

State of Florida



Public Service Commission

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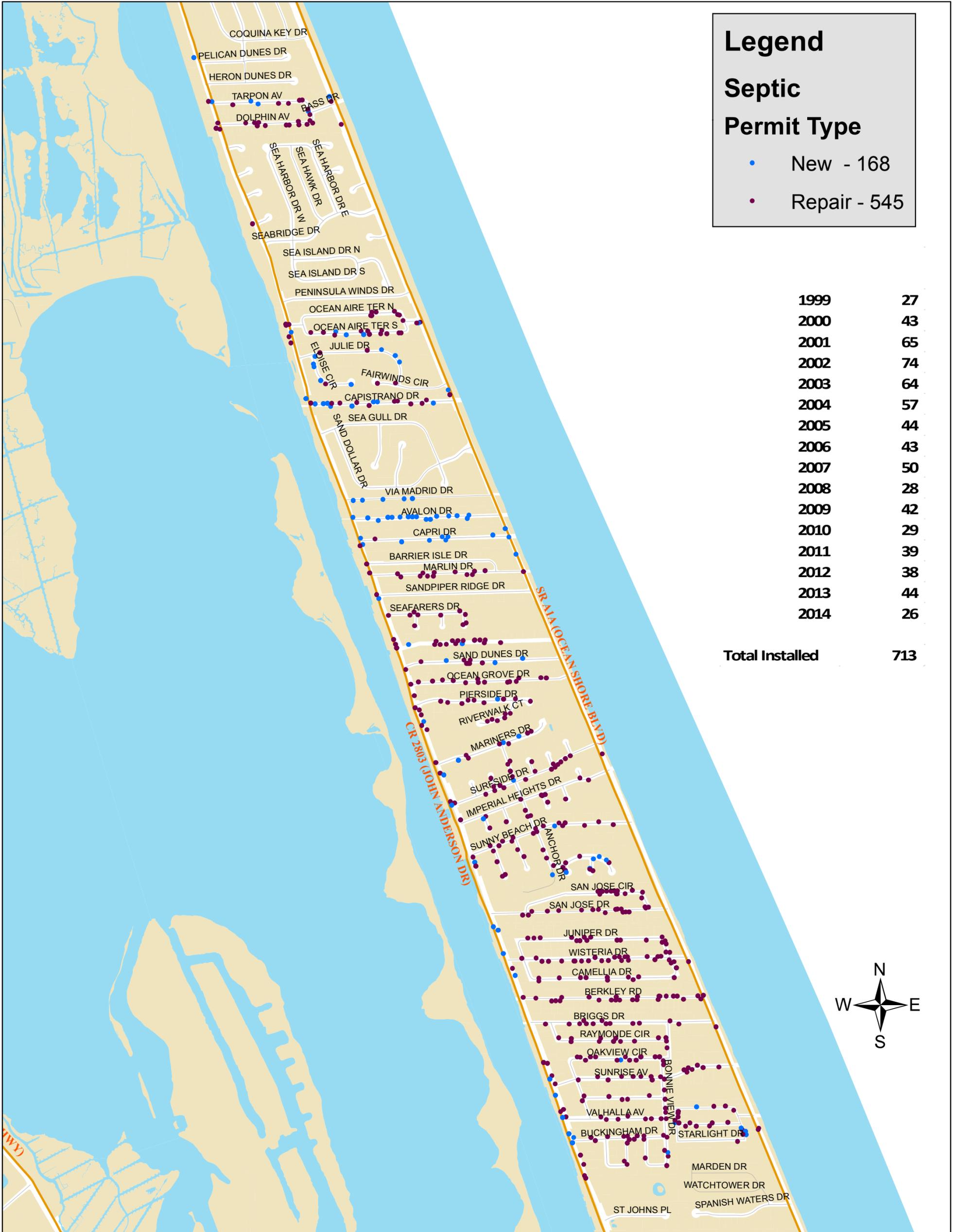
-M-E-M-O-R-A-N-D-U-M-

DATE: March 20, 2015
TO: Carlotta S. Stauffer, Commission Clerk, Office of Commission Clerk
FROM: Clayton Lewis, Engineering Specialist, Division of Engineering *CKL*
RE: DN 130209-SU – Application for expansion of certificate (CIAC) (new wastewater line extension charge) by North Peninsula Utilities Corp.

Please file the attached correspondence in the above mentioned docket file.

Thank you.

Septic North Peninsula Vicinity, East Volusia County, FL 2014



Legend

Septic Permit Type

- New - 168
- Repair - 545

1999	27
2000	43
2001	65
2002	74
2003	64
2004	57
2005	44
2006	43
2007	50
2008	28
2009	42
2010	29
2011	39
2012	38
2013	44
2014	26

Total Installed 713





Report on the status of sewage disposal and collection in Volusia County, Florida

November 2013

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Mission:

To protect, promote & improve the health of all people in Florida through integrated state, county & community efforts.



Rick Scott
Governor

John H. Armstrong, MD, FACS
State Surgeon General & Secretary

Vision: To be the Healthiest State in the Nation

Report on the status of sewage disposal and collection in Volusia County, Florida – 2013

Introduction

In 1999, Volusia County Health Department environmental health staff prepared a report on the status of sewage disposal in the county. Staff analyzed geographic areas utilizing a formula to determine if the area would be better suited for septic system use or connection to a sewer system. This updated report will use the same formula to review the areas that were analyzed 14 years ago and also review a few more areas of the county. It is estimated that about 55 – 60% of the septic systems in the county have been included in this report. Some rural areas of the county were left out of this report due to the fact that they are located far from existing sewer lines and have large sized properties, some of those rural areas include Seville, Pierson and Samsula.

This report provides objective environmental public health information that can be used by local planners, elected officials, utility directors and community stakeholders to help make informed decisions on future planning of sewer expansion. On page 14 of the report is a table that shows the objective ranking of the geographic areas. Many of the areas are shaded light brown categorized as “needs more investigation”. Municipalities would need to study or investigate that particular area in more detail to help decide whether or not to bring sewer into that area.

In the 14 years since the original report was prepared approximately 17,773 new systems were installed in the county, conversely 4,327 systems were abandoned. In 1999, it was estimated that there were approximately 80,000 septic systems. That totals 93,446 septic systems identified in Volusia County. During the time when these new septic systems were added, an additional 15,098 existing septic systems were repaired or replaced. Approximately 35 percent of all the septic systems have been installed or replaced within the past 14 years. These new installations utilize modern septic technology to properly dispose of the sewage. Requirements such as better separation of drainfield to the high water table, two compartment septic tanks and filters in the septic tanks help to properly treat the sewage.

Septic facts

- 80,000 septic systems identified in Volusia County in 1999
- 17,773 new systems installed in Volusia County since 1999
- 4,327 systems abandoned since 1999
- 93,446 combined total of septic systems in Volusia County to date
- 15,098 existing septic systems were repaired or replaced since 1999

Using this report

This report is an objective review of geographic areas in Volusia County. It is intended to provide a scientific review of septic systems for future planning, to ensure the continued protection of public health. The report is not intended as a statement of the efficacy of septic systems in lieu of other sewerage systems.

In trying to provide objectivity to the central sewer versus onsite system debate, the environmental health office developed a sewage recommendation index in which consideration is given to soil permeability, effect on surface water bodies, the age of the in-ground systems, protection of ground water, connection to regulated water supplies, and density of land use. The formula is as follows:

$$\frac{A + B + C + D + E}{F}$$

Where A = Permeability index
 B = Water body index
 C = Average age of system index
 D = Water table index
 E = Potable water supply index
 F = Density index

The indexes are calculated and assigned a weighted factor and then added together. Since density is the most important issue of onsite systems, it is given a reverse index and is the denominator.

The indexes are as follows:

Permeability Index		
Average permeability (from Table 16 of Volusia Soil Survey)	Index	Examples of soils
> 20" per hour	5	Astatula fine sand, Canaveral sand
6.0"-2.0"	4	Apopka fine sand, Myakka fine sand
2.0"-6.0"	3	Chobee fine sandy loam, Daytona sand
0.6"-2.0"	4	Myakka Variant fine sand, Gator muck
0.2"-0.6"	5	Bluff sandy clay loam

Note that the index is high for excessively drained and poorly drained soils. The actual permeability for a particular site depends as much upon the site as it does the soil type.

Water Body Index	
Proximity to surface water	Index
Adjacent to food production (shellfish harvesting)	5
Adjacent to protected waterways or public beaches	4
Adjacent area drains to surface water body	3
Not adjacent to (nor flows to) waters of concern	1

This index is high for parcels of land where a water body is adjacent and low for areas far from a water body. Ideally you would not want a septic system near a body of water where food is harvested such as clams and oysters.

Average Age of System Index	
Average age of system	Index
> 26 years	5
17 to 26 years	3
11 to 16 years	2
1 to 10 years	1

The age of the septic system is important due to the fact that newer septic systems would have a two compartment tank and a filter to help produce a better treated effluent.

Water Table Index	
Depth to water table	Index
Above ground surface	5
0" to 23"	4
24" to 35"	3
36" to 48"	2
>48"	1

The further the depth to the ground water under a septic system the lower the index is. More filtration of chemicals, nutrients and pathogens occur in dry soils under the septic system drainfield.

Potable Water Supply Index	
Potable water status	Index
Private wells used	5
Mixture of private wells and public water	3
Public water provided	0

Private potable water wells close to a septic system have a higher index. The farther away the well is from a septic system the less chance there is of contaminating the water supply. Normally large municipal wells are constructed away from septic systems and are drilled deeper than a private well.

Density Index	
Density (useable area)	Index
1 unit or less per acre	5
2 units per acre	4
3 units per acre	3
4 units per acre	2
5 units per acre	1
6 or more units per acre	0.5

A higher index rating is assigned to larger parcels of land with fewer septic systems per acre. An area that has six or more homes per acre (higher density) would have the smallest index rating.

Using this formula, the worst scenario would be:

$$\frac{5 + 5 + 5 + 5 + 5}{0.5} = 50.00$$

For example, a subdivision that has a soil (permeability index) which percolates extremely fast or slow, is adjacent to a shellfish harvesting water body, was built over 26 years ago, has a high ground water table, is served by individual private potable wells and has more than five homes per acre.

The best scenario would be:

$$\frac{3 + 1 + 1 + 1 + 0}{5.0} = 1.20$$

For example, a subdivision that has a medium percolating soil, not too fast or slow, is far away from any bodies of water, is ten years or less old, has a low ground water table, is served by municipal water supply which is protected by large setbacks to potential contaminants and has one home or less per acre.

Thus, the range will be between 1.20 and 50.00. The lower the score the better suited the area would be for septic use. The higher the score the better suited the area would be for central sewer use based on the use of this formula. Scores in the mid-range will tend to require more subjective investigation.

The actual number of septic systems in each individual area is not known so an estimate of the number of systems was provided. The estimated number of septic systems located in each area was determined by the Environmental Health Specialist's general knowledge of the area as well as using maps from the Volusia County Property Appraisers web site. The Environmental Health office only has electronic mapping data for septic systems that were installed from 1999 to the present. Previous to 1999 septic system applications were not processed on computers only on paper. Consequently, all of the septic systems permitted and installed before 1999 are not available to be electronically mapped.

Narratives for the selected mapping units

1. Halifax Plantation: This subdivision, created in 1988, is located in northeast Volusia County. The soils are primarily Paola fine sand and Bulow sand. The lots in this subdivision are typically one-half acre. This subdivision is adjacent to Bulow Creek. Potable water is supplied by a community water distribution system.

$\frac{5+3+3+1+0}{4} = \text{Score: } 3.0$ Estimated number of septic systems 303.

2. U.S. Highway 1 and Hull Road south to Airport Road in Ormond Beach: This area consists of lots that are greater than one acre. The soils are primarily Myakka fine sand and Pomona fine sand. Potable water is supplied by private potable wells.

$\frac{4+1+5+4+5}{5} = \text{Score: } 3.8$ Estimated number of septic systems 29.

3. Village of Pine Run: This subdivision, created in 1978, is located north of U.S. Highway 1 in Ormond Beach. Lots in this area are typically greater than one acre. Potable water is supplied by private wells. The soils are mapped as Cassia fine sand and Myakka fine sand.

$\frac{4+1+5+3+5}{5} = \text{Score: } 3.6$ Estimated number of septic systems 191.

4. Tomoka Estates: This subdivision, created in 1958, is located on U.S. Highway 1 in Ormond Beach. This subdivision is adjacent to the Tomoka River. Potable water is supplied by private potable wells. For the purpose of this study, the area is being divided into two categories:

A) This area of the subdivision consists of one acre and one-half acre parcels, soils are mapped as Astatula fine sand and Bulow sand and estimated wet season water tables are greater than 72 inches below grade.

$\frac{5+3+5+1+5}{4} = \text{Score: } 4.75$ Estimated number of septic systems 249.

B) This area of the subdivision has a high lot density, the lots are adjacent to surface waters, the soils are poor and the majority of the lots have estimated wet season water tables within 23 inches of surface.

$\frac{4+3+5+4+5}{1} = \text{Score: } 21.0$ Estimated number of septic systems 135.

5. Plantation Pines Subdivision and adjacent areas: This subdivision, created in 1994, is located on State Road 40 in Ormond Beach. The lots in this subdivision and adjacent areas are greater than one acre. Potable water is supplied by private wells. The soils are mapped as Myakka fine sand, St. Johns fine sand, and several other flatwood soils.

$\frac{4+1+5+4+5}{5} = \text{Score: } 3.8$ Estimated number of septic systems 331.

6. Riverbend Acres: This subdivision, created in approximately 1978, is located south of State Road 40 in Ormond Beach. This subdivision consists of lots that are greater than one acre. Potable water is supplied by private wells. Soils in this area are mapped as Farmton fine sand.

$$\frac{4+3+3+4+5}{5} = \text{Score: } 3.8 \quad \text{Estimated number of septic systems } 55.$$

7. Tomoka Farms Road area: This area, located in Daytona Beach, consists of lots that are typically greater than one acre. Potable water is supplied by private wells. Soils in this area are mapped as Pomona fine sand, Wauchula fine sand, Farmton fine sand, Myakka fine sand and other flatwood type soils.

$$\frac{4+1+5+4+5}{5} = \text{Score: } 3.8 \quad \text{Estimated number of septic systems } 322.$$

8. Daytona Highridge Estates and vicinity: This area includes Daytona Highridge Estates and the area north of U.S. Highway 92. Daytona Highridge Estates was created in approximately 1958. The subdivision consists of 0.17 acre lots. The area north of U.S. Highway 92 includes residential, commercial, and industrial lots. Potable water is supplied by both private wells and by a community water distribution system. Soils in this area are mapped as Myakka fine sand and Immokalee sand. The area has high water tables, poor soils and wet ditches. Special Note: If central water were supplied to all lots, the index number would decrease to 24.

$$\frac{4+1+5+4+3}{0.5} = \text{Score: } 34.0 \quad \text{Estimated number of septic systems } 247.$$

9. Daytona Estates and vicinity: This area includes Daytona Estates Subdivision, June Terrace and Nova Road. Daytona Estates Subdivision, created in 1955, is located on Nova Road in Daytona Beach. The lots within the subdivision are 0.15 acres. Both private wells and a community water distribution system supply potable water. June Terrace is made up of single family, residential lots and a mobile home park. Nova Road is made up of commercial strip malls, restaurants/bars and industrial lots. Soils in this area are mapped as Tuscawilla fine sand and Daytona sand.

$$\frac{4+1+5+4+3}{1} = \text{Score: } 17.0 \quad \text{Estimated number of septic systems } 140.$$

10. Ormond by the Sea: This area is comprised of numerous subdivisions dating back to the 1940s and 1950s. The area is located on the northern peninsula between the Halifax River and the Atlantic Ocean. For the purpose of this study, the area is being divided into three categories:

A) The majority of the lots located in this area of Ormond by the Sea are 0.17 acres in size. Potable water is supplied by a community water distribution system. Soils are mapped as Palm Beach/Paola Complex with estimated wet season water tables between 24 and 35 inches.

$$\frac{5+4+5+3+0}{0.5} = \text{Score: } 34.0 \quad \text{Estimated number of septic systems } 717.$$

B) This area is similar to area A) above, however, the estimated wet season water tables are greater than 72 inches. There are no private potable wells and the majority of the lots are not directly adjacent to surface water. However, due to high lot density and numerous irrigation wells there is a high potential for nitrate contamination to the water table and surface waters.

$$\frac{5+4+5+1+0}{0.5} = \text{Score: } 30.0 \quad \text{Estimated number of septic systems } 4,200.$$

C) This area consists of John Anderson Drive which is adjacent to the Halifax River. Potable water is supplied by a community water distribution system. Soils are mapped as Palm Beach-Urban land-Paola Complex with wet season water tables within 23 inches of the ground surface. Numerous homes that were originally built in the 1950's, 60's and 70's are being replaced with large, expensive

single family homes. Due to limited area for drainfield installations, numerous aerobic treatment units have been installed along John Anderson Drive. Many septic system variance requests have been applied for in this area.

$\frac{5+4+3+4+0}{0.5} = \text{Score: } 32.0$ Estimated number of septic systems 369.

11. Tomoka View/Tanglewood Forest: This subdivision, created in approximately 1969, is located on State Road 40 in Ormond Beach. The lots in this subdivision are 0.22 to 0.25 acres in size. Soils in this area are mapped as Tavares fine sand. Potable water is supplied by a community water distribution system. This subdivision is adjacent to the Tomoka River.

$\frac{5+3+3+2+0}{2} = \text{Score: } 6.5$ Estimated number of septic systems 195.

12. Ponce Inlet: Lot size in this area is somewhat larger with three to four lots per acre. Potable water is supplied by a community water distribution system. Soils in this area are mapped as Palm Beach-Urban land-Paola Complex with estimated wet season water tables greater than 48 inches. Those lots that are adjacent to the Halifax River are mapped separately.

$\frac{5+4+5+1+0}{2} = \text{Score: } 7.5$ Estimated number of septic systems 999.

13. Holly Hill: The soils in this area are Paola fine sand and Astatula fine sand. Potable water is supplied by a community water distribution system. Lot density is high with the average lot approximately 0.17 acres in size. There are no private potable wells and the lots are not directly adjacent to surface water. However, there is high lot density and numerous irrigation wells.

$\frac{5+1+5+1+0}{0.5} = \text{Score: } 24.0$ Estimated number of septic systems 1,801.

14. Palm View and Sherri Boulevard are located on Nova Road in South Daytona: Soils in this area are mapped as Tusawilla fine sand with estimated wet season water tables within 24 inches of ground surface. Potable water is supplied by private wells. Lot density is high with the majority of the lots approximately 0.17 acres. Several industrial lots are also located on these streets along with a mobile home park.

$\frac{4+1+5+4+5}{1} = \text{Score: } 19.0$ Estimated number of septic systems 55.

15. Pine Forest: This subdivision, created in 1959, is located east of Clyde Morris Boulevard in South Daytona. The soils in this area are mapped as Orsino fine sand and Paola fine sand. The potable water supply is provided by private wells. Lot density is average with approximately four lots per acre. Special Note: If a central water supply were provided to this subdivision, the index number would decrease to 14.

$\frac{5+3+5+1+5}{1} = \text{Score: } 19.0$ Estimated number of septic systems 103.

16. Broadwater: This subdivision is adjacent to the Tomoka River. Potable water is supplied by a community water distribution system. The residential lots within the subdivision are approximately 0.25 acres. Soils in this area are mapped as Tavares fine sand.

$\frac{5+3+3+1+0}{4} = \text{Score: } 3.0$ Estimated number of septic systems 56.

17. John Anderson Highway is an area located in Northern Volusia County. Lots are greater than one acre, soils are mapped as Paola fine sand and potable water is supplied by private wells. This area is adjacent to Bulow Creek and the Halifax River.

$\frac{5+3+3+1+5}{5} = \text{Score: } 3.4$ Estimated number of septic systems 162.

18. This area is located in Holly Hill. Potable water is supplied by a community water distribution system. Soils in this area are mapped as Tuscawilla fine sand with estimated wet season water tables within 23 inches of ground surface. Lot density is high with approximately four to five lots per acre; the majority of the lots are adjacent to wet ditches.

$$\frac{4+1+5+4+0}{1} = \text{Score: } 14.0 \quad \text{Estimated number of septic systems } 180.$$

19. This area includes the Bellevue Avenue extension located in Daytona Beach. This area consists of commercial and industrial lots. Soils in this area are mapped as Pomona fine sand. A city sewer main and a city waterline are located on the south side of the road that serves the Daytona Flea Market. The majority of these properties will be required to connect to the sewer main when their onsite systems are in need of repair.

$$\frac{4+1+5+4+5}{5} = \text{Score: } 3.8 \quad \text{Estimated number of septic systems } 53.$$

20. Frances Drive is located off of U.S. Highway 92 in Daytona Beach. The area consists of residential and industrial lots. The industrial lots have connected to a community water distribution system. However, the residential lots are still served by private potable wells. Soils are mapped as Pomona fine sand with estimated wet season water tables less than 23 inches below grade. If central water were supplied to all lots, the index number would decrease to 28.

$$\frac{4+1+5+4+5}{0.5} = \text{Score: } 38.0 \quad \text{Estimated number of septic systems } 14.$$

21. North 40 Subdivision Area: This area is adjacent to the Tomoka River in Ormond Beach. For the purpose of the study, this area will be divided into two areas:

A) Potable water is supplied by a community distribution system. Soils in this area are mapped as Myakka fine sand with estimated wet season water tables less than 23 inches below grade.

$$\frac{4+3+3+4+0}{2} = \text{Score: } 7.0 \quad \text{Estimated number of septic systems } 29.$$

B) Potable water is supplied by a community distribution system. Soils in this area are mapped as Apopka fine sand, Orsino fine sand, and Tavares fine sand with estimated wet season water tables greater than 48 inches below grade.

$$\frac{5+3+3+1+0}{2} = \text{Score: } 6.0 \quad \text{Estimated number of septic systems } 4.$$

22. Twin River Estates: This subdivision is located on State Road 40 in Ormond Beach and is adjacent to the Tomoka River. Potable water is supplied by a community distribution system. There are two distinct areas in this subdivision:

A) The soils on the West Side of the subdivision are mapped as Apopka fine sand. This area has high lot density and surface waters.

$$\frac{4+3+5+1+0}{1} = \text{Score: } 13.0 \quad \text{Estimated number of septic systems } 43.$$

B) The soils on the East Side of the subdivision are mapped as Quartzipsamments (filled area). The lots in this area of the subdivision are located on canals and are adjacent to surface water. The estimated wet season water tables are within 23 inches of the ground surface.

$$\frac{4+3+5+4+0}{1} = \text{Score: } 16.0 \quad \text{Estimated number of septic systems } 32.$$

23. This area is located on Tymber Creek Road in Ormond Beach. Potable water is supplied by private wells. Soils in this area are mapped as Farmton fine sand and Tavares fine sand with water tables typically within 23 inches of ground surface. The lot density is not extremely high; however there are high water tables, poor soils and private wells. However, if a central water distribution system were provided to the area the index number would drop to 5.3.

$$\frac{4+3+5+4+5}{3} = \text{Score: } 7.0 \quad \text{Estimated number of septic systems } 258.$$

24. This area is located in Holly Hill and is east of U.S. Highway 1. Potable water is supplied by a community water distribution system. The soils are mapped as Astatula fine sand and estimated wet season water tables are greater than 72 inches below grade. There is high lot density and numerous irrigation wells.

$$\frac{5+1+5+1+0}{1} = \text{Score: } 12.0 \quad \text{Estimated number of septic systems } 74.$$

25. This area includes those lots that are located adjacent to the Halifax River near Wilbur by the Sea. Potable water is supplied by a community water distribution system. Soils are mapped as Palm Beach-Urban land-Paola Complex and estimated wet season water tables are typically less than 35 inches below grade.

$$\frac{5+3+5+3+0}{1} = \text{Score: } 16.0 \quad \text{Estimated number of septic systems } 688.$$

26. DeLeon Springs Area: This area is bounded by Audubon Avenue on the west, Ponce DeLeon Boulevard on the north, Fairport Avenue on the east and Davis Street on the south. The area is served entirely by private wells. This area is very close to DeLeon Spring.

$$\frac{5+5+5+1+5}{4} = \text{Score: } 5.25 \quad \text{Estimated number of septic systems } 711.$$

27. U.S. Highway 11, 15A and 17 Triangle Area: This area is bounded by U.S. Highway 17 on the west, U.S. Highway 15A on the north and U.S. Highway 11 on the east and south. This area has a mixture of wells and community water supply. A large portion of the area has small lots with poor soil conditions.

$$\frac{5+1+5+2+3}{2} = \text{Score: } 8.0 \quad \text{Estimated number of septic systems } 757.$$

28. Daytona Park Estates Subdivision: This area is bounded by Kepler Road on the west, U.S. Highway 92 on the north, 11th Avenue on the east and Larkspur Road on the south. The area is served entirely by private wells. The majority of the subdivision has poor soil conditions.

$$\frac{4+3+3+4+5}{2} = \text{Score: } 9.5 \quad \text{Estimated number of septic systems } 1,291.$$

29. Lake Helen: This area is bounded by Interstate 4 on the west, Baxter Road on the north, Prevatt Avenue on the east and Kicklighter Road on the south. The area is served by community water supply.

$$\frac{4+1+5+2+0}{2} = \text{Score: } 6.0 \quad \text{Estimated number of septic systems } 913.$$

30. West Highland Subdivision: This subdivision is bounded by Bishop Avenue on the west, 20th Street on the north, Hamilton Avenue on the east and 1st Street on the south. This area has small lots served by private wells and is very close to Blue Spring.

$$\frac{5+4+3+1+5}{1} = \text{Score: } 18.0 \quad \text{Estimated number of septic systems } 938.$$

31. East Orange City: This area is bounded by Volusia Avenue on the west, Wisconsin Avenue on the north, Leavitt Avenue on the east and Holly Drive on the south. The area has good soil conditions and is served by community water.

$$\frac{5+3+5+1+0}{2} = \text{Score: } 7.0 \quad \text{Estimated number of septic systems } 815.$$

32. West Orange City: This area is bounded by Hamilton Avenue on the west, New York Avenue on the north, Volusia Avenue on the east and Blue Spring Avenue on the south. The area has good soil conditions and is served by community water.

$$\frac{5+3+5+1+0}{2} = \text{Score: } 7.0 \quad \text{Estimated number of septic systems } 1,412.$$

33. West DeBary: This area is bounded by Wilson Road on the west, Highbanks Road on the north, U.S. Highway 17 on the east and Sanford Avenue on the south. This older community has small lots served by private wells.

$$\frac{4+3+5+2+3}{2} = \text{Score: } 8.5 \quad \text{Estimated number of septic systems } 707.$$

34. East DeBary: This area is bounded by U.S. Highway 17-92 on the west, Highbanks Road on the north, Interstate 4 on the east and Dirksen Drive on the south. This older community has small lots served by private wells and the area flows towards Lake Monroe and Gemini Springs.

$$\frac{4+3+5+3+5}{2} = \text{Score: } 10.0 \quad \text{Estimated number of septic systems } 2,047.$$

35. Deltona NW: This area is bounded by Interstate 4 on the west, Howland Avenue on the north, Providence Boulevard on the east and Saxon Boulevard on the south. The area is served by community water supply.

$$\frac{5+1+3+1+0}{2} = \text{Score: } 5.0 \quad \text{Estimated number of septic systems } *.$$

36. Deltona NE: This area is bounded by Providence Boulevard on the west, Howland Boulevard on the north, Courtland Boulevard on the east and Fort Smith Boulevard on the south. The area is served by community water supply.

$$\frac{5+1+3+1+0}{2} = \text{Score: } 5.0 \quad \text{Estimated number of septic systems } *.$$

37. Deltona SW: This area is bounded by Interstate 4 on the west, Saxon Boulevard on the north, Providence Boulevard on the east and Doyle Road on the south. The area is served by community water supply..

$$\frac{5+3+3+1+0}{2} = \text{Score: } 6.0 \quad \text{Estimated number of septic systems } *.$$

38. Deltona SE: This area is bounded by Providence Boulevard on the west, Fort Smith Boulevard on the north, Courtland Boulevard on the east and Doyle Road on the south. The area is served by community water supply.

$$\frac{5+3+3+1+0}{2} = \text{Score: } 6.0 \quad \text{Estimated number of septic systems } *.$$

39. Osteen east of State Road 415: This area is bounded by Lemon Bluff Road, State Road 415, Shell Street and Dickson Avenue and is characterized by old development and individual potable wells.

$$\frac{4+1+5+1+5}{5} = \text{Score: } 3.2 \quad \text{Estimated number of septic systems } 210.$$

40. Newton Road vicinity: This area is bounded by Newton Road, Dalford Road, Renner Road and Spruce Creek Road. This area is characterized by medium density, old development and poor soils. The area is almost entirely surrounded by development on municipal sewer.

$\frac{4+3+3+4+0}{3} = \text{Score: } 4.67$ Estimated number of septic systems 122.

41. Hewitt/Overlook vicinity: This area contains properties only on these two streets. This area is characterized by low density, medium age development and excessively well-drained soils. The area is adjacent to Spruce Creek, a water body currently under scrutiny for mitigation of its degraded ecosystem.

$\frac{5+4+2+1+0}{5} = \text{Score: } 2.4$ Estimated number of septic systems 40.

42. Bayview Drive (Bayshore Drive on some maps) vicinity: This area contains properties only on this street and is characterized by medium density, very old development, poor soils and a high water table. The area is adjacent to Turnbull Bay, a water body currently under scrutiny for mitigation of its degraded ecosystem.

$\frac{4+3+5+4+0}{4} = \text{Score: } 4.0$ Estimated number of septic systems 39.

43. Turnbull Bay Road 1200 block: This area contains properties from about 1190 to 1290 Turnbull Bay Road. This area is characterized by low density, old development, poor soils and a high water table. The development is 100 percent light industry.

$\frac{4+3+3+4+0}{4} = \text{Score: } 3.5$ Estimated number of septic systems 12.

44. Aqua Court vicinity: This area contains properties on Sea Street, Dee Street and Aqua Court. This area is characterized by high density, old development and poor soils. Many properties are located adjacent to small canals or wet ditches that comprise a vast drainage system that eventually reaches Turnbull Creek and Turnbull Bay. The area is almost entirely surrounded by development on municipal sewer.

$\frac{4+3+3+3+0}{1} = \text{Score } 13.0$ Estimated number of septic systems 88.

45. North Beach: This area contains properties on Dune Circle and Ocean Drive east of North Peninsula Drive. This area is characterized by very high density, old development and excessively well drained soils. The area is adjacent to the Indian River North, part of the system of Outstanding Florida Water Bodies that are currently under scrutiny for mitigation of their degraded ecosystems.

$\frac{5+4+3+2+0}{0.5} = \text{Score: } 28.0$ Estimated number of septic systems 66.

46. New Smyrna Beach west side: This area is bounded by West Canal Street, Milford Road, Wayne Avenue and Cherry Street This area is characterized by medium density, old development, poor soils and a high water table. The oldest development is also the highest density development within the area. The area is low-income and septic system repairs, when sought, are a severe economic burden to residents. The area is surrounded by municipal sewer.

$\frac{4+3+5+4+0}{3} = \text{Score: } 5.33$ Estimated number of septic systems 417.

47. Ellison Acres: This area is bounded by West Canal Street, Eddie Road and Jungle Road. This area is characterized by medium density, very old development and poor soils.

$\frac{4+3+5+4+0}{2} = \text{Score: } 8.0$ Estimated number of septic systems 116.

48. Glen Oaks: This area contains properties on Glen Circle and Glen Drive. This area is characterized by low density, medium age development, poor soils and a very high water table. Natural drainage throughout the area has been altered by the development in such a way that frequent flooding occurs in some places.

$\frac{4+3+2+4+0}{5}$ = Score: 2.6 Estimated number of septic systems 19.

49. Oliver Estates: This area is bounded by Oliver Drive, Lydia Way and Patricia Drive This area is characterized by medium density, medium age development and poor soils.

$\frac{4+3+3+4+0}{3}$ = Score: 4.67 Estimated number of septic systems 122.

50. Hammock Gardens: This area contains Wildwood Drive, Wild Orange Drive and Timberlane Drive. This area is characterized by medium density, medium age development, very poor soils and a very high water table.

$\frac{4+3+2+4+0}{4}$ = Score: 3.25 Estimated number of septic systems 77.

51. Corbin Park: This area is bounded by Corbin Park Road, Bolton Road, Pine Island Drive and Doster Drive. This area is characterized by medium density, medium age development and very poor soils.

$\frac{4+3+2+4+0}{3}$ = Score 4.33 Estimated number of septic systems 217.

52. Waterford Estates: This area is bounded by Glencoe Road, Old Mission Road, Eslinger Road and the unopened westward extension of Doster Drive. This area is characterized by low density, new development, very poor soils and a very high water table. Parts of this subdivision flood.

$\frac{4+3+1+4+0}{5}$ = Score: 2.4 Estimated number of septic systems 45.

53. Edgewater Acres: This area is bounded by Tatum Boulevard, Elizabeth Street, Josephine Street and Park Avenue. This area is characterized by medium density, medium age development and poor soils.

$\frac{4+3+2+4+0}{3}$ = Score: 4.33 Estimated number of septic systems 172.

54. South Air Park Road vicinity: This area is bounded by Air Park Road, Old Mission Road, West Park Avenue and 22nd Street. Properties on both sides of Oak Lane west of Old Mission Road are also included. This area is characterized by low density, medium age development, poor soils and a high water table. Commercial properties at the north end of Air Park Road are served by municipal sewer.

$\frac{4+3+1+4+0}{5}$ = Score: 2.4 Estimated number of septic systems 161.

55. Juniper Drive vicinity: This area contains properties on 15th Street, 16th Street and the 1500 block of Juniper Tree Drive. This area is characterized by low density, poor soils and a high water table. The density is misleading, as a significant portion of development is multi-family. One-half of the septic systems in the area have failed since original construction. The area is surrounded by municipal sewer.

$\frac{4+3+2+4+0}{4}$ = Score: 3.25 Estimated number of septic systems 21.

56. Saxon Drive vicinity: This area is bounded by Saxon Drive, South Atlantic Avenue and Sea Mist Drive. This area is characterized by medium density development and excessively well-drained soils. The area is adjacent to the Indian River North, part of the system of Outstanding Florida Water Bodies that are currently under scrutiny for mitigation of their degraded ecosystems. The area is surrounded by municipal sewer.

$\frac{5+5+3+2+0}{2}$ = Score: 7.5 Estimated number of septic systems 296.

57. South Atlantic Avenue vicinity: This area is characterized by high density development and excessively well-drained soils. The easterly area is adjacent to public beaches on the Atlantic Ocean. The westerly portion includes Oak Tree Drive and Hillside Drive and drains to the Mosquito Lagoon. The area west of Saxon Drive and all of Hillside Drive are characterized by a high water table and poor soils. The area is surrounded by municipal sewer.

$\frac{5+4+5+1+0}{1}$ = Score: 15.0 Estimated number of septic systems 318.

58. Cory Estates: This area contains properties on North and South Cory Drive. This area is characterized by medium density, medium age development and excessively well-drained soils. About one-half of properties lie on a deep water canal that leads to the Indian River North or are riverfront.

$\frac{5+5+2+3+0}{3}$ = Score: 5.0 Estimated number of septic systems 86.

59. Waterway Park: This area is bounded by Poinciana Road, Godfrey Road, the Indian River and U.S. Highway 1. This area is characterized by medium density, medium age development and individual potable wells. The majority of lots within the area are located on canals that lead to the Indian River North, part of the system of Outstanding Florida Water Bodies that are currently under scrutiny for mitigation of their degraded ecosystems. Achieving proper setbacks from septic systems to surface water and potable wells is a problem for many lot owners. Some lots are unbuildable without a septic system variance.

$\frac{4+5+2+3+5}{2}$ = Score: 9.5 Estimated number of septic systems 181.

60. Jones Fish Camp Road: This area contains properties located along Jones Road and is characterized by medium density, medium age development and individual potable wells. Some lots within the area are located on the Indian River North, part of the system of Outstanding Florida Water Bodies that are currently under scrutiny for mitigation of their degraded ecosystems.

$\frac{4+5+3+3+5}{4}$ = Score: 5.0 Estimated number of septic systems 14.

61. Indian Harbor Estates: This area is bounded by Indian Creek Road, U.S. Highway 1, Ariel Road and the Indian River. This area is characterized by medium density and old development. The majority of lots within the area are located on canals that lead to the Indian River North, part of the system of Outstanding Florida Water Bodies that are currently under scrutiny for mitigation of their degraded ecosystems.

$\frac{4+5+5+2+0}{2}$ = Score: 8.0 Estimated number of septic systems 268.

62. Mobile Village: This area is bounded by U.S. Highway 1, South Street, Brooks Circle and the F.E.C. Railroad. This area is characterized by high density development, individual potable wells and a high water table. The subdivision was originally approved for an investor-owned water supply. The water supply failed in the early eighties, and property owners were faced with no choice but to construct individual wells. Individual wells are consistently found within the current setback

requirement to septic systems and in some cases the proximity of potable wells to a development project creates problems for the developer and for the health department.

$\frac{4+3+2+4+5}{1} = \text{Score: } 18.0$ Estimated number of septic systems 103

63. Oak Hill west side: This area is bounded by West Halifax Avenue, Putnam Grove Road and Wyatt Street. This area is characterized by medium density, old development, poor soils, a high water table and individual potable wells. The oldest development is also the highest density development within the area. The area is low income and septic system repairs when sought, are a severe economic burden to residents.

$\frac{4+3+5+3+5}{3} = \text{Score: } 6.67$ Estimated number of septic systems 153.

64. Oak Hill: This area bounded by U.S. Highway 1, Palm Avenue, Canal Avenue and Church Street. This area is characterized by medium density, old development, poor soils and individual potable wells.

$\frac{4+3+5+1+5}{4} = \text{Score: } 4.5$ Estimated number of septic systems 193.

65. Quiet Place in the Country/Spruce Creek Farms: This area is bounded by Quiet Trail, State Road 415, Taylor Road and Spruce Creek and is characterized by poor soils, individual potable wells and a high water table.

$\frac{4+1+3+4+5}{5} = \text{Score: } 3.4$ Estimated number of septic systems 232.

66. Mango Tree Road and Flagler Avenue Vicinity: This area combines several smaller areas that lie in close proximity to each other. Included are properties lying along both sides of N. Mango Tree Drive, from the 300 block north to Park Avenue, and properties lying along N. Flagler Avenue, westerly of the F.E.C. Railroad. The density is misleading, as the area is mostly commercial and industrial. Establishments are not connected to the municipal sewer line.

$\frac{3+1+5+3+0}{5} = \text{Score: } 2.4$ Estimated number of septic systems 112.

* In the Deltona area there are some parcels served by sewer but the majority of the parcels have septic systems. Due to the large number of parcels served by septic systems it was not possible to provide an accurate estimate of the number of septic systems for the Deltona areas.

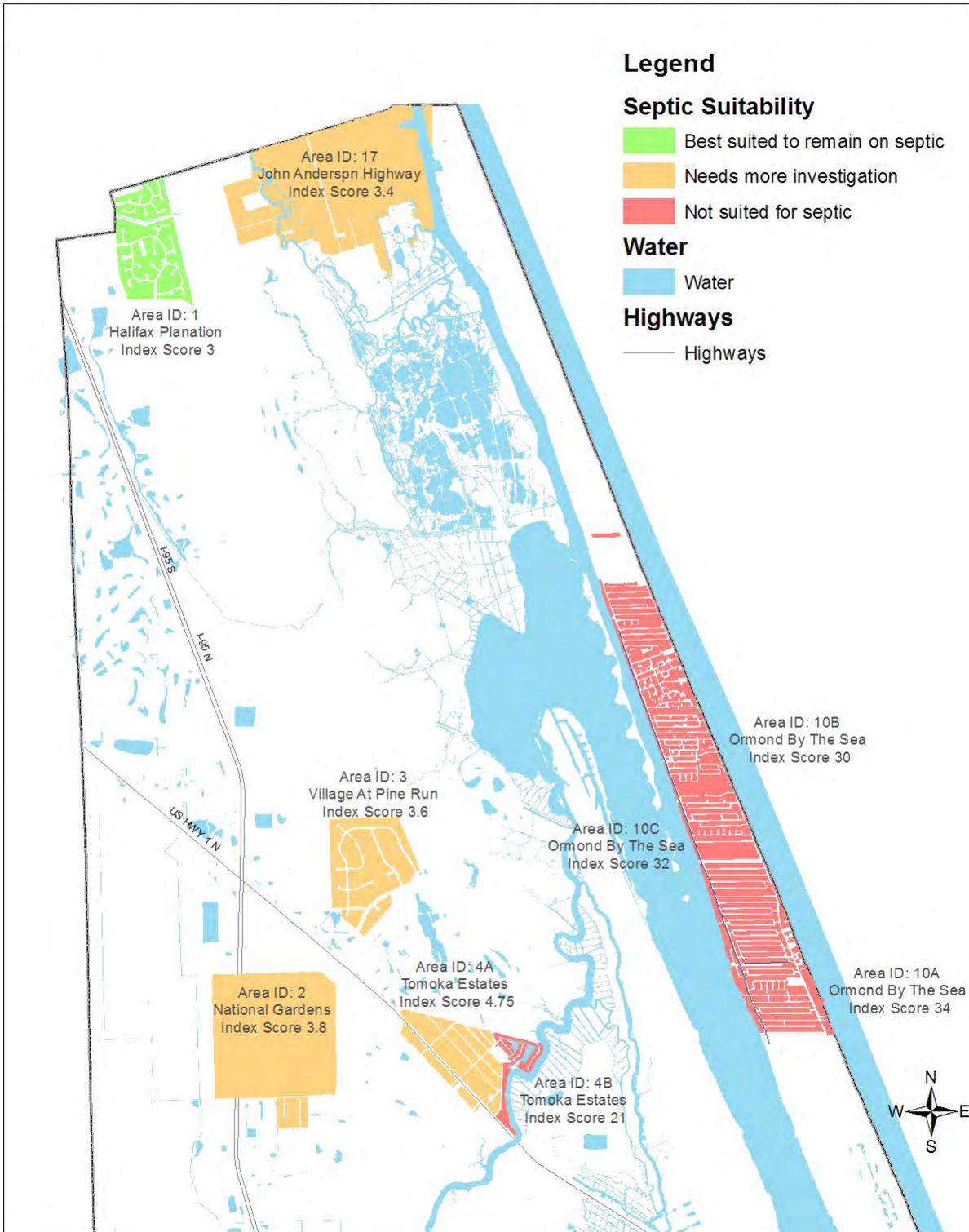
The table below has the areas ranked from lowest index score or better suited for septic system use to the highest score or better suited for central sewer use.

Area	Score
41.	2.4
52.	2.4
54.	2.4
66.	2.4
48.	2.6
1.	3.0
16.	3.0
39.	3.2
50.	3.25
55.	3.25
17.	3.4
65.	3.4
43.	3.5
3.	3.6
2.	3.8
5.	3.8
6.	3.8
7.	3.8
19.	3.8
42.	4.0
51.	4.33
53.	4.33
64.	4.5
40.	4.67
49.	4.67
4.A.	4.75
35.	5.0
36.	5.0
58.	5.0
60.	5.0
26.	5.25
46.	5.33
21.B.	6.0
29.	6.0
37.	6.0

Area	Score
38.	6.0
11.	6.5
63.	6.67
21.A.	7.0
23.	7.0
31.	7.0
32.	7.0
12.	7.5
56.	7.5
27.	8.0
47.	8.0
61.	8.0
33.	8.5
28.	9.5
59.	9.5
34.	10.0
24.	12.0
22.A.	13.0
44.	13.0
18.	14.0
57.	15.0
22.B.	16.0
25.	16.0
9.	17.0
30.	18.0
62.	18.0
14.	19.0
15.	19.0
4.B.	21.0
13.	24.0
45.	28.0
10.B.	30.0
10.C.	32.0
8.	34.0
10.A.	34.0
20.	38.0

The maps on the following pages are provided to give a general view of the specific areas that were evaluated.

Septic Suitability - North Ormond Vicinity, East Volusia County, FL 2013

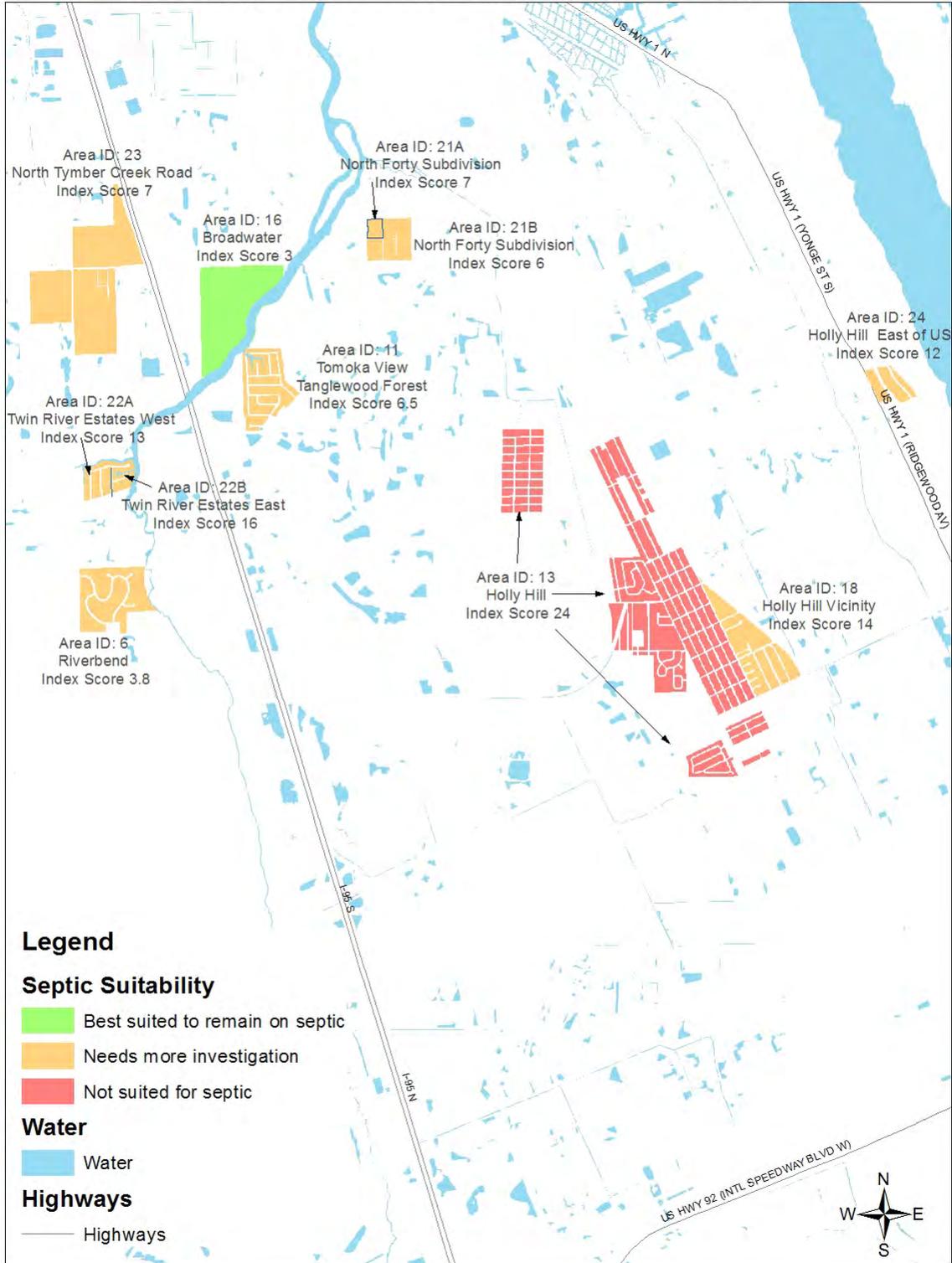


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DATA SOURCES: Florida Department of Health in Volusia County

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Septic Suitability - South Ormond Vicinity, East Volusia County, FL 2013

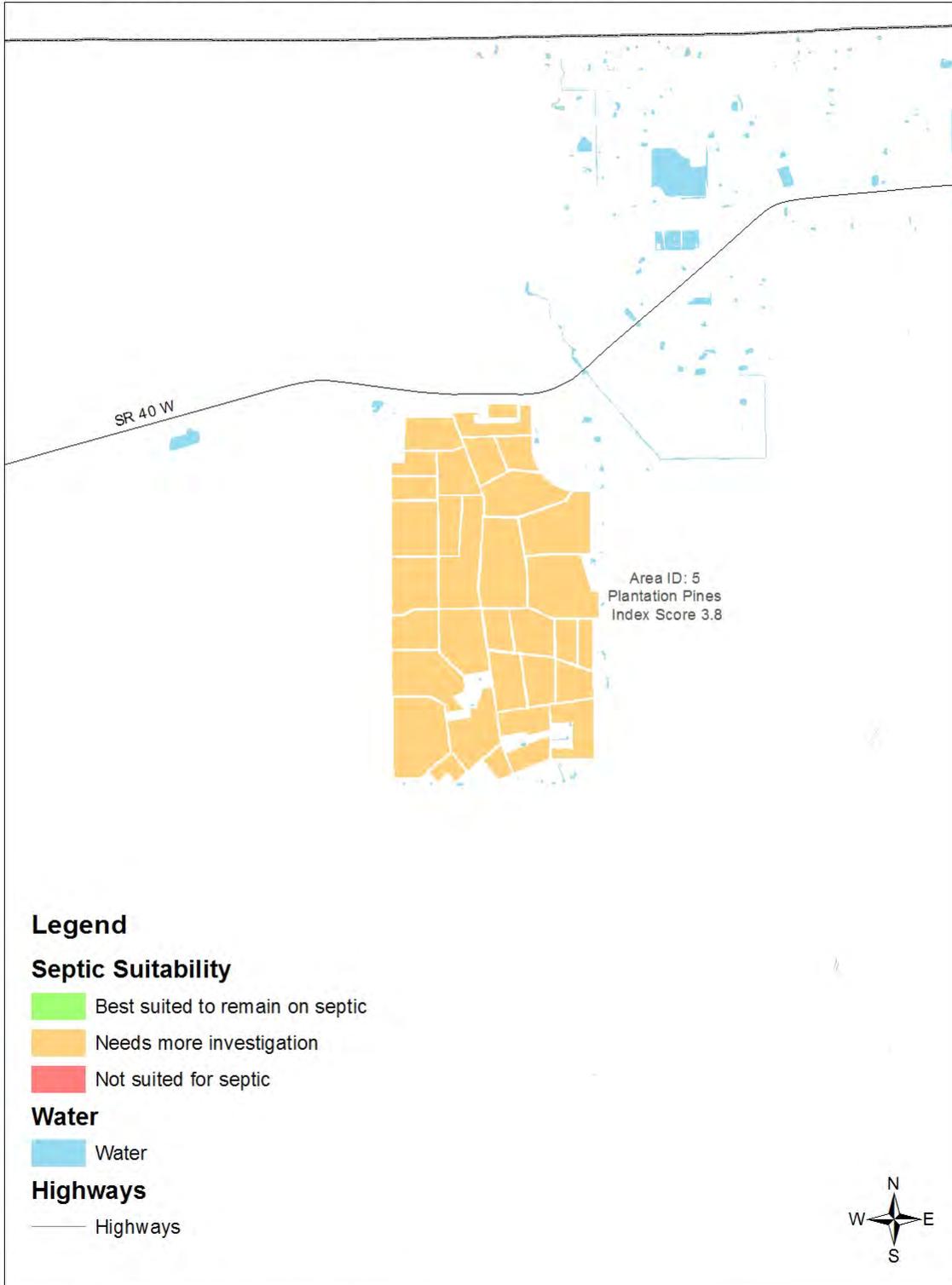


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Septic Suitability - West Ormond Vicinity, East Volusia County, FL 2013

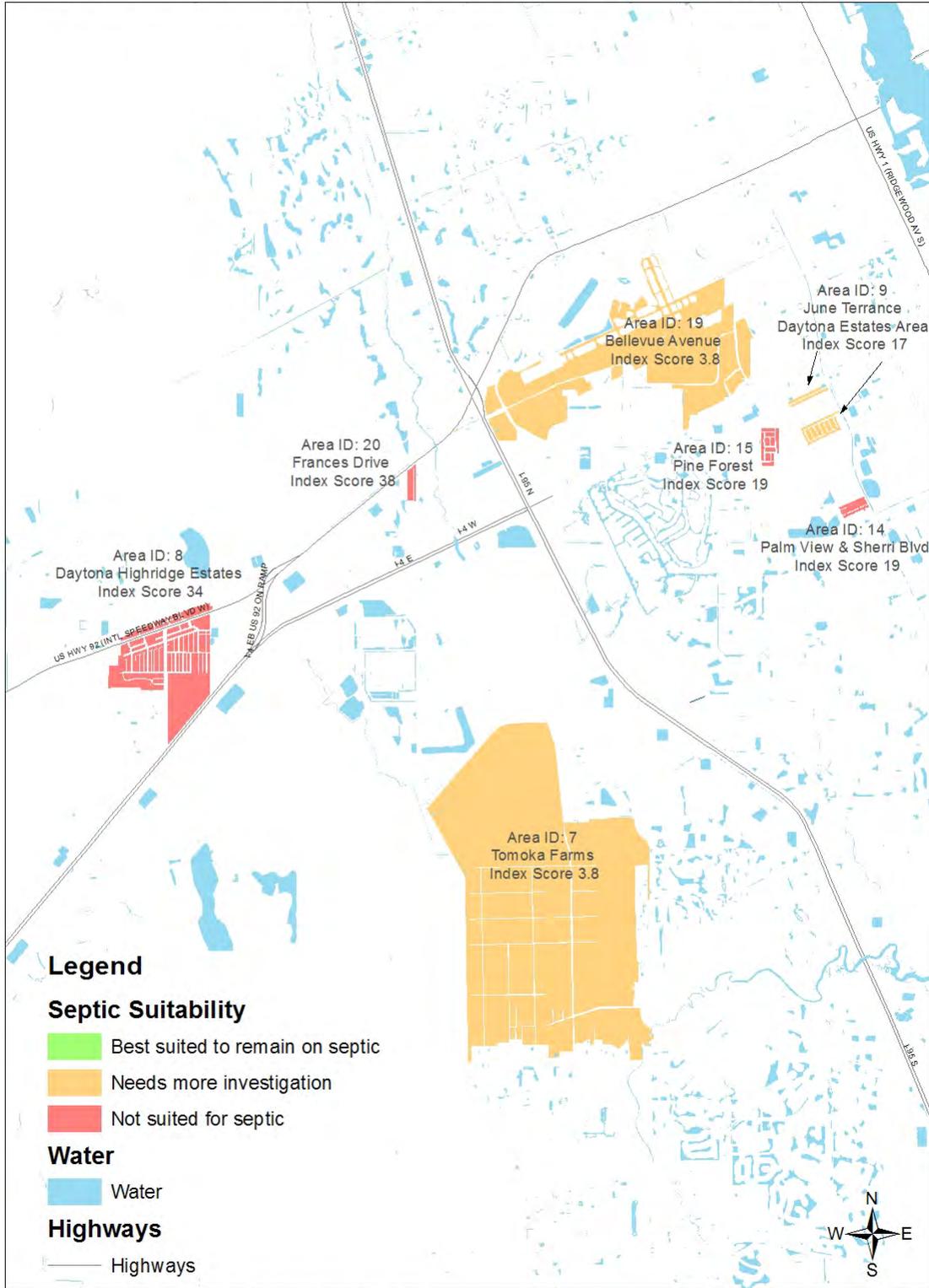


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Septic Suitability - Daytona Beach Vicinity, East Volusia County, FL 2013

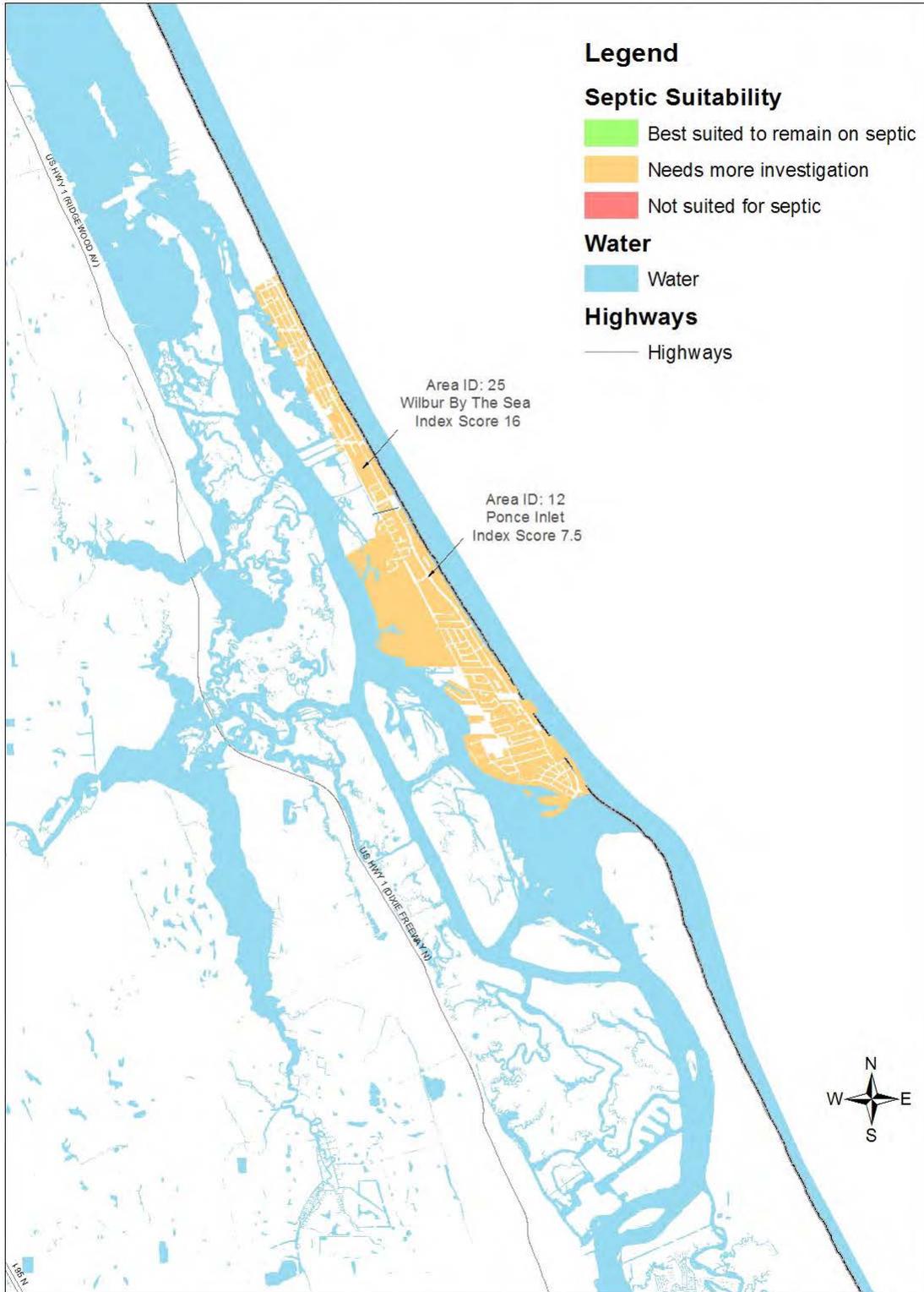


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Septic Suitability Ponce Inlet Vicinity, East Volusia County, FL 2013

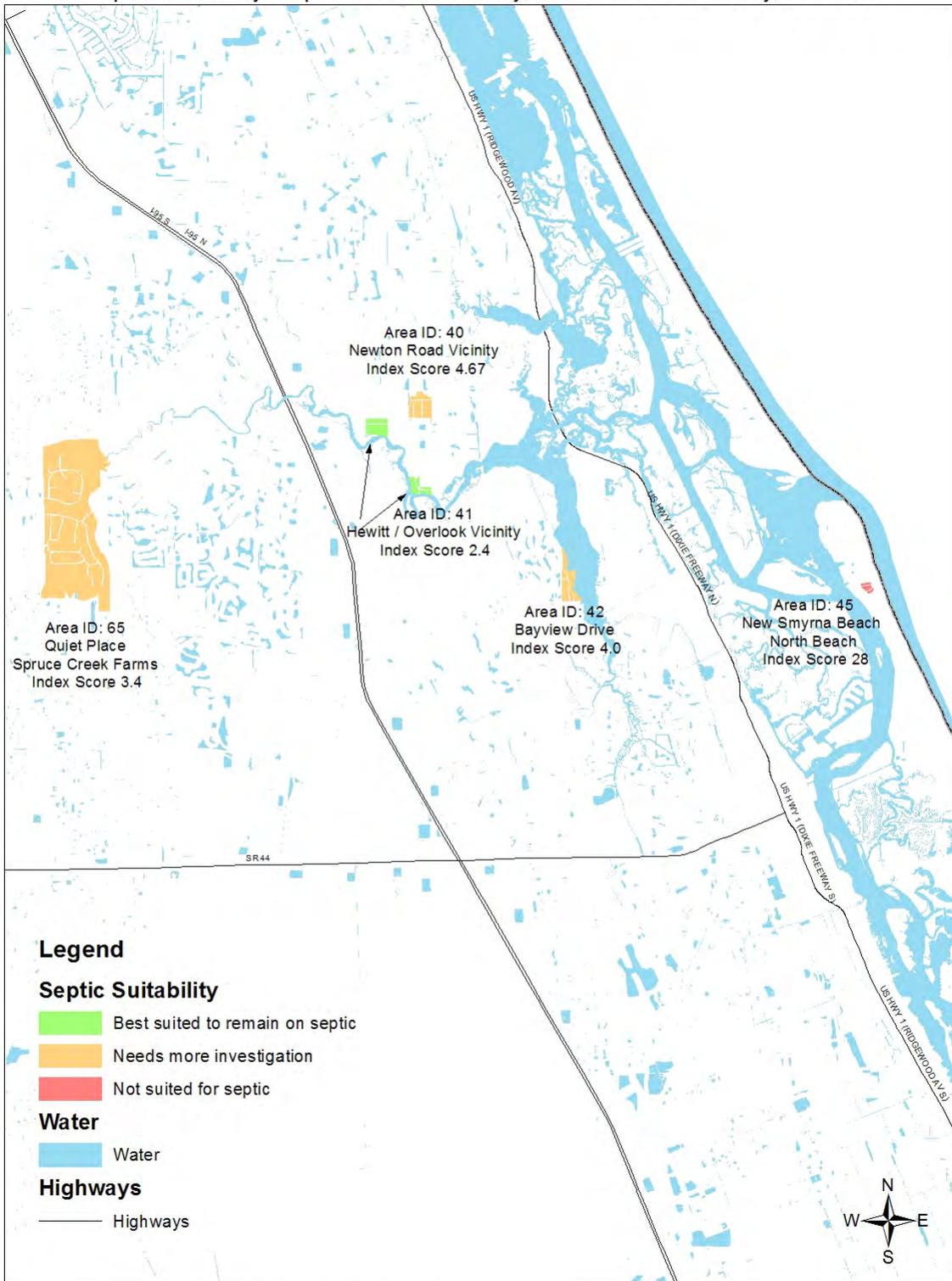


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Septic Suitability - Spruce Creek Vicinity, South Volusia County, FL 2013

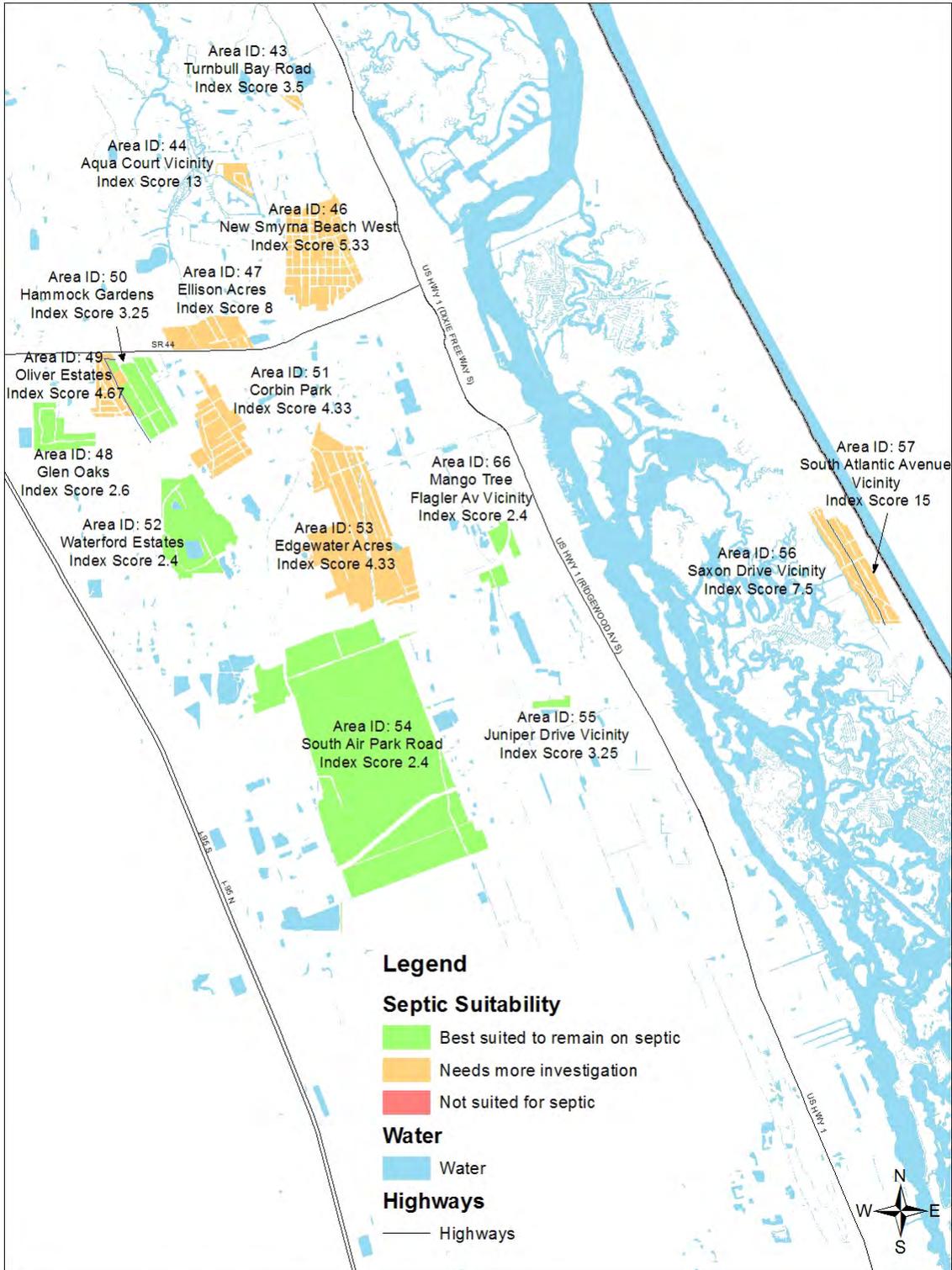


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Septic Suitability - New Smyrna Beach Vicinity, South Volusia County, FL 2013

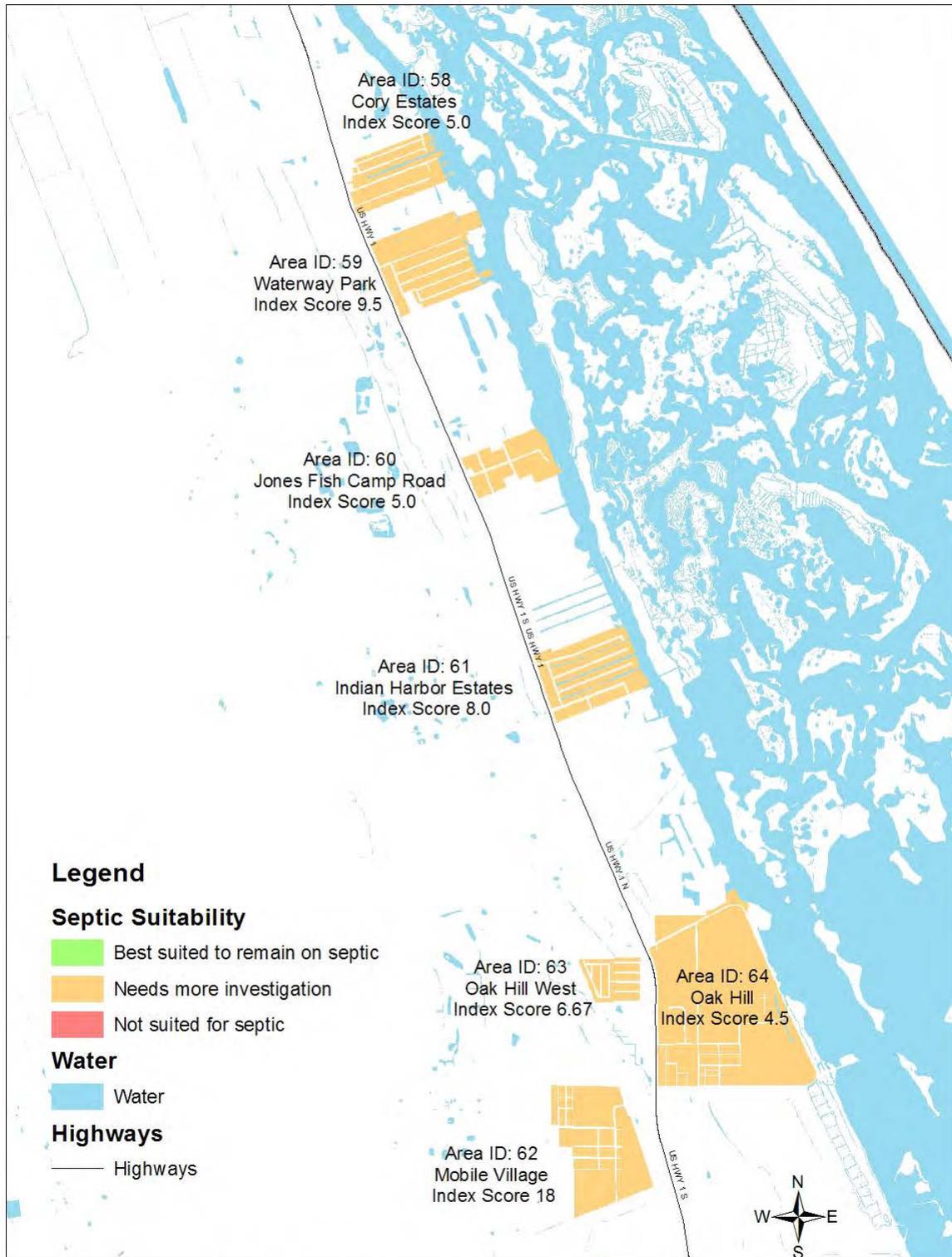


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Septic Suitability - Oak Hill Vicinity, South Volusia County, FL 2013

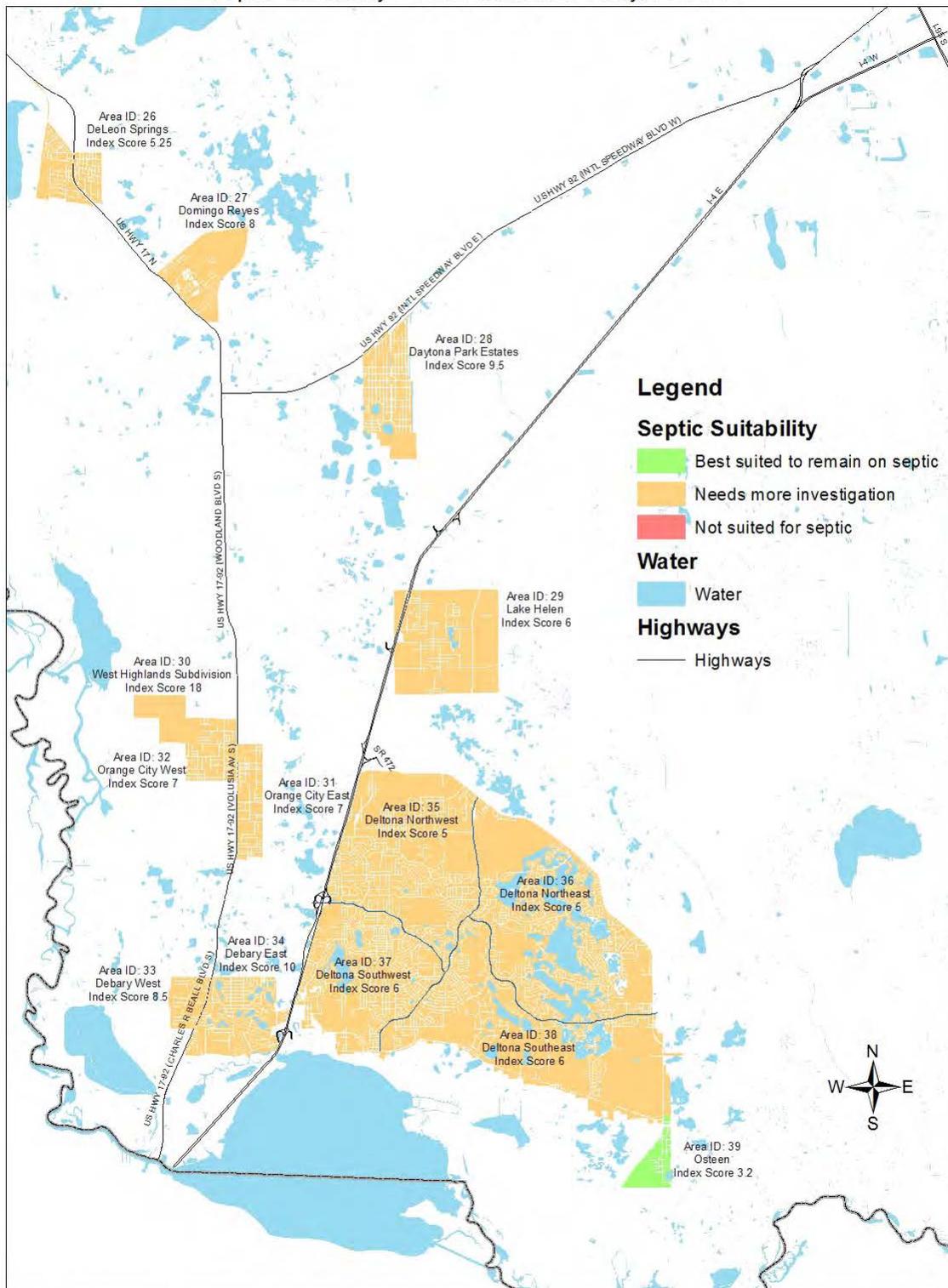


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Septic Suitability - West Volusia County, FL 2013



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	Soil Permeability Index A	Water-body Index B	Age of Septic System Index C	Water Table Index D	Drinking Water Supply Index E	Density Index F	Estimated Number of Septic Systems
1. Halifax Plantation 3.0	5	3	3	1	0	4	303
2. National Gardens 3.8	4	1	5	4	5	5	29
3. Village of Pine Run 3.6	4	1	5	3	5	5	191
4. A. Tomoka Estates 4.75	5	3	5	1	5	4	249
4. B. Tomoka Estates 21.0	4	3	5	4	5	1	135
5. Plantation Pines 3.8	4	1	5	4	5	5	331
6. Riverbend Acres 3.8	4	3	3	4	5	5	55
7. Tomoka Farms Road area 3.8	4	1	5	4	5	5	322
8. Daytona Highridge Estates 34.0	4	1	5	4	3	0.5	247
9. Daytona Estates 17.0	4	1	5	4	3	1	140

	Soil Permeability Index A	Water-body Index B	Age of Septic System Index C	Water Table Index D	Drinking Water Supply Index E	Density Index F	Estimated Number of Septic Systems
10. A. Ormond by the Sea 34.0	5	4	5	3	0	0.5	717
10. B. Ormond by the Sea 30.0	5	4	5	1	0	0.5	4,200
10. C. Ormond by the Sea 32.0	5	4	3	4	0	0.5	369
11. Tomoka View 6.5	5	3	3	2	0	2	195
12. Ponce Inlet 7.5	5	4	5	1	0	2	999
13. Holly Hill 24.0	5	1	5	1	0	0.5	1,801
14. Palm View Sherri Blvd 19.0	4	1	5	4	5	1	55
15. Pine Forest 19.0	5	3	5	1	5	1	103
16. Broadwater 3.0	5	3	3	1	0	4	56
17. John Anderson 3.4	5	3	3	1	5	5	162

	Soil Permeability Index A	Water-body Index B	Age of Septic System Index C	Water Table Index D	Drinking Water Supply Index E	Density Index F	Estimated Number of Septic Systems
18. Holly Hill Vicinity 14.0	4	1	5	4	0	1	180
19. Bellevue Avenue 3.8	4	1	5	4	5	5	53
20. Frances Drive 38.0	4	1	5	4	5	0.5	14
21. A. North 40 7.0	4	3	3	4	0	2	29
21. B. North 40 6.0	5	3	3	1	0	2	4
22. A. West Twin River Est. 13.0	4	3	5	1	0	1	43
22. B. East Twin River Est. 16.0	4	3	5	4	0	1	32
23. N.Tymber Creek 7.0	4	3	5	4	5	3	258
24. Holly Hill East 12.0	5	1	5	1	0	1	74
25. Wilbur by the Sea 16.0	5	3	5	3	0	1	688

	Soil Permeability Index A	Water-body Index B	Age of Septic System Index C	Water Table Index D	Drinking Water Supply Index E	Density Index F	Estimated Number of Septic Systems
26. Deleon Springs 5.25	5	5	5	1	5	4	711
27. Domingo Reyes Area 8.0	5	1	5	2	3	2	757
28. Daytona Park Estates 9.5	4	3	3	4	5	2	1,291
29. Lake Helen 6.0	4	1	5	2	0	2	913
30. West Highlands 18.0	5	4	3	1	5	1	938
31. East Orange City 7.0	5	3	5	1	0	2	815
32. West Orange City 7.0	5	3	5	1	0	2	1,412
33. West Debarry 8.5	4	3	5	2	3	2	707
34. East Debarry 10.0	4	3	5	3	5	2	2,047

	Soil Permeability Index A	Water-body Index B	Age of Septic System Index C	Water Table Index D	Drinking Water Supply Index E	Density Index F	Estimated Number of Septic Systems
35. Deltona NorthWest 5.0	5	1	3	1	0	2	*
36. Deltona NorthEast 5.0	5	1	3	1	0	2	*
37. Deltona SouthWest 6.0	5	3	3	1	0	2	*
38. Deltona SouthEast 6.0	5	3	3	1	0	2	*
39. Osteen 3.2	4	1	5	1	5	5	210
40. Newton Road 4.67	4	3	3	4	0	3	122
41. Hewitt Overlook 2.40	5	4	2	1	0	5	40
42. Bayview Drive 4.0	4	3	5	4	0	4	39
43. Turnbull Bay Rd. 3.5	4	3	3	4	0	4	12
44. Aqua Court 13.0	4	3	3	3	0	1	88

* In the Deltona area there are some parcels served by sewer but the majority of the parcels have septic systems. Due to the large number of parcels served by septic systems it was not possible to provide an accurate estimate of the number of septic systems.

	Soil Permeability Index A	Water-body Index B	Age of Septic System Index C	Water Table Index D	Drinking Water Supply Index E	Density Index F	Estimated Number of Septic Systems
45. North Beach 28.0	5	4	3	2	0	0.5	66
46. New Smyrna Beach West 5.33	4	3	5	4	0	3	417
47. Ellison Acres 8.0	4	3	5	4	0	2	116
48. Glen Oaks 2.6	4	3	2	4	0	5	19
49. Oliver Estates 4.67	4	3	3	4	0	3	122
50. Hammock Garden 3.25	4	3	2	4	0	4	77
51. Corbin Park 4.33	4	3	2	4	0	3	217
52. Waterford Estates 2.4	4	3	1	4	0	5	45
53. Edgewater Acres 4.33	4	3	2	4	0	3	172

	Soil Permeability Index A	Water-body Index B	Age of Septic System Index C	Water Table Index D	Drinking Water Supply Index E	Density Index F	Estimated Number of Septic Systems
54. South Air Park Road 2.4	4	3	1	4	0	5	161
55. Juniper Drive 3.25	4	3	2	4	0	4	21
56. Saxon Drive 7.5	5	5	3	2	0	2	296
57. South Atlantic Avenue 15.0	5	4	5	1	0	1	318
58. Cory Estates 5.0	5	5	2	3	0	3	86
59. Waterway Park 9.5	4	5	2	3	5	2	181
60. Jones Fish Camp 5.0	4	5	3	3	5	4	14
61. Indian Harbor Est. 8.0	4	5	5	2	0	2	268
62. Mobile Village 18.0	4	3	2	4	5	1	103

	Soil Permeability Index A	Water-body Index B	Age of Septic System Index C	Water Table Index D	Drinking Water Supply Index E	Density Index F	Estimated Number of Septic Systems
63. Oak Hill West 6.67	4	3	5	3	5	3	153
64. Oak Hill 4.5	4	3	5	1	5	4	193
65. Quiet Place - Spruce Creek 3.4	4	1	3	4	5	5	232
66. Mango Tree Flagler Avenue 2.4	3	1	5	3	0	5	112