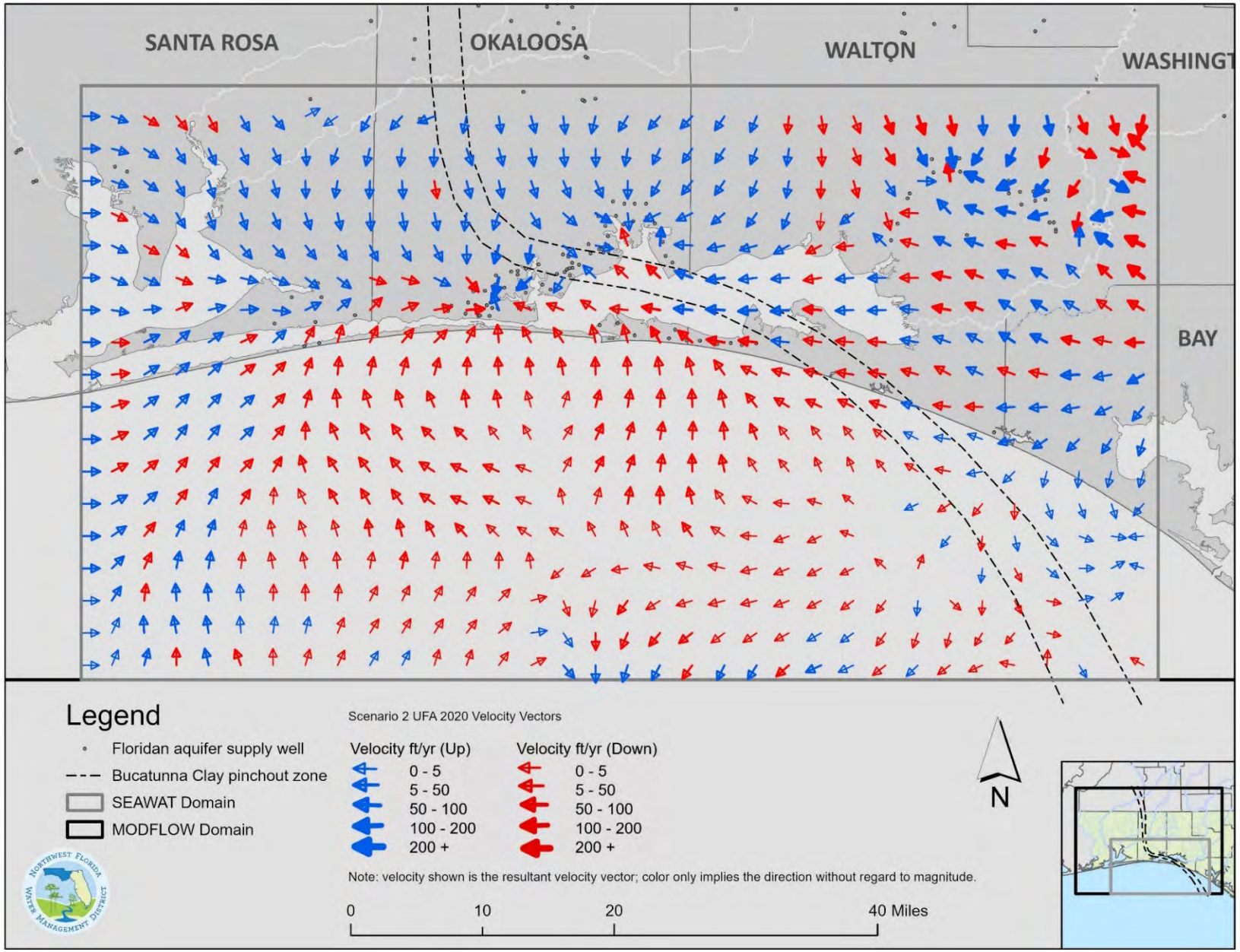

Figure 2. Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2020

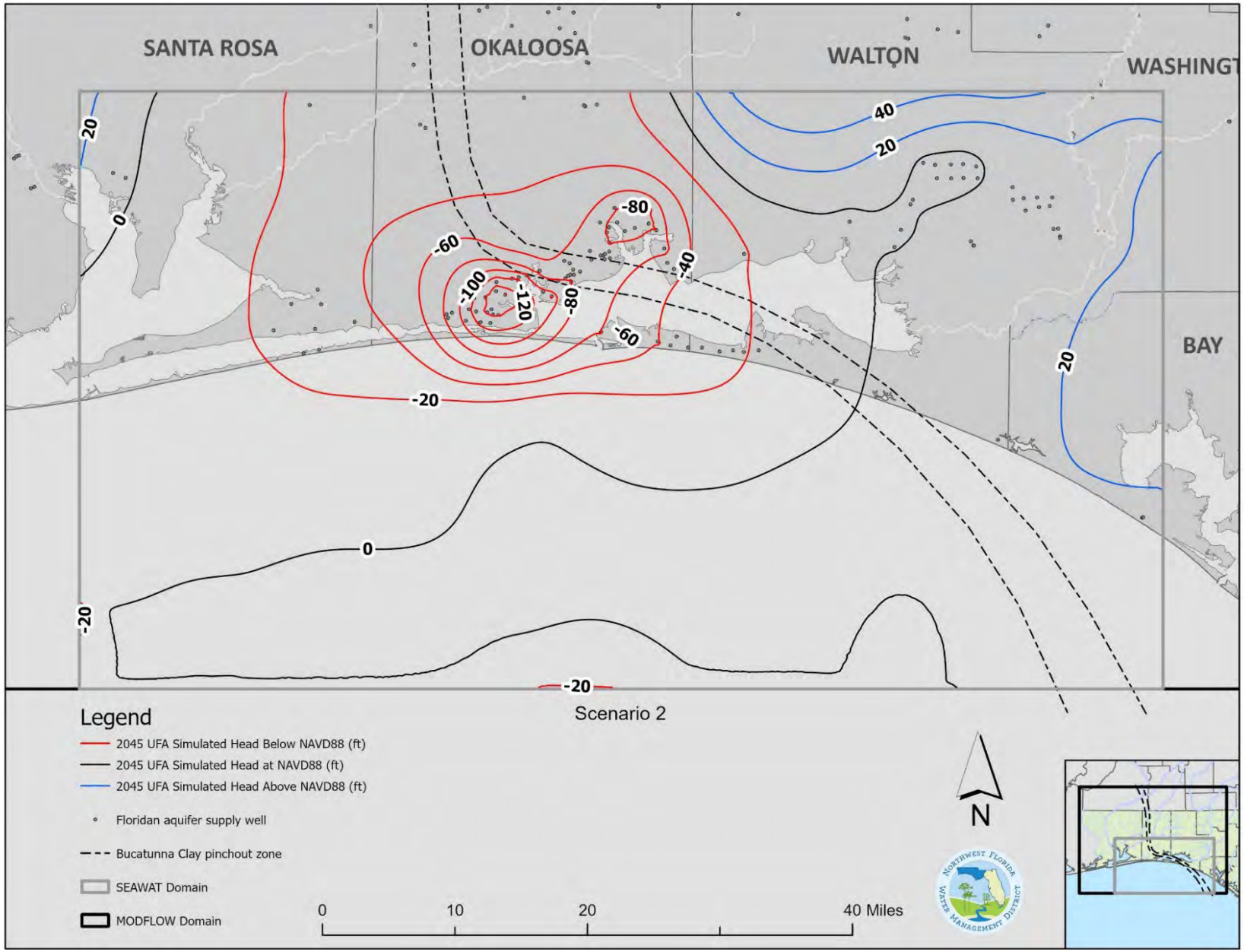

Figure 3. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2045

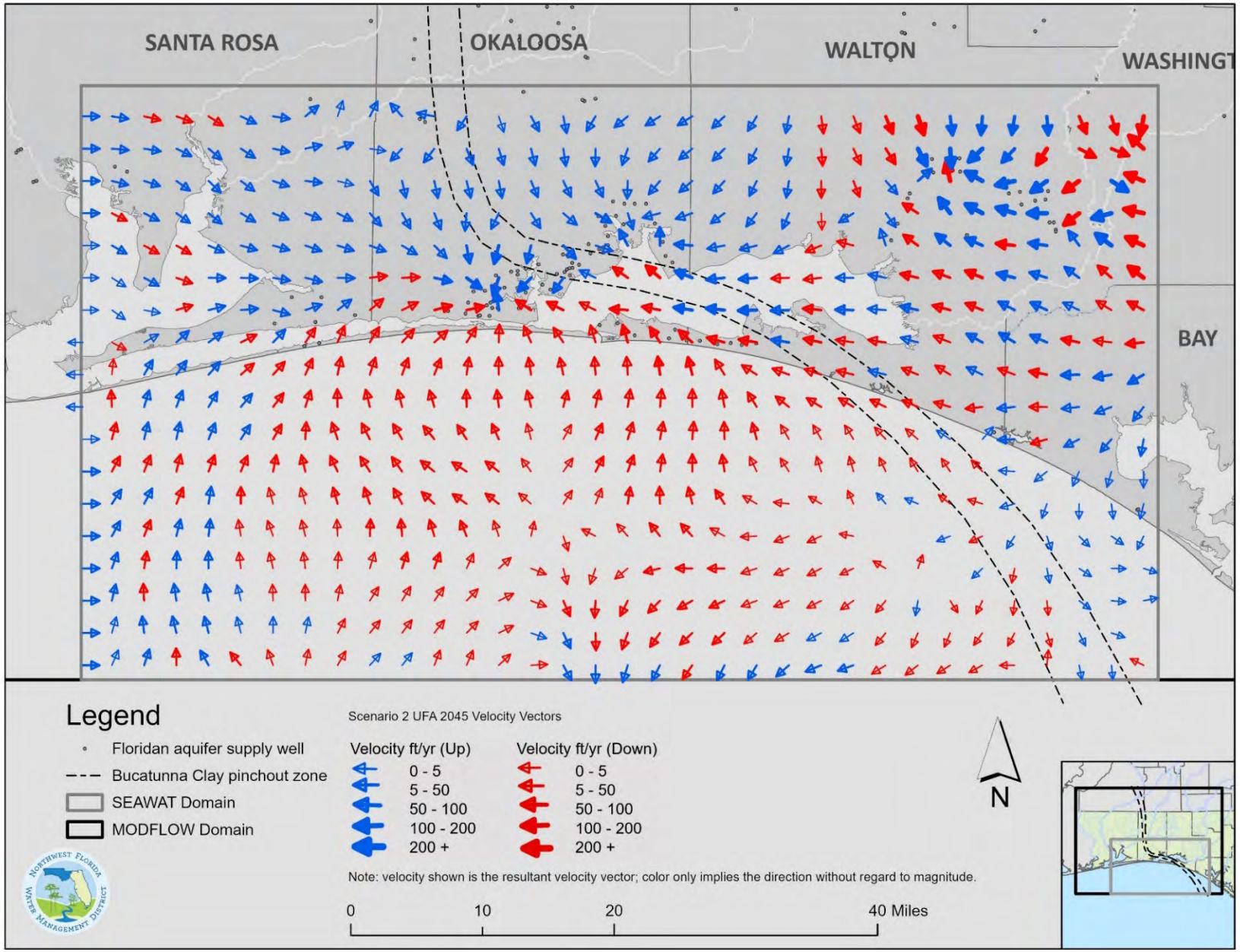

Figure 4.Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2045

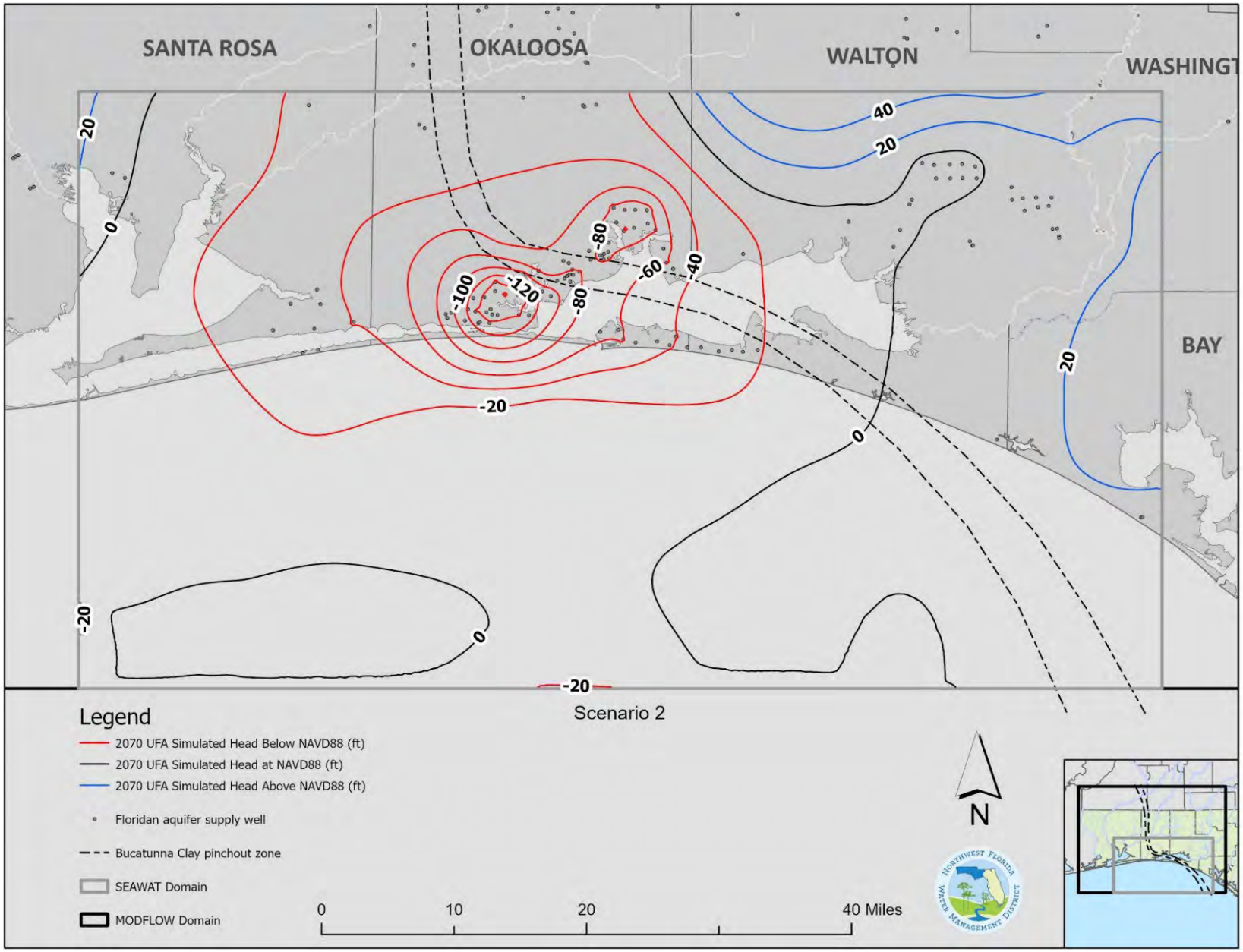

Figure 5. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2070

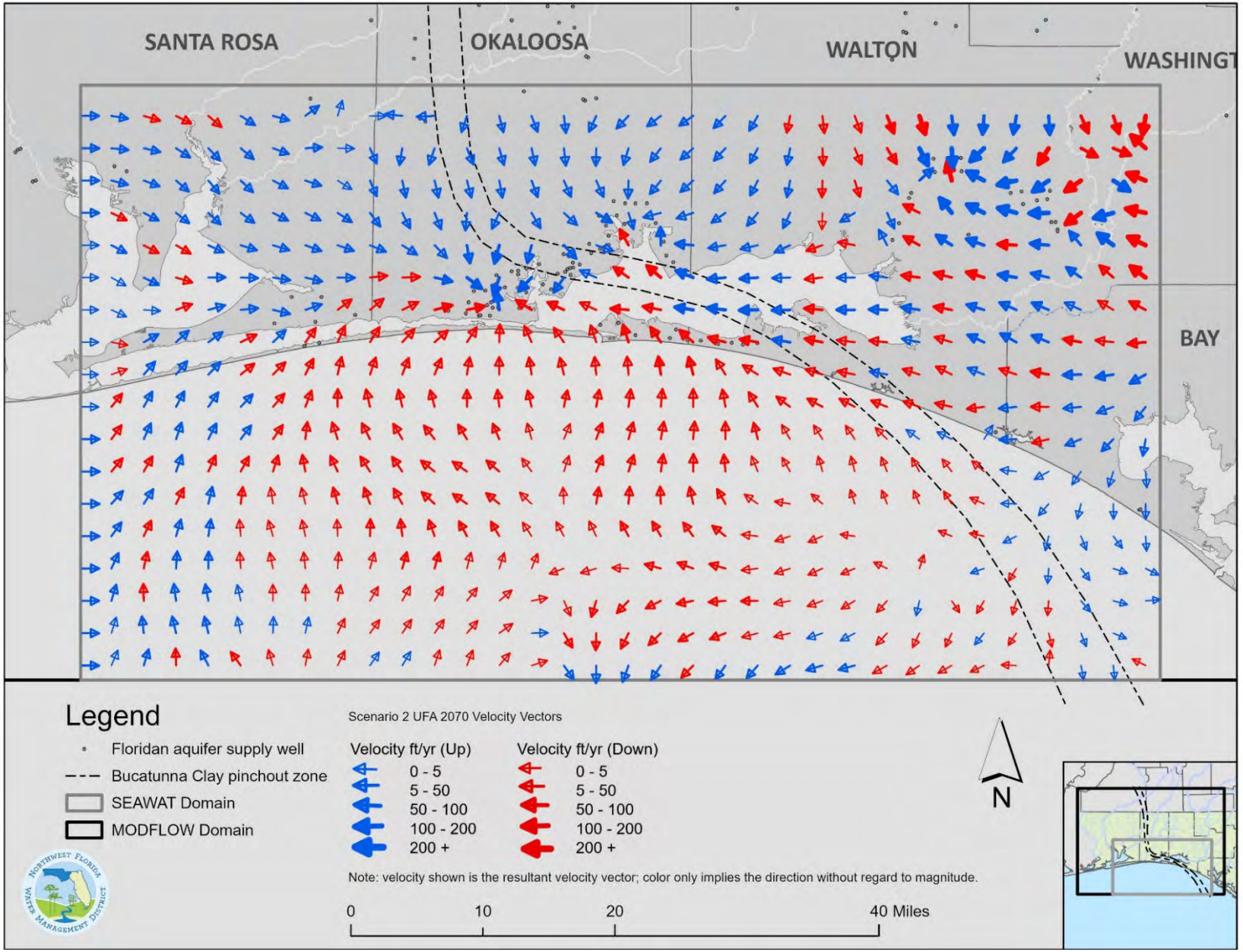

Figure 6. Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2070

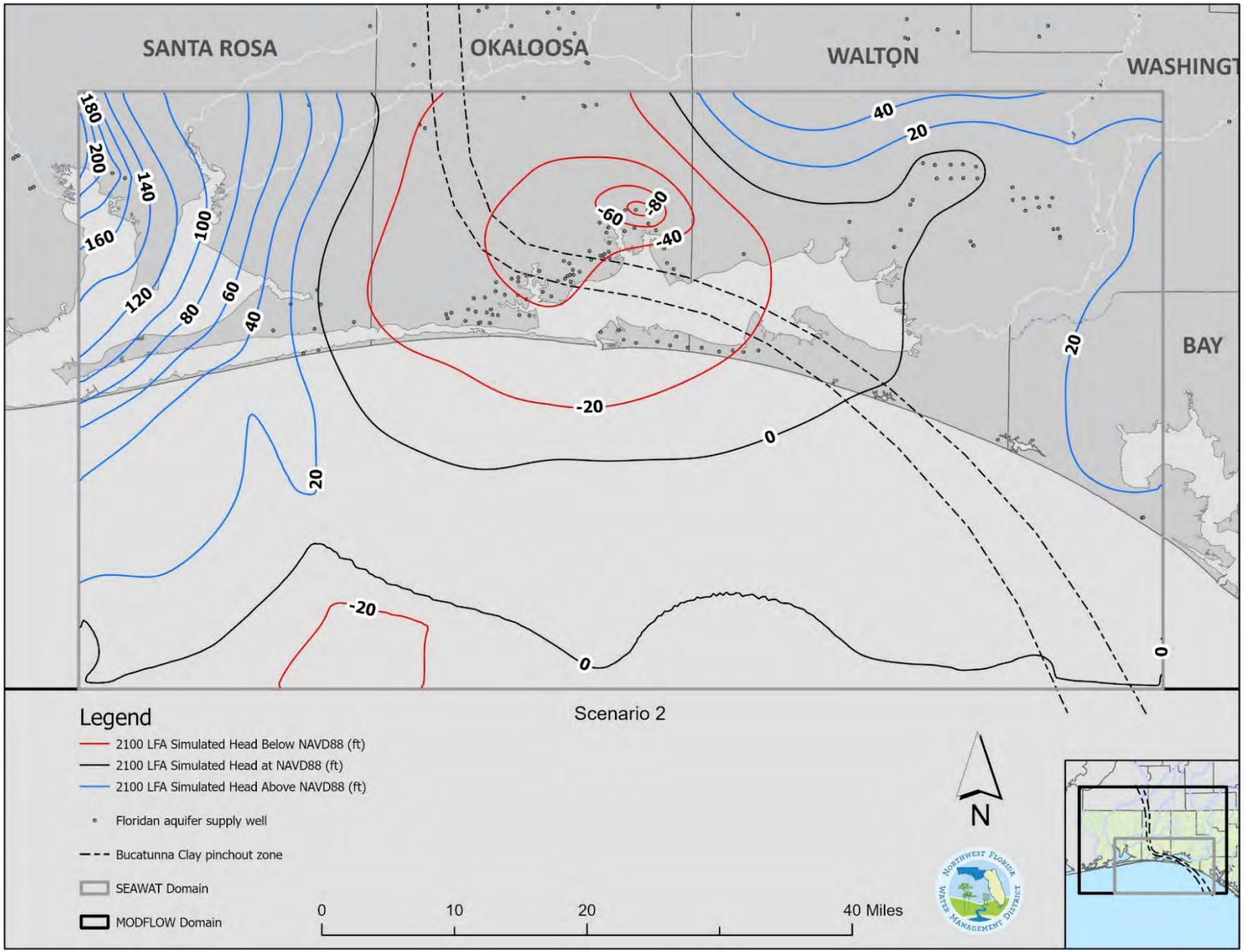

Figure 7. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2100

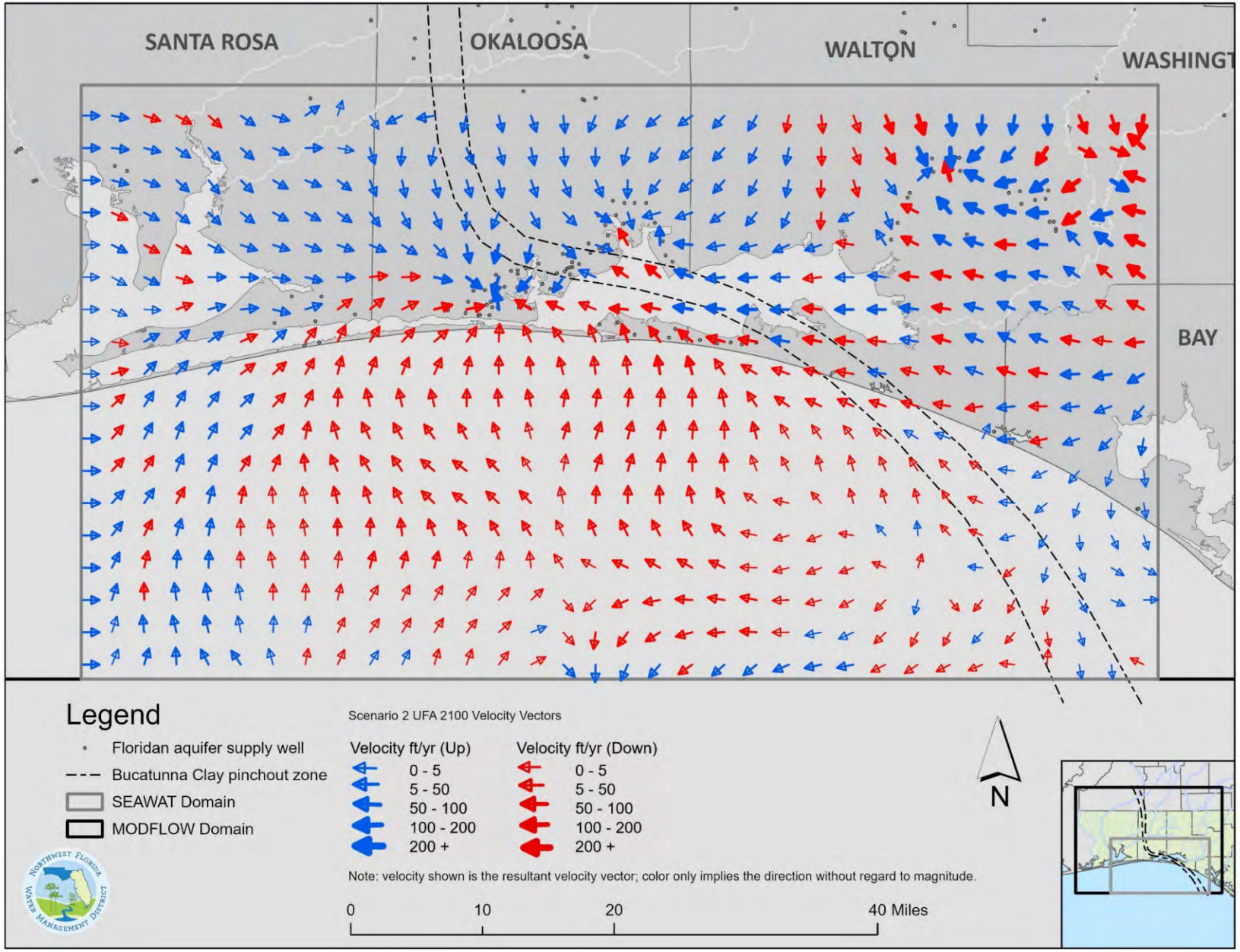

Figure 8. Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2100

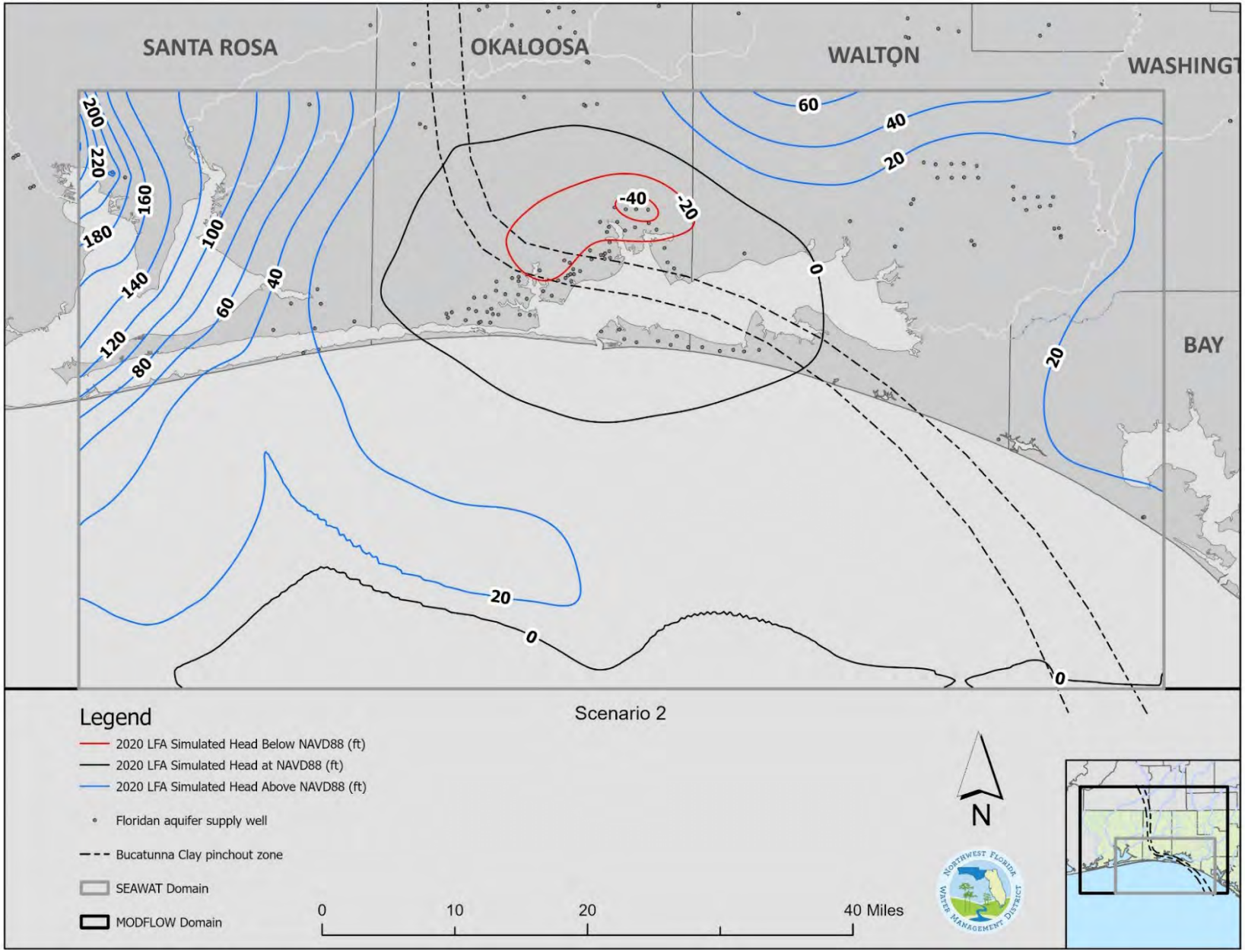

Figure 9. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2020

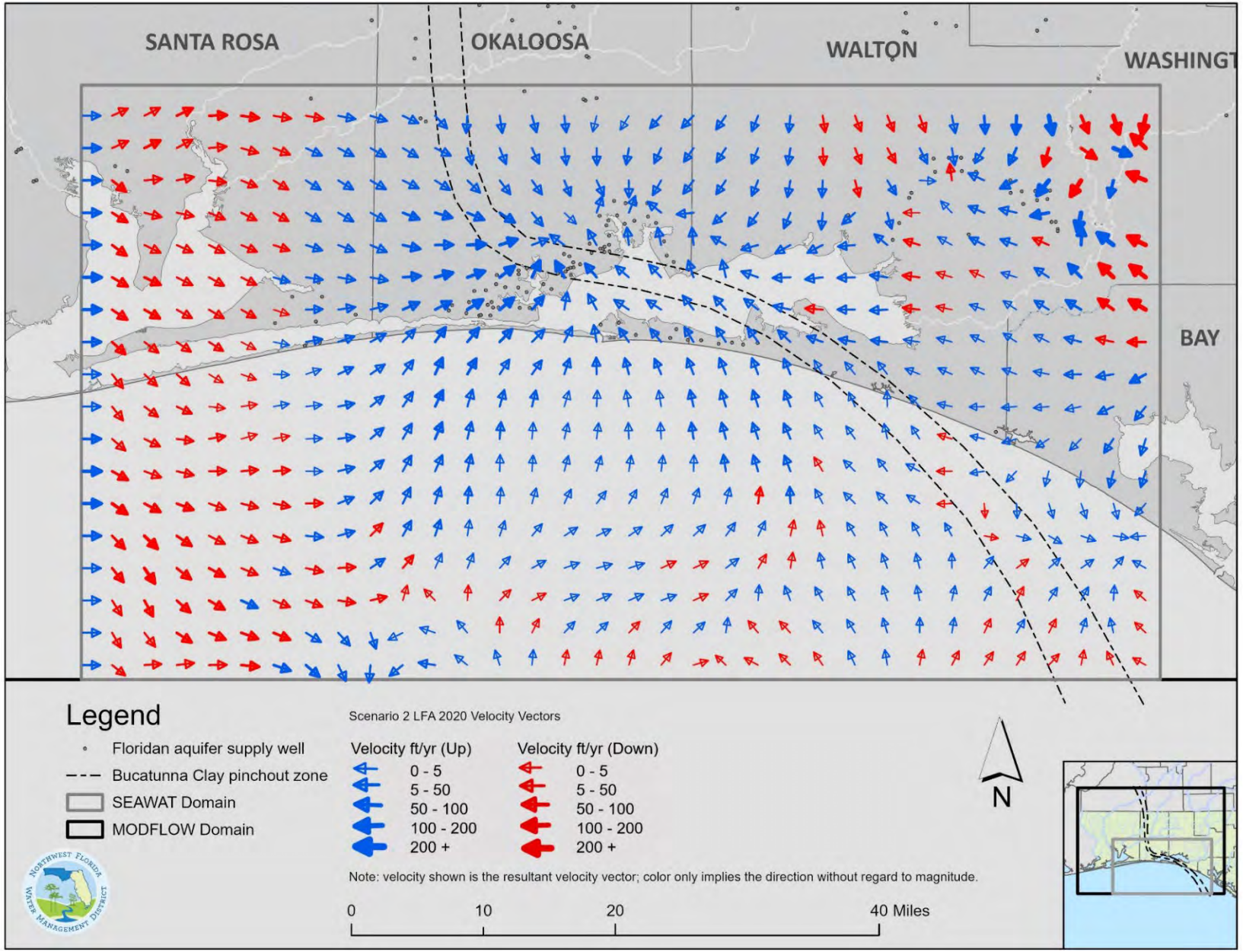

Figure 10. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2020

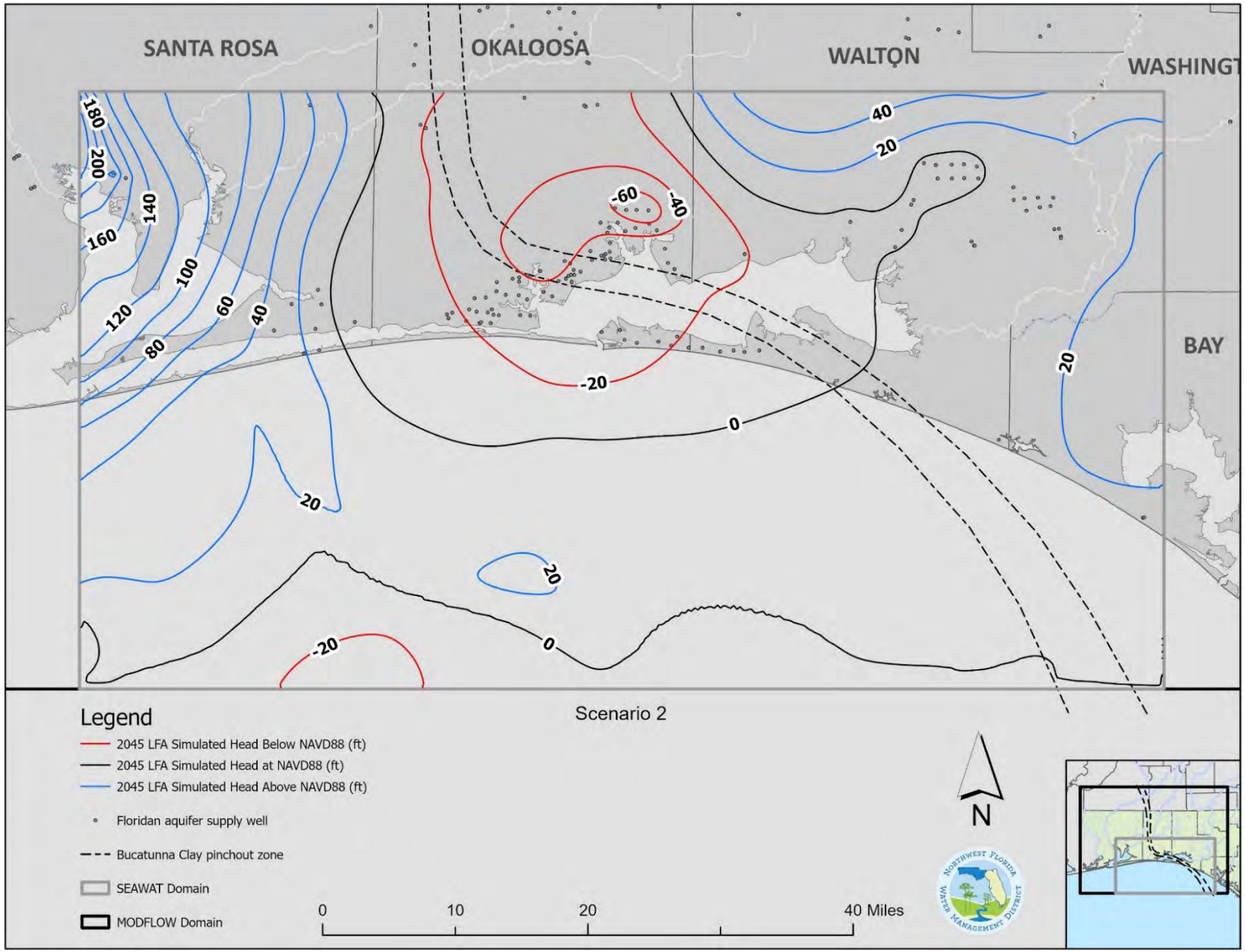

Figure 11. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2045

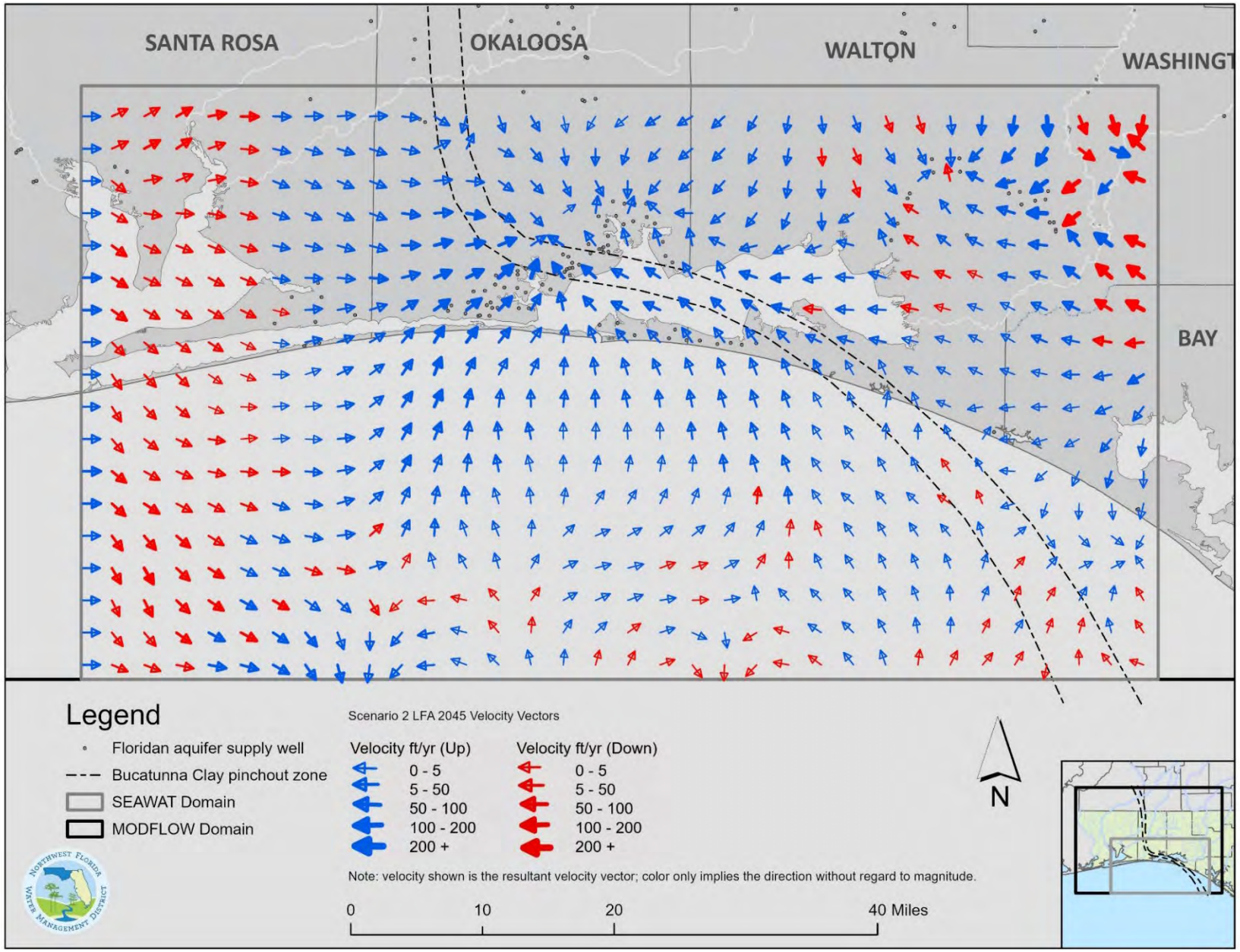

Figure 12. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2045

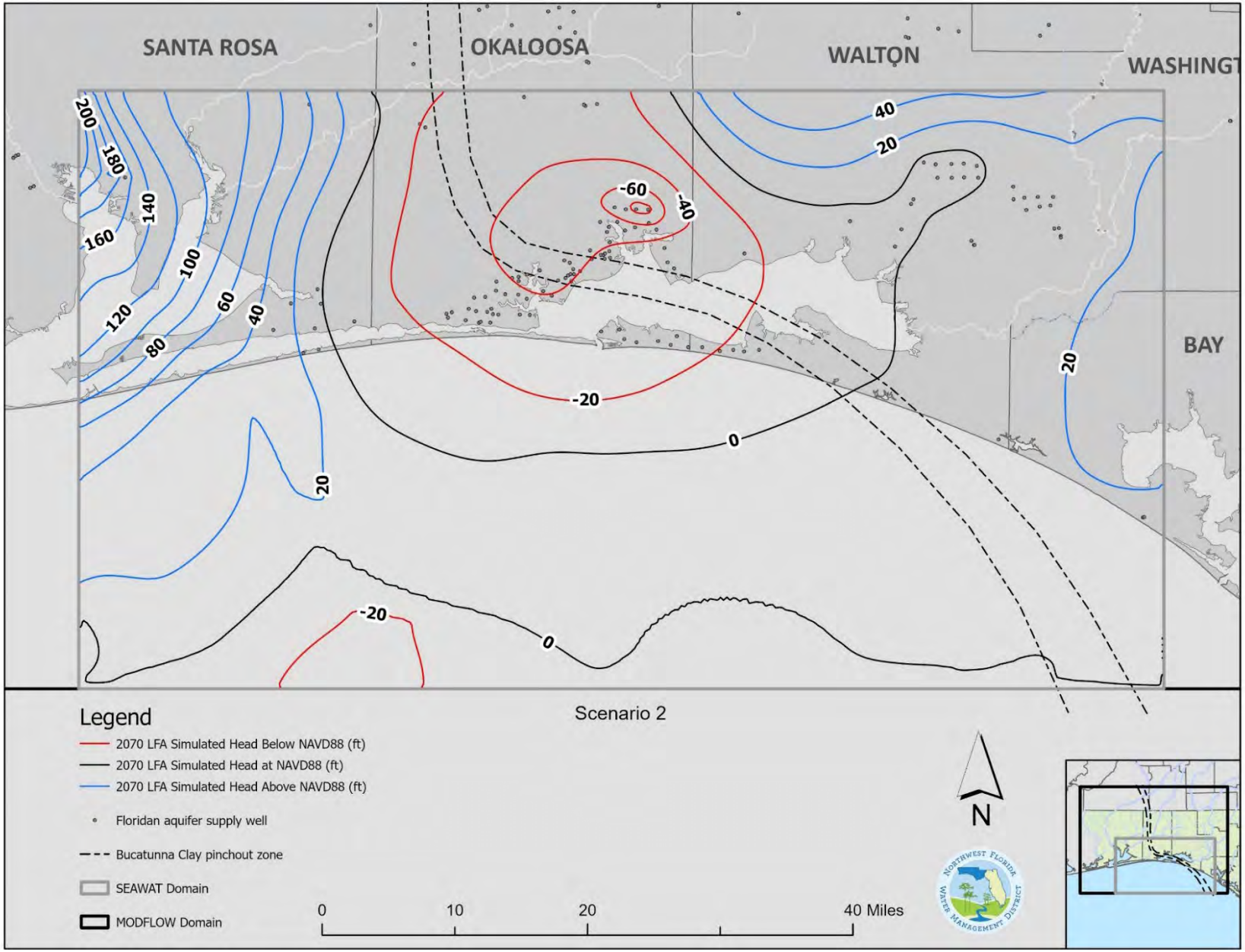

Figure 13. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2070

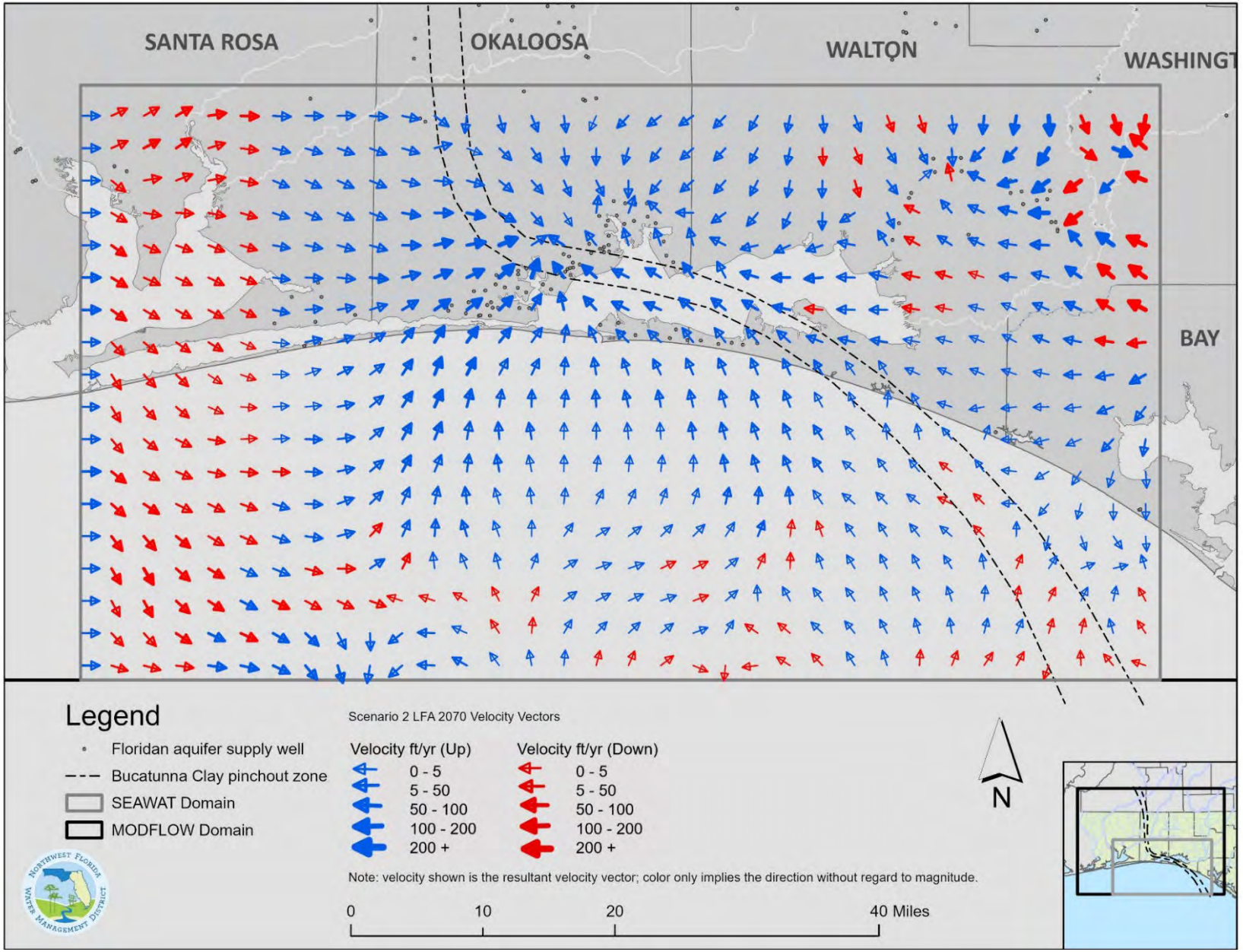

Figure 14. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2070

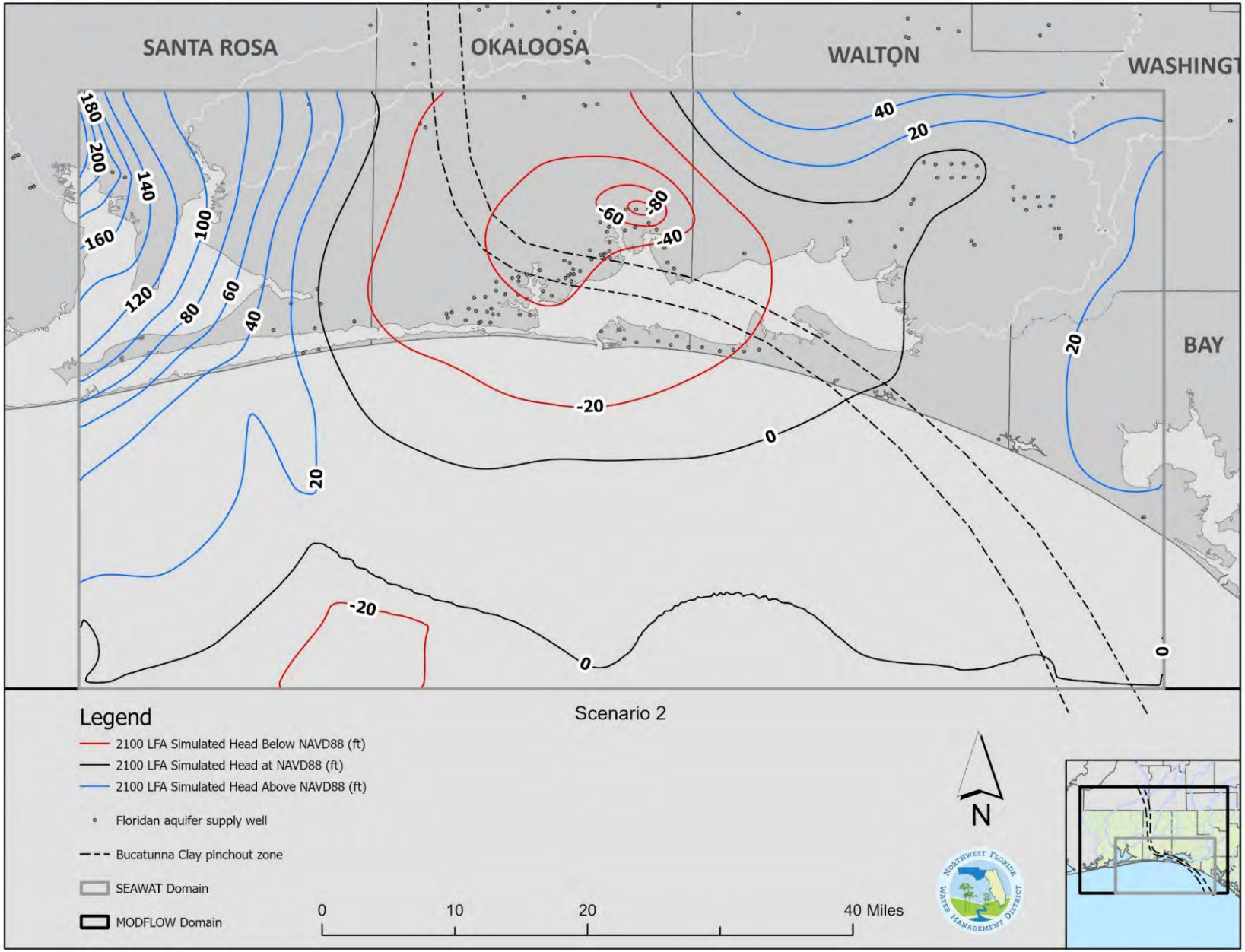

Figure 15. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2100

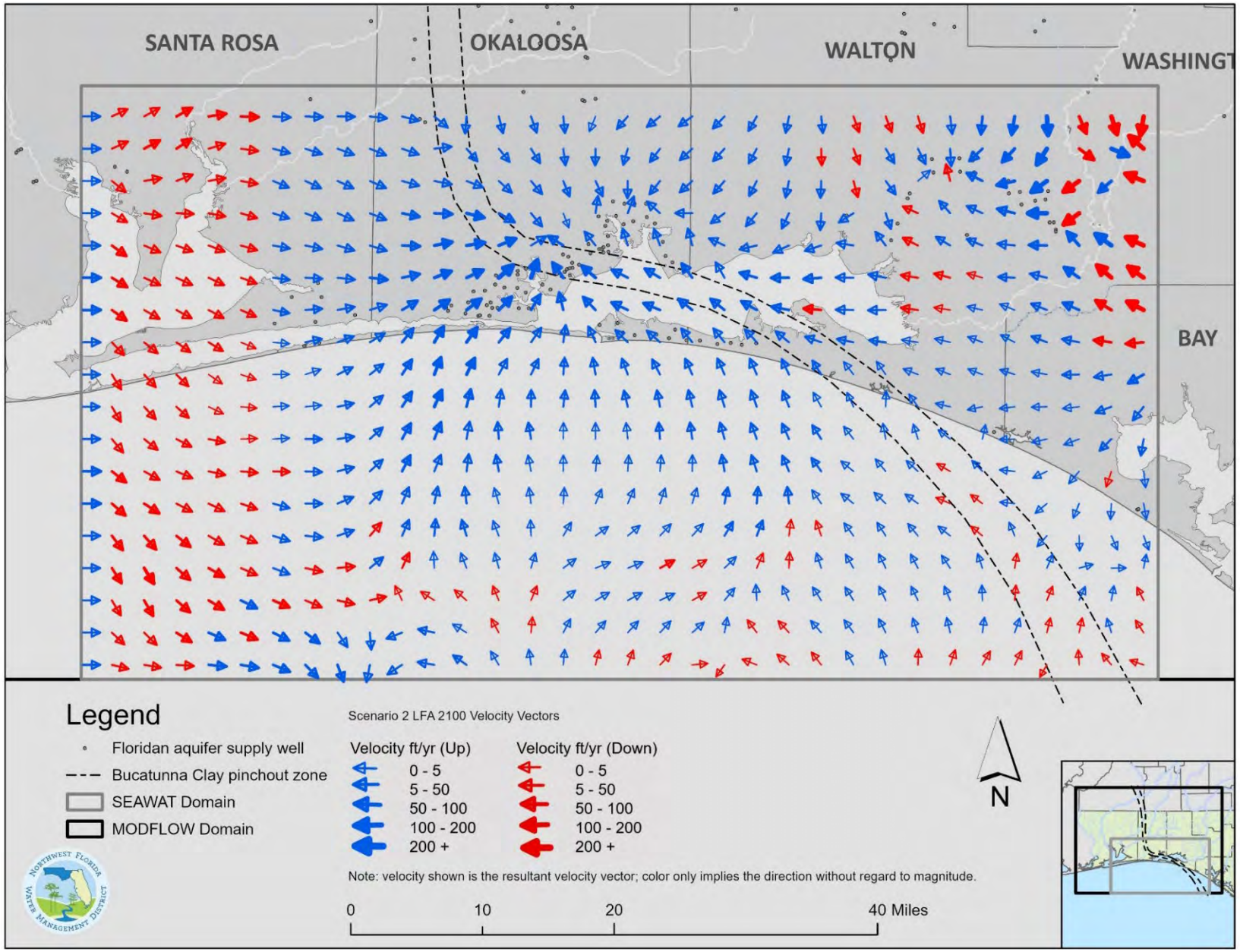

Figure 16. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2100

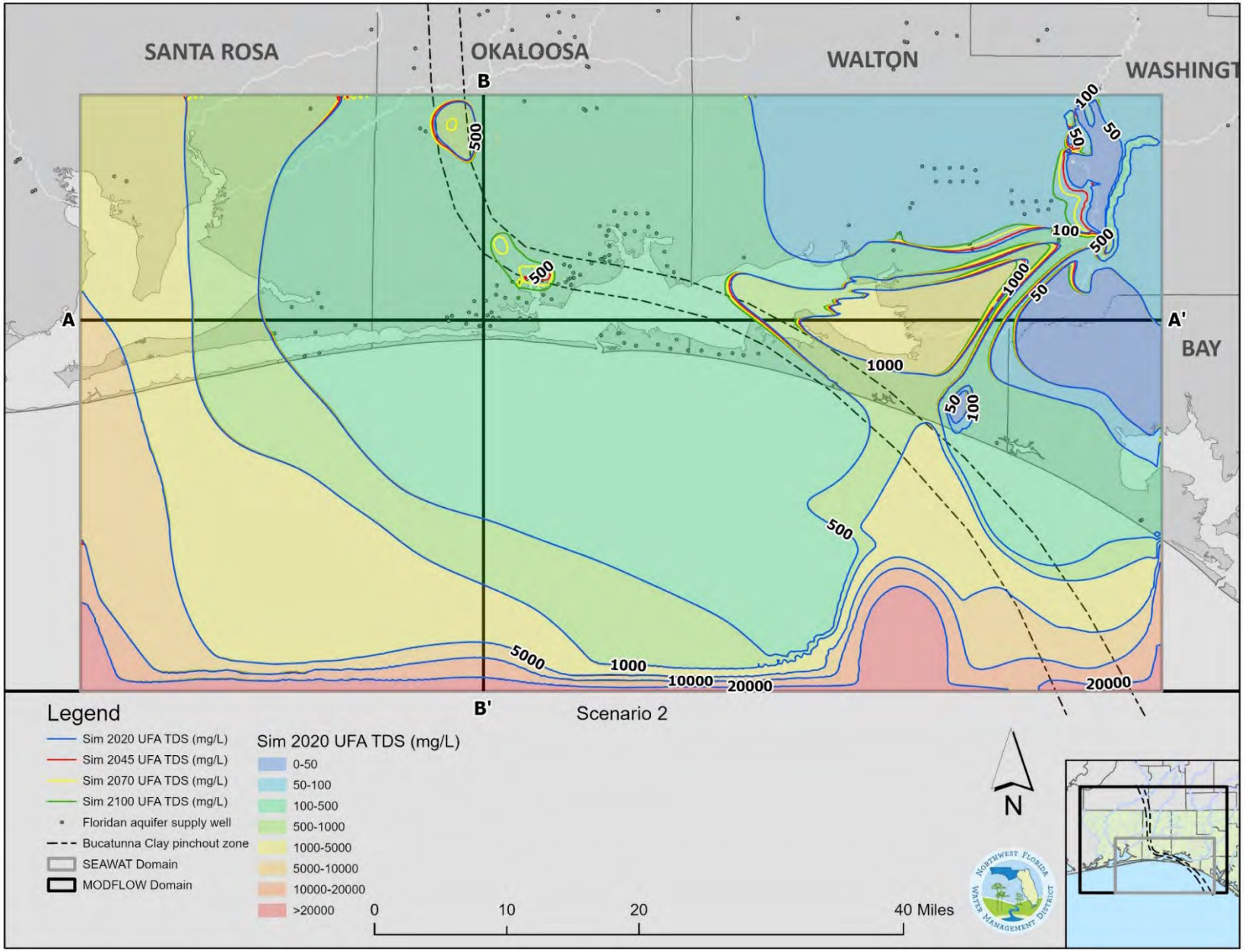

Figure 17. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) in the Upper Floridan aquifer (2020 – 2100)

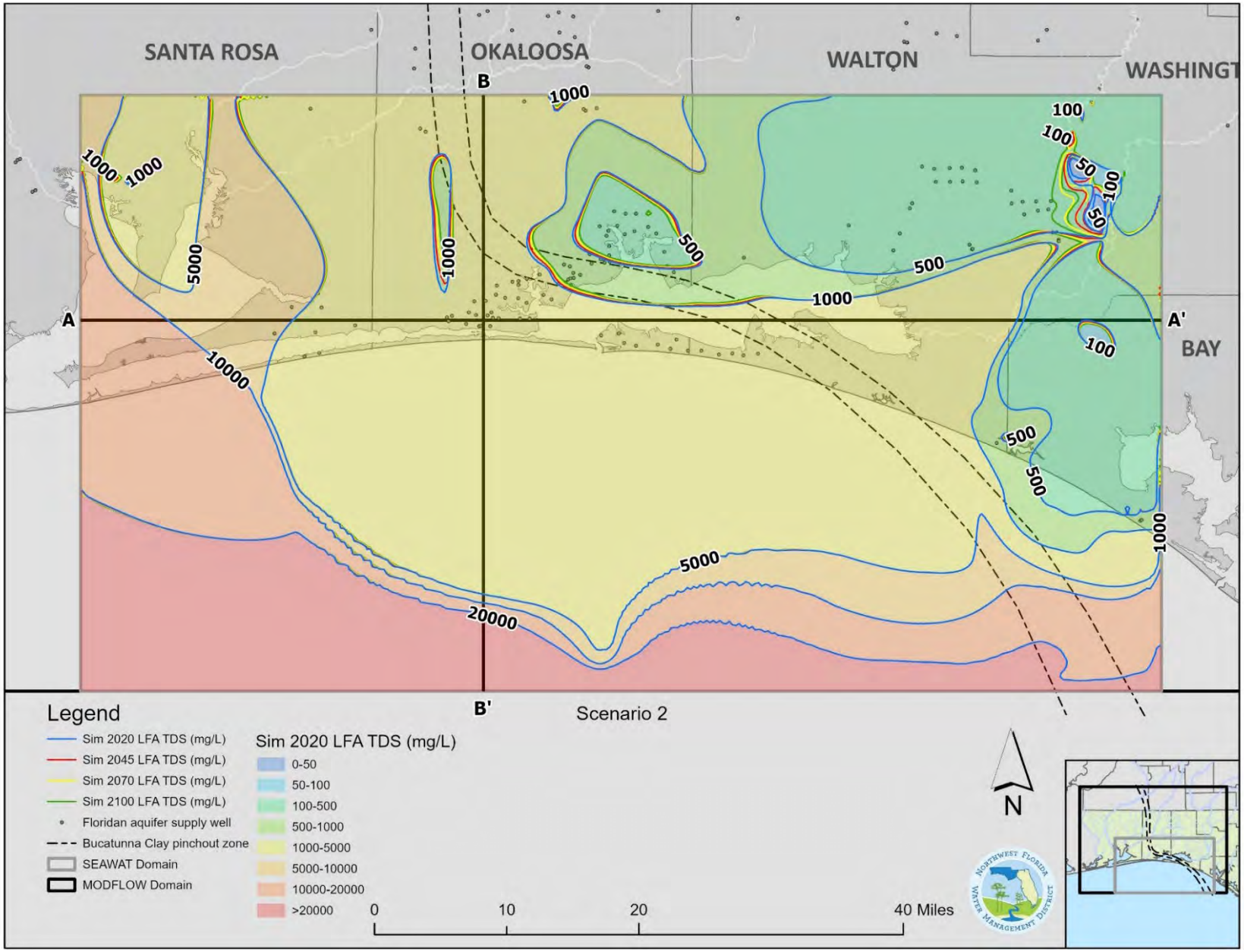

Figure 18. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) in the Lower Floridan / lower undifferentiated Floridan aquifer (2020 – 2100)

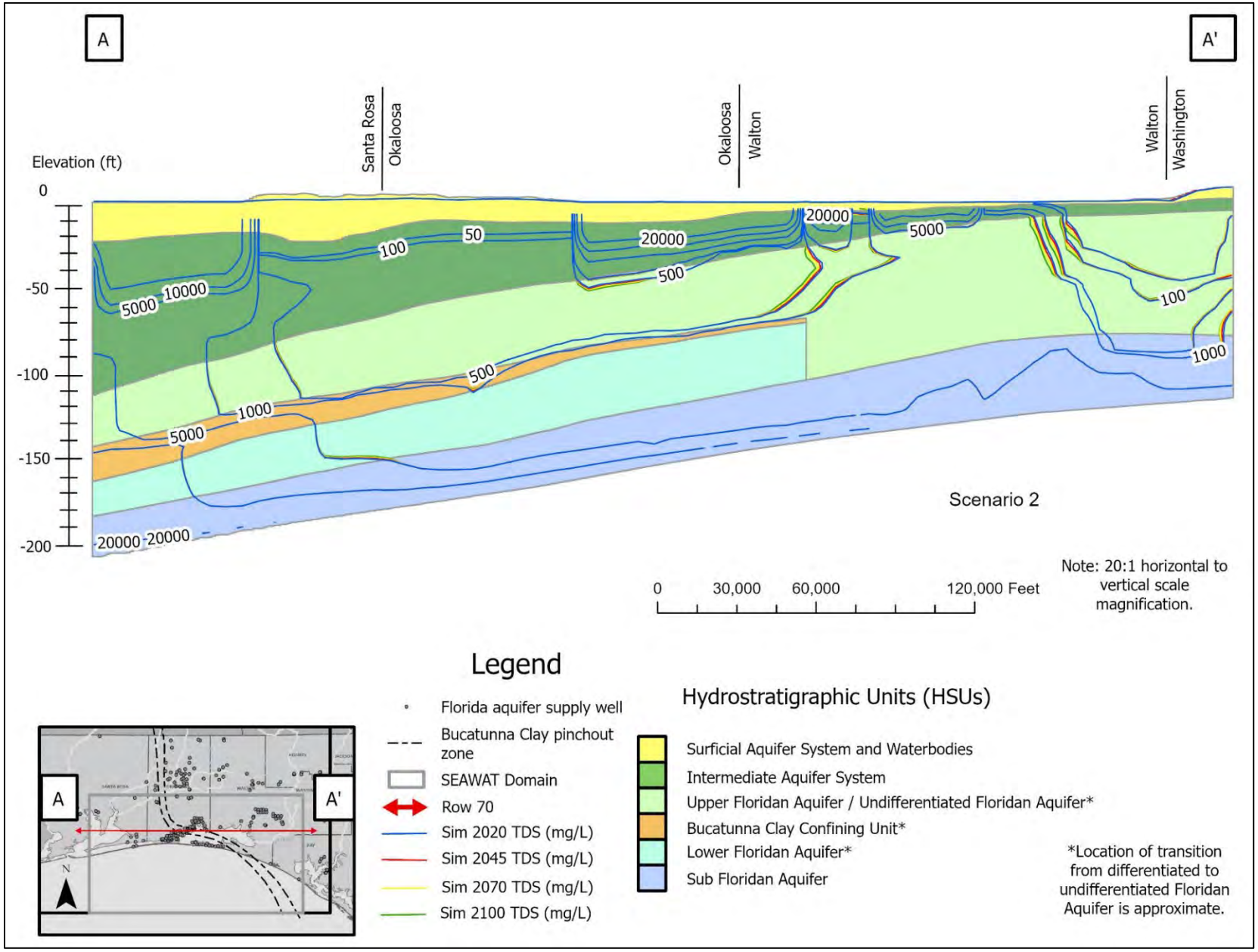

Figure 19. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) along transect A - A' (2020 - 2100)

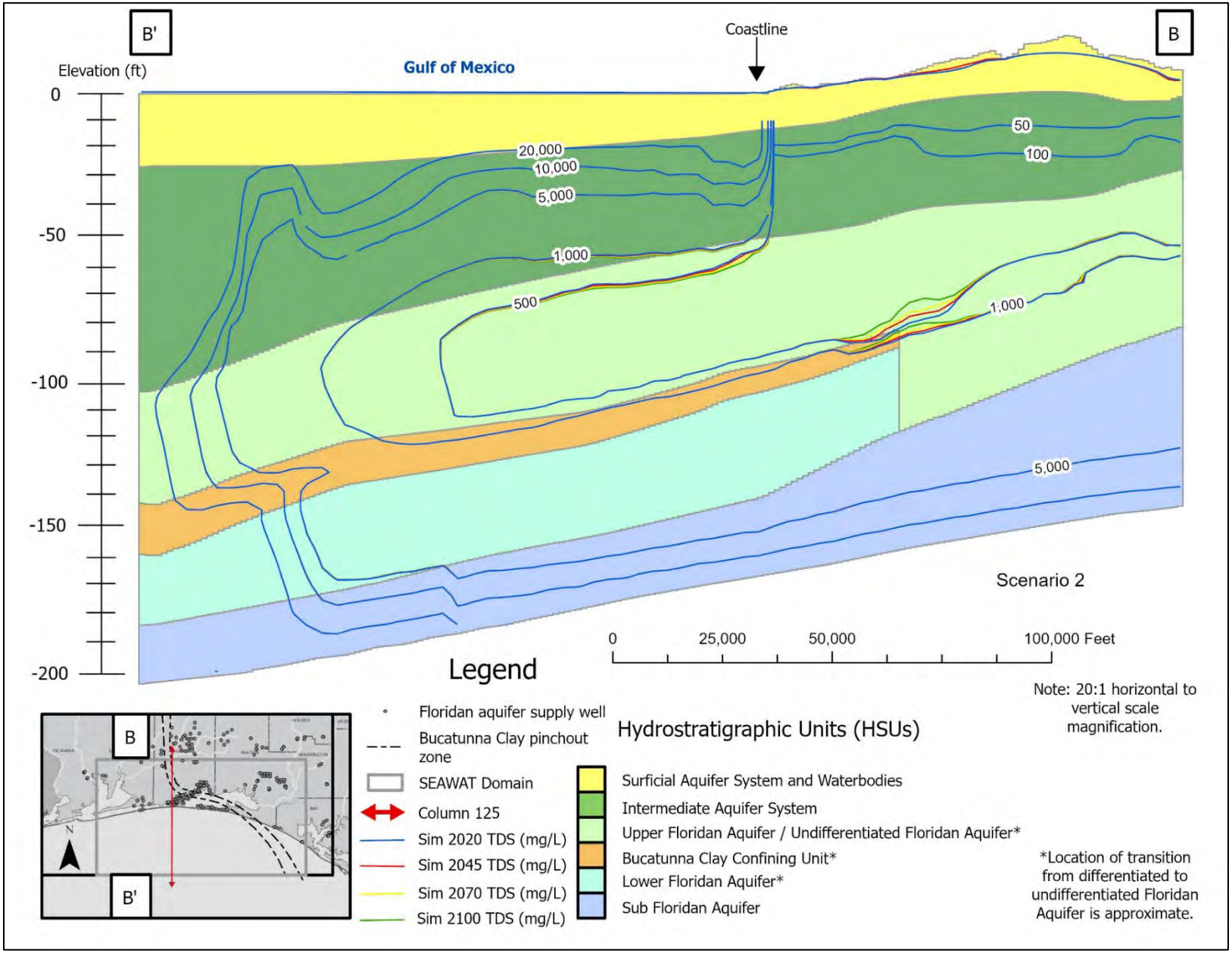

Figure 20. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) along transect B - B' (2020 - 2100)

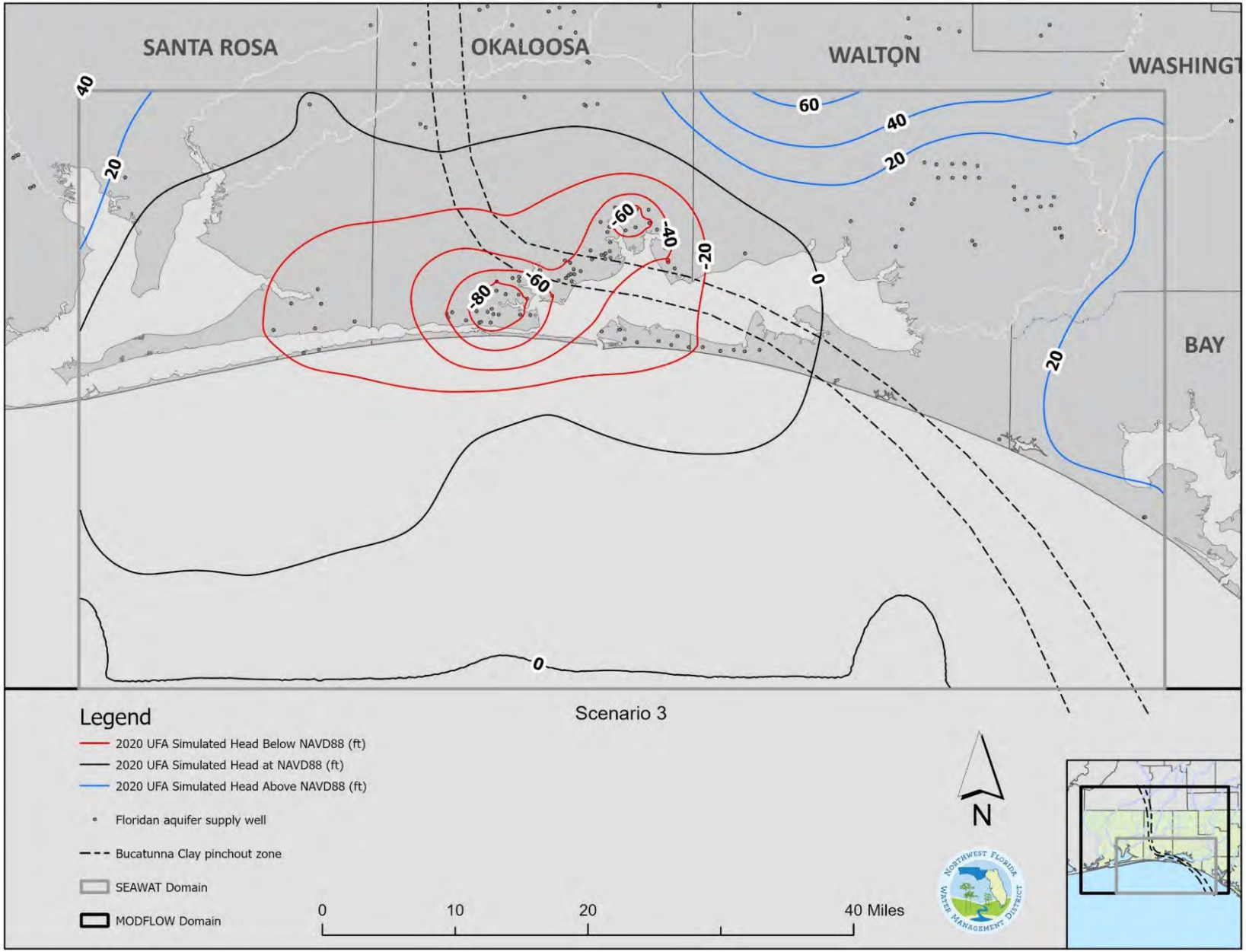

Figure 1. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2020

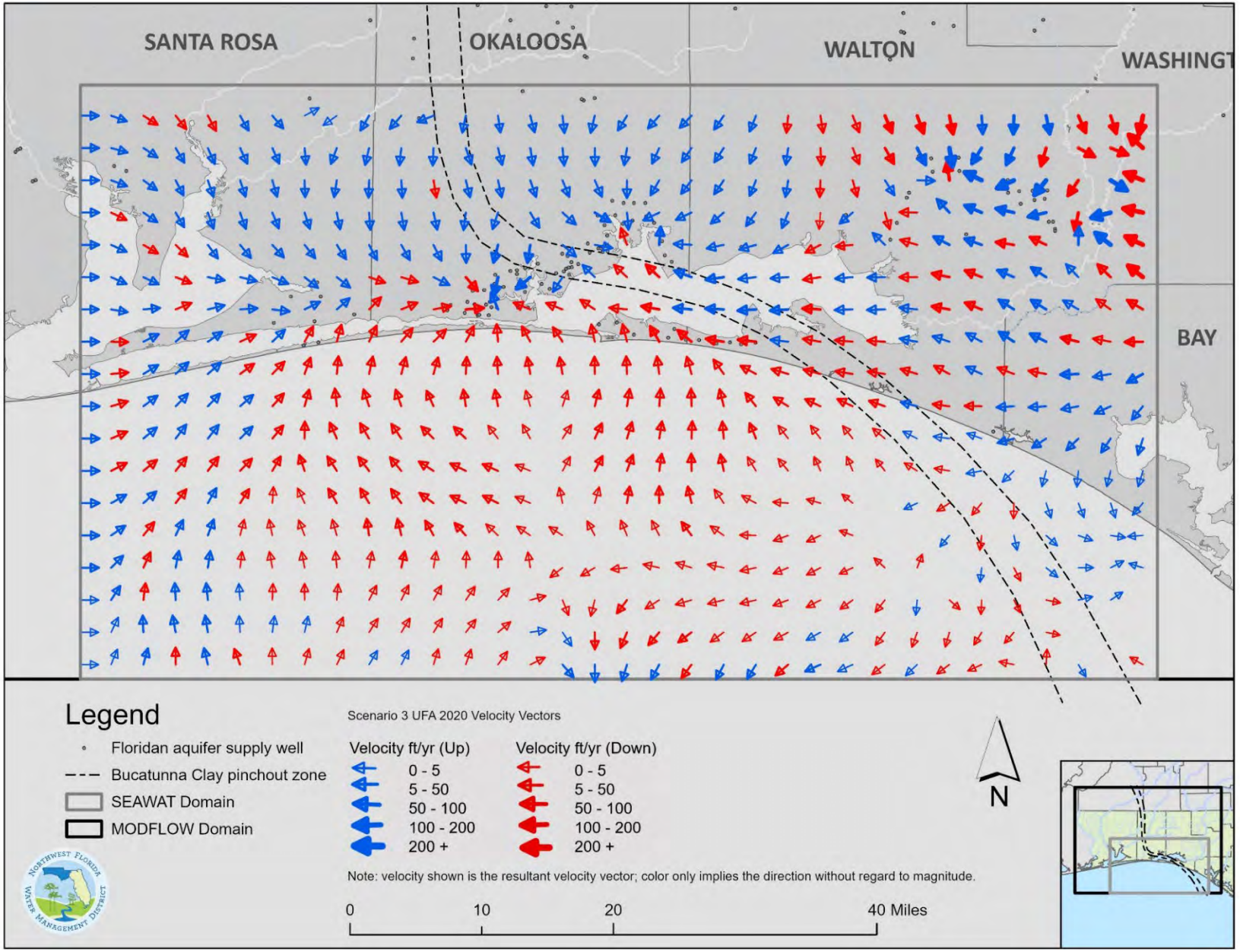

Figure 2. Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2020

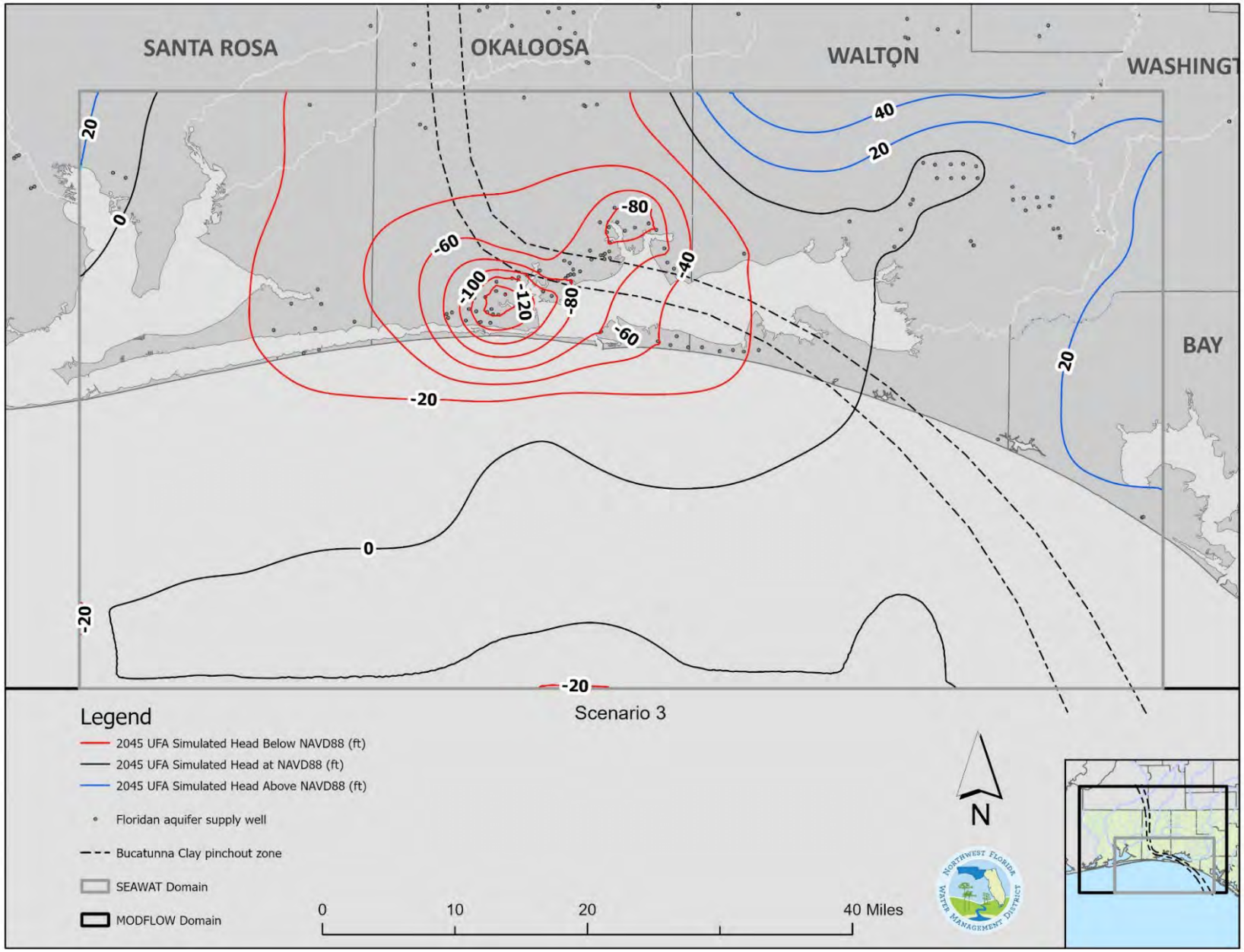

Figure 3. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2045

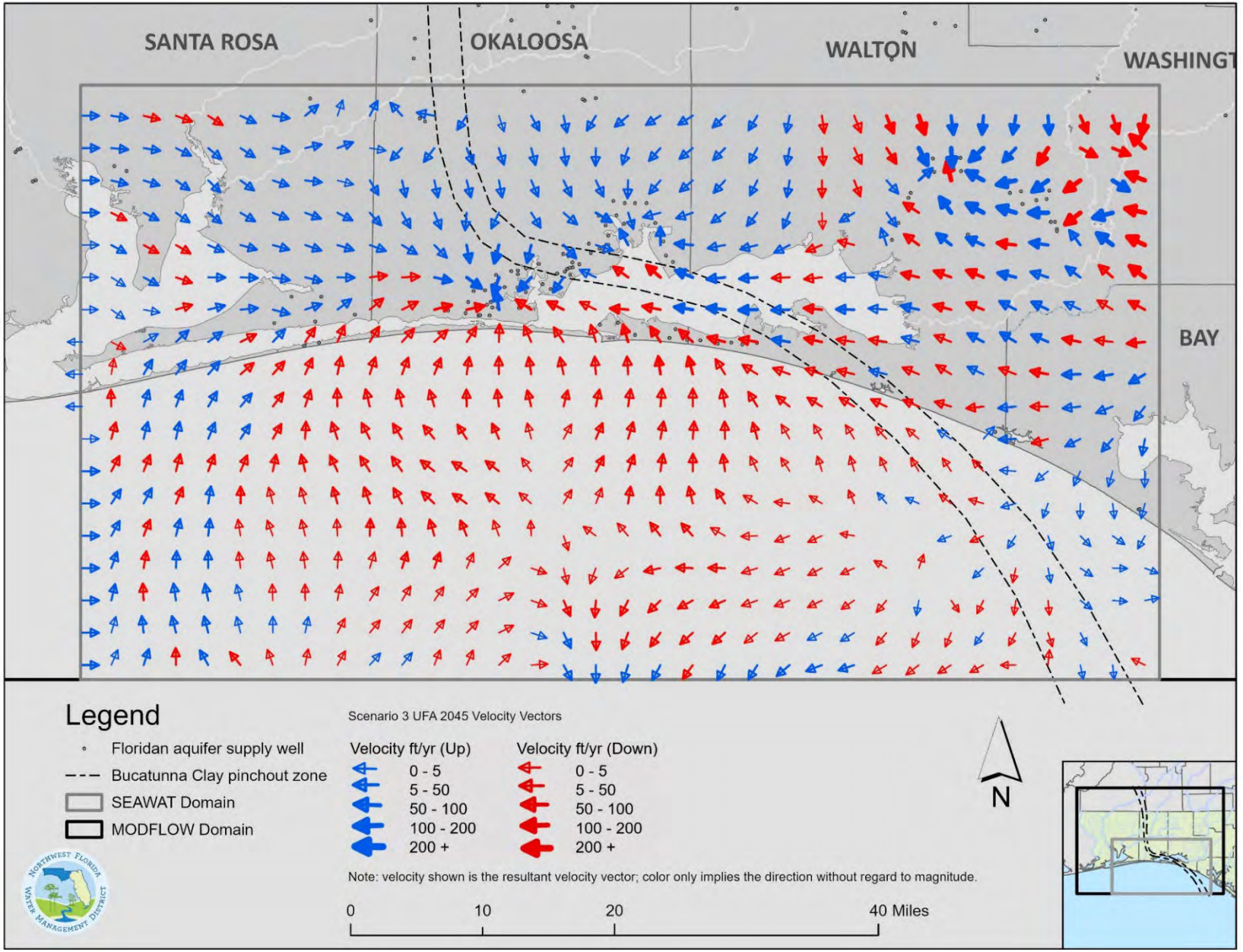

Figure 4.Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2045

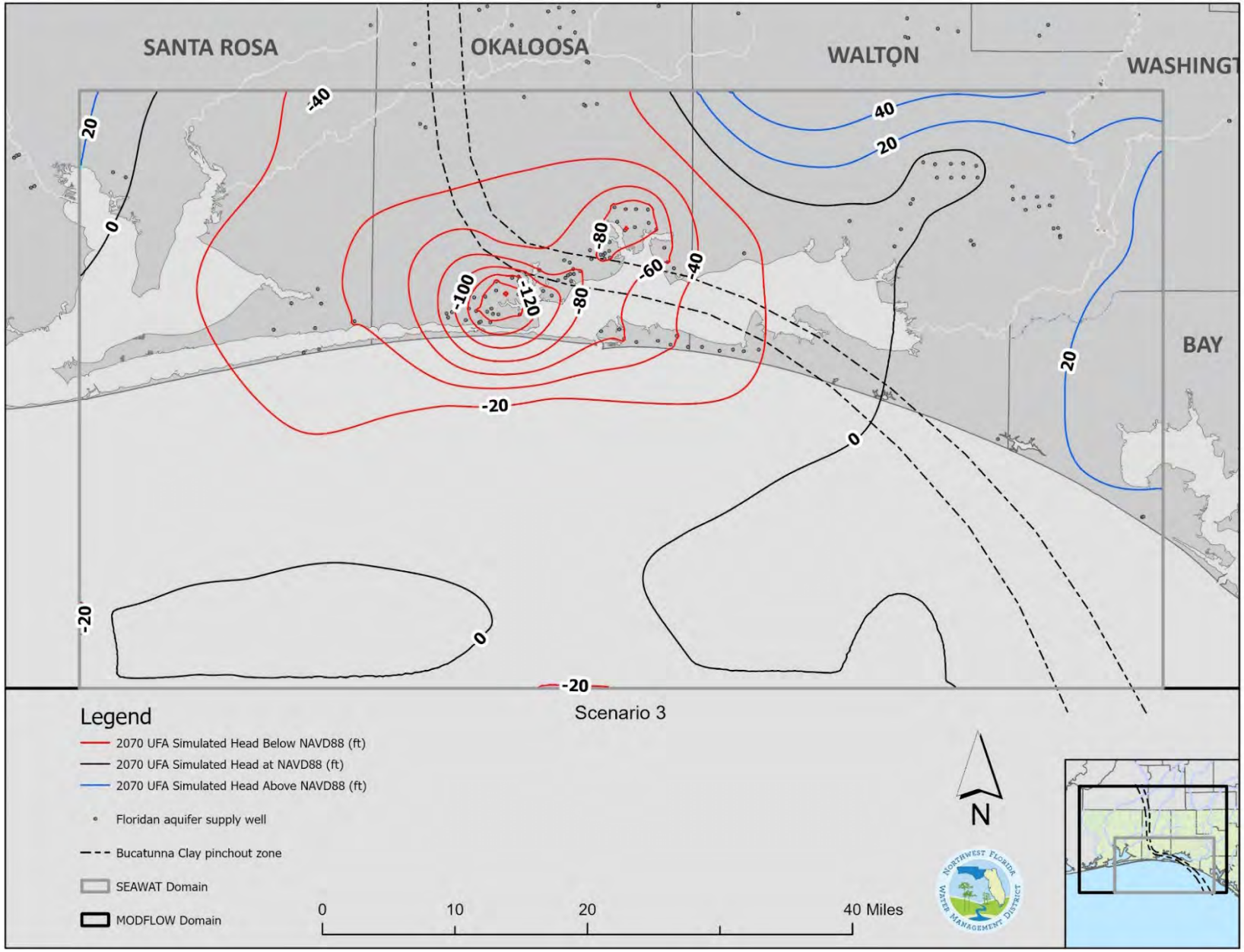

Figure 5. Simulated head contours in the Upper Floridan aquifer (layer 7) for the year 2070

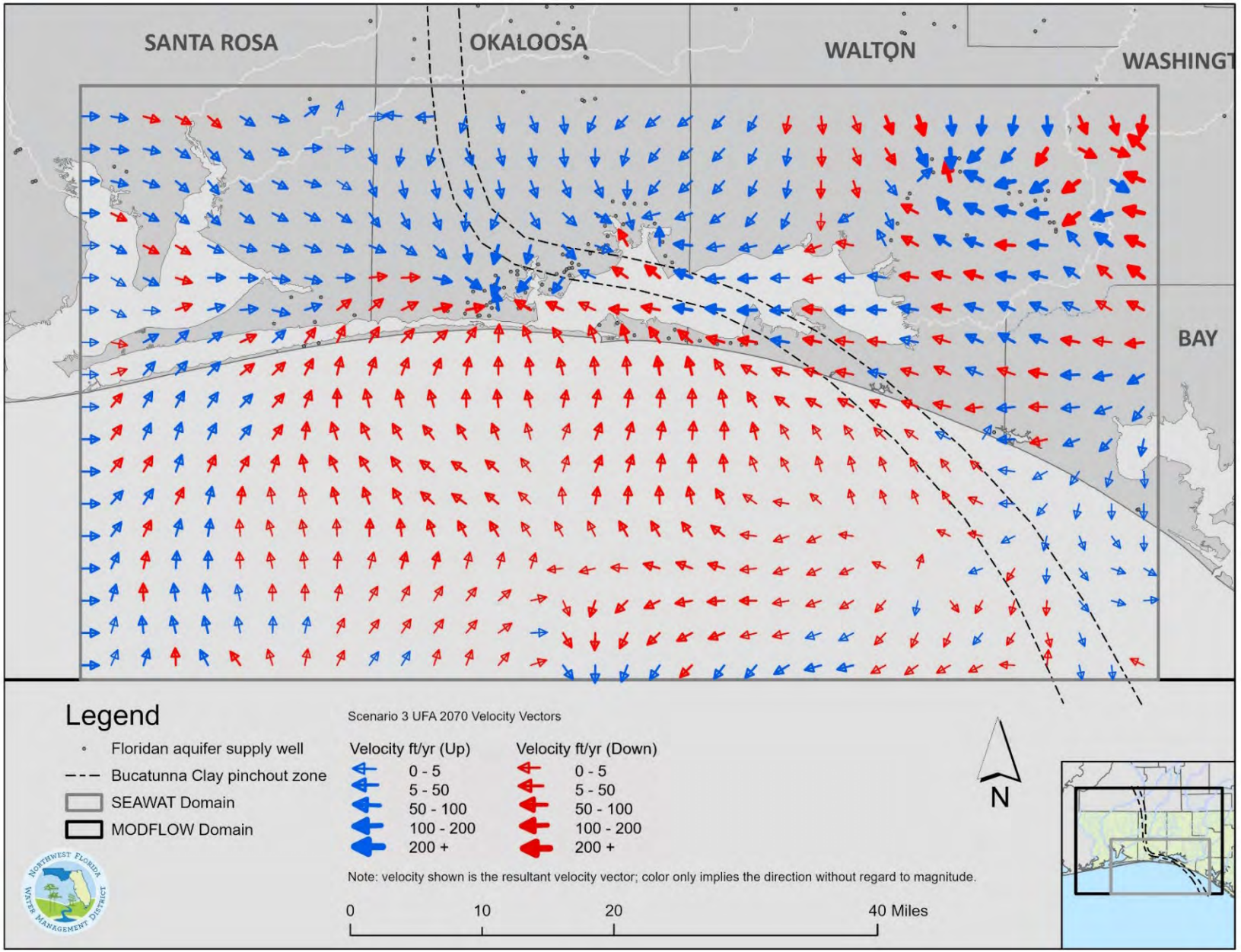

Figure 6. Simulated seepage velocity vectors in the Upper Floridan aquifer (layer 7) for the year 2070

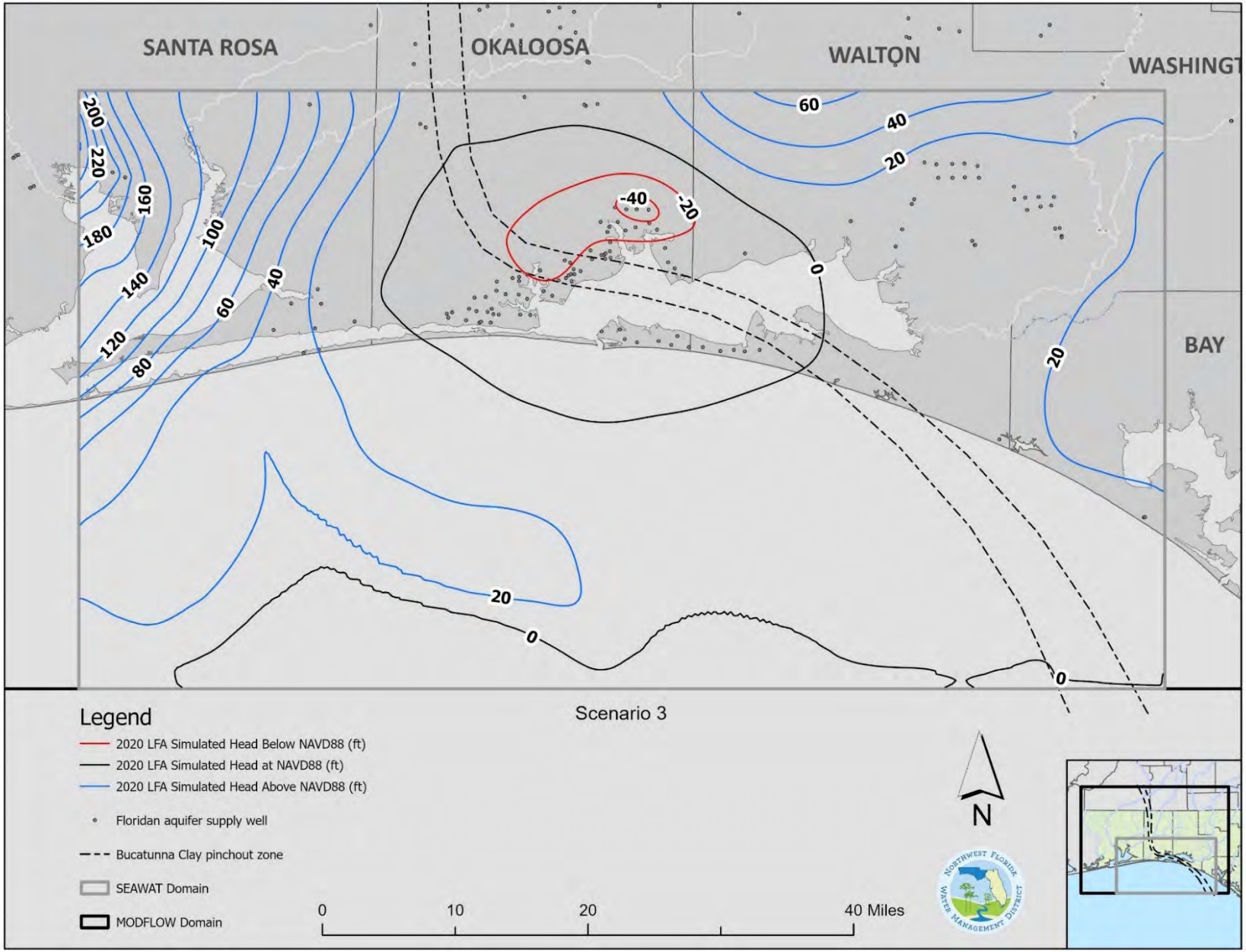

Figure 7. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2020

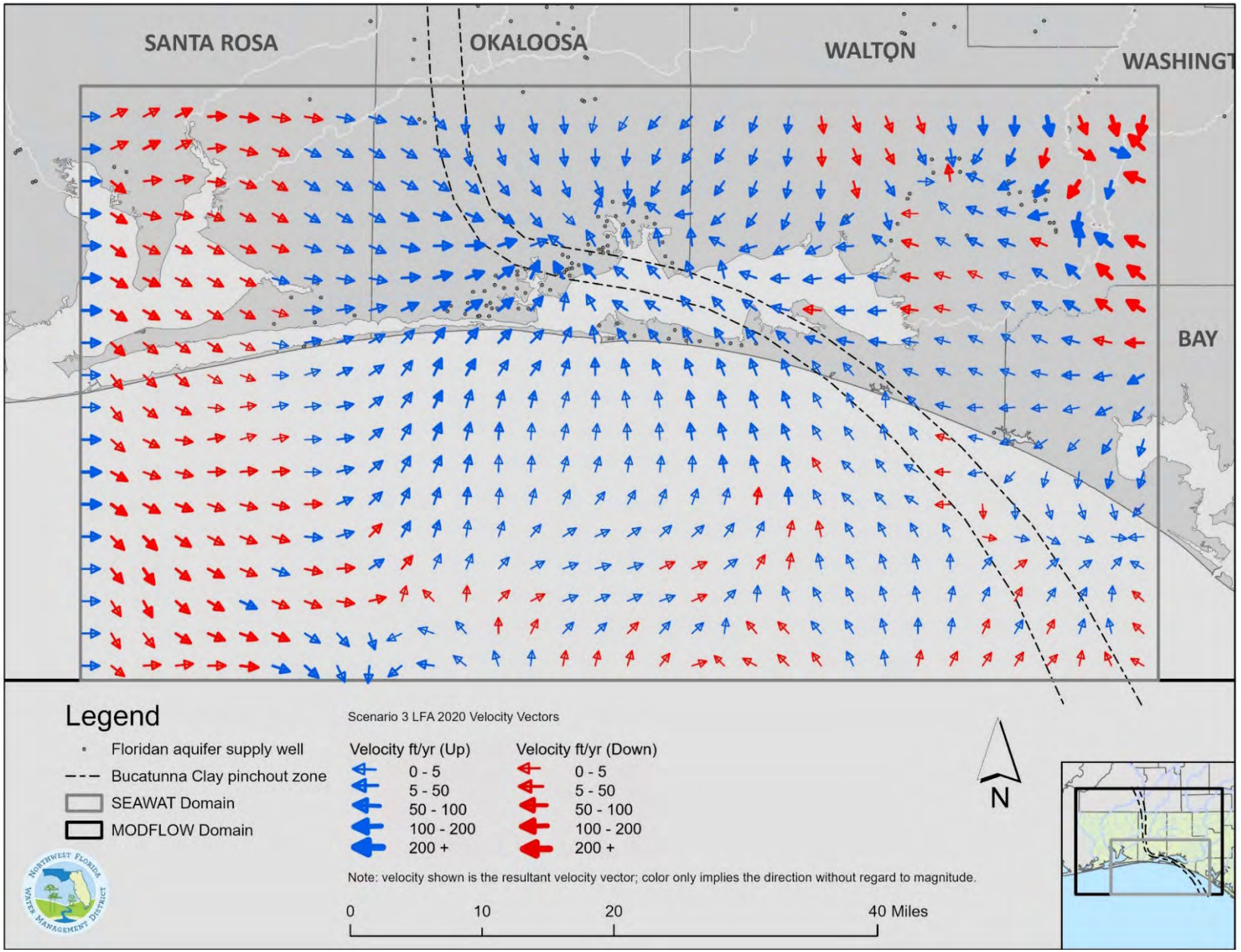

Figure 8. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2020

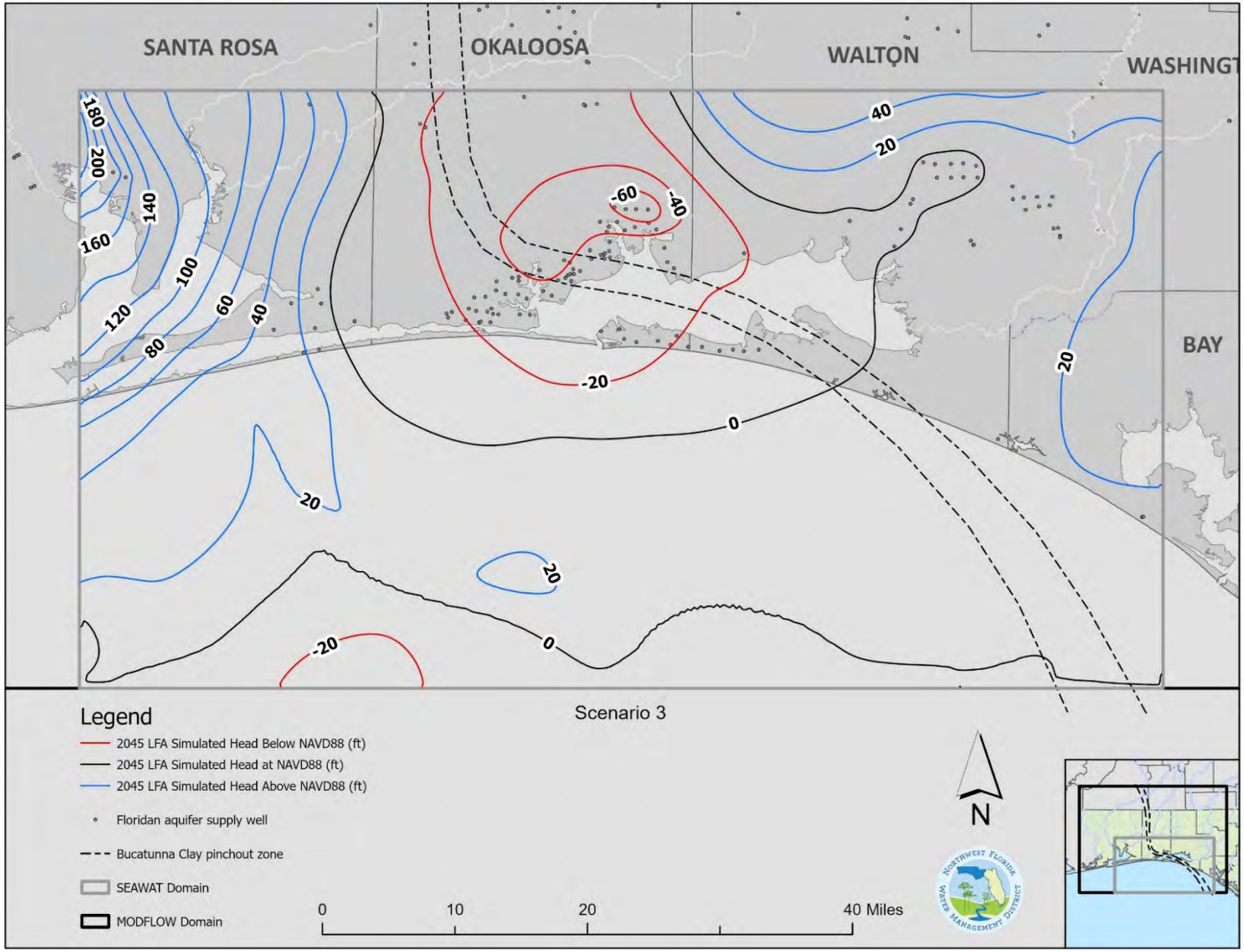

Figure 9. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2045

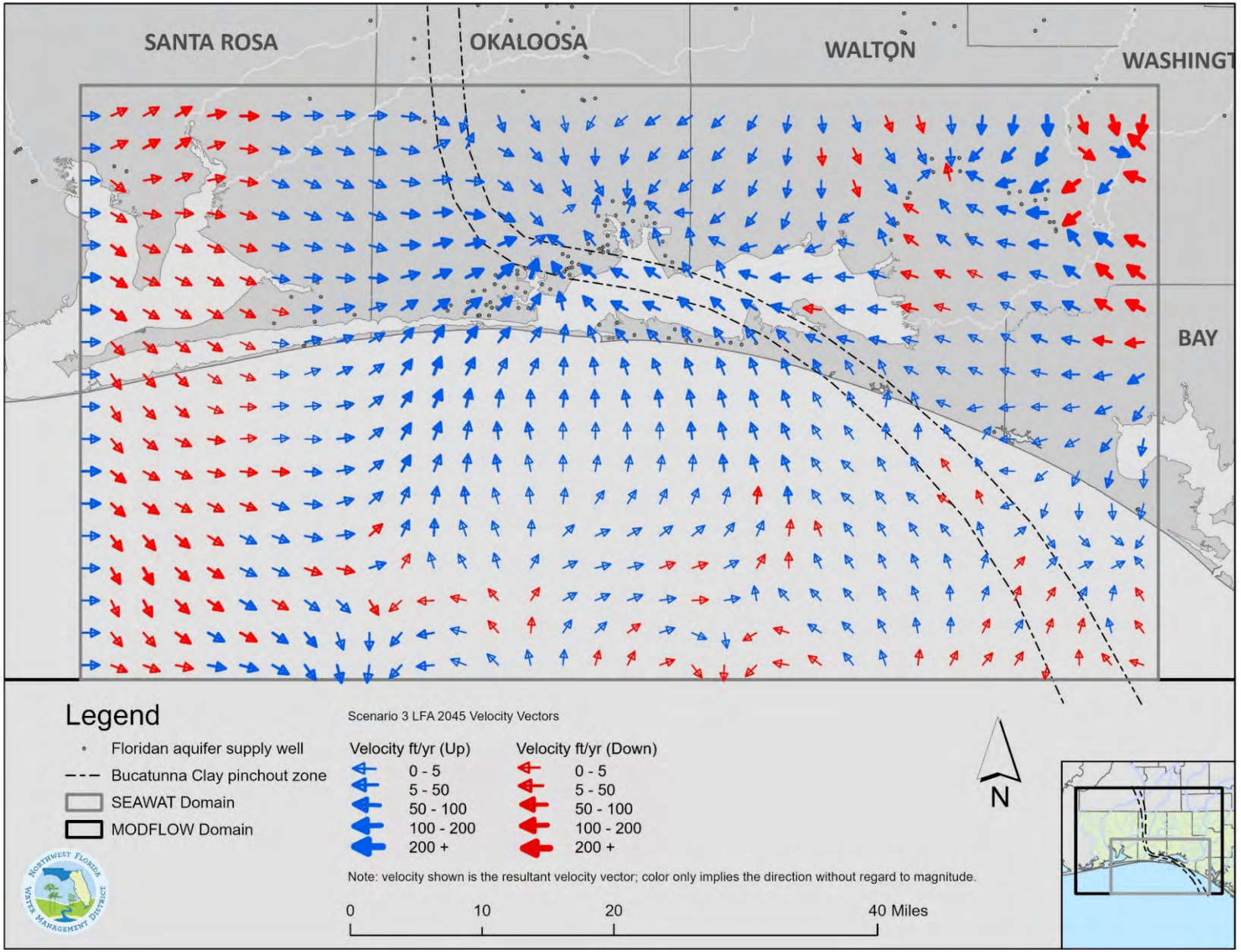

Figure 10. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2045

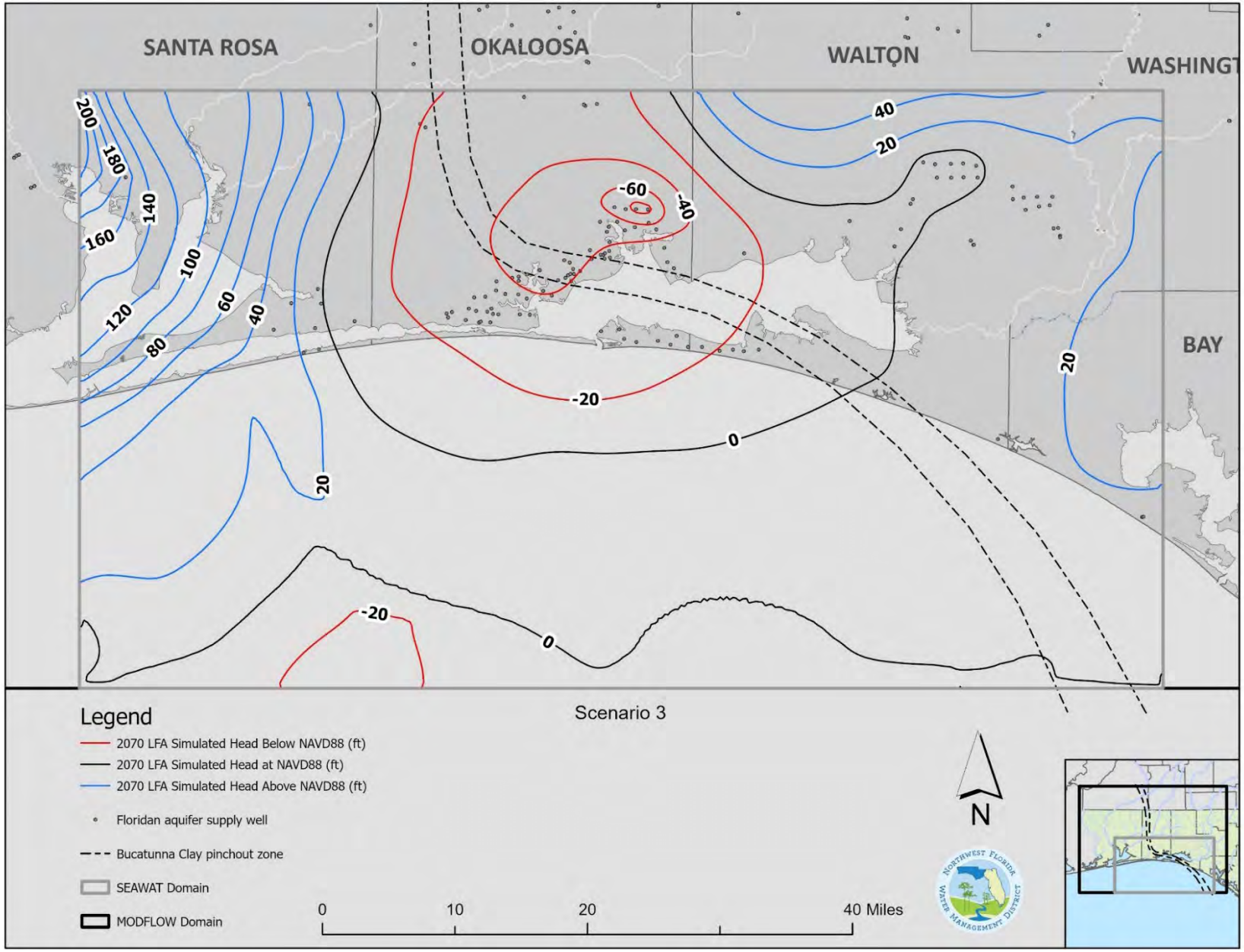

Figure 11. Simulated head contours in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2070

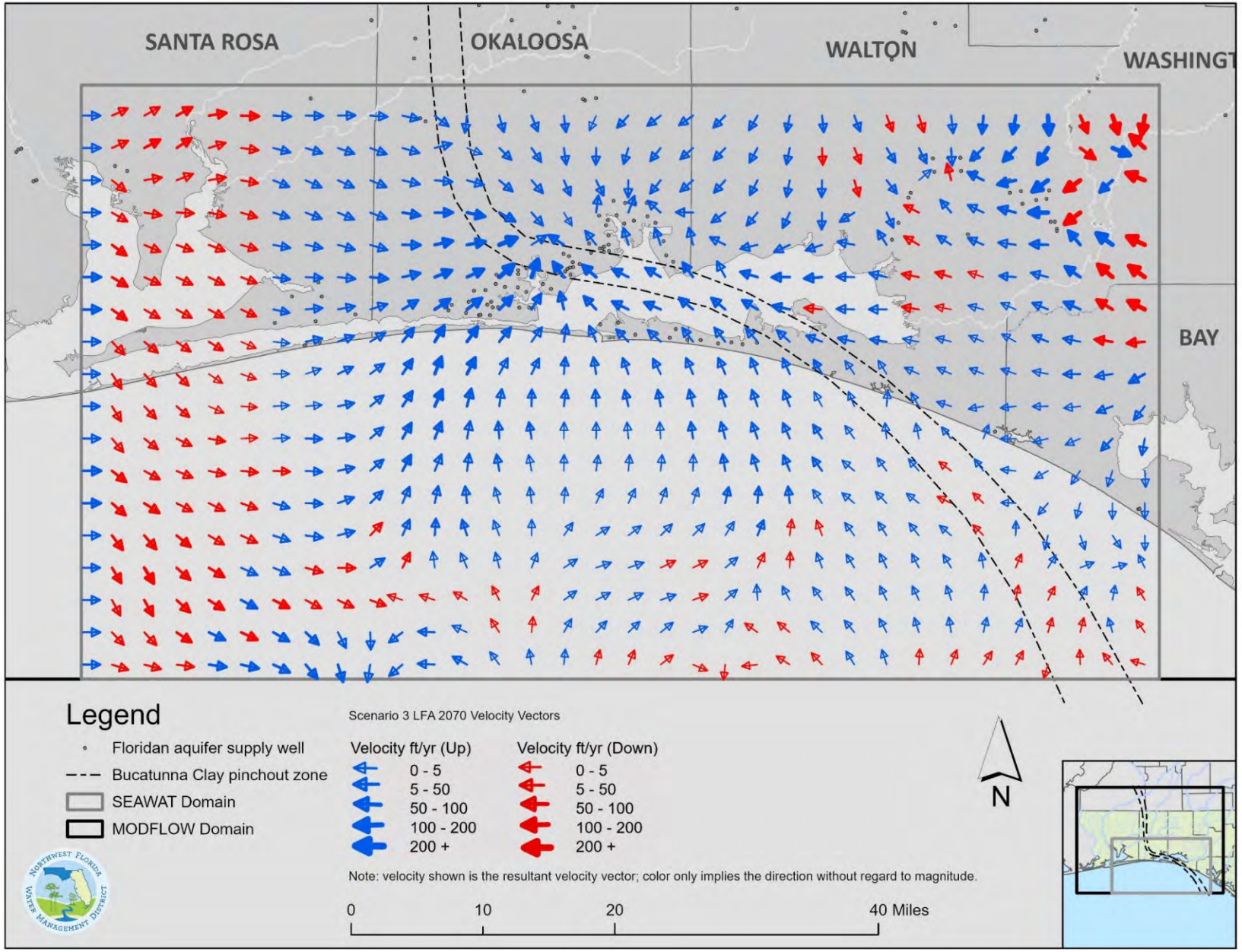

Figure 12. Simulated seepage velocity vectors in the Lower Floridan/lower undifferentiated Floridan aquifer (layer 15) for the year 2070

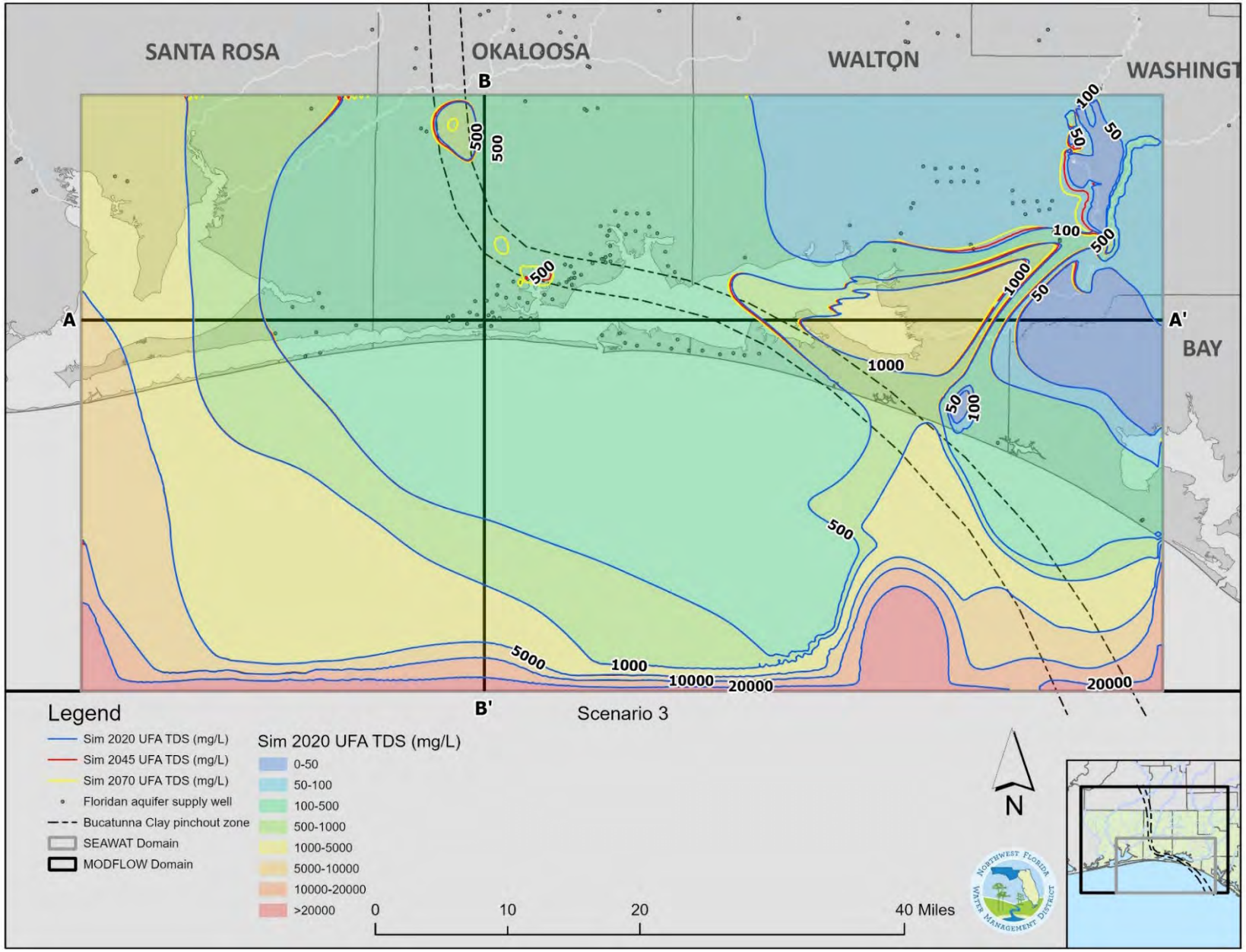

Figure 13. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) in the Upper Floridan aquifer (2020 – 2100)

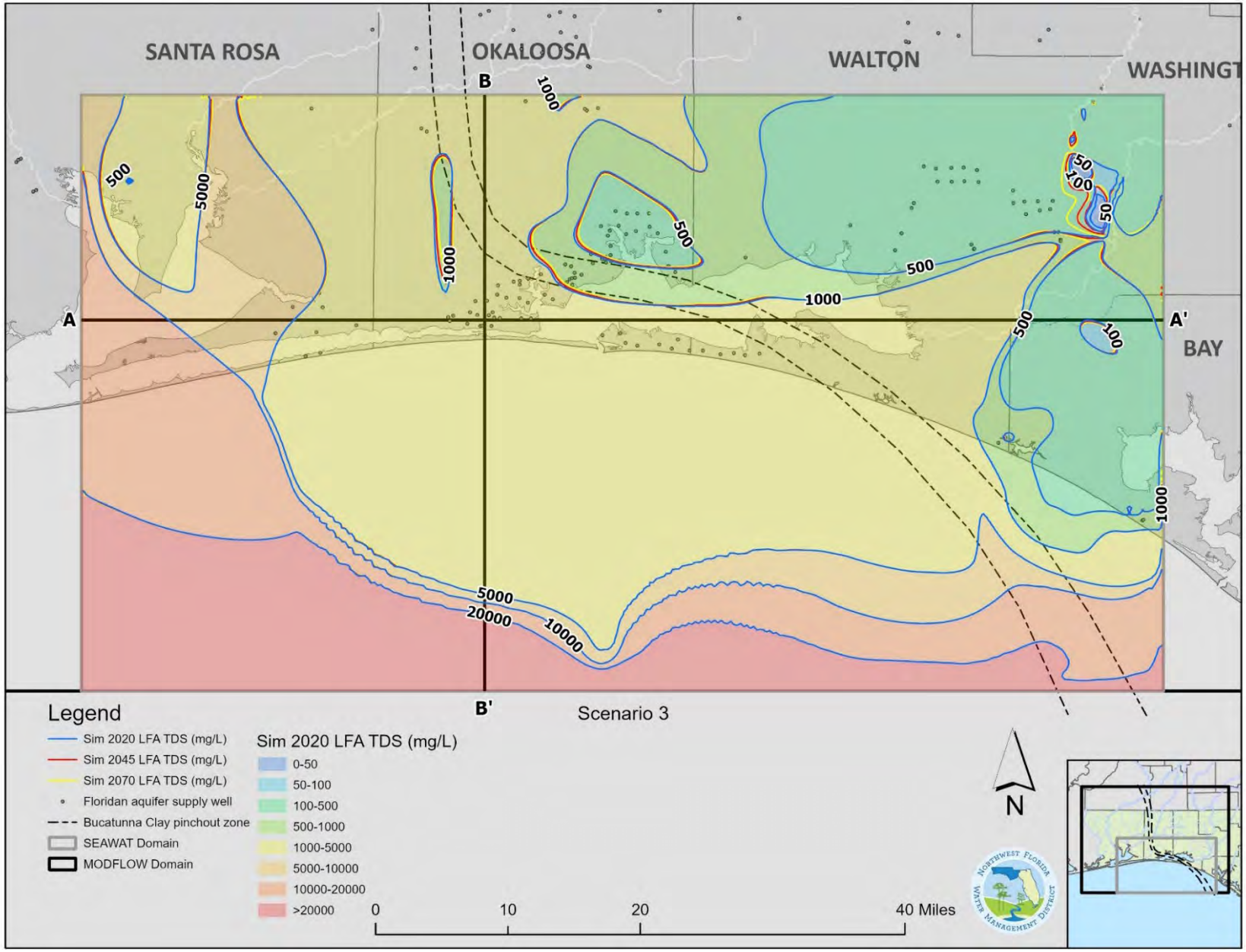

Figure 14. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) in the Lower Floridan/lower undifferentiated Floridan aquifer (2020 – 2100)

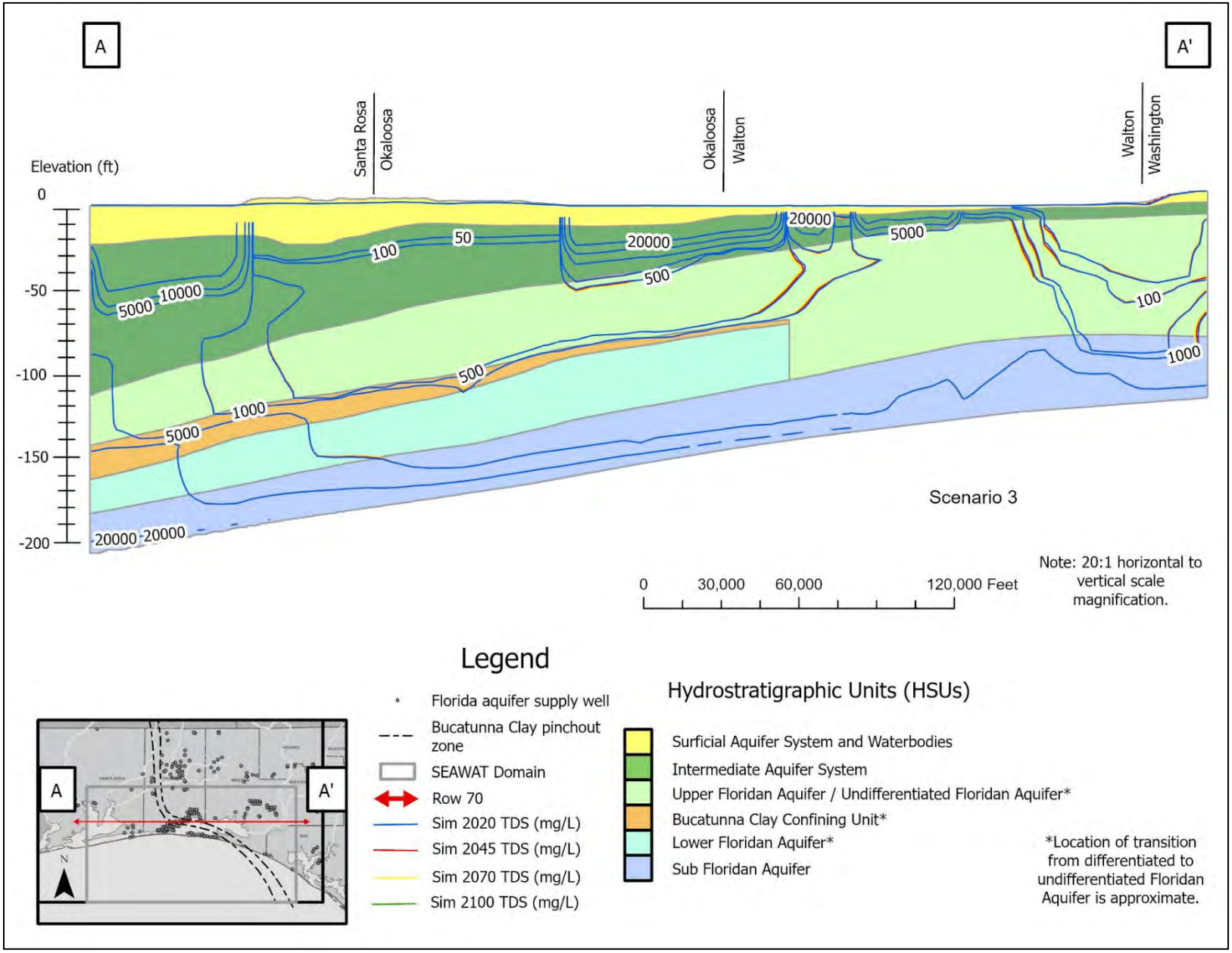

Figure 15. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) along transect A - A' (2020 - 2100)

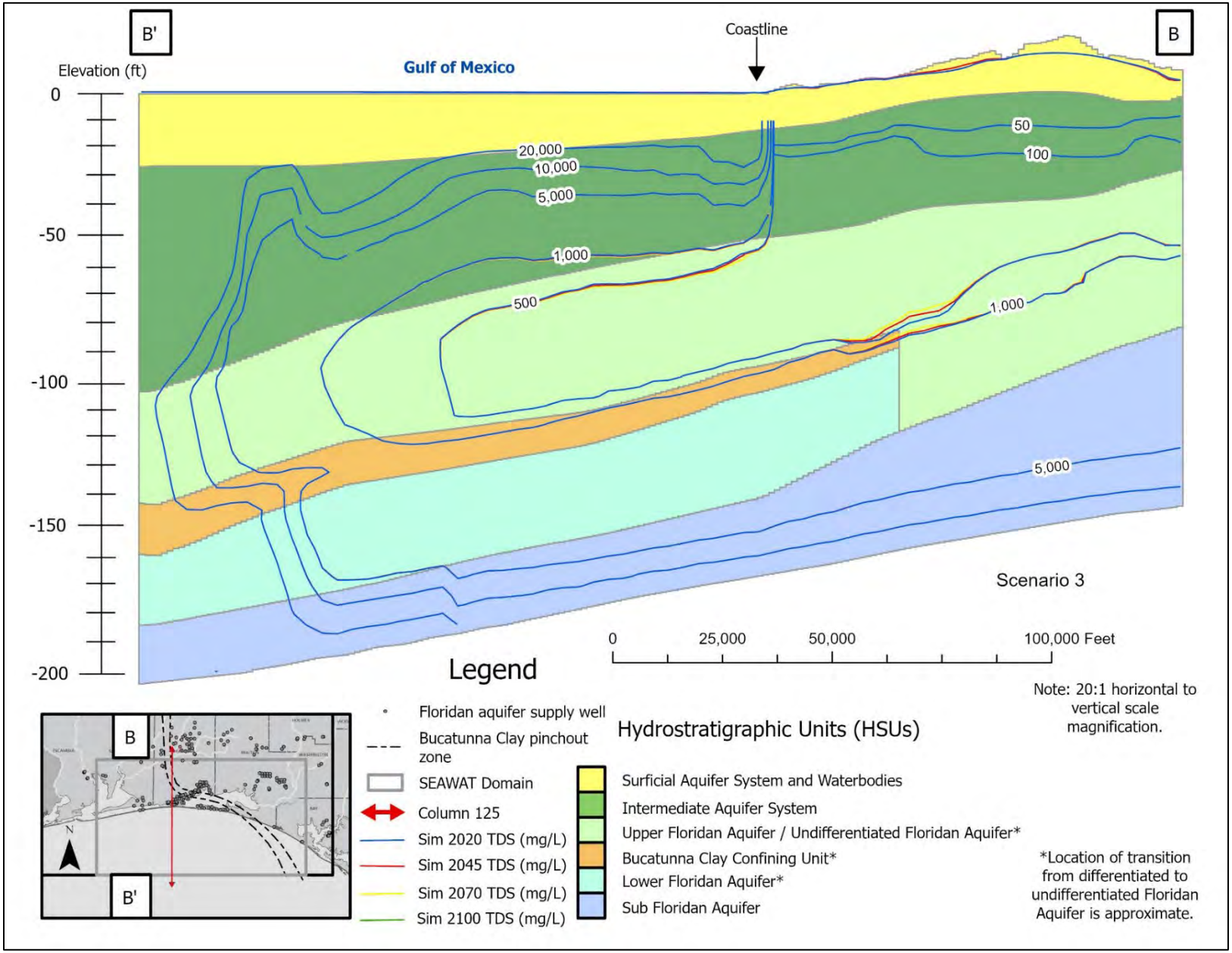

Figure 16. Simulated Total Dissolved Solids iso-concentrations contours (mg/L TDS) along transect B - B' (2020 - 2100)

Appendix D.

List of Water Supply Development Project Options

Project Title	Project Type[1]	Source (for water supply projects)	Project Location	Estimated Water Quantity to be Supplied or Saved (MGD)	Expected Start Date	Expected End Date	Estimated Capital Costs	Estimated Annual O&M Costs	Implementing Entity(s)	Proposed Source(s) of Funding
New Interconnect with SWUCI	Interconnection	Not Applicable	Destin	-	2025	2025	$150,000	-	DWU	In-House
CR399 FRUS Connection	Interconnection	Not Applicable	Navarre	-	2025	2026	$300,000	$10,000	Holley Navarre Water System	Cash/loan
FRUS BP System Upgrades	Interconnection	Not Applicable	MWS Station 3	-	2023	TBD	-	-	Fairpoint Regional Utility System	In-House
Proposed interconnection	Interconnection	Not Applicable	Okaloosa/Walton County Line	-	2026	2027	$50,000	$2,000	Mossy Head	In-House
East County Supplemental Water Main	Interconnection	Not Applicable	-	-	TBD	TBD	-	-	OCWS	State Funding and/or OCWS Budget
West County Northern Bypass Water Main	Interconnection	Not Applicable	-	-	2024	2027	$8,700,000	$50,000	OCWS	State Funding and/or OCWS Budget
Longwood Area Transmission Water Main	Interconnection	Not Applicable	-	-	2025	2026	$1,400,000	$50,000	OCWS	In-House
Auburn Water Interconnections	Interconnection	Not Applicable	-	-	2026	2027	$250,000	$50,000	OCWS	In-House
Water Plant Controls Program Updates	Other	Not Applicable	-	-	2025	2025	$100,000	-	Regional Utilities	-
Research for a New Well	Other Water Supply	Sand and Gravel Aquifer	Franchise Area East	-	TBD	TBD	-	-	Midway Water System	In-House
HWY 85 Water Main Upgrade	Pipeline/Distribution	Not Applicable	Auburn Community	0.10	2025	2035	$1,000,000	$5,000	Auburn Water System, Inc.	In-House
Bill Lundy Rd. Water Main Upgrade	Pipeline/Distribution	Not Applicable	-	0.01	2025	2027	$300,000	$2,000	Auburn Water System, Inc.	In-House
Garden City Rd. Water Main Upgrade	Pipeline/Distribution	Not Applicable	Auburn Community	0.10	2029	2032	$750,000	$5,000	Auburn Water System, Inc.	In-House
HWY 393 Water Main Upgrade	Pipeline/Distribution	Not Applicable	Deer Land Community	0.10	2033	2034	$1,000,000	$5,000	Auburn Water System, Inc.	In-House
Oakhill Rd, Taylor Rd & Lake Silver Rd Water Main Upgrade	Pipeline/Distribution	Not Applicable	Auburn Community	0.10	2040	2043	$1,500,000	$5,000	Auburn Water System, Inc.	In-House
Woodville Rd. Line Replacement	Pipeline/Distribution	Not Applicable	Milton	0.05	2024	2026	$150,000	-	Bagdad Garcon	In-House

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Upgrade Inland Wellfield Capacity Service Area	Pipeline/Distribution	Not Applicable	Destin	-	2028	2031	$1,150,000	-	DWU	In-house
National Seashore Transmission Main Replacement	Pipeline/Distribution	Not Applicable	Gulf Breeze	-	2027	2029	$2,000,000	$5,000	Gulf Breeze Regional Water System/ECUA	Grants and Operating Capital
Millside Waterline Loop	Pipeline/Distribution	Not Applicable	Laurel Hill	0.10	2025	2026	$2,000,000	$4,500	City of Laurel Hill	USDA, SRF, Legislative Appropriations
Ludlum Waterline Loop	Pipeline/Distribution	Not Applicable	Laurel Hill	0.10	2026	2027	$250,000	$1,000	City of Laurel Hill	USDA, SRF, Legislative Appropriations
Stokes Road Waterline Replacement	Pipeline/Distribution	Not Applicable	Laurel Hill	0.10	2027	2028	$600,000	$1,350	City of Laurel Hill	USDA, SRF, Legislative Appropriations
Phase 1 Highway 98 Project	Pipeline/Distribution	Not Applicable	HWY 98	-	2022	2025	$1,300,000	-	Midway Water System	In-House
Phase 2 Highway 98 Project	Pipeline/Distribution	Not Applicable	HWY 98	-	TBD	TBD	$3,163,200	-	Midway Water System	In-House
Main up Grades/Fire Protection	Pipeline/Distribution	Not Applicable	MWS Franchise Area	-	2023	2024	$809,638	-	Midway Water System	In-House/CDBG
Main Upgrades	Pipeline/Distribution	Not Applicable	MWS River Birch	-	2025	2026	$424,920	-	Midway Water System	In-House
Main Connectors	Pipeline/Distribution	Not Applicable	Hickory Shores East/Abercrombie	-	2025	2027	$472,560	-	Midway Water System	In-House
Main Connectors	Pipeline/Distribution	Not Applicable	New Hope/Nantahala Beach RD.	-	2025	2027	-	-	Midway Water System	In-House
24" Source Pipeline, US 331 Plant to US 98	Pipeline/Distribution	Not Applicable	-	-	2025	2025	$1,150,000	-	Regional Utilities	-
24" Source Water Transmission Line Replacement US 98	Pipeline/Distribution	Not Applicable	-	-	2024	2028	$8,000,000	-	Regional Utilities	-
Community Way Water Plant	Pipeline/Distribution	Not Applicable	Community Way Water Plant	-	2025	2025	$80,000	-	Regional Utilities	-
Peach Creek Potable Water Plant	Pipeline/Distribution	Not Applicable	Peach Creek Potable Water Plant	-	2026	2026	$80,000	-	Regional Utilities	-

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Project Title	Project Type[1]	Source (for water supply projects)	Project Location	Estimated Water Quantity to be Supplied or Saved (MGD)	Expected Start Date	Expected End Date	Estimated Capital Costs	Estimated Annual O&M Costs	Implementing Entity(s)	Proposed Source(s) of Funding
24" Line Peach Creek PWP to HWY 98	Pipeline/Distribution	Not Applicable	Peach Creek PWP to HWY 98	-	2025	2025	$450,000	-	Regional Utilities	-
24" Line HWY 98 from CR393 to Thompson Rd	Pipeline/Distribution	Not Applicable	HWY 98 from CR393 to Thompson Rd	-	TBD	TBD	$1,500,000	-	Regional Utilities	-
24" Line HWY 98 from Thompson Rd to Sugar Dr	Pipeline/Distribution	Not Applicable	HWY 98 from Thompson Rd to Sugar Dr	-	TBD	TBD	$760,000	-	Regional Utilities	-
24" Line HWY 98 from Sugar Dr to W CR30A	Pipeline/Distribution	Not Applicable	HWY 98 from Sugar Dr to W CR30A	-	TBD	TBD	$1,900,000	-	Regional Utilities	-
12" Line Chat Holly at Nellie Dr to Blue Mountain Road	Pipeline/Distribution	Not Applicable	Chat Holly at Nellie Dr to Blue Mountain Road	-	2027	2027	$500,000	-	Regional Utilities	-
18" Line HWY 98 to Chat Holley Rd	Pipeline/Distribution	Not Applicable	HWY 98 to Chat Holley Rd	-	2026	2026	$600,000	-	Regional Utilities	-
18" Line HWY 98 from CR393 to Thompson (separate from 24")	Pipeline/Distribution	Not Applicable	HWY 98 from CR393 to Thompson	-	2027	2027	$575,000	-	Regional Utilities	-
Water Main upgrades to allow fire hydrants	Pipeline/Distribution	Not Applicable	Various	-	2026	2026	$500,000	-	Regional Utilities	-
18" Line upgrade from WM CR 30A west to Rosemary Beach	Pipeline/Distribution	Not Applicable	WM CR 30A west to Rosemary Beach	-	2025	2028	$20,000,000	-	Regional Utilities	-
Well House Upgrades	Pump Station	Not Applicable	Laurel Hill	-	2025	2026	$500,000	$1,125	City of Laurel Hill	USDA, Legislative Appropriations
WUP Booster Pump Stations	Pump Station	Not Applicable	Midway	-	2024	2025	$3,500,000	$100,000	Fairpoint Regional Utility System	SRF Drinking water/cash
Master Booster Pump Station	Pump Station	Not Applicable	Navarre	-	2024	2025	$4,200,000	$25,000	Holley Navarre Water System	Cash/loan
CR399 FRUS Booster Pump Station	Pump Station	Not Applicable	Navarre	-	2025	2026	$750,000	$15,000	Holley Navarre Water System	Cash/loan
West Plant Replacement	Pump Station	Not Applicable	Gulf Breeze	-	2024	2026	$1,100,000	$50,000	Gulf Breeze Regional Water System	In-House
SWU Water booster station	Pump Station	Not Applicable	Walton and Okaloosa County	-	2026	2027	$25,000,000	$150,000	SWUCI	Grant/Billing/SRF

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Project Title	Project Type[1]	Source (for water supply projects)	Project Location	Estimated Water Quantity to be Supplied or Saved (MGD)	Expected Start Date	Expected End Date	Estimated Capital Costs	Estimated Annual O&M Costs	Implementing Entity(s)	Proposed Source(s) of Funding
Reclaimed Water Main to DMC S/D	Reuse	Reclaimed Water	Along SR293	4.00	2024	2025	$6,500,000	$300,000	City of Niceville	ARPA/Bond Issue
Reuse piping- North	Reuse	Reclaimed Water	Destin	-	2030	2033	$3,200,000	-	DWU	In-House
Reuse piping- Crosstown Connector	Reuse	Reclaimed Water	Destin	-	2024	2025	$650,000	-	DWU	In-House
Reuse piping- East	Reuse	Reclaimed Water	Destin	-	2024	2024	$300,000	-	DWU	In-House
South Santa Rosa Reuse	Reuse	Reclaimed Water	-	4.35	2021	TBD	$10,600,000	-	City of Gulf Breeze Holley-Navarre WS Santa Rosa County	Grant/Billing
Reclaimed Water Interconnection	Reuse	Reclaimed Water	South Santa Rosa County	-	2025	2026	$3,500,000	$5,000	Gulf Breeze Regional Water System	Grants and Operating Capital
Jerry D. Mitchem WRF Reclaimed Water Supply	Reuse	Reclaimed Water	-	1.00	2025	2030	-	-	OCWS	State Funding and/or OCWS Budget
Shoal River Ranch WRF Program	Reuse	Reclaimed Water	-	1.00	2024	2027	$63,000,000	-	OCWS	State Funding and/or OCWS Budget
RW Reuse Capacities	Reuse	Reclaimed Water	-	-	2024	2028	$4,000,000	-	Regional Utilities	-
Seacrest/Point Washington Piping/Capacity Upgrade	Reuse	Reclaimed Water	Seacrest and Point Washington	-	2027	2028	$3,000,000	-	Regional Utilities	-
Wolfe Creek Sprayfield capacity increase	Reuse	Reclaimed Water	Wolfe Creek	-	2025	2026	$1,250,000	-	Regional Utilities	-
SWU Reuse Expansion	Reuse	Reclaimed Water	Walton County	1.50	2025	2025	$3,500,000	$50,000	SWUCI	Grant/Billing
5MG GST for Reclaimed Water	Storage/Tank	Reclaimed Water	Near SR293	-	2025	2026	$6,000,000	$350,000	City of Niceville	Bond Issue
Chumuckla HWY Ground Storage Tank and Booster Pump	Storage/Tank	Reclaimed Water	Santa Rosa	-	2023	2025	$1,110,725	-	PACE	Grant
RPA Reuse Water Tank at 331	Storage/Tank	Reclaimed Water	CR 331	-	2024	2024	$2,500,000	-	Regional Utilities	-

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SWU Reuse Storage	Storage/Tank	Reclaimed Water	Okaloosa County	-	2025	2026	$4,000,000	$50,000	SWUCI	Grant/Billing
Tank #4 Replacement	Storage/Tank	Not Applicable	Auburn Community	-	2043	2045	$2,000,000	$15,000	Auburn Water System, Inc.	In-House
Elevated Storage Tank	Storage/Tank	Not Applicable	Auburn Community	-	2024	2025	$1,650,000	$12,000	Auburn Water System, Inc.	In-House
1MG Elevated Water Tank	Storage/Tank	Not Applicable	NE Niceville	-	2025	2026	$6,000,000	$50,000	City of Niceville	Water Extension Fund
Upgrade Water Booster Station	Storage/Tank	Not Applicable	At Tank #3	-	2025	2025	$400,000	$150,000	City of Niceville	Water Extension Fund
Water Tower Kelly Plantation	Storage/Tank	Not Applicable	Destin	-	2024	2025	$3,000,000	$35,000	DWU	SRF Drinking Water
Tank 3 Replacement	Storage/Tank	Not Applicable	Harold	-	2025	2026	$2,000,000	-	East Milton Water System	In-House
West Elevated Tank Replacement	Storage/Tank	Not Applicable	Gulf Breeze	-	2025	2026	$1,500,000	$20,000	Gulf Breeze Regional Water System	In-House
1MG Elevated Tank	Storage/Tank	Not Applicable	Navarre	-	2023	2025	$4,029,900	$50,000	Holley Navarre Water System	In-House
Elevated Tank No. 3	Storage/Tank	Not Applicable	Holt	-	2025	2026	$2,100,000	$15,000	Holt Water Works, Inc	FDEP SRF
Water tank #4	Storage/Tank	Not Applicable	Walton County	-	2028	2029	$500,000	$5,000	Mossy Head	Finance
Water Storage Tanks Inspected/Repaired/ Painted	Storage/Tank	Not Applicable	-	-	Ongoing	Ongoing	$9,000,000	$50,000	OCWS	In-House
Shoal River Ranch Water Storage Tank	Storage/Tank	Not Applicable	-	-	2028	2029	$3,500,000	$50,000	OCWS	In-House
Mid County Water Storage Tank	Storage/Tank	Not Applicable	-	-	TBD	TBD	$3,500,000	$50,000	OCWS	In-House
West County Water Storage Tank	Storage/Tank	Not Applicable	-	-	2024	2025	$3,000,000	$50,000	OCWS	In-House
Water Storage Tanks Fill Valve Replacement	Storage/Tank	Not Applicable	-	-	2024	2025	$160,000	$5,000	OCWS	In-House
5 MG Ground Storage Water Tank (West)	Storage/Tank	Not Applicable	-	-	TBD	TBD	$5,600,000	-	Regional Utilities	-

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Flex Net Metering system	Water Conservation: Billing, Database, AMR upgrades	Not Applicable	Entire Distribution System	0.01	2024	2030	$550,000	$10,000	Auburn Water System, Inc.	In-House
Edmunds Billing Software	Water Conservation: Billing, Database, AMR upgrades	Not Applicable	Main office		2024	2024	$200,000	$80,000	Holley Navarre Water System	In-House
AMR/Flex Net	Water Conservation: Billing, Database, AMR upgrades	Not Applicable	MWS Franchise Area	-	2022	2030	$400,000	$13,500	Midway Water System	In-House
UMS Mobile Software	Water Conservation: Billing, Database, AMR upgrades	Not Applicable	MWS Office	-	2024	2024	$15,245	-	Midway Water System	In-House
Public Information on Water Conservation	Water Conservation: Education or Smart Bill	Not Applicable	-	-	Ongoing	Ongoing	N/A	$6,000	OCWS	In-House
Well Maintenance	Water Conservation: Maintenance	Not Applicable	Destin	-	Annual	Annual	$100,000	-	DWU	In-House
Pigging/ pressure pipe testing program	Water Conservation: Maintenance	Not Applicable	Destin	-	Annual	Annual	$150,000	-	DWU	In-House
Azalea Drive Neighborhood Distribution Upgrade	Water Conservation: Maintenance	Not Applicable	-	-	2023	2024	$748,000	$15,700	City of Mary Esther	State Revolving Fund; utility revenues
South of US 98 Mains Replacement	Water Conservation: Maintenance	Not Applicable	-	-	2024	2025	$3,349,000	$70,300	City of Mary Esther	State Revolving Fund; utility revenues
Large meter Replacement	Water Conservation: Meter Replacement	Not Applicable	Entire Distribution System	0.01	2024	2025	$30,000	$1,000	Auburn Water System, Inc.	In-House
Residential Meter Replacement	Water Conservation: Meter Replacement	Not Applicable	Entire Distribution System	0.01	2024	2030	$300,000	$5,000	Auburn Water System, Inc.	In-House
System Upgrade	Water Conservation: Meter Replacement	Not Applicable	Milton	-	2018	-	$750,000	-	Bagdad Garcon	In-House
SCADA System Upgrades	Water Conservation: Other	Not Applicable	MWS Franchise Area	-	2024	2025	$38,000	$5,000	Midway Water System	In-House
Well #6 upgrade	Water Supply	Floridan Aquifer	Deer Land Community	0.30	2030	2032	$300,000	$15,000	Auburn Water System, Inc.	In-House
New Well #9	Water Supply	Floridan Aquifer	Auburn Community	0.30	2032	2034	$1,250,000	$15,000	Auburn Water System, Inc.	In-House

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Well #4 Replacement	Water Supply	Floridan Aquifer	Auburn Community	0.50	2040	2042	$1,300,000	$20,000	Auburn Water System, Inc.	In-House
New Well 5R	Water Supply	Floridan Aquifer	Destin	1.44	2024	2024	$3,000,000	$50,000	DWU	SRF Drinking Water
New Well and Water Plant No. 4	Water Supply	Floridan Aquifer	Holt	0.36	2025	2026	$2,000,000	$25,000	Holt Water Works, Inc	FDEP SRF
Town of Jay Well #4	Water Supply	Floridan Aquifer	Jay	0.10	2026	2027	$750,000	$50,000	Town of Jay	USDA RD, Legislature, SRF
New Water Supply Well	Water Supply	Floridan Aquifer	North of Niceville	1.00	2025	2026	$3,500,000	$50,000	City of Niceville	Water Extension Fund
Seminole Well	Water Supply	Floridan Aquifer	-	0.33	2024	2025	$3,300,000	$50,000	OCWS	In-House
Shoal River Ranch Well	Water Supply	Floridan Aquifer	-	0.72	2024	2026	$3,300,000	$50,000	OCWS	State Revolving Fund; OCWS O&M Budget
Antioch Well Replacement	Water Supply	Floridan Aquifer	-	0.25	2025	2026	$3,300,000	$50,000	OCWS	State Revolving Fund; OCWS O&M Budget
Office Well Replacement	Water Supply	Floridan Aquifer	-	0.25	2027	2029	$3,300,000	$50,000	OCWS	State Revolving Fund; OCWS O&M Budget
Northgate Well Replacement	Water Supply	Floridan Aquifer	-	0.80	2027	2029	$3,300,000	$50,000	OCWS	State Revolving Fund; OCWS O&M Budget
Water Well Rehab	Water Supply	Floridan Aquifer	-	-	Ongoing	Ongoing	$3,000,000	$50,000	OCWS	In-House
Additional Well in Mid County	Water Supply	Floridan Aquifer	-	0.33	TBD	TBD	$4,000,000	$50,000	OCWS	In-House
EM Well 7	Water Supply	Sand and Gravel Aquifer	East Milton	0.40	2024	2025	$1,000,000	$40,000	East Milton Water System	In House
EM Well 8	Water Supply	Sand and Gravel Aquifer	East Milton	0.50	2029	2030	$1,200,000	$45,000	East Milton Water System	In House
EM Well 2A	Water Supply	Sand and Gravel Aquifer	East Milton	0.50	2034	2035	$1,400,000	$50,000	East Milton Water System	In House
New Well #8	Water Supply	Sand and Gravel Aquifer	East Milton	1.00	2025	2028	$5,000,000	$180,000	Fairpoint Regional Utility System	SRF Drinking water/cash
New Well #9	Water Supply	Sand and Gravel Aquifer	East Milton	1.00	2025	2028	$5,000,000	$180,000	Fairpoint Regional Utility System	Grant funds/cash

[1] Water conservation and alternative water supply development projects meet the goals of this RWSP and are therefore preferred RWSP options. Floridan aquifer groundwater projects have been identified by utilities and, although not preferred, may still be options for inland areas. Project sponsors will need to conduct or demonstrate detailed technical and financial feasibility reviews including engineering and resource assessments as needed to support permitting and funding requirements. Furthermore, any proposed Floridan aquifer projects in the Region II WRCA are subject to the constraints stipulated in s. 40A-2.802, F.A.C.

Project Title	Project Type[1]	Source (for water supply projects)	Project Location	Estimated Water Quantity to be Supplied or Saved (MGD)	Expected Start Date	Expected End Date	Estimated Capital Costs	Estimated Annual O&M Costs	Implementing Entity(s)	Proposed Source(s) of Funding
Shoal River Off-Line Reservoir & Surface Water Treatment Plant	Water Supply	Surface Water	-	5.00	TBD	TBD	$200,000,000	$500,000	OCWS	State Funding and/or OCWS Budget
Well #12	Water Supply	-	-	-	2024	2024	$400,000	-	Regional Utilities	-
Well #13	Water Supply	-	-	-	2026	2026	$650,000	-	Regional Utilities	-
Well #14	Water Supply	-	-	-	2028	2028	$650,000	-	Regional Utilities	-
Total				**27.71**			**$517,546,188**	**$3,625,475**		

[1] Water conservation and alternative water supply development projects meet the goals of this RWSP and are therefore preferred RWSP options. Floridan aquifer groundwater projects have been identified by utilities and, although not preferred, may still be options for inland areas. Project sponsors will need to conduct or demonstrate detailed technical and financial feasibility reviews including engineering and resource assessments as needed to support permitting and funding requirements. Furthermore, any proposed Floridan aquifer projects in the Region II WRCA are subject to the constraints stipulated in s. 40A-2.802, F.A.C.

Appendix E.

Conservation Potential Options

Water Conservation

Water conservation is the prevention and reduction of wasteful or unreasonable uses of water to improve efficiency of use. The overall water conservation goal of the state is to prevent and reduce wasteful, uneconomical, impractical, or unreasonable use of water resources. [Section 373.227(1), F.S.] Improving water use efficiency can defer or limit expenditures needed for water resource and supply development and enhances the long-term sustainability of water resources and associated natural systems. A wide variety of water conservation strategies and activities may be employed, tailored to individual utilities and communities based on both regional and local challenges and characteristics. Examples specific to public supply include water loss abatement programs, public education and outreach programs, plumbing fixture retrofits, landscaping best management practices, and inclining block rate structures. Innovative practices and facility designs can also be effective for other water use categories, including Agriculture, Commercial/Industrial/Institutional, and Power Generation. Water conservation programs and practices are typically implemented by local governments, utilities, and self-supplied water users, with technical and/or financial assistance available from regional, state, and federal entities including the District.

As part of the 2024 Region II Regional Water Supply Plan Update, the District evaluated the potential for implementation of additional water conservation strategies within the region. The focus was primarily on quantifying water conservation potential within the public supply sector. The District contracted with Hazen and Sawyer to identify cost effective measures which could be implemented based on the Alliance for Water Efficiency (AWE) water conservation tracking tool. Water conservation strategies currently being implemented by public supply utilities within Region II as well as historical per capita water use trends were considered as part of this evaluation. The following sections summarize existing water conservation practices within Region II as well as a description of methods utilized to quantify water conservation potential from proposed additional measures using the AWE tool.

Water Conservation Initiatives in Region II

Most public supply utilities within Region II have implemented water conservation measures, substantially due to regulatory requirements and incentives established within the coastal Region II Water Resource Caution Area (WRCA). Water conservation efforts vary significantly by implementing utility, based largely on the extent of conservation requirements in specific permit conditions, although some utilities have implemented programs exceeding set permit conditions. For this report, the primary data source for evaluating currently implemented water conservation programs is through conservation related reporting requirements submitted to the District annually by the utilities within Region II. Individual utility webpages and additional literature were also used to determine ongoing efforts. To assess current conservation efforts in Region II, annual conservation and compliance reports submitted to the District from 2020 to 2022 were examined from local governments and public supply utilities. Strategies currently being pursued by municipal utilities in Region II are summarized in Table 1.

Water conservation projects and initiatives currently being implemented include:

- Water Resource Caution Area (WRCA): WRCAs are geographic areas designated by the Governing Board that are currently experiencing or expected to experience critical water resource issues within the next twenty years. Currently, the coastal area of Region II has been placed under a WRCA and is subject to permitting requirements requiring additional conservation measures to reduce water demand and promote efficient use of the area's water resources.
- Annual Water Loss Audit: Water losses are calculated by the difference between the quantity of water pumped into the distribution system with the amount of water billed to customers as well as other known uses such as firefighting and flushing. Water losses generally reflect leakage within the distribution system as well as deficiencies in metering. Several utilities follow the District's recommendation to utilize either the American Water Works Association (AWWA) or Florida Rural Water Association (FRWA) water audit methodology, which both provide standard terminology/assumptions and free audit software to assist utilities with performing water audits.
- Water Loss Target: Water loss targets are an acceptable set upper limit of total system losses just due to leakage. Water lost due to leakage is referred to as "real losses" by the AWWA. Generally, a loss target of less than or equal to 10% of total water introduced into the distribution system is set within CUP conditions, however, the number can vary based on factors such as age of the system or local terrain.
- Leak Detection: Leak detection programs enable utilities to detect and repair leaks in a timely manner. Detecting leaks as soon as possible reduces lost utility revenue and total water loss. Leak detection employed in Region II ranges from visual inspections to sonic leak detection devices.
- Meter Calibration and Replacement: Meter calibration and replacement programs are designed to keep distribution system and production well flow meters as well as customer meters monitoring water use at an accurate level. Meters need to be tested and calibrated on a routine basis to ensure accuracy. When not calibrated correctly, meters will calculate the amount of water used incorrectly leading to unaccounted for losses during an audit. Production wells typically require routine calibration and 95% accuracy.
- Gross Per Capita Target: Gross per capita water use (annual average water use per day / average annual residential population) provides a consistent method for evaluating water use efficiency across utilities. Gross per capita targets are most commonly set by the District at 100 or 110 gallons per day within CUP conditions.
- Conservation Rate Structure: Conservation rate structures are implemented with the intent of setting rates which encourage water conservation. The most common conservation rate structure is the implementation of increasing price blocks, where the cost per gallon increases as water usage increases. To be considered a conservation rate structure at least two different price blocks must be present for the utility.
- Tap Fee: Tap fees are costs placed on the consumer to create (tap) additional water lines from the existing distribution system based upon size of the anticipated new service line. Inclining tap rates

encourage water conservation by ensuring properly sized meters and service lines are installed based on the customers anticipated water demand, reducing the potential for inefficient use and meter inaccuracies/under-registration.

- Conservation guidelines, public awareness campaigns, and education: These measures predominately include water conservation brochures, water saving tips printed on bills, water use calculators on websites, visits to local schools to discuss water conservation, and public conservation outreach during local events.
- Florida Friendly Landscaping or Conservation Landscaping: Florida Friendly Landscaping (FFL) as defined in Section 373.185 F.S., Florida Friendly landscape ordinances should include elements such as landscape design and maintenance standards which promote water conservation, identification of prohibited exotic species, maximum percentage of impervious surface, standards for preserving exiting native vegetation, etc. Florida Friendly Landscaping water conservation is primarily driven by reductions in irrigation due to drought tolerant native vegetation.
- Irrigation Efficiency Orders: Pursuant to Section 373.185 F.S., the District has encouraged several utilities within the Coastal Region II WRCA to pursue adoption of irrigation efficiency ordinances within local or county land development codes. Irrigation efficiency ordinances refer to seasonal or time of day/day of week watering restrictions which may be adopted as a local government ordinance, and which are typically utilized during drought conditions. Watering during dawn and dusk reduces water loss from evaporation and keeps water in target soil zones.
- Plumbing Retrofit Program: Plumbing retrofit programs by utilities offer newer and more water efficient fixtures such as showerhead flow restrictors, faucet aerators, and low flow toilet fixtures. Many of the utilities in Region II offer these kits free at their buildings for their customers to pick up. However, due to the large span of time since the program began and the addition of new houses with high efficiency plumbing fixtures, the amount of the kits being claimed has declined over the past few years.
- Separate Irrigation Meters: Separate irrigation meters exclusively meter water used for outdoor watering and irrigation. Separate meters for residential properties provide several benefits including accurate assessment of outdoor use, as well as indoor use from the regular meter measuring domestic uses. Due to current irrigation practices and the utilization of shallow irrigation wells, the use of separate irrigation meters has declined over recent years.
- Augmentation of Water Bodies for Aesthetic use: CUP conditions for several utilities within Coastal Region II WRCA prohibit augmentation of water bodies for aesthetic/irrigation uses from potable supply. This predominantly includes public areas and golf courses which must utilize reuse, surface, or stormwater first before turning to any groundwater source. Utilities within the WRCA cannot use potable water sources for augmentation of water bodies for aesthetic purposes.
- Reuse: Utilities in Region II and the District continue to work on implementing Reuse water projects to offset Floridan Aquifer non-potable use. The most common offsets are for irrigation and aesthetic uses.

Table E-1. Existing Water Conservation Best Management Practices in Region II

The number of utilities reporting implementation were taken from conservation and compliance data from 2020 to 2022 and from local ordinances. Over the three years examined eight utilities did not submit either a conservation report, compliance report, or both. When this occurred, the utility was marked as not reporting implementation of those conservation measures. Additionally, as a water wholesaler, Fairfield Regional Utilities Service was not included in the table above, as the utilities they sell to report their own conservation measures.

Water Conservation Best Management Practice	Number (Percent) of Utilities in Region II Reporting Implementation	Comments
Service Area in WRCA	16 (43%)	Permit contains at least one service area in the WRCA
Annual Water Loss Audit	29 (78%)	Methods vary widely, some use AWWA or FRWA audit.
Water Loss Target	20 (54%)	Meeting Water Loss Target (Generally <10% goal)
Leak Detection Program	15 (41%)	Survey frequency and methods/technology varies widely.
Meter Calibration/Replacement	13 (35%)	May include both customer service and supply meters.
Residential Per Capita Target	34 (92%)	Generally either 110 gpcd or 100 gpcd.
Conservation Rate Structure	26 (70%)	Number and size of tiers varies widely.
Inclining Tap Rates (Impact Fees)	15 (41%)	Generally based on meter size.
Educational Materials	26 (70%)	Most common media are pamphlets, utility websites, and inserts on bills.
Florida Friendly Landscaping	18 (49%)	Ordinances for Florida Friendly Landscapes or Xeriscapes
Public Outreach	10 (27%)	Presentations at schools, public workshops and events, etc.
Irrigation Efficiency Ordinance	15 (41%)	Generally in local or county land development codes.
Plumbing Fixture Retrofits	11 (30%)	Primarily low flow showerhead and faucet retrofit kits.
Evaluation and Management of Separate Irrigation Meters	4 (11%)	Establish adequate rate structure/tap fees for separate irrigation meters to encourage efficient use. Also may include adjustment of policies for separate meters and/or abandonment of separate irrigation meters.
Augmentation of Water Bodies for Aesthetic/Irrigation Uses Excluded From Potable Supply	5 (14%)	May also include restricting potable water for irrigation in new developments.
Utilize Available Reuse Supplies to Offset Floridan Aquifer Non-Potable Use	11 (37%)	Primarily to offset aesthetic/irrigation uses.
Total	**37 (100%)**	**37 public supply utilities are within Region II**

Public Supply Water Conservation Potential in Region II

In order to quantify the public supply water conservation potential within Region II, the District contracted with Hazen and Sawyer to identify cost effective measures which could be implemented using the Alliance for Water Efficiency (AWE) water conservation tracking tool. The AWE Tracking Tool is an analytical platform for defining a suite of potential programs and measures and for estimating water savings, costs, and benefits. The tool comes equipped with default savings rates that apply to most urban water conservation strategies, which are tailorable with local information where available.

Water conservation plans were developed for each county within Region II, to identify cost effective water savings opportunities during the planning horizon (2025-2045). All identified measures less than or equal to $4/kgal were considered cost effective and included as viable options for implementation. Water conservation savings determined for this evaluation reflect expected water conservation to be achieved, factoring in assumed participation or penetration rates from the eligible customer base for each possible conservation measure evaluated. With increased participation or incentives, further conservation potential could be realized.

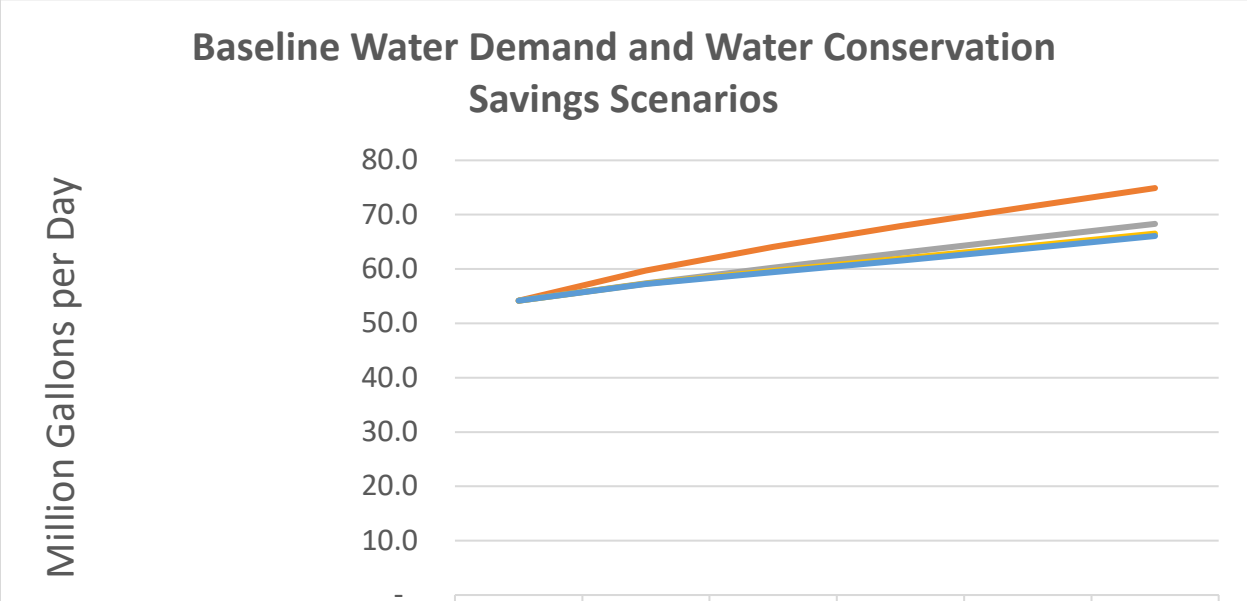
Hazen and Sawyer with input from District staff, determined water demand projections for the planning horizon from 2025-2045 based on three tiers of achievable water demand reductions from various levels of water conservation measures using the Alliance for Water Efficiency's (AWE) conservation tracker tool. The AWE conservation tracker tool uses county property appraisal data, current and projected populations, water demands, and metered connections to determine water demand reductions attributable to passive water conservation as well as active conservation achieved from various conservation programs and strategies based on an estimate of the eligible market for each measure along with default savings rates contained within the tool. Some of the conservation programs for single and multi-family homes include toilet fixture upgrades (ultra-low flow and high efficiency), washer rebates, irrigation upgrades such as nozzle replacement and smart controllers. Other programs specifically designed for the industrial, commercial, and institutional markets include ultra-low and high efficiency toilet upgrades, urinal replacements (1/8 gallons per flush and waterless), commercial kitchen dishwasher, spray rinse valve, and food steamer rebates, large landscape irrigation nozzle replacement, irrigation controllers, and landscape water audits.

The baseline demand projections were derived from the 2023 Water Supply Assessment, which assumes a fixed per capita water use rate. Passive water conservation consists of the amount of water saved from the natural upgrading of appliances from older, less water efficient models when they have reached the end of their lifespan with newer, more efficient models. Passive water conservation in this context is referred to as tier one savings. Passive tier one savings are estimated to reduce demand in 2045 by 4.3 mgd.

Active water conservation includes utility or local government incentivized programs in addition to that achieved by passive conservation alone. Active water conservation is comprised of two tiers: tier two and tier three assuming different levels of customer participation or penetration. Tier two active water conservation penetration rates compared to passive conservation, representing a feasible amount of increased participation and savings. The tier two penetration rates vary from 5% to 25% depending on the program examined and available measures (fixtures) in Region II. Active conservation tier two savings

over the entire planning period of 2025-2045 are estimated to be 7,874 million gallons reducing 2045 demands by an additional 1.7 mgd. The total expenditure over the twenty-year planning horizon to fully implement all tier 2 programs is around $16.7 million for all three counties in Region II.

Tier three water conservation assumed a higher penetration rate and, thus, the most water conservation savings. However, tier three active saving would require much higher participation rates than are feasible without considerable investment into enacting these programs to such a high degree. Tier three penetration rates predominantly increase by 10% per program from the tier 2 penetrations rates discussed above. Active conservation tier three savings over the entire planning period of 2025-2045 are estimated to be 14,531 million gallons and are also estimated to reduce demand in 2045 by an additional 2.1 mgd compared to tier 1 or an additional 0.4 mgd compared to tier 2 savings. The total expenditure over twenty years to fully implement all programs is around $33 million.



	2020	2025	2030	2035	2040	2045
Baseline Demand	54.2	59.7	64.1	67.9	71.5	74.9
Tier 1: Passive Only Demand	54.2	57.4	60.3	63.0	65.7	68.3
Tier 2: Passive and Active Demand	54.2	57.3	59.6	61.9	64.2	66.5
Tier 3: Passive and Active Demand	54.2	57.2	59.4	61.5	63.8	66.1

Figure E-1. The baseline water demand and post conservation demands through the 2020-2045 planning period provided by Hazen and Sawyer from their AWE water conservation tracker analysis.

Due to the relatively small amount of remaining water savings compared to expenses found when conducting the AWE water conservation tracker tool analysis between tiers two and three, the results suggest tier two passive and active conservation is the optimal route at this time. Implementation of tier two passive and active water conservation has an estimated average cost of $840,000 per year over the

planning period and would reduce daily demand by an additional 1.7 MGD by 2045 compared to passive conservation alone.

The District continues to encourage water conservation through public information and outreach. Water conservation resources for homeowners, business, agriculture, and industry are provided on the District's website. More targeted outreach is at times in the form of responding to individual requests or providing information at public events. Public information and outreach activities are expected to continue through the planning horizon 2025-2045.

Potential funding sources include USDA Rural Development, TRIUMPH, and state grants and appropriations.

Appendix F.

Final Order of the NWFWMD Governing Board

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