

Task 2: Database of Advanced Systems in Florida

Database Development, Database Structure, and Summary Statistics

for

DEP Agreement G0239
Department of Health Assessment of Water Quality Protection by Advanced Onsite Sewage
Treatment and Disposal Systems: Performance, Management, Monitoring Project

By Elke Ursin and Eberhard Roeder

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1 Introduction

The database created as part of this project contains a total of 16,595 systems from four main sources: the Department of Health's Environmental Health Database (EHD), the Carmody system, various county health department databases, and innovative permit files. This report is submitted as the deliverable for Task 2 of grant G0239: "Description of advanced systems database, including fields and structure; Summary statistics of the results of the data aggregation, such as number of each type of system, number of advanced systems by county, etc." The report contains three main sections: the process description on how the data was combined into the project database, a description of the project database fields and database structure, and summary statistics for the data contained in the database.

2 Development of a Database of Advanced Treatment Systems

2.1 Method Overview

The development of a database of advanced treatment systems included the gathering of information from several data sources and several iterations of identifying duplications. The information came from two aspects of the permitting process: construction permitting for the initial construction or the repair of a system, and operating permitting for the continued operation and maintenance of a system. The sources of data were the Environmental Health Database (EHD), Carmody, County Health Department spreadsheets, and innovative permit files in the Bureau of Onsite Sewage Programs. In September 2008, project staff pursued the option of hiring an outside contractor to complete the task and solicited proposals, but negotiations with the most promising contractor were not successful. Therefore, the task needed to be completed in-house and data gathering commenced after the hiring of contract staff in June of 2009. The following sections describe the processes that led to the creation of the project database, the address list for the survey (Task 3) and the selection of treatment systems to be assessed (Task 4).

2.2 Data Sources

2.2.1 Environmental Health Database (EHD)

The environmental health database (EHD), is the successor to a previous central permitting data system of the Department of Health (Centrax). It contains both data on permits issued since EHD has been implemented and legacy data from permits issued through the previous system since the mid- to late 1990s. Depending on the county, EHD was implemented between 2007 and 2008, The legacy data tend to contain fewer data fields. This data source contains information on all systems, not just advanced systems. Data from this source were made available to the project in the form of query results by a distributed computer systems consultant in the Bureau. The bulk of the data has a nominal date of September 2009.

As a first step, candidate systems were all systems with an indication of being an ATU or a PBTS. For construction permits that included permits that had an application sub-type indicated as ATU on the application page, or where PBTS or innovative was selected as the application subtype, or that included a designation of aerobic treatment unit as distinct from a septic tank. For operating permits, active operating permits that had a check box for ATU or PBTS were selected. When both check boxes were indicated, the record was classified as PBTS. This resulted in 8,716 construction permit records and 11,636 operating permit records, or a total of 20352 records to begin with. Of course, each system should have received a construction permit and an operating permit, but both may not have been found using the criteria above. Also, there are scenarios, such as replacement of an older system with a newer system or the existence of multiple systems at one address, in which several permits may exist in the database for the same property. For the purposes of this database, which in large part was to provide addresses for a survey and for system assessment visits, one record per address was considered sufficient.

The second set of steps had the goal of linking operating permits and construction permits and the related goal of eliminating duplicate records. Sorting records by county, street address, and permit number allowed matching of street addresses with multiple permit information. Eliminating multiple addresses and requiring a complete mailing address lead to an address list of advanced system with 13,577 records. This list was utilized by the contractor for the user survey in the second half of 2010 as part of Task 3 of the overall grant project. The sorting also allowed matching of 3,727 instances of one address being associated with exactly one construction permit and exactly one operating permit. There were 2,497 records that had multiple permits at the same address. Inspection of these records showed that this included frequently streets without house numbers, and missing street addresses. Multiple construction permits or operating permits for one address were consolidated into one record by selecting the most recent permit based on an associated data field, and excluding records without identifiable addresses. With limited additional matching based on addresses that were spelled differently but referred to the same location, and city information, 13,609 records from EHD resulted for further processing. This included 3,699 addresses for which both construction and operating permit numbers were available, 4,194 for which only construction permit information were available, and 5,716 for which only operating permit information was available.

2.2.2 Carmody

Carmody is a web-based maintenance and inspection tracking system. Carmody Data Systems, Inc. is under contract with the Florida Department of Environmental Protection to offer this service to maintenance entities and health departments, as a tool to report maintenance and inspection events electronically. Carmody administers access to this tracking system. A related, publicly accessible, tool is "Septic Search TM" (septicsearch.com), which allows viewing of documents that Carmody Data Systems makes available for each system. In addition to maintenance and inspection reports, this may include other permit files, usually available for counties in which Carmody Data Systems, Inc. has performed a project to scan and electronically organize such files.

During the initial phases of the project the project contract employee had access to Carmody and its functionality to download data by county in Excel format. These data were aggregated

to result in a list of all systems for which Carmody tracked maintenance and inspections. This list encompassed 14,909 records that had information up to July 2009. Not all of these systems were advanced systems, as Carmody also tracks maintenance and inspections for systems that need an operating permit for other reasons, such as commercial establishments, service entities, and systems located in industrial/manufacturing areas. The following summarizes the processing steps taken to focus on advanced systems.

The first set of steps consisted in a search for duplicates based on agreement of addresses. The record with the highest Carmody "tracking number" was generally kept for multiple records. During this search it became clear that Monroe county had two records for many addresses because the treatment system and the injection well or a gravel filter preceding the injection well (allowed only in Monroe county) were recorded separately. An additional set of data fields, "2nd component", was created to consolidate this information into one record per address. This resulted in 13,740 records.

The second set of steps aimed to eliminate those addresses that stemmed from only commercial or only industrial/manufacturing operating permits without an advanced system. Such systems are characterized in Carmody by a "management level" of "commercial" or "industrial". In order to do this, we undertook a match based on operating permit number with EHD-information. While for most cases, the Carmody "State Permit Number" corresponds to the operating permit of EHD, this match was not feasible for some counties, in particular for Charlotte, Franklin, and Sarasota, which used a different naming convention. For Monroe County, the Carmody "State Permit Number" consisted frequently of two joined operating permits, which was modified to reflect the later operating permit. The EHD-information consisted of a query of commercial and industrial operating permits, for which no advanced system indicator was present. Records, for which this EHD-operating permit and the Carmody "State Permit Number" agreed were eliminated, unless the Carmody record contained management level or component information that indicated an advanced treatment system.

After this screening, 10,466 records were left from this source. This still included many records in which management level was not indicated, and the equipment not specified ("unknown system type"). A random sample of 40 such systems indicated that many of these were indeed commercial or industrial, not advanced systems, and that the advanced systems had addresses that were part of the EHD-addresses discussed above.

2.2.3 CHD-Records and Innovative System Records

Preliminary surveys and telephone inquiries were made to the County Health Departments to determine their methods for recording operating permit data. Several counties (Miami-Dade, Duval, Escambia, Flagler, Madison, and Palm Beach) provided the Excel-spreadsheets that they use to track operating permits. We reformatted and aggregated these spreadsheets. Information from Madison County did generally not include addresses and was eventually removed from consideration.

Additional innovative system records stemmed from files in the Bureau that pertained to the permitting of innovative systems. These provided generally some information on the location,

and sometimes permitting information, of systems that were installed under an experimental or innovative program. CHD and innovative information were gathered in one spreadsheet, records matched, and the result was 636 individual records. The permitting and installation of a new innovative system in Wakulla County in June of 2011 prompted the addition of one more record in the final database, which did not undergo the same preprocessing as other records.

2.3 Consolidating the Sources

2.3.1 Generating a System Address List

Initial assessments indicated limited overlap between operating permits in the state database and in Carmody, complicating efforts to develop a comprehensive database with uniform fields. In order to link records from different sources with the aim of achieving an address list of unique addresses we took the following steps:

The first step consisted of adding Carmody and CHD/innovative record information to EHD-records based on matching operating permit numbers. Subsequently all records were imported into one spreadsheet with 24,731 records.

Duplications in these records were eliminated by matching and consolidating operating permits and address information for the linked Carmody and CHD/innovative records. If the address (left 14 characters) matched between Carmody or CHD/innovative records and EHD-records, but EHD did not provide an operating permit, these were consolidated. This eliminated about 5,700 entries. The next step matched EHD-construction and operating permits based on the beginning of the address. Subsequently, for the same address, records with lower operating permit numbers were eliminated. For records that had the same, or a very similar address, and the same operating permit number, the record with less information was eliminated.

Then addresses were checked for similarities based on the first five characters. Where there appeared to be a duplication, operating and construction permit numbers and Carmody records were consolidated, and generally the EHD-address was used. This left 16,802 records. In the following overview, the relative importance of sources is indicated. The dominant sources of these were:

- 5,301 EHD provided operating permit but no construction permit information
- 4,058 EHD provided construction and operating permit information (other sources may corroborate information)
- 3,823 EHD provided construction permit but no operating permit information
- 3,502 Carmody information was the only source available
- 69 CHD sources were the only source available
- 39 Innovative files were the only source available
- 10 EHD provided construction permit and CHD provided operating permit information

At this stage, random numbers and system ID numbers based on ordering of the random numbers were assigned to each record (Figure 1). The addresses in records were checked against a mailing address database (Accumail), geocoded (MapMarker) and additional data

fields added to summarize the success of geocoding and corrected addresses as described in Section 4.6. Subsequently, another search for duplicates found additional records that could be consolidated. Some of these had not been found before due to street spelling, capitalization, and city name not matching. Some resulted from Carmody and construction permit record matches for the addresses, or from Carmody matching EHD-operating permits for the permit number, but with a different address. In these cases, the construction permit address was kept. At this stage there were 16,594 records. The innovative record mentioned in Section 2.2.3 was added, to leave a final project total number of records of 16,595. Subsequently, an occasional duplicate was found during permit reviews or attempts to find a system in the field, usually due to very different or erroneous spellings of the street address, but these records were not deleted.

The focus on systems with identifiable addresses may have lead to a bias in the database against systems that can not be easily located. This bias is difficult to quantify, in part because many unidentifiable addresses stemmed from relatively recent EHD-operating permits, which may have replaced older operating permit numbers that are included in the database. To a lesser extent, addresses that could not be located, such as PO boxes, highway names, and lot numbers, appeared to be overrepresented in smaller counties.

2.3.2 Characterizing Treatment Components

The analysis of treatment technology was based on those records that could be linked with treatment component information from the data sources. Treatment component information had already been part of Carmody, CHD, and innovative information from the beginning. For EHD, the download queried the fields that had the highest potential for containing that information. For construction permits, these were the tank legends, which is suitable for those cases where the legend is completely recorded and a treatment tank legend corresponds to a treatment system. The latter condition was not always met, as some tanks can be used as septic tank or treatment system tank. For operating permits, the data field of the treatment system manufacturer and treatment was gathered. The EHD-information was compared in two configurations, the information that was associated with the permit numbers, and the information that had been condensed from multiple records, as discussed in the previous section. This resulted in a total of eight possible sources for treatment technology information.

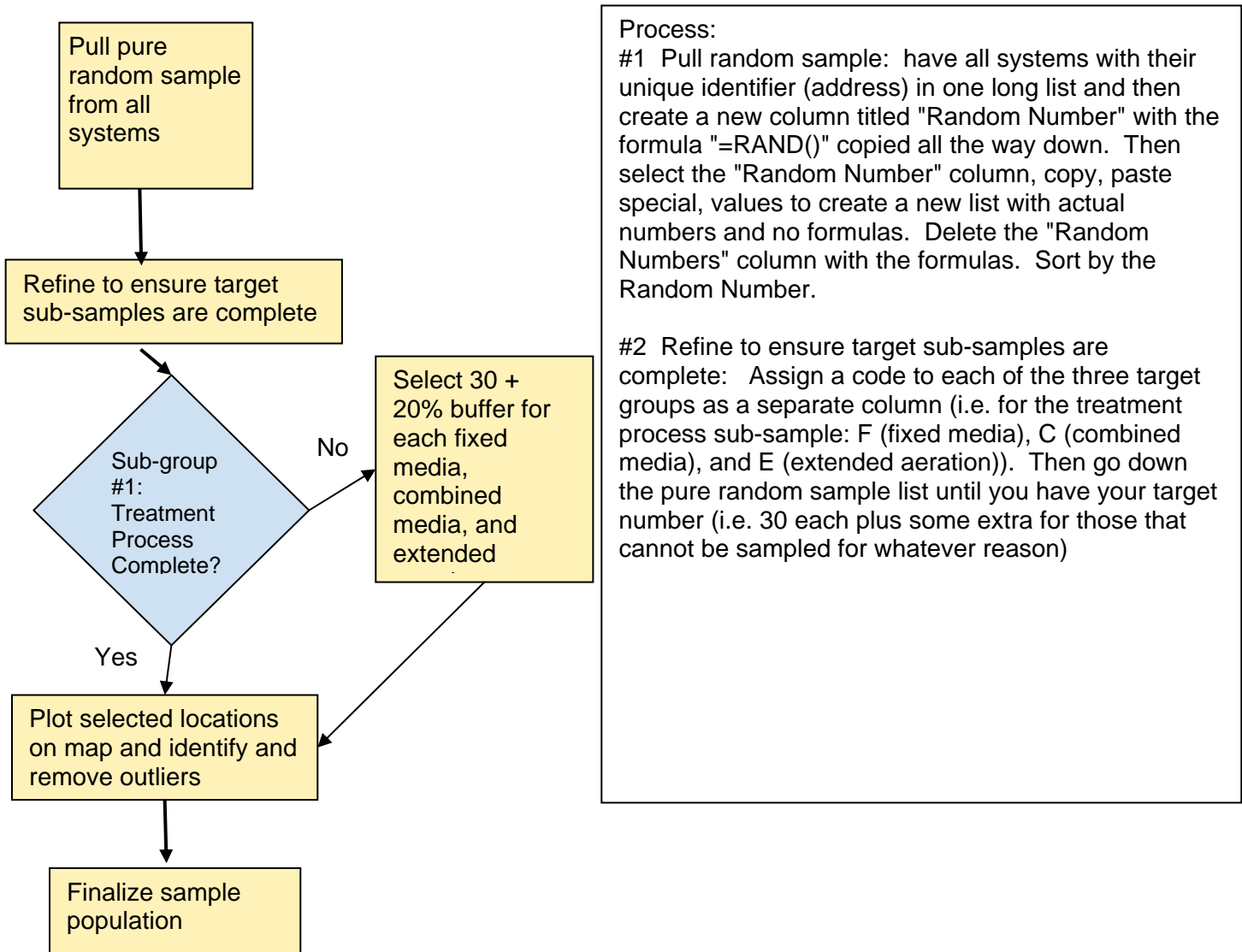


Figure 1. Sample Selection Flowchart

Treatment technology component descriptions in the various sources used different designations. To unify the descriptions, we created the following categories for treatment descriptions: manufacturer, technology/product line, modifier to address configuration variations such as recirculation, and model number. Each technology was also associated with a more general treatment approach, such as extended aeration or fixed film.

To arrive at the final determination for the treatment components for an identified system, we compared the available information in a stepwise fashion:

- The first step was gathering EHD-operating information, EHD-construction information, Carmody information for the first and derived second treatment component (Carmody 1 and 2); CHD, and Innovative system information.
- The second step consolidated EHD information, and compared Carmody with CHD/innovative information
- The third step consolidated all information. If all information was equal, the EHD-information was used because this source tended to have more detailed information, such as model information. If sources disagreed with each other, we assumed that the general order of accuracy was: CHD, Innovative, EHD-operating permit, EHD-construction permit, Carmody 1, Carmody 2. This assumption could be examined at the end of permit review. The highest ranked source information was designated component 1, and the second highest was designated component 2.

3 Database Description

3.1 Description of Tables and Fields

The database had twenty one main tables. These tables provide information on the data source, system location, system technology, permit numbers, construction permit, operating permit, field evaluation, lab results, and data calibration. Appendix A contains a list of each table in the database and which fields are in each table. Each field name has an associated data type (text, number, date/time, yes/no, memo, etc.) as well as a description.

3.2 Description of Database Relationships

The tables in Appendix A were linked together in several queries that were used to develop forms for data entry and viewing. A screenshot of each form is shown in Appendix B. A CD of the project database as of November 2011 is included in Appendix C.

The relationships between the tables are mainly a one-to-one relationship based on System ID number. Some of the tables have a one-to-many relationship and are described in Table 1.

Table 1. One-to-Many Relationships Between Tables

One	Many	Description
DBsource_record_lookup	Step3&4_field_evaluation	Many field evaluations per site (some had multiple site visits in Task 5 of the project)
Step3&4_field_evaluation	Step3&4_Components	Multiple components per field evaluation (i.e. pretreatment tank, aeration chamber, clarifier, pump tank, sample port, drainfield)
Step3&4_field_evaluation	Step5_lab_results_with_QC_qualifiers	Multiple samples taken at one field evaluation event from multiple components
DBsource_record_lookup	Step4_field_analysis_form	Multiple field analysis done per site (some had multiple site visits in Task 5 of the project)
tbl Calibration	Step3&4_Components	Multiple YSI readings over several sites during day when equipment was calibrated

4 Summary Statistics

4.1 Introduction

This section contains the summary statistics of the results of the data aggregation and is broken up into several sections. The first section describes the distribution of systems in Florida by county. The second section describes the results of geocoding addresses for advanced systems in Florida. The third section describes the source of that data that was used in the project database. The fourth section provides advanced system information by manufacturer and technology. The fifth, and final section, describes the process used to select samples and a summary of the results of that selection.

4.2 Distribution of Systems

Table 2 shows the frequency of advanced systems by county and is sorted alphabetically. Table 3 shows the frequency of advanced systems by county and is sorted by highest frequency to lowest frequency. Over 60% of the advanced systems in Florida are contained in these five counties: Monroe, Charlotte, Brevard, Franklin, and Lee.

Table 2. Frequency of Advanced Systems by County (Alphabetical)

	Frequency	Percent			
Alachua	19	0.11	Lee	706	4.25
Baker	3	0.02	Leon	111	0.67
Bay	17	0.10	Levy	42	0.25
Bradford	7	0.04	Liberty	5	0.03
Brevard	2446	14.74	Madison	23	0.14
Broward	179	1.08	Manatee	20	0.12
Calhoun	15	0.09	Marion	331	1.99
Charlotte	2454	14.79	Martin	88	0.53
Citrus	246	1.48	Miami-Dade	299	1.80
Clay	52	0.31	Monroe	3436	20.71
Collier	430	2.59	Nassau	54	0.33
Columbia	23	0.14	Okaloosa	25	0.15
Desoto	22	0.13	Okeechobee	12	0.07
Dixie	18	0.11	Orange	561	3.38
Duval	464	2.80	Osceola	121	0.73
Escambia	150	0.90	Palm Beach	286	1.72
Flagler	80	0.48	Pasco	30	0.18
Franklin	1104	6.65	Pinellas	33	0.20
Gadsden	12	0.07	Polk	228	1.37
Gilchrist	22	0.13	Putnam	77	0.46
Glades	10	0.06	Santa Rosa	110	0.66
Gulf	60	0.36	Sarasota	404	2.43
Hamilton	16	0.10	Seminole	142	0.86
Hardee	9	0.05	St. Johns	100	0.60
Hendry	86	0.52	St. Lucie	125	0.75
Hernando	35	0.21	Sumter	40	0.24
Highlands	28	0.17	Suwannee	77	0.46
Hillsborough	159	0.96	Taylor	46	0.28
Holmes	8	0.05	Union	1	0.01
Indian River	38	0.23	Volusia	413	2.49
Jackson	29	0.17	Wakulla	164	0.99
Jefferson	15	0.09	Walton	78	0.47
Lafayette	21	0.13	Washington	5	0.03
Lake	125	0.75	Total	16595	100.00

Table 3. Frequency of Advanced Systems by County (Highest to Lowest)

	Frequency	Percent
Monroe	3436	20.71
Charlotte	2454	14.79
Brevard	2446	14.74
Franklin	1104	6.65
Lee	706	4.25
Orange	561	3.38
Duval	464	2.80
Collier	430	2.59
Volusia	413	2.49
Sarasota	404	2.43
Marion	331	1.99
Miami-Dade	299	1.80
Palm Beach	286	1.72
Citrus	246	1.48
Polk	228	1.37
Broward	179	1.08
Wakulla	164	0.99
Hillsborough	159	0.96
Escambia	150	0.90
Seminole	142	0.86
Lake	125	0.75
St. Lucie	125	0.75
Osceola	121	0.73
Leon	111	0.67
Santa Rosa	110	0.66
St. Johns	100	0.60
Martin	88	0.53
Hendry	86	0.52
Flagler	80	0.48
Walton	78	0.47
Putnam	77	0.46
Suwannee	77	0.46
Gulf	60	0.36
Nassau	54	0.33
Clay	52	0.31
Taylor	46	0.28
Levy	42	0.25
Sumter	40	0.24
Indian River	38	0.23
Hernando	35	0.21
Pinellas	33	0.20
Pasco	30	0.18
Jackson	29	0.17

Highlands	28	0.17
Okaloosa	25	0.15
Columbia	23	0.14
Madison	23	0.14
Desoto	22	0.13
Gilchrist	22	0.13
Lafayette	21	0.13
Manatee	20	0.12
Alachua	19	0.11
Dixie	18	0.11
Bay	17	0.10
Hamilton	16	0.10
Calhoun	15	0.09
Jefferson	15	0.09
Gadsden	12	0.07
Okeechobee	12	0.07
Glades	10	0.06
Hardee	9	0.05
Holmes	8	0.05
Bradford	7	0.04
Liberty	5	0.03
Washington	5	0.03
Baker	3	0.02
Union	1	0.01
Total	16595	100.00

4.3 Geocoding Results

As part of the grant requirements, the addresses in the database were geocoded to the best extent possible in order to allow for mapping and trip planning. The results can be found in Tables 4 and 5.

Addresses were run through AccuMail, which is an address correction and validation system that determines whether a given address is a deliverable address. The program corrects misspelled addresses, corrects and adds missing zip codes, and standardizes street addresses by matching the given address with addresses from the United States Postal Service which are updated quarterly. Table 4 illustrates the success of geocoding the addresses in the database. Eighty-seven percent of the addresses geocoded correctly. Out of the issues that prevented an address from being geocoded, the main reasons were that the street was unable to be matched (6%), the system was unable to match the house number (4%), and that there were issues with the length of the data field (1%). This match rate is somewhat optimistic when compared to the raw data from EHD, as the processing leading up to the database eliminated many records without house number or street name.

Table 4. Frequency of AccuMail Codes Showing Geocoded Address Issues

	Description	Frequency	Percent
	Geocoded correctly	14471	87.20
1	Geocoded but undeliverable	62	0.37
2	Zip code not found	15	0.09
4	Too many changes required to code correctly	38	0.23
5	Street coded as alias but out of range	16	0.10
7	Unable to match street	804	4.84
8	Unable to match street based on too many unmatched components	239	1.44
9	Unable to match house number	671	4.04
12	Unknown	1	0.01
14	Incorrect suffix, directions, street name or unit	75	0.45
15	Multiple matches	22	0.13
16	Corrected field was too long to fit into the supplied field	181	1.09
Total		16595	100.0

MapMarker software was used to add latitude and longitude data based on the location information. Out of all of the systems, 86% were correctly geocoded down to the street address (Table 5). Six percent of the systems had a slightly reduced level of accuracy for geocoding based on whether the location was matched to the street, intersection, or zip code. Eight percent of the systems were not able to be matched.

Table 5. Frequency of MapMarker Result Code Information (indicates the success or failure of the geocoding operation and the quality of the match)

	Frequency	Percent
No match	1401	8.44
Zip code match	36	0.22
Zip + 2 match	295	1.78
Zip + 4 match	463	2.79
Street intersection match	3	0.02
Street match	75	0.45
Street address match (highest accuracy)	14322	86.30
Total	16595	100.00

4.4 Source of Data

Information in the database came from several sources: the Department of Health's Environmental Health Database (EHD), the Carmody system, several county health department spreadsheets, and innovative permit files. There was overlap between these sources that required extensive work to avoid the occurrence of duplicate records. These matching operations based on addresses and permit numbers resulted in the final assignment of construction and operating permit numbers. Some of the final numbers did not reflect the standardized EHD-format but local county usages. This experience indicates that the variety of special-purpose data formats utilized are not easily compatible with the objective of a statewide management system.

Table 6 illustrates the sources of the construction and operating permit data in the database. Out of 16,595 records, 8,313 have a construction permit number, which may have different formats and 12,804 have an operating permit number. Of 16,595 records 4,649, or slightly more than a quarter, have both an operating permit and a construction permit number. 127 records did not have any permit number assigned, these were Carmody and county/innovative records that did not include such information. For construction permit data, Table 6 shows that while about half of the records came from EHD construction permit information and not from Carmody, nearly half of the records have a source in Carmody, and about 7% had construction permit information in Carmody but not in EHD. While there was information in the county/innovative records, only in a few cases was it the main reason for assigning permit numbers. The one record without any additional source information is the innovative system added after data processing was completed (see Section 2.2.3). For operating permit data, Table 6 shows that nearly half of the records (45%) occur both as an EHD-operating permit and as Carmody permit information. About a quarter of the operating permit records each are EHD-operating permits but not in Carmody and vice versa.

Table 6. Permit Data Source

Source	Construction Permit	Operating Permit
EHD construction permit	4196	105 (only CP)
EHD operating permit	152 (only OP)	3560
EHD permit + Carmody	3389	5732
Carmody, not same EHD-type	554	3292
County/Innovative w/o Carmody	21 (no CP)	114 (no OP)
No additional source	1	1
Total with some Information	8313	12804

The technology of the advanced system components came from several different sources: two iterations of operating or construction permit (tank) information from EHD, up to two components from Carmody, county health department spreadsheets, and innovative permit files. This resulted in up to eight potential sources that could have contributed to the final determination of what components are used for a specific system. Table 7 outlines how many of the sources provided information on components. Approximately 45% of the systems did not have any component information. Fifty percent of those records that had component information had this from a single source. This source was predominantly Carmody, with some county health department and innovative information. The systems with two sources (23% of component information) relied generally on two iterations of EHD-information (either operating or construction permit) or on the existence of two components from Carmody. Systems with three sources (23% of component information) are the first category that allows a cross-checking of component information. Out of 2119 records, 251 differed in the information between at least two sources, with about half of these due to differences between Carmody and EHD. Systems with four sources are largely located in Monroe County with one Carmody source indicating an injection well or associated filter, and the other Carmody source predominantly agreeing with the available EHD-information.

Table 7. Number of Sources with Similar Component Technology Information

	Frequency	Percent
0	7388	44.5
1	4631	27.9
2	2175	13.1
3	2119	12.8
4	280	1.7
5	2	.0
Total	16595	100.0

Table 8 illustrates the source of the technology information that was used in the database. This was selected through a hierarchy which put in case of conflict a preference on the data from county health departments and innovative files first, then EHD, then Carmody, and then other data sources. As can be seen in Table 8, 44.5% of the systems did not have any data. Out of those that did have data, Carmody and EHD were the predominant data sources with Carmody

providing information for about a quarter of the records and EHD-operating and construction information each providing about one eighth of records with component information. Approximately 1,800 systems were matched in both EHD and Carmody, showing that there was some consistency between the two data sources.

Table 8. Source of Technology Information
Source of Technology Information

	Frequency	Percent
Carmody	4593	27.7%
EHD Construction Permit	2238	13.5%
EHD Operating Permit	2011	12.1%
CHD	297	1.8%
Innovative Permit File	67	0.4%
No information	7389	44.5%
Total	16595	100.0%

4.5 System Information

The information in the project database contains system information details that are analyzed in this section.

Table 9 illustrates the frequency of commercial and residential establishments. This field is mainly recorded on the construction permit application but the operating permit application and occasionally Carmody data provide an indication of a commercial establishment. The majority of the unknown systems did not have any construction permit information. Ninety-four percent of those that did have information were for residential systems.

Table 9. Frequency of Commercial / Residential Advanced Systems

	Frequency	Percent
Unknown	6381	38.45
Commercial Non I/M	457	2.75
Commercial I/M	173	1.04
Residential	9584	57.75
Total	16595	100.00

Table 10 illustrates the frequency of the type of advanced system in the database. Seventy-six percent of the systems are for ATU's and eight percent are for PBTS. Relatively few systems, about 15%, are recorded as unknown, indicating a limited potential of having included conventional systems.

Both EHD and the Carmody system have a field for recording whether a system is in an industrial/manufacturing zone or has an equivalent usage. Of 13 records listed in Carmody as

industrial/manufacturing, 2 (15%) are correctly matched in EHD, 1 (8%) is incorrectly matched as commercial, and 10 (77%) had no information in EHD.

Both EHD and the Carmody system have a field for recording whether a system is a commercial system. Of 126 records in Carmody that are listed as commercial, 78 (62%) are correctly matched in EHD, 8 (6%) are incorrectly matched as residential, and 40 (32%) have no information in EHD.

Table 10. Frequency of Type of Advanced System (ATU, PBTS, Innovative, Unknown)

	Frequency	Percent
ATU	12660	76.3
Innovative	183	1.1
PBTS Non Innovative	1189	7.2
Unknown	2563	15.4
Total	16595	100.0

Table 11 illustrates the age of the advanced system from January 1, 2010, which is about six months after the data gathering for the database started, and the approximate date of when the data were imported into the database. The system installation date is entered on the construction permit and the operating permit application and was part of some CHD and innovative records. The high occurrence of unknown ages could be a result of there being fewer EHD permits in the database as well as this being a field that is not consistently completed in EHD. Of the systems with no final system approval date 8,248 (88%) did not have construction permit information. A total of 7,173 systems in the database had a final system approval date. Of these systems, 75% were installed within 2-5 years of January 1, 2010.

Table 11. Age of System from January 1, 2010

	Age of System	
	Frequency	Percent
Unknown	9422	56.8
<2	431	2.6
2 - 5	5372	32.4
6 - 10	1313	7.9
11-15	47	.3
16-20	5	.0
>20	5	.0
Total	16595	100.0

Table 12 outlines the different technology approaches, manufacturers, products, and aeration subtypes for all of the systems for which data were available. These data likely reflect what has been installed over the years under a variety of approval conditions. Out of a total of 16,595 systems, 9,206 (56%) had this type of information. There were three main types of treatment technology approaches considered: extended aeration, fixed media, and combined (aeration

Table 12. Technology of Components with Sample Selection Information

Technology Approach	Manufacturer	Product	Aeration Subtype	Number of Systems	Product Sample	Subtype Sample	Approach Sample
Combined	Bio-Microbics	FAST	Diffuser	394	35	35	70
	Bionest	Bionest	Diffuser	35 ¹	0		
	Jet	Jet	Aspirator	188	35	35	
Extended Aeration	Acquired Wastewater Technologies	Alliance	Diffuser	76	2	35	70
	Ecological Tanks, Inc.	Aqua Aire	Diffuser	73	2		
	Ecological Tanks, Inc.	Aqua Safe	Diffuser	56	2		
	Aqua-Klear	Aqua-Klear	Diffuser	1353	4		
	American Wastewater	B.E.S.T. 1	Diffuser	130	3		
	Acquired Wastewater Technologies	Cajun Aire	Diffuser	132	3		
	Clearstream	Clearstream	Diffuser	861	3		
	Delta	DF or UC	Diffuser	257	3		
	Delta	N/D	Diffuser	507	0		
	Hoot	Hoot	Diffuser	975	4		
	Hydro-Action	Hydro-Action	Diffuser	89	2		
	H.E. McGrew	Mighty Mac	Diffuser	357	3		
	Consolidated	Nayadic	Diffuser	1733	4		
	Consolidated	Multi-Flo	Aspirator	583	15	35	
	Consolidated	Enviro-Guard	Aspirator	3	3		
Norweco	Singulair	Aspirator	949	17			
Fixed Media	Orenco	AdvanTex		8	6		70
	Quanics	Aerocell		5	4		
	Quanics	Biocoir		5	4		
	Carroll Environmental Technologies	Carroll Filter		1			
	Premier Tech	EcoFlo		30	9		
	EcoPure	EcoPure		19	8		

¹ Result of non-unique tank use, no systems actually installed. See text.

Technology Approach	Manufacturer	Product	Aeration Subtype	Number of Systems	Product Sample	Subtype Sample	Approach Sample
Fixed Media (cont.)	Earthtek	EnviroFilter		149	14		
	Klargester	Klargester		2	2		
	Rotodisk	Rotodisk		3	3		
	Ruck	Ruck		11	7		
	NoMound	NoMound		21	8		
	Sandfilter	Sandfilter		6	5		
Other	Injection Well	Interim filter		173	0		0
		Cromaglass		1	0		
		P-removal		19	0		
	Evapotranspiration			2	0		
Total				9206			210

and fixed media) (Figure 2). Sand and gravel filters would fall into the fixed media category, and several experimental or innovative treatment and disposal systems that involve effluent passage through a drainfield were included in this category. While interim aggregate filters are fixed film systems, they were not included in further consideration because they are generally located after an aerobic treatment step. The “other” category captures largely systems with injection wells and evapotranspiration in Monroe County.

One of the limitations of the source data that became apparent at this stage is the designation of a treatment technology based on the tank approval number. The distributors of one innovative treatment technology, Bionest, had obtained approval to fit the technology into several tanks that can also be used as septic or other tanks. Finding the tank approval numbers in the construction records of advanced systems lead to 35 systems designated as Bionest systems, even though the distributor confirmed that no system had been installed.

The main technology approach used in Florida is extended aeration, with 88% of the systems that had product information. Over half of the systems in the database used extended aeration in the treatment process. 42% use a diffuser and 10% use an aspirator to aerate (Table 13). Systems that use a combined technology approach only accounted for 7% of the population, while fixed media had only a share of 3%.

Table 13. Use of Aeration in the Treatment Process

Aeration		
	Frequency	Percent
Aspirator	1724	10.4
Diffuser	7028	42.4
Unknown	7843	47.3
Total	16595	100.0

Figure 3 illustrates the different manufacturers for the systems that had information. Fourteen manufacturers had less than 100 systems each and these were totaled together and combined under the “Other” category in Figure 3. The top five manufacturers used in Florida are Consolidated, Aqua-Klear, Hoot, Norweco, and Clearstream.

Figure 4 illustrates the different products for the systems that had information. In many but not all cases the product carries the same name as the manufacture. Nineteen products had less than 100 systems each and these were totaled together and combined under the “Other” category in Figure 4. The top five products used in Florida are Nyadic, Aqua-Klear, Hoot, Singulair, and Clearstream, which corresponds to the distribution of the respective manufacturers.

There was also information captured on the second component in series. Less than 5% of the systems in the database had any information on the second component. Of those that had information, the majority were injection wells with the Carmody system as the data source.

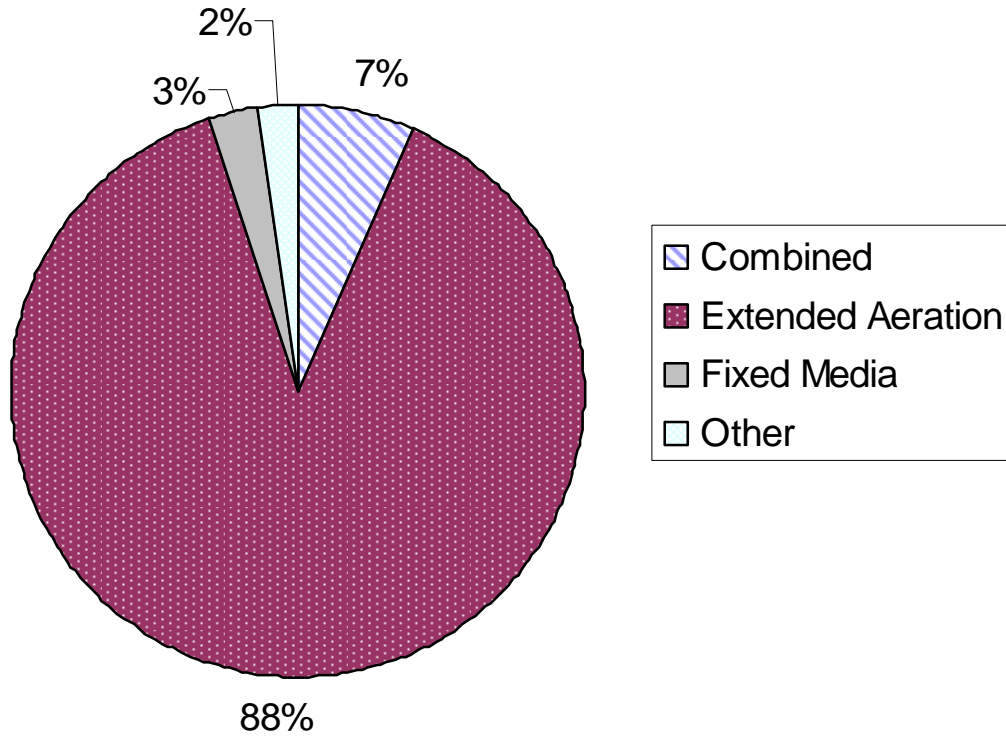


Figure 2. Technology Approach Information

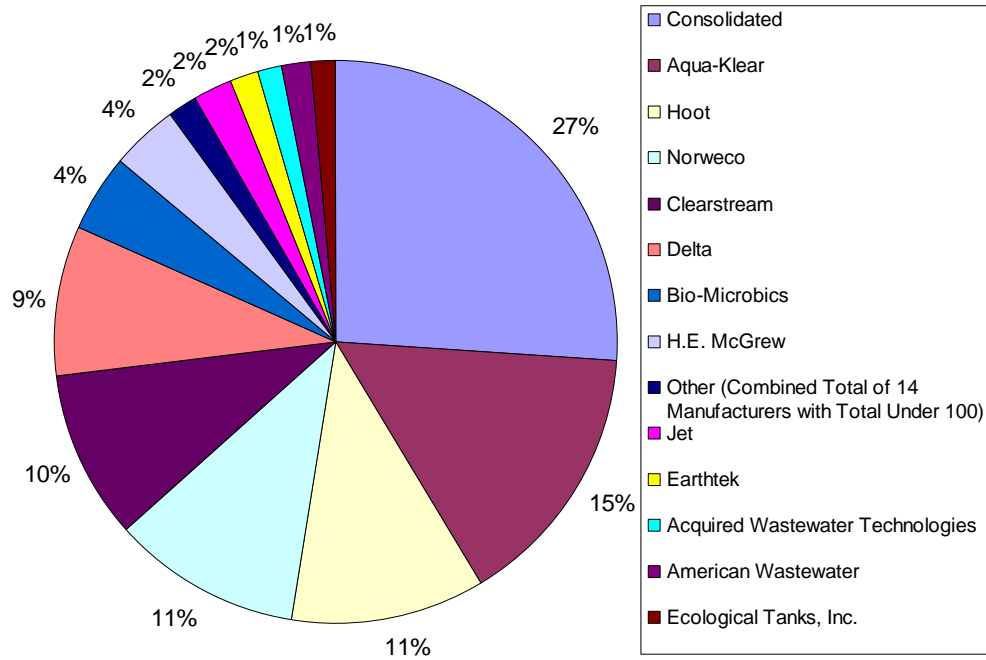


Figure 3. Manufacturer Information

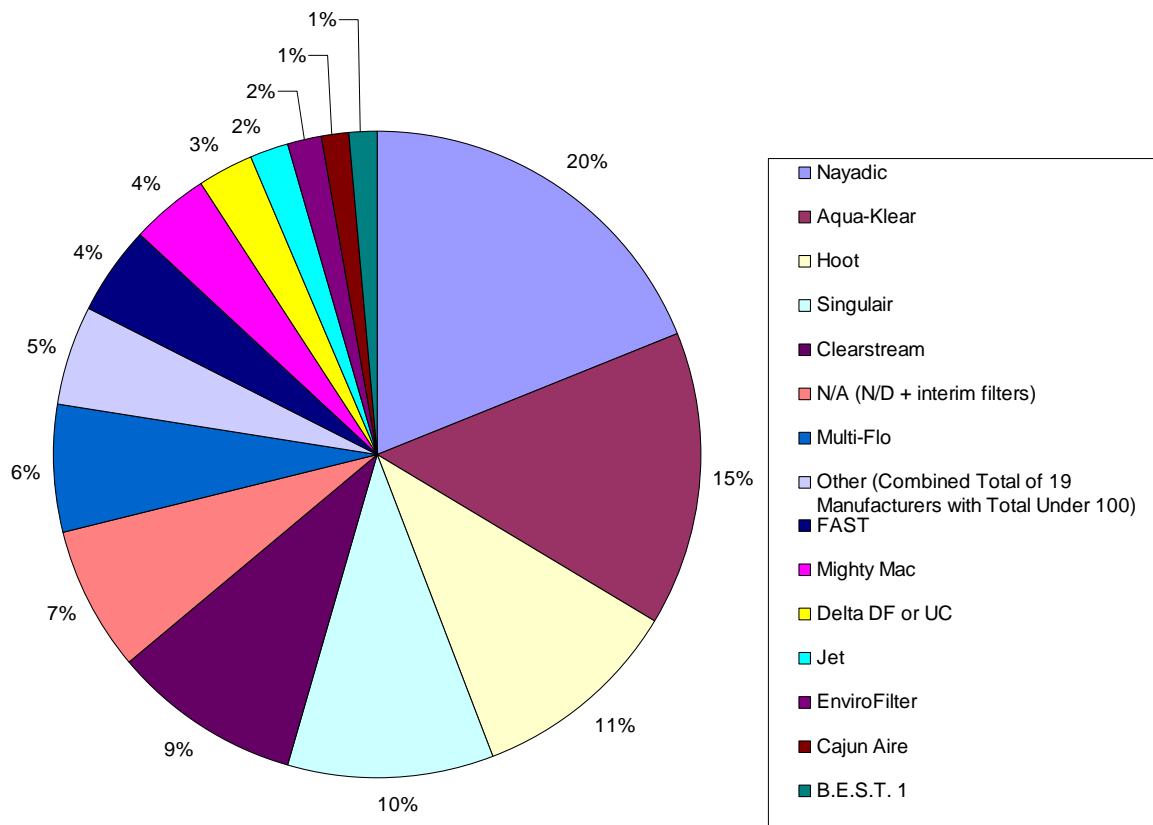


Figure 4. Product Technology Information

4.6 Sample Selection

A total of 1013 systems were selected for sampling (Table 14). These are broken up into 6 sample groups. Five hundred eighty five systems were selected based purely on a random sample taken from all of the systems (Figure 1). For those records where sufficient information existed, treatment component technologies have been categorized and this information linked to the system record based on the type of technology installed (Table 12). The treatment technologies have been grouped as either: unsaturated fixed media, combined media, and extended aeration. Additionally, aeration technology for combined media and extended aeration was subcategorized into diffuser and aspirator approaches. Records were selected to represent each of the different technology approaches. Numbers of samples for each manufacturer were proportional to the logarithm of the number of systems in the same category. The record selection used a similar approach as the overall random sample, by selecting the records with the lowest n random numbers that fulfilled the criteria. A total of 210 systems (70 from each of three technology approaches: unsaturated fixed media, combined media, and extended aeration) were selected based on technology, with 112 systems coming from the initially selected random sample, and 98 systems selected based on their technology type. Two hundred and four additional systems were selected based in a second round of random

sampling. These additional systems were necessary after performing detailed permit reviews which revealed that a large number of systems (~60%) were not an active advanced system (i.e. they were either abandoned, a conventional system, connected to sewer, etc.) A few additional systems were assessed to gather data on monitoring points beneath the drainfield, account for misidentifications, and assess a couple of conveniently located additional innovative systems.

**Table 14. Systems Selected for Sampling
Selected for Sampling?**

	Frequency
N	1
Y-initial random sample	15581
Y1-additional technology sample	585
Y2-sample for initial random sample and technology	98
Y3-second round of random samples	112
Y4-additional systems	204
Y6-drainfield monitoring samples	7
Total	7
	16595

Appendix A: Database Description of Tables

A) Geocoded Address Results

This section of the database provides information regarding the results of geocoding the address information for locations with advanced systems. Addresses were run through AccuMail, which is an address correction and validation system that determines whether a given address is a deliverable address. The program corrects misspelled addresses, corrects and adds missing zip codes, and standardizes street addresses by matching the given address with addresses from the United States Postal Service which are updated quarterly. Latitude and longitude data are also added, using the MapMarker program through a similar address matching process, which provides mapping capabilities.

Table: DBsource_geocoded_address_results

Field name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
FinalAddressesApr06_2010-2_CombAddress	Text	combined address of EHD and Carmody addresses
County	Text	county
summary_city	Text	combined city of EHD and Carmody addresses
FinalAddressesApr06_2010-2_FL	Text	State
FinalAddressesApr06_2010-2_summary_ZIP	Text	combined zip of EHD and Carmody addresses
2nd address	Text	address after cleanup with accumail and geocoding
2nd county	Text	county after cleanup with accumail and geocoding
2ndcity	Text	address after cleanup with accumail and geocoding; empty city tended to be misplaced "Tallahassee" in summary_city
2ndstate	Text	state after cleanup with accumail and geocoding
2nd zip	Text	zip after cleanup with accumail and geocoding
2nd long	Double	geocoded longitude
2nd lat	Double	geocoded latitude
2nd georesult	Text	geocoding result code (indicates quality of matching)
2nd geo ACCU	Text	accumail results code (indicates

		quality of matching)
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B) Permit Classification Results

This section of the database provides permit classification information from the Department of Health Environmental Health Database (EHD) and from Carmody Systems for those systems that were determined to potentially be advanced systems. Permit classification information includes such information as what permit category the system is (ATU, PBTS, etc.), whether the system is commercial or residential, etc.

Table: DBsource_permitclassifications

Field Name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
County	Text	County
Comm/Res	Text	Commercial/Residential establishment (form DH4015, p.1)
ApplicationSubType_simplified	Text	derived field from EHD advanced system permit category simplified into fewer categories (ATU, PBTS non_innovative, Innovative, unknown, none, other (converted Keys interim systems to ATU, and Keys OWNRS to PBTS non_innovative)
ApplicationSubType	Text	EHD information on advanced system permit category (ATU, PBTS non_innovative, Innovative, PBTS innovative, Keys interim) DH4015 p.1
PBInnovativeComponent	Text	EHD innovative component ??
EHD_Ind_man_Field1	Text	EHD industrial/manufacturing zoning info (DH4015 p.1)
EHD_OPType	Text	EHD operating permit type (DH4081)
Management Level	Text	Carmody Management level (can be ATU, PBTS, commercial, industrial)
CM_commercial	Text	derived field from Carmody management level to indicate commercial establishment
CM_Management_level_simplified	Text	derived field from Carmody management level to indicate application subtype (see ApplicationSubType_simplified)
Component Flagging	Text	Carmody component flagging

		information
2nd component	Text	Carmody 2nd component flagging information
result_com/res	Text	result commercial/residential information based on EHD (primary) and Carmody information: Residential/Commercial/0 (0= no information)
result_ATU/PB/Inn	Text	result advanced system permit category based on EHD (primary) and Carmody information: ATU/PBTS_non_innovative/innovative/unknown/other (sand filters are other)
result_IM	Text	result IM zoning information based on EHD (primary) and Carmody information (no for records that had no indication of IM zoning):no/IM

C) Permit Number Results

This section of the database provides information on permit number data on potential advanced OSTDS from the Environmental Health Database, Carmody, County Health Department spreadsheets, and innovative paper files. A more condensed subset of this information is also in the table "DBsource_record_lookup"

Table: DBsource_permitnumbers

Field Name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
County	Text	County
CP_Combined	Text	Construction Permit number based on combining all data (EHD, Carmody, CHD, innovative) (is also in "dbsource_componentstechnology")
OP_Combined	Text	Operating Permit number based on combining all data (EHD, Carmody, CHD, innovative) (is also in "dbsource_componentstechnology")
CP_CentraxPermitNumber	Text	Construction Permit number based on EHD only

FinalSystemApprovalDate	Date/Time	Final system approval date based on EHD
OP_CentraxPermitNumber	Text	Operating Permit number based on EHD only
OPDate	Date/Time	From operating permit information in EHD: date of OP issue
SepticApplicationID	Text	SepticApplicationID (from EHD)
Old_carmodyID	Integer	ID number from previous Carmody download table
Tracking No	Text	Carmody field: tracking number
County Sanitary Permit No	Text	Carmody field: County Sanitary Permit No
State Permit No	Text	Carmody field: State Permit No
Eb_CHD+innovative_rev1_CHD_ID	Text	ID number from 319 table Eb_CHD+innovative_rev1_CHD_ID= ID of CHD and innovative files
CHD_ConstAP	Text	from CHD-files: ConstAP number for application (CENTRAX-identifier)
CHD_ConstOSTDSNumber	Text	from CHD-files: ConstOSTDSNumber (Centrax identifier)

D) Record Lookup Results

This section of the database provides information on whether a site was selected for sampling mostly based on a random number that was assigned to a system. This section also includes some information on permit numbers from various sources.

Table: DBsource_record_lookup

Field Name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
Random Number	Double	random number assigned to system
Selected for Sampling?	Text	selected as part of initial samples Y=random sample; Y1=sample for technology evaluation only; Y2=sample for both technology evaluation and random sample; Y3=additional random sample systems; Y4=other system; Y5=; Y6=Charlotte monitoring well system
County	Text	county

FinalSystemApprovalDate	Date/Time	Final System Approval date based on most recent construction
OPDate	Date/Time	latest operating permit date
CP_CentraxPermitNumber	Text	construction permit number (newest for address)
OP_CentraxPermitNumber	Text	operating permit number (newest for address)
CHD_ConstPermit	Text	construction permit number based on CHD/innovative data
CHD_ID	Integer	ID in CHD/Innovative record table
CHD_OperPermit	Text	operating permit number based on CHD/innovative data
Old_carmodyID	Integer	ID in Old Carmody table

E) Components Technology Results

This section of the database provides information on the technology of the components in the advanced system. The source of this information came from the Environmental Health Database, Carmody, County Health Department spreadsheets, and innovative permit files. Information such as the manufacturer, the treatment approach, and model are included. Because data came from many different sources, quality assurance fields are also included showing the results of various data checks that were done to help determine confidence in the result.

Table: DBsource_componentstechnology

Field Name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
sum_infosources	Integer	number of different data source in which information about this system was found
CP check	Text	result of check if two different versions of the EHD-download agreed on technology in the construction permit and which information to use
OP check	Text	result of check if two different versions of the EHD-download agreed on technology in the operating permit and which information to use
CM check	Text	result of check if Carmody provides technology information
CHD_inn check	Text	result of check if CHD and innovative

		sources agree on technology and which information to use
EHD_check	Text	result of check if operating and construction permit information in EHD agree on technology and which information to use
Car/CHD_inn	Text	result of check if Carmody and the CHD/innovative sources agree on technology and which information to use
EHD_other	Text	result of check if EHD and other (Carmody/CHD/innovative) agree on technology and which information to use
source_final	Text	Source from which the technology information has been taken for the first(main) component
Comb_Component	Text	Combined component information for first component
Comb_Man	Text	combined manufacturer information
Comb_Appr	Text	combined treatment approach
Comb_Techn	Text	combined technology/product line information
Comb_Modifier	Text	combined modifier for technology/product line
Comb_Model	Text	combined model number
Comb_aeration	Text	combined aeration approach (based on a lookup table with product line information)
Comb_aeration_comments	Text	comments on aeration approach
2nd_source	Text	Source from which the technology information has been taken for the second component (most frequently injection wells in Monroe County)
2ndComb_Component	Text	Combined component information for second component
2ndComb_Man	Text	combined manufacturer information
2ndComb_Appr	Text	combined treatment approach
2ndComb_Techn	Text	combined technology/product line information
2ndComb_Modifier	Text	combined modifier for

		technology/product line
2ndComb_Model	Text	combined model number
2nd Comb_aeration	Text	combined aeration approach (based on a lookup table with product line information)
2nd Comb_aeration_comments	Text	comments on aeration approach
Legend1_comb	Text	combined legend for the first tank
legend2_comb	Text	combined legend for the second tank (looks like some problems here 438 records have this, but not all have component information, and several conflicts)

F) Treatment Unit Description

This section of the database provides information on the description of the treatment unit to ensure consistency for data entry and analysis. This description includes the manufacturer, the product line, the modifier, and the model.

Table: manuf_productlin_modif_mod

Field Name	Data Type	Description
ID	Autonumber	Unique ID number for each treatment unit
Man_Proline_modif_model	Text	Condensed technology information: manufacturer_productline_modifier_model
Pretreatment_compartment	Text	Pretreatment compartment (default value) "none" Or "part of ATU" Or "separate and required" Or Is Null
Clarifier_compartment	Text	Clarifier compartment (default value) "none" Or "part of ATU" Or Is Null

G) Manufacturer Contact Information

This section of the database provides contact information for manufacturers of unit used in Florida.

Table: Manufacturer_Contact_Information

Field Name	Data Type	Description
ID	Autonumber	Unique ID number for each manufacturer
DB_MANUFACTURER	Text	Name of manufacturer from the database

current_manufacturer	Text	Name of current manufacturer if different from database
MODELS	Text	Models of units manufacturers
ADDRESS	Text	Mailing address
Second Address	Text	Second mailing address
City	Text	City
State	Text	State
Zipcode	Text	Zip code
Country	Text	Country
Primary number	Text	Primary phone number
Alternative number	Text	Alternate phone number
WEBSITE ADDRESS	Text	Website
Contact person	Text	Person to contact
Contact Number	Text	Phone number of contact person
Contact E-mail	Text	Email of contact person
Regulatory advisors	Text	Name of regulatory advisor
Regulatory number	Text	Phone number of regulatory advisor
Florida Contact Name	Text	Name of Florida contact
Florida Contact phone	Text	Phone number for Florida contact
Florida Contact e-mail	Text	Email of Florida contact

H) Drainfield Materials

This section of the database provides information on drainfield materials to ensure consistency for data entry and analysis. This data came from EHD.

Table: Drainfield Materials

Field Name	Data Type	Description
ID	Autonumber	Unique ID number for each drainfield material
CodeID	Number	Unique identifier from EHD
DisplayDescriptionText	Text	Description of drainfield material from EHD

I) Owners Survey Tracking Information

This section of the database provides tracking information for the owner's survey on user perceptions of advanced OSTDS in Florida. This data came from FSU for work done under Task 3 of the grant agreement. A separate database was created under Task 3 with tracking information for all of the different user group surveys. This is included here as some of the information for the owner's survey tracking was used in developing the queries and forms in the main project database. This table was created to keep track of when surveys were mailed, when they were returned, list the reason

why a survey may have been returned undeliverable, list when a survey was re-mailed, and what the overall status is of the surveys.

Table: tblSurveyOwnersTracking

Field Name	Data Type	Description
ID	Long integer	Unique ID number for each tracking number
track	Double	Tracking number for each survey
line	Double	Line from the original excel spreadsheet sent to FSU
Sampgrp	Double	Sample group number
Locate	Double	Numerical code: 1 – Residential, 2 – Commercial, and 3 – Unknown
loctxt	Text	Text for numerical Locate field: 1 – Residential, 2 – Commercial, and 3 – Unknown
Type	Double	Type of system: 1 – Residential ATU, 2 – Commercial ATU, 3 – Unknown ATU, 4 – Residential PBTS, 5 – Commercial PBTS, 6 – Unknown PBTS, 7 – Residential Innovative, 8 – Commercial Innovative
Septic	Double	Type of permit: 1 – ATU, 2 – PBTS, 3 - Innovative
Septtxt	Text	Text for type of permit: 1 – ATU, 2 – PBTS, 3 - Innovative
Source	Text	Source of data (construction permit or operating permit)
CentraxPermitNumber	Text	Construction permit number from EHD
OperatingPermitNumber	Text	Operating permit number from EHD
County	Text	County where system is located from EHD
CompleteStreetAddress	Text	Street address where system is located from EHD
City	Text	City where system is located from EHD
State	Text	State where system is located from EHD
Zip	Text	Zip code where system is located from EHD

OwnerFirstName	Text	First name of owner from EHD
OwnerLastName	Text	Last name of owner from EHD
OwnerAll	Text	Combined first and last name of owner
OwnerOrganization	Text	Organization from EHD
FinalName	Text	Final name used on letters (either data from OwnerAll or "Current Resident")
occupant	Text	If there was a name in the FinalName field, "or Current Resident" was entered in this field
title2	Text	Second title
OwnerHomePhone	Text	Home phone number from EHD
Comm/Res	Text	Commercial or residential from EHD
ApplicationSubType	Text	Subtype of application from EHD
FinalSystemApprovalDate	Text	Final system approval date from EHD
Tank1Size	Text	Size of the first tank from EHD
Tank1Legend	Text	Legend of the first tank from EHD
Tank1Manufacturer	Text	Manufacturer of the first tank from EHD
Tank2Size	Text	Size of the second tank from EHD
Tank2Legend	Text	Legend of the second tank from EHD
Tank2Manufacturer	Text	Manufacturer of the second tank from EHD
PBInnovativeComponent	Text	Component information from EHD
SepticApplicationID	Text	Application ID number from EHD
ApplicationFinalInspectionID	Text	Application final inspection ID number from EHD
OPUnitSize	Text	Size of the treatment unit from EHD operating permit
OPUnitName	Text	Model of the treatment unit from EHD operating permit
OPDFSize	Text	Drainfield size from EHD operating permit
OPLotSize	Text	Lot size from EHD operating permit
DateReturn	Text	Date survey was returned
instrument_status	Double	0 unreturned, 1 returned complete, 2 returned mail issues, 3 returned undeliverable, 4 returned new address, 5 second return, 6 out of district, 7 deceased, 8 returned not

		interested/blank, 9 N/A, 10 could not find new address
newstatus	Double	A "1" was put into the field if the surveys were returned undeliverable and given to DOH for re mailing
complete	Text	Survey completed
julystatus	Text	Status as of July
Instrument_new_administrator or owner name	Text	New mailing name
newadd1	Text	New mailing address #1
newadd2	Text	New mailing address #2
newcity	Text	New city
newstate	Text	New state
newzip1	Text	New zip code #1
Newzip2	Text	New zip code #2
re mail_status	Text	Status of re mailing survey
re mail_date	Text	Date survey was re mailed
comments	Text	Comments

J) Owners Survey Results

This section of the database provides information on the results of the owner's survey on user perceptions of advanced OSTDS in Florida. This data came from FSU for work done under Task 3 of the grant agreement. A separate database was created under Task 3 with survey results for all of the different user group surveys. This is included here as some of the information in the owner survey was used in developing the queries and forms in the main project database.

Table: tblSurveyOwnersCompleted

Field Name	Data Type	Description
ID	Long integer	Unique ID number for each tracking number
track	Double	Tracking number for each survey
enteredby	Text	Initials of person who entered the survey results
date	Date/Time	Date/time when survey results were entered
Sampgrp	Double	Sample group number
Locate	Double	Numerical code: 1 – Residential, 2 – Commercial, and 3 – Unknown
loctxt	Text	Text for numerical Locate field: 1 –

		Residential, 2 – Commercial, and 3 – Unknown
Type	Double	Type of system: 1 – Residential ATU, 2 – Commercial ATU, 3 – Unknown ATU, 4 – Residential PBTS, 5 – Commercial PBTS, 6 – Unknown PBTS, 7 – Residential Innovative, 8 – Commercial Innovative
Septic	Double	Type of permit: 1 – ATU, 2 – PBTS, 3 - Innovative
Septtxt	Text	Text for type of permit: 1 – ATU, 2 – PBTS, 3 - Innovative
Source	Text	Source of data (construction permit or operating permit)
Qu1	Double	Reference the code book submitted previously for Task 3
Qu1txt	Text	Reference the code book submitted previously for Task 3
Qu1oth	Text	Reference the code book submitted previously for Task 3
Qu2	Double	Reference the code book submitted previously for Task 3
Qu2txt	Text	Reference the code book submitted previously for Task 3
Qu3	Double	Reference the code book submitted previously for Task 3
Qu4	Double	Reference the code book submitted previously for Task 3
Qu5a	Double	Reference the code book submitted previously for Task 3
Qu5b	Double	Reference the code book submitted previously for Task 3
Qu5c	Double	Reference the code book submitted previously for Task 3
Qu5d	Double	Reference the code book submitted previously for Task 3
Qu5e	Double	Reference the code book submitted previously for Task 3
Qu5f	Double	Reference the code book submitted previously for Task 3
Qu5g	Double	Reference the code book submitted

		previously for Task 3
Qu5h	Double	Reference the code book submitted previously for Task 3
Qu5hoth	Text	Reference the code book submitted previously for Task 3
Qu6a	Double	Reference the code book submitted previously for Task 3
Qu6b	Double	Reference the code book submitted previously for Task 3
Qu6c	Double	Reference the code book submitted previously for Task 3
Qu6d	Double	Reference the code book submitted previously for Task 3
Qu6e	Double	Reference the code book submitted previously for Task 3
Qu6f	Double	Reference the code book submitted previously for Task 3
Qu6g	Double	Reference the code book submitted previously for Task 3
Qu6h	Double	Reference the code book submitted previously for Task 3
Qu6i	Double	Reference the code book submitted previously for Task 3
Qu6j	Double	Reference the code book submitted previously for Task 3
Qu6joth	Text	Reference the code book submitted previously for Task 3
Qu7	Double	Reference the code book submitted previously for Task 3
Qu7oth	Text	Reference the code book submitted previously for Task 3
Qu8	Double	Reference the code book submitted previously for Task 3
Qu8oth	Text	Reference the code book submitted previously for Task 3
Qu9	Double	Reference the code book submitted previously for Task 3
Qu10	Double	Reference the code book submitted previously for Task 3
Qu10oth	Text	Reference the code book submitted previously for Task 3

Qu11	Double	Reference the code book submitted previously for Task 3
Qu12	Double	Reference the code book submitted previously for Task 3
Qu13	Double	Reference the code book submitted previously for Task 3
Qu14a	Double	Reference the code book submitted previously for Task 3
Qu14b	Double	Reference the code book submitted previously for Task 3
Qu14c	Double	Reference the code book submitted previously for Task 3
Qu15a	Double	Reference the code book submitted previously for Task 3
Qu15b	Double	Reference the code book submitted previously for Task 3
Qu15c	Double	Reference the code book submitted previously for Task 3
Qu15d	Double	Reference the code book submitted previously for Task 3
Qu15e	Double	Reference the code book submitted previously for Task 3
Qu15f	Double	Reference the code book submitted previously for Task 3
Qu15g	Double	Reference the code book submitted previously for Task 3
Qu15h	Double	Reference the code book submitted previously for Task 3
Qu15i	Double	Reference the code book submitted previously for Task 3
Qu15ioth	Text	Reference the code book submitted previously for Task 3
Qu16txt	Text	Reference the code book submitted previously for Task 3
Qu17	Double	Reference the code book submitted previously for Task 3
Qu18atxt	Text	Reference the code book submitted previously for Task 3
Qu18btxt	Text	Reference the code book submitted previously for Task 3
Qu19	Double	Reference the code book submitted

		previously for Task 3
Qu19oth	Text	Reference the code book submitted previously for Task 3
Qu20a	Double	Reference the code book submitted previously for Task 3
Qu20b	Double	Reference the code book submitted previously for Task 3
Qu20c	Double	Reference the code book submitted previously for Task 3
Qu20d	Double	Reference the code book submitted previously for Task 3
Qu20e	Double	Reference the code book submitted previously for Task 3
Qu20eoth	Text	Reference the code book submitted previously for Task 3
Qu21	Double	Reference the code book submitted previously for Task 3
Qu21oth	Text	Reference the code book submitted previously for Task 3
Qu22	Text	Reference the code book submitted previously for Task 3
Qu23atxt	Text	Reference the code book submitted previously for Task 3
Qu23b	Double	Reference the code book submitted previously for Task 3
Qu23c	Double	Reference the code book submitted previously for Task 3
Qu23dtxt	Text	Reference the code book submitted previously for Task 3
Qu23e	Double	Reference the code book submitted previously for Task 3
Qu23f	Double	Reference the code book submitted previously for Task 3
Qu23gtxt	Text	Reference the code book submitted previously for Task 3
Qu23h	Double	Reference the code book submitted previously for Task 3
Qu23hoth	Text	Reference the code book submitted previously for Task 3
Qu23itxt	Text	Reference the code book submitted previously for Task 3

Qu23j	Double	Reference the code book submitted previously for Task 3
comments	Memo	Comments on data entry
CentraxPermitNumber	Text	Construction permit number from EHD
OperatingPermitNumber	Text	Operating permit number from EHD
County	Text	County where system is located from EHD
CompleteStreetAddress	Text	Street address where system is located from EHD
City	Text	City where system is located from EHD
State	Text	State where system is located from EHD
Zip	Text	Zip code where system is located from EHD
OwnerFirstName	Text	First name of owner from EHD
OwnerLastName	Text	Last name of owner from EHD
OwnerAll	Text	Combined first and last name of owner
OwnerOrganization	Text	Organization from EHD
FinalName	Text	Final name used on letters (either data from OwnerAll or "Current Resident")
occupant	Text	If there was a name in the FinalName field, "or Current Resident" was entered in this field
title2	Text	Second title
OwnerHomePhone	Text	Home phone number from EHD
Comm/Res	Text	Commercial or residential from EHD
ApplicationSubType	Text	Subtype of application from EHD
FinalSystemApprovalDate	Text	Final system approval date from EHD
Tank1Size	Text	Size of the first tank from EHD
Tank1Legend	Text	Legend of the first tank from EHD
Tank1Manufacturer	Text	Manufacturer of the first tank from EHD
Tank2Size	Text	Size of the second tank from EHD
Tank2Legend	Text	Legend of the second tank from EHD
Tank2Manufacturer	Text	Manufacturer of the second tank from EHD
PBInnovativeComponent	Text	Component information from EHD

SepticApplicationID	Text	Application ID number from EHD
ApplicationFinalInspectionID	Text	Application final inspection ID number from EHD
OPUnitSize	Text	Size of the treatment unit from EHD operating permit
OPUnitName	Text	Model of the treatment unit from EHD operating permit
OPDFSize	Text	Drainfield size from EHD operating permit
OPLotSize	Text	Lot size from EHD operating permit
OPDate	Text	Operating permit date from EHD

K) Step 1: Record ID Results

This section of the database provides information on the results of the Step 1 permit file review which consisted of assessing the completeness of the permit files as well as documenting basic information on document requests, the status of the permit file review, and quality control review information.

Table: Step1_recordID_results

Field Name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
Address_change	Yes/No	Were address changes needed? (address usually located on the upper portion of the document)
Permit_number_change	Yes/No	Were permit number changes (OP or CP) needed? (permit number located on the upper right corner of the construction permit)
Which permit number change	Text	If there was a permit number change, which was it "add CP";"add OP";"change CP";"change OP"
System_status_is	Text	Status of system based on initial information from CHD: abandoned before file request; abandoned after file request; active; active but conventional system; not_existent; not_on_file; permit_for_ME_IM_or_facility
System_treatment system	Text	Category of system based on permit

category_is		files: "ATU"; "PBTS non_innovative"; "Innovative"; "PBTS innovative"; "Keys interim"; "other"
Construction_info_available?	Yes/No	Does the file contain construction information (permit or drawings)? (if any information is received regarding construction permit check this box)
Operating_info_available?	Yes/No	Does the file contain operating permit, maintenance entity and inspection information? (if any information is received regarding operating permit check this box)
Comments_on_file_search	Memo	Additional comments about finding the file and the system
Requested_files_when	Date/Time	On what date did were the files requested from CHD?
Requested_files_from_whom	Text	From whom were the files requested from CHD?
Received_files_when_1st attempt	Date/Time	On what date did were the files received by state health office in response to the first attempt?
Source_Field 1st	Text	What was the source of document collection? Carmody, EHD or County files, Laserfiche
Reviewed_1st by	Text	Who reviewed the file?
Reviewed_1st on (mm/dd/yyyy)	Date/Time	What date did the review occur?
2nd_attempt_Omitted_documents	Text	This represents the second attempt to notify CDH regarding omitted documents?
2nd_Date_Requested	Date/Time	Date the second request was made for omitted documents?
Received_files_when_2nd attempt	Date/Time	On what date did were the files received by SHO in response to the second attempt?
Source_Field 2nd	Text	What was the source of document collection? Carmody, EHD or County files, Laserfiche
3rd_attempt_Omitted_document	Text	This represents the third attempt to notify CHD regarding omitted documents?
3rd_Date_Requested	Date/Time	Date the third request was made to notify CHD regarding omitted

		documents?
Received_files_when_3rd attempt	Date/Time	On what date did we receive the files received by state health office in response to the third attempt?
Source_Field 3rd	Text	What was the source of document collection? Carmody, EHD or County files, Laserfiche
Reviewed_final by	Text	Who reviewed the file? (The final review of all documents)
List_of_requested_documents_received	Text	List of requested documents that have been received
All requested documents received?	Yes/No	Did we receive all documents requested?
Reviewed_final comments	Text	Final comments on source data collection
Reviewed_final on (mm/dd/yyyy)	Date/Time	What date did the review occur?
Complete	Yes/No	All documents are accounted for or no additional information is needed
Construction_Permit_Application Received	Yes/No	Is DH4015 p.1 included in the file or in EHD?
Site_Evaluation_Received?	Yes/No	Has this file been received? (typically acquired from form DH4015 page 3)
Construction_Permit_Received?	Yes/No	Is DH4016 included in the file or in EHD?
Final_Inspection_Received?	Yes/No	Has this file been received? (Form 4016 page 2 of 3)
Site_Plan_Received?	Yes/No	Is a site plan included in the file? (scaled drawing which included the approximate location of system and drainfield)
Engineer_Design_Drawing_Received?	Yes/No	Are the drawings by the engineer present? (drawing of the systems created by an engineer)
As-Built_Received?	Yes/No	Is an as-built in the file? (unscaled drawing of system and drainfield)
Operating_Permit_Received?	Yes/No	Has this file been received? (Form DH4013 (03/97))
Operating_Permit_Application_Received?	Yes/No	Has this file been received? (Form DH 4081 page 1)
Operating_Permit_Application_Comments	Text	Comments regarding operating permit application (Generally located on form

		DH4013 under condition of operation)
Maintenance_Entity_Contract_Received?	Yes/No	Has this file been received? (Approved Maintenance Entity provider)
Inspection_Checklist_Received?	Yes/No	Has this file been received? (This checklist represents what the CHD uses to uniformly inspect advanced systems)
File_Activity_Checklist_Received?	Yes/No	Has this file been received? (This checklist represents any written log and/or journal regarding the system)
CHD_Inspection_Reports_Received?	Yes/No	Has this file been received?
Maintenance_Entity_Inspection_Reports_Received?	Yes/No	Has this file been received? (This document contains service provided at the time of the ME inspection)
Enforcement_Action_For_Advanced_System_Received?	Yes/No	Has this file been received? (List the last documented enforcement action)
PBTS/Innovative_System_Design_Calculations_Received?	Yes/No	Has this file been received? (Typically found with required PBTS Engineer documents)
PBTS/Innovative_System_Design_Criteria_Received?	Yes/No	Has this file been received? (Typically found with required PBTS Engineer documents)
PBTS/Innovative_Soil_Treatment_Description_Received?	Yes/No	Has this file been received? (Typically found with required PBTS Engineer documents)
PBTS/Innovative_Contingency_Plan_Received?	Yes/No	Did the engineer provide contingency instructions? (Typically found with required PBTS Engineer documents)
PBTS/Innovative_Certification_of_Design_Received?	Yes/No	Is the certification of design included in the application package? (Typically found with required PBTS Engineer documents)
PBTS/Innovative_Operation_and_Maintenance_Manual_Received?	Yes/No	Did the engineer include an operation and maintenance manual? (Typically found with required PBTS Engineer documents)
PBTS/Innovative_Applicant_Cover_Letter_Received?	Yes/No	if this is an innovative system, are homeowner acknowledgement form and CHD/SHO review form included?
PBTS/Innovative_Cert_of_compl	Yes/No	Did the engineer provide a certificate

iance_received?		of compliance after the installation? (Typically found with required PBTS Engineer documents)
PBTS/Innovative_Monitoring_Requirements_Recieved?	Yes/No	Did the engineer provide a list of monitoring requirements for the system? (Typically found with required PBTS Engineer documents)
QC_check_by	Text	Initials of QC checker
QC_check_on	Date/Time	Short date of QC check
QC_results	Text	Result of QC review: complete and agrees with records; partial and agrees with records; missing some fields; data entry errors; missing some and errors
QC Comments Step 1	Memo	Comments on the QC review for Step 1
QC Review Status	Text	Status of QC review (final, follow-up)
DateModified	Date/Time	Date that this field was modified, autoentered
Primary key	Long Integer	Primary key for this table

L) Step 2a: Construction Permit File Results

This section of the database provides information on the results of the Step 2a permit file review which consisted of reviewing construction permit file information.

Table: Step2a_const_permit_file_results

Field Name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
CP_Soil_Profile complete?	Yes/No	Is the soil profile filled out correctly and completely DH4015 p.3?
Employee#SignPermit	Long Integer	Employee number from the CEHP who signed off on the permit
CP_permit signed and approved	Yes/No	Is the construction permit signed and approved in the file?
final inspection form signed and approved?	Yes/No	Is the final inspection signed and approved in the file?
FinalSystemApprovalDate	Date/Time	Final date when system was final approved

Enforcement_Action	Yes/No	Is there enforcement action document relative to construction included in the file (including failed construction inspections)?
Source_Asbuilt	Text	Who drew the as-built?
CP_comments	Memo	Comments on completeness of construction permit file
Permit_Comments	Memo	Comments from the actual construction permit
Engineer_designed	Yes/No	Was the system designed by an engineer?
application_type	Text	Application type checked on application form DH4015 p.1
application_type_comments	Text	Comments on application (variance, which multiple types were checked?)
CP_Commercial/residential	Text	Does the construction permit show this as commercial or residential system?
ResidentialOrCommercialText	Text	Does the operating permit show this as commercial or residential system?
Establishment_type	Text	Type of establishment DH4015 p.1
Establishment_type2-New	Text	Type of establishment DH4015 p.1 for second type of establishment using system
Usable property_size (acres)	Single	Property size given on site evaluation or similar DH4015 p.3 in acres
Usable property_size (feet)	Double	Property size given on site evaluation or similar DH4015 p.3 in square feet
Estimated_sewage_flow_(tablel)	Single	Estimated sewage flow (Table I) DH4015 p.3
Authorized sewage flow (gpd)	Long Integer	Authorized sewage flow DH4015 p.3
Site_elevation (in)	Single	Elevation of proposed site (in) DH4015 p.3
Changes_to_Site_Evaluation	Yes/No	Check this box if changes to the site evaluations data dump occurred?
site elevation above/below	Text	Indicator of elevation of site above/below
EWSWT elevation (in)	Single	What is the estimated wet season water table as shown on the site evaluation? Inches below = -

EWSWT elevation above/below	Text	Indicator of elevation of EWSWT above/below
Application_date	Date/Time	When was system construction permit originally applied for? (mm/dd/yyyy) DH4015 p.1
ApplicationCompleteDate	Date/Time	Date when application was complete
Permit_Issue_date	Date/Time	When was permit issued (DH4016 p.1)
Construction_approval_date	Date/Time	When was construction approval given on DH4016 p.2
Construction_permit_approval_date_changed?	Yes/No	Was a change to the EHD-obtained construction permit approval date made based on the permit review?
Changes_to_Construction_permit_application	Yes/No	Check this box if changes to the Construction permit data dump occurred?
Changes_to_final_system_approval_date?	Yes/No	Was a change to the EHD-obtained final system approval date made based on the permit review?
permit_source	Text	Source of information on permitting (flow, authorized flow, setbacks, application)
tank 1 legend	Text	Legend 1 of tank (DH4016 p.2)
tank 2 legend	Text	Legend 2 of tank (DH4016 p.2)
Grease_Trap	Long Integer	Is a grease trap present? 1=yes; 0=no
Drainfield_Cp_Application_Size	Text	Drainfield size annotated on Construction permit application. (DH 4016 p.2)
DF1_Permit	Double	Size of drainfield #1 on the construction permit
DF2_Permit	Text	Size of drainfield #2 on the construction permit
Tank1Units	Text	Units for tank #1 (gal/gpd)
Tank2Units	Text	Units for tank #2 (gal/gpd)
Tank1	Double	Size of tank #1 on the final inspection
Tank2	Double	Size of tank #2 on the final inspection
Drainfield_TypeCode	Double	Unique identifier from EHD for the drainfield type (same as number in Drainfield_Materials table)
DocumentNumber	Text	Document number from EHD

DrainfieldInstallation_DosingPumpsNumber	Double	Number of dosing pumps
DF1_Final	Double	Size of drainfield #1 on the final inspection
DF2_Final	Text	Size of drainfield #2 on the final inspection
IndustrialManufacturingOrEquivalent	Text	Is this industrial/manufacturing or its equivalent?
Drainfield_flow_type	Text	How does water get into drainfield and soil? "drip";"gravity";"lift-dosed";"LPDS";"unknown"
Drainfield_dosing	Text	Is there a dosing pump -> dosing from DH4016 p.2?
Drainfield_type	Text	Drainfield type relative to ground surface "fill"; "mound"; "standard/subsurface"; "unknown"
Drainfield_config	Text	Drainfield configuration "bed"; "trench"; "unknown"
Drainfield_material	Text	What is the material used in the drainfield (manufacturer; product)
elevation_of_constructed_drainfield_(in)	Double	Numerical value of constructed elevation of drainfield above/below benchmark (DH 4016 p.2)
elevation_of_constructed_drainfield_above/below	Text	Indicator of constructed elevation of drainfield above/below benchmark (DH 4016 p.2)
ElevationOfProposedSystemSiteInchesOrFeet-New	Text	Is the elevation of the system site in inches or feet?
Drainfield comments	Text	Any additional comments on drainfield?
Authorized sewage flow increase	Yes/No	Was authorized sewage flow increase allowed due to PBTS?
SetbackSurfaceWater	Text	What is the setback to the surface water from the final inspection?
Setback reductions_horizontal?	Yes/No	Was a horizontal setback reduction allowed due to PBTS?
Setback reductions_vertical	Yes/No	Was a vertical setback reduction allowed due to PBTS?
Drainfield_size_reduction	Text	What drainfield size reduction was taken for the pretreatment (common numbers are 0, 25, 30, 40%)

Monitoring_locations_shown?	Text	Are monitoring locations shown or indicated in the file?
Monitoring_locations_where?	Text	What are the monitoring locations, if indicated?
Operating_manual_available?	Text	Is there an operation manual, including inspection procedures for this unit or references included?
Monitoring_instructions	Memo	What are the monitoring instructions?
Monitoring_requirements	Memo	What are the monitoring requirements?
Sampling_Requirements_in_permit	Text	Are sampling requirements specified?
Variance?	Yes/No	Has a variance been applied for?
QC Comments Step 2a	Memo	Comments on the QC review for Step 2a
DateModified	Date/Time	Date that this field was modified, autoentered
Primary Key	Long Integer	Primary key for this table

M) Step 2b: PBTS Review Results

This section of the database provides information on the results of the Step 2b PBTS review which consisted of reviewing information in the permit files.

Table: Step2b_PBTSreview_results

Field Name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
PBTS_Present	Yes/No	Is this a PBTS?
PBTS_application signed and sealed?	Yes/No	Is the PBTS application package signed and sealed? (4015 page 1)
Performance_standard_class	Text	Qualitative performance standard: "advanced sec."; "adv.sec.cBOD5/TSS (drip/DFred.)"; "advanced ww."; "adv.ww.cBOD5/TSS (drip/DFred.)"; "baseline"; "Florida Keys"; "secondary"; "sec.CBOD5/TSS (drip/DFred.)"; "ATU"; "nitrogen"; "DFred."; "not specified"; "unknown"
cBOD5 (mg/L)	Long Integer	Numerical performance standard (if specified)

TSS(mg/L)	Long Integer	Numerical performance standard (if specified)
TN(mg/L)	Long Integer	Numerical performance standard (if specified)
TP(mg/L)	Long Integer	Numerical performance standard (if specified)
fecal coliform (cfu/100mL)	Long Integer	Numerical performance standard (if specified)
comments_performance_standard	Text	Comments on performance standards (e.g. if not based on annual averages)
Engineer_required_maintenance/monitoring	Text	What frequency of maintenance and monitoring did the engineer specify?
Are_there_sampling_requirements?	Yes/No	Did the engineer specify sampling requirements?
Sampling_Requirements	Text	What are the sampling requirements?
Additional comments	Memo	Additional comments on the engineer's work
DateModified	Date/Time	Date that this field was modified, autoentered
QC Comments Step 2b	Memo	Comments on the QC review for Step 2b
HistoricalSampleResults	Yes/No	Are there any historical sample results for this system?
Primary Key	Long Integer	Primary key for this table

N) Step 2c: Treatment Train Results

This section of the database provides information on the results of the Step 2c review on the treatment train information.

Table: Step2c_treatmenttrain_results

Field Name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
Changes_to_previous_info	Yes/No	Was any of the previous information changed?
Which changes?	Memo	What information was added or changed?
Multiple_treatment_units_#	Long Integer	How many treatment units are there for this system permit?
Multiple_treatment_units_same	Text	If there are multiple units are they the

		same or different?
Multiple_treatment_units_config	Text	If there are multiple treatment units, are they in series or in parallel? "in series"; "parallel"; "unknown"
Dosing_into_treatment	Text	Is the treatment system(s) (in contrast to the drainfield) dosed?
Trash or pretreat tank/compartament	Text	Is there a trash tank or compartment present? Tank; 1st compartment; Absent
Pretreatment_vol(g)	Long Integer	Pretreatment tanks/compartament volumes (g)
Manufacturer_list	Long Integer	Manufacturer of treatment system (database info)
Manuf_Prodline_modif_model	Long Integer	Manufacturer_Product line_modifier_model of treatment system (database info)
Modifier of configuration	Text	Modifier of treatment system "with recirc";
ATU_compartment_vol(g)	Long Integer	Treatment compartment volume (g)
ATU_treatment_capacity (gpd)	Long Integer	Nominal treatment capacity (gpd)
Recirc_presence	Text	None (usual); present (drip systems will have recirculation present); questionable; unknown
Recirc_from	Text	From which compartment/tank does recirculation start (e.g. branch from discharge pipe to...)
Recirc_to	Text	To which compartment/tank does recirculation flow to
Recirc_rate	Text	Ratio recirculation flow/discharge flow
Clarifier_qualitative	Text	Compartment within ATU; separate tank; absent; unknown
Clarifier_vol(g)	Long Integer	Clarifier volume (gallons)
additional_tank1_qualitative	Text	Filter or recirculation tank or compartment description qualitative: absent; mineral aggregate; P-removal; recirculation; other
additional_tank2_qualitative	Text	Filter or recirculation tank or compartment description qualitative:

		absent; mineral aggregate; P-removal; recirculation; other
P-reduction approach	Text	P-reduction material: NONE; AOS; LECA; BRICK_CHIPS; MID-FLOC
P_red_tank_vol(g)	Long Integer	P-reduction tank or compartment volume (gal)
P-red_sat_unsat	Text	If P-reduction provided: saturated upflow; saturated downflow; unsaturated downflow
DOSE_tank_qualitative	Text	Dosing tank description: absent; part of ATU; part of filter tank; separate tank; other
DOSE_tank_vol(g)	Long Integer	Dosing tank/compartment volume (gal)
DOSE_PUMP	Text	None; lift dose; low-pressure dose; drip irrigation
Chlorination	Text	None; in dosing tank; in separate tank; in P-filter tank
Discharge_to	Text	WELL; DRAINFIELD
Monitoring_locations where	Memo	Description of monitoring locations
Grease_interceptor_to	Text	Where does the grease interceptor discharge to
DateModified	Date/Time	Date that this field was modified, autoentered
QC Comments Step 2c	Memo	Comments on the QC review for Step 2c
Primary Key	Long Integer	Primary key for this table

O) Step 2d: Operating Permit File Results

This section of the database provides information on the results of the Step 2d permit file review which consisted of reviewing operating permit file information.

Table: Step2d_operating_permit_file_results

Field Name	Data Type	Description
System_set_ID	Integer	System ID number assigned for this project
General_operating_permit_question	Text	General questions and/or changes with regards to operating permit documentation
Application_for_OP	Yes/No	Is the OP application on file?

Date_of_OP_application	Date/Time	Date of most recent OP application on file
OriginalApplicationDate	Date/Time	Date of the original OP application
Approval date on OP application	Date/Time	Approval date on latest OP application
Operating_permit_approval_date_changed?	Yes/No	Was a change to the EHD-obtained most recent OP application permit approval date made based on the permit review?
Type of OP application	Text	Aerobic / Commercial / IM (indicate if multiple)
Aerobic	Long Integer	Is the aerobic system checkbox checked?
Commercial	Long Integer	Is the commercial system checkbox checked?
IndustrialManufacturing	Long Integer	Is the industrial/manufacturing system checkbox checked?
PerformanceBased	Long Integer	Is the performance-based system checkbox checked?
TypeOfOP-Checkboxes	Text	Result of which check box was checked, indicates the type of operating permit (Aerobic, Commercial, Industrial/Manufacturing, PBTS)
New OP application?	Text	Is this a new, amended or renewal OP application?
Installation_approved_date	Date/Time	Installation approval date per operating permit application
Manufacturer on OP_app	Text	Manufacturer per information on operating permit application
ATU_type_on OP_application	Text	ATU type per information on operating permit application
>1500 gpd unit	Text	Is >1500 gpd indicator on OP application yes or no
multiple ATUs	Text	Are multiple ATUs used on site indicated on OP application?
PBandInnovativeID	Double	ID number for PBTS and Innovative System from EHD
Operating permit ever issued?	Yes/No	Has an operating permit ever been issued?
TreatmentUnitCapacity	Double	Capacity of treatment unit listed on

		the operating permit application
TreatmentUnitUnits	Text	Is the Treatment Unit Capacity in gallons or gpd?
GreaseTrapGallons	Double	Capacity of the grease trap listed on the operating permit application
DosingTankGallons	Double	Capacity of the dosing tank listed on the operating permit application
DrainfieldSizeSquareFeet	Double	Size of the drainfield listed on the operating permit application
DrainfieldDescription	Text	Description of the drainfield listed on the operating permit application
LotSizeSquareFeet	Double	Lot size in square feet listed on the operating permit application
SqFtAcres	Text	Is the lot size in square feet or acres?
ApprovedBusinessTypes	Text	Types of approved businesses
DrainfieldType	Text	Type of drainfield (mound, subsurface, etc.)
DrainfieldLayout	Text	Layout of drainfield (trenches, bed, etc.)
Operating conditions on OP	Memo	What, if any conditions are on the OP (none, sampling, etc.)
Expiration of latest operating permit	Date/Time	Expiration data of latest operating permit
PermitIssueDate	Date/Time	Date OP was issued
How many days past due?	Long Integer	How many days is the permit past due?
Operating permit current?	Yes/No	Is there a current operating permit present? Current = 6/30/10 or later
Documentation for lack of OP	Text	Is there a reason given for the lack of a current operating permit (vacant house, enforcement ongoing)?
Changes_to_OP_permit_Application	Yes/No	Check this box if changes were made to the operating permit application data dump
Changes_to_Operating_permit	Yes/No	Check this box if changes were made to the operating permit data dump
Effective_date_of_previous OP_permit_year_completed	Date/Time	Date of beginning of most recent permit year completed by 3/31/2010 (first half of permits issued 4/1/2008-3/31/2009, second half of permits issued 4/1/2007-3/31/2008, year

		before permit issued after 3/31/09, 3/31/2009 for systems w/o permit on 3/31/09
Inspection_1_by_CHDs	Yes/No	Is there an inspection report completed by the CHD for the permit year?
Inspection_1_by_Me	Yes/No	Is there a first inspection report completed by the ME for the permit year?
Inspection_2_by_Me	Yes/No	Is there a second inspection report completed by the ME for the permit year?
Inspection_>2_by_Me	Yes/No	Are there additional inspection reports completed by the ME for the permit year (ATU>1500 gpd; boreholes in Keys)?
Maintenance_Entity_Contract	Yes/No	Is there a valid ME contract included in the files?
Maintenance_Contract_Expiration	Date/Time	When does the most recent ME contract expire?
Last_ME_Inspection	Date/Time	What was the date of the most recent ME inspection?
Monitoring_submitted	Memo	Was sampling result were submitted by ME?
Technical Problems?	Memo	What were any technical problems noted on the inspection reports or elsewhere?
Description of violations	Text	Describe any violations documented in the file
Violation observed when?	Date/Time	When was the violation observed? (most recent occurrence)
ME sent notice of discontinuation	Date/Time	When did the ME send a notice to the CHD that the owner will not continue maintenance agreement? (most recent occurrence)
CHD Sent reminder to ME	Date/Time	When did the CHD send a reminder to ME to renew operating permit? (most recent occurrence)
CHD sent reminder to owner	Date/Time	When did the CHD send a reminder to owner to get operating permit/maintenance contract? (most recent occurrence)

CHD sent NOV to owner	Date/Time	When did the CHD send a notice of violation to owner about ME/OP requirement? (most recent occurrence)
CHD sent notice of intended action	Date/Time	When did the CHD send a notice of intended action to owner/ME? (most recent occurrence)
CHD sent administrative complaint	Date/Time	When did the CHD send an administrative complaint to owner/ME? (most recent occurrence)
CHD sent citation	Date/Time	When did the CHD send a citation to owner/ME? (most recent occurrence)
Enforcement action results?	Memo	What enforcement action results are documented in the file
PBandInnovativeID2	Text	ID number 2 for PBTS and Innovative System from EHD
ATU_type_on OP_application2	Text	Type of ATU on OP application #2
PBandInnovativeID3	Text	ID number 3 for PBTS and Innovative System from EHD
ATU_type_on OP_application3	Text	Type of ATU on OP application #3
PBandInnovativeID4	Text	ID number 4 for PBTS and Innovative System from EHD
ATU_type_on OP_application4	Text	Type of ATU on OP application #4
PBandInnovativeID5	Text	ID number 5 for PBTS and Innovative System from EHD
ATU_type_on OP_application5	Text	Type of ATU on OP application #5
PBandInnovativeID6	Text	ID number 6 for PBTS and Innovative System from EHD
ATU_type_on OP_application6	Text	Type of ATU on OP application #6
DateModified	Date/Time	Date that this field was modified, autoentered
General Questions	Text	List any general questions/comments about this record
QC Comments Step 2d	Memo	Comments on the QC review for Step 2d
Primary Key	Long Integer	Primary key for this table

P) Step 3 & 4: Components

This section of the database provides information on the results of the component details from the Step 3 & 4 field evaluation.

Table: Step3&4_ Components

Field Name	Data Type	Description
ComponentID#	Long Integer	Automatic generated number for this system's component information
System_set_ID	Long Integer	System ID number assigned for this project
ComponentEvalDate	Date/Time	Date that the component was evaluated
ComponentType	Text	Type of component
ComponentOrder	Long Integer	Order of the component (1-10)
ComponentTypeRecirculationFrom	Long Integer	If recirculation was selected as a component type, which component is it coming from
ComponentTypeRecirculationTo	Long Integer	If recirculation was selected as a component type, which component is it going to
ComponentTypeFilterTankMedia	Text	If filter tank was selected as a component type, what sort of media is it?
ComponentTypeDisinfectionOther	Text	If disinfection was selected as a component type and the type of disinfection was listed as other, what is it?
ComponentTypeOther	Text	If other was selected as the component type and it is not a sampling port, what is it?
ComponentFunction	Text	Function of component
ComponentFunctionOther	Text	If other was selected as the component function, what is it?
ComponentMaterial	Text	Material of component CO-concrete FG-fiberglass PE-polyethylene OT-other _____
ComponentMaterialOther	Text	Description of the component material if it is other
Tank structural condition	Text	0-structually sound, 1-rebar exposed, 2-spalling, 3-corrosion, 4-roots inside of compartment, 5-cracks, 6-deflection, 7-inlet seal missing/broken, 8-outlet seal missing/broken, 9-holes, 10-lid broken/missing, 11-manhole

		cover missing/broken, 12-other
ConditionOther	Text	If other was listed for the tank structural condition, what is it?
LiquidLevelOutlet	Text	Liquid level relative to outlet (in) (NA for pump tank)
LiquidLevelOutletAbove/Below	Text	Liquid level relative to outlet above or below
LiquidLevelInlet	Text	Liquid level relative to outlet (in) (NA for pump tank)
LiquidLevelInletAbove/Below	Text	Liquid level relative to outlet above or below
LiquidLevelHigher	Text	Evidence liquid level has been higher
LiquidLevelDropped	Text	Evidence liquid level dropped (no pump)
Non-sewageInflow	Text	Evidence of non-sewage inflow
Watertight	Text	Appears to be watertight (no visual leaks)
OilyFilm/Sheen	Text	Oily film/sheen present
OdorIntensity/Quality	Text	Intensity: 0 None perceivable 1 barely perceivable 2 faint but identifiable 3 easily perceivable 4 Strong Quality: SEP Septic EARTHY Earthy/Musty/Moldy CHEM Chemical SOUR Sour/Rancid/Putrid OTH Other_____ N/A
SampleTaken	Yes/No	Sample taken?
ScumDepth	Long Integer	Depth of scum in inches
ScumColor	Text	Color of scum BL Black BR Brown MU Mustard GR Gray WH White TAN Tan OTH Other_____ NO None
ScumColorOther	Text	Description of other color for scum color if selected
ScumClarity/Structure	Text	CLEAR Clear CLOUD Cloudy MILK Milky MUD Muddy FLOC Flocked GRA Grainy FLU Fluffy
ClearZoneDepth	Long Integer	Depth of clear zone in inches
ClearZoneColor	Text	Color of clear zone BL Black BR

		Brown MU Mustard GR Gray WH White TAN Tan OTH Other____ NO None
ClearZoneColorOther	Text	Description of other color for clear zone color if selected
ClearZoneClarity/Structure	Text	CLEAR Clear CLOUD Cloudy MILK Milky MUD Muddy FLOC Flocked GRA Grainy FLU Fluffy
SludgeDepth	Long Integer	Depth of sludge in inches
SludgeColor	Text	Color of sludge BL Black BR Brown MU Mustard GR Gray WH White TAN Tan OTH Other____ NO None
SludgeColorOther	Text	Description of other color for sludge color if selected
SludgeClarity/Structure	Text	CLEAR Clear CLOUD Cloudy MILK Milky MUD Muddy FLOC Flocked GRA Grainy FLU Fluffy
Comments	Memo	Comments on component
YSIStationDescription	Text	Description of station where YSI readings were taken (i.e. pump tank). Should match type of component field.
YSIDate	Date/Time	Date in yy/mm/dd for YSI reading
YSITime	Date/Time	Time in hr:min YSI reading was taken
YSIWaterTemp	Double	Water temperature
YSIDO	Double	Dissolved oxygen
YSI%Sat	Double	Percent saturation
YSI%SatTrend	Text	Trend for dissolved oxygen
YSIORP	Double	Oxygen reduction potential
YSICond	Double	Specific Conductance
YSISalinity	Double	Salinity
YSIpH	Double	pH
Step3&4ID	Long Integer	Primary key from Step3&4_field_evaluation table
SampleLocation	Text	AC-aeration chamber CL-clarifier DS-disinfection ND- not determined OT-other MF-media filter PO-phosphorus sorption PU- pump/dosing/ recirc chamber SP-sampling port TT-

		trash/premt tank PEB-pre-cleaned EB FBL-field blank FEB-field-cleaned EB
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Q) Step 3 & 4: Field Evaluation

This section of the database provides information on the results of the Step 3 & 4 field evaluation.

Table: Step3&4_field_evaluation

Field Name	Data Type	Description
Step3&4ID	Long Integer	Unique value to identify this sample event
QC Comments Step 3	Memo	Comments on the QC review for Step 3
Step3FormDate	Date/Time	Date of initial system evaluation
Step3FormSampler	Text	Name of sampler for initial system evaluation
System_set_ID	Long Integer	System ID number assigned for this project
Date#1PreviousMEVisit	Date/Time	Date of first previous ME visit
Date#2PreviousMEVisit	Date/Time	Date of second previous ME visit
DatePreviousCHDIInsp	Date/Time	Date of the previous CHD inspection
OperatingPermitCurrent	Text	Is the Operating Permit current?
MaintenanceContractCurrent	Text	Is the Maintenance Contract current?
MaintenanceEntityPresent?	Yes/No	Is the Maintenance Entity present for this site visit?
CHDPresent?	Yes/No	Is the CHD present for this site visit?
Owner/UserPresent?	Yes/No	Is the Owner/User present for this site visit?
SiteVisitAnnouncedBy	Text	Who announced the site visit
SiteVisitAnnouncedTo	Text	Who was notified of the site visit
SiteVisitAnnounced#Days	Long Integer	How many days in advance was the site visit announced?
SystemInfoComments	Memo	Comments on the system information gathered
AccessToSite	Text	Permission given, Open, Obstructed (locked gate/fence), Denied, Other
BaseForInitialSystemEvaluation	Text	Observation from afar, Observation of above-ground parts and control panels, Probing of system location, Permit records

HowManySystems	Text	None found, One, More than one
CommentsIfNoSystems	Memo	If there is not a system, provide a comment
SystemSketchSource	Text	Source of the system sketch
Surfacing/Breakouts	Text	Are there signs of surfacing or breakouts near the treatment system?
Tank/Lid/CoverBroken/Missing	Text	Are tanks, lids, or access covers broken or missing?
Settling/erosion	Text	Are there any signs of settling or erosion near the system components?
VehicularTraffic	Text	Does it appear as though the system is subject to vehicular traffic?
Encroachment	Text	Is there any encroachment onto the system?
EncroachmentWithin5Ft	Text	If yes, what is within 5ft of system?
EncroachmentWithin5FtOther	Text	If Other was checked for Encroachments within 5 ft, what is the reason
OdorIntensity	Text	Evaluate intensity of odor within 10ft of perimeter of system
OdorQuality	Text	Evaluate quality of odor within 10ft of perimeter of system
OdorQualityOther	Text	If Other was checked for Odor Quality, what is the description
OdorSource	Memo	What is the source of the odor, if present?
SoundIntensity	Text	Evaluate intensity of sound (except alarm) within 10ft of perimeter of system
SoundSource	Text	Evaluate source of sound (except alarm) within 10ft of perimeter of system
SoundComments	Memo	Any comments on the sound evaluation?
Watertight	Text	Does the system appear water-tight?
WaterEnterOrLeave	Text	If not watertight, does the water seem to enter or leave the system?
WaterEnter/LeaveFrom	Text	If not watertight, where does the water enter or leave?
WaterEnter/LeaveFromOther	Text	If water enters/leaves from "other", what is the description?

AlarmsOn	Text	Are any alarms on?
AlarmsOnReason	Text	What alarm is on
AlarmsOnReasonOther	Text	If "other" was checked for the reason the alarm is on, describe here
AssessSewageFlow	Text	Is there a means to assess sewage flow? (water meter, event counter, flow meter)
MeterReading	Long Integer	If there is a means to assess sewage flow and influent is available for sampling, document meter reading
SystemEvaluationComments	Memo	Comments on the system evaluation
Alterations/SiteChanges	Text	Any landscape construction, utility work, or changes in drainage patterns?
Obstructed	Text	Has system been obstructed?
Additions	Text	Any apparent recent additions to the building(s) connected to system?
ComponentsMissing/Modified	Text	Are any components missing or modified?
ComponentsNotDetermined	Yes/No	Were the components not determined?
ComponentsNotDeterminedReason	Memo	Reason why components were not determined, if applicable
ComponentsComments	Memo	Comments on components list
ControlPanelVisible	Text	Is control panel for treatment system visible?
ControlPanelAccessible	Text	Is control panel for treatment system accessible?
PowerOnFromIndicator	Text	Does power indicator, if present, indicate that power is on?
PowerOnFromAerator	Text	Does operation of system (aerator) indicate that power is on?
PowerOff	Text	Does it appear that the power is switched off?
PowerComments	Memo	Comments on the power assessment
AlarmPresent	Text	Is an alarm present for the treatment unit?
AlarmPresentYes	Text	If yes, which of the following are operational?
DosingTankAlarm	Text	Is an alarm present for the dosing tank, if tank is present?

DosingTankAlarmPresentYes	Text	If yes, which of the following are operational?
TreesInDF	Text	Are there any trees in the drainfield?
DrainfieldVegetation	Text	Relative to surrounding areas, how does the vegetation on the drainfield look?
VegetationLocation	Memo	Location of drainfield vegetation listed in "drainfield vegetation" field
Ponding	Text	Is there evidence that there is ponding in the drainfield?
PondingDescription	Text	Description of ponding
PondingDescriptionObPortInches	Long Integer	Number of inches of standing water in observation port
PondingDescriptionOther	Text	Ponding description if "other" selected
DrainfieldComments	Memo	Comments on the drainfield evaluation
SamplePort	Text	Is there an effluent sample port installed?
SamplePortLocation	Text	Where is the sample port?
SamplePortType	Text	Type of sample port
SamplePortOdor	Text	Was the odor checked, not checked, or N/A?
SamplePortOdorIntensity	Text	Evaluate intensity of odor within the sample port
SamplePortOdorQuality	Text	Evaluate quality of odor within the sample port
SamplePortOdorQualityOther	Text	If Other was checked for Sample Port Odor Quality, what is the description?
TreatmentTankAccess	Text	Can you get access to the treatment tank?
AccessLocation	Text	Location of access to treatment tank
AccessLocationBuried	Long Integer	Number of inches access location is buried
AccessCoversFastened	Text	Are access covers securely fastened?
AccessCoversOperable	Text	Are access covers in operable condition?
Post-TreatmentTankAccess	Text	Can you get access to the post-treatment tank?
Post-TreatmentTankAccessLocation	Text	Location of access to post-treatment tank
Post-	Long	Number of inches access location to

TreatmentTankAccessLocation Buried	Integer	post-treatment tank is buried
Post-TreatmentTankAccessCovers Fastened	Text	Are access covers to post-treatment tank securely fastened?
Post-TreatmentTankAccessCoversOperable	Text	Are access covers to post-treatment tank in operable condition?
InfluentSample	Text	Is it feasible to obtain an influent sample from this system?
InfluentSampleLocation	Text	Location of influent sample
AccessToSewageComments	Memo	Comments on access to sewage
Step4FormDate	Date/Time	Date of system operation evaluation
Step4FormSampler	Text	Name of sampler for system operation evaluation
Region	Long Integer	Region sampler works in: 1=Monroe, 2=Charlotte, 3=Lee, 4=Statewide, 5=Volusia, 6=Headquarters
Time	Date/Time	Time of assessment
CloudCover%	Long Integer	Percent cloud cover
RainfallCurrent	Text	1 None 2 Light 3 Moderate 4 Heavy
RainfallPrev7Days	Long Integer	Amount of rainfall over the previous 7 days in inches
DateLastPumpout	Date/Time	Date of the last pumpout
AerationPresent	Text	Is an aeration chamber present?
AerationAccess	Text	Is there access to the aeration chamber?
AerationMixing	Text	Is there mixing in the aeration chamber
AerationMixingComment	Memo	Comments on mixing in aeration chamber
SSVSampleTaken	Text	Was a Settled Sludge Volume Test sample obtained?
SSVSettledBegin	Long Integer	Volume in mL/L of settled sludge at beginning
SSVFloatingBegin	Long Integer	Volume in mL/L of floating sludge at beginning
SSVBeginTime	Long Integer	Number of minutes after obtaining sample when volume of settled and

		floating sludge was measured
SSVSettledEnd	Long Integer	Volume in mL/L of settled sludge at end
SSVSettledEndQualifier	Text	Qualifier for SSV Settled End
SSVFloatingEnd	Long Integer	Volume in mL/L of floating sludge at end
SSVEndTime	Long Integer	Number of minutes after obtaining sample when volume of settled and floating sludge was measured
BiomassColor	Text	Color of biomass
BiomassColorOther	Text	If Other was checked for Biomass Color, what is the description
BiomassStructure	Text	Structure of biomass
Supernatant	Text	Cloudy or clear
Attached-GrowthPlugging	Text	Attached-growth media plugging?
Attached-GrowthFloating	Text	Attached-growth media floating?
Attached-GrowthMediaReplaced	Text	Attached-growth media replaced?
MediaFilter	Text	Is there a media filter?
MediaFilterDevice	Text	What is the device for the media filter?
MediaFilterDistribution	Text	Is there uniform distribution over the media filter?
MediaFilterOperation	Text	Is the media filter operating properly?
MediaFilterPonding	Text	Is there ponding associated with the media filter?
MediaFilterComments	Memo	Comments on the media filter
MediaFilterSumpPonding	Text	Is there ponding in the media filter sump?
GravityDrainage	Text	Is gravity drainage operational?
SolidsBuildupSump	Text	Is there solids buildup in the sump area?
UnderdrainVents	Text	Are underdrain vents present?
UnderdrainVentsOperable	Text	Are the underdrain vents operable?
ChlorinationSystem	Text	Is there a chlorination system present?
ChlorinationManufacturer	Text	Manufacturer of chlorination system
Chlorinator	Text	Info on the chlorinator
Dechlorinator	Text	Info on the dechlorinator
ChlorinationSystemModel	Text	Model number of the chlorination system
ChlorinationMethod	Text	Tablet, Liquid

ChlorinationCondition	Text	Does the unit appear in good condition?
ChlorinationLocation	Long Integer	Location of chlorination: Location in/after tank #___
TabletChlorinatorOperable	Text	Chlorinator appears operable
ChlorineTabletsPresent	Text	Are chlorine tablets in place?
TabletsTouchEffluent	Text	Are the tablets in contact with effluent?
ContactChamberOperable	Text	Is the contact chamber operable?
FreeChlorineResidual	Double	Free chlorine residual ppm
TotalChlorineResidual	Long Integer	Total chlorine residual ppm
EffluentScreenLocation	Text	Location of effluent screen / tertiary filter
EffluentScreenClogging	Text	Evidence of clogging of effluent screen / tertiary filter?
QC Check By	Text	Who performed QC check
Task 5 Site	Yes/No	Was this a Task 5 site?

R) Step 4: Field Analysis Form

This section of the database provides information on the results of the Step 4 field analysis form.

Table: Step4_field_analysis_form

Field Name	Data Type	Description
System_set_ID	Long Integer	System ID number assigned for this project
FieldAnalysisID	Long Integer	Automatically generated number to associate with this sample
Sampler	Text	Name of the sampler
TestStripExpDate	Date/Time	Date that the test strip brand/lot expires
Sample#	Long Integer	Number of the sample within this sampling event (1-6)
SAMPLE_DATE	Date/Time	Date - Short
SAMPLE_TIME	Date/Time	Time - Medium
SampleType	Text	Eff =effluent Inf=Influent Tap=tap water QC=quality control
SampleLocation	Text	AC-aeration chamber CL-clarifier DS-disinfection ND- not determined OT-other MF-media filter PO-phosphorus

		sorption PU- pump/dosing/ recirc chamber SP-sampling port TT-trash/premt tank PEB-pre-cleaned EB FBL-field blank FEB-field-cleaned EB
SampleMethod	Text	i=intermediate container d=directly from free fall, spigot etc. p=peristaltic pump
Original/Duplicate	Integer	01-original sample 02-duplicate
LabSampleTaken	Yes/No	Was a lab sample taken?
Color	Text	BLack BRown MUstard GRay WHite TAN OTher _____ NOne
Clarity	Text	Clear Cloudy Milky Muddy Flocced Grainy Fluffy
OdorIntensity	Long Integer	0 None perceivable 1barely perceivable 2 faint but identifiable 3 clearly perceivable 4 strong
OdorQuality	Text	Septic Earthy/Musty/Moldy Chemical Sour/Rancid/Putrid Other_____ N/A
HACH_Apparent_Color	Long Integer	Value for apparent color from HACH Colorimeter DR/890
HACH_Apparent_Color_qualifier	Text	Qualifier for apparent color from HACH Colorimeter DR/890
HACH_Turbidity	Long Integer	Value of turbidity from HACH Colorimeter DR/890
HACH_Turbidity_qualifier	Text	Qualifier for turbidity from HACH Colorimeter DR/890
HACH_NH4-N	Double	Value of NH3-N from HACH Colorimeter DR/890
HACH_NH4-N_qualifier	Text	Qualifier for NH3-N from HACH Colorimeter DR/890
HACH_NO3-N	Double	Value of NO3-N from HACH Colorimeter DR/890
HACH_NO3-N_qualifier	Text	Qualifier for NO3-N from HACH Colorimeter DR/890
HACH_PO4	Double	Value of PO4 from HACH Colorimeter DR/890
HACH_PO4-P	Double	Value of PO4-P (=PO4 *.3261) from HACH Colorimeter DR/890
HACH_PO4-P_qualifier	Text	Qualifier for PO4-P from HACH

		Colorimeter DR/890
pH(Taylor)	Double	Taylor Kit pH
pH(Taylor)_qualifier	Text	Qualifier Taylor Kit pH
Alkalinity(Taylor)	Double	Taylor Kit total alkalinity
Alkalinity(Taylor)_qualifier	Text	Qualifier Taylor Kit total alkalinity
PO4 (strip)	Double	Test strip (mg/L) PO4
NO3 (strip)	Double	Test strip (mg/L) NO3-N
NO2 (strip)	Double	Test strip (mg/L) NO2-N
NH4-N (strip)	Double	Test strip (mg/L) NH3-N
Total Alkalinity (strip)	Double	Test strip (mg/L) total alkalinity
Cl (strip)	Double	Test strip (mg/L) Cl
pH (strip)	Double	Test strip
AnalystsInitials	Text	Initials of analyst
AnalysisHours	Long Integer	Analysis done within ____ hours
Comments	Memo	Comments on field analysis
QC to do	Text	Lab values seem odd, need checking; comments of changes
DateCreated	Date/Time	Date that this field was created, autoentered
DateModified	Date/Time	Date that this field was modified, autoentered
pH YSI Calibration Successful?	Yes/No	Was the YSI calibration successful for pH?
DO YSI Calibration Successful?	Yes/No	Was the YSI calibration successful for dissolved oxygen?
ORP YSI Calibration Successful?	Yes/No	Was the YSI calibration successful for specific conductance?
QC Comments Step 4b	Memo	Comments on the QC review for Step 4b
Step3&4ID	Long Integer	Step 3&4 ID number

S) Calibration Results

This section of the database provides information on the calibration results for the field evaluation.

Table: tbl Calibration

Field Name	Data Type	Description
ID	Long Integer	Primary key

Date	Date/Time	Date of calibration
Meter #	Text	Which meter
Initials	Text	Who performed the calibration? Use ER1 for Eb in Monroe, ER2 for Eb in Charlotte, ER3 for Eb with Keith, ER4 for Eb in Volusia
Dissolved Oxygen Result	Text	What was the result of the dissolved oxygen calibration? Pass; Calibration trouble; Incomplete no a.m., Incomplete no p.m.
Dissolved Oxygen Standard	Double	Enter standard in here:
Dissolved Oxygen Reading	Double	Enter reading in here for those that failed
Specific Conductance Result	Text	What was the result of the specific conductance calibration? Pass; Calibration trouble; Incomplete no a.m., Incomplete no p.m.
Specific Conductance Standard	Double	Enter standard in here for those that failed
Specific Conductance Reading	Double	Enter reading in here for those that failed
pH Result	Text	What was the result of the pH calibration? Pass; Calibration trouble; Incomplete no a.m., Incomplete no p.m.
pH Standard	Double	Enter standard in here for those that failed
pH Reading	Double	Enter reading in here for those that failed
Comments	Memo	Overall comments
pH Data Useable?	Text	Are the pH data useable for this date?
Dissolved Oxygen Data Useable?	Text	Are the Dissolved Oxygen data useable for this date?
Specific Conductance Data Useable?	Text	Are the Specific Conductance data useable for this date?

T) Samplers Region

This section of the database provides information on the region where samplers were located. By grouping samplers by region, the calibration results could be assigned to a specific instrument.

Table: TblSamplersRegion

Field Name	Data Type	Description
Sampler Initials	Text	Initials of sampler
Primary Key	Long Integer	Primary key
Region	Long Integer	Region sampler works in: 1=Monroe, 2=Charlotte, 3=Lee, 4=Statewide, 5=Volusia, 6=Headquarters

U) Lab Results

This section of the database provides information on the lab results of the sampling efforts. Information from several labs have been combined into one table along with an analysis of the quality control review.

Table: TblSamplersRegion

Field Name	Data Type	Description
Step5_lab_results_System ID	Double	System ID number assigned for this project
Step5_lab_results_Sample Type	Text	Eff =effluent Inf=Influent Tap=tap water QC=quality control
Step5_lab_results_Sampling Location	Text	AC-aeration chamber CL-clarifier DS-disinfection ND- not determined OT-other MF-media filter PO-phosphorus sorption PU- pump/dosing/ recirc chamber SP-sampling port TT-trash/premt tank PEB-pre-cleaned EB FBL-field blank FEB-field-cleaned EB
Step5_lab_results_Sampling Method	Text	i=intermediate container d=directly from free fall, spigot etc. p=peristaltic pump
Step5_lab_results_Original/Duplicate	Text	01-original sample 02-duplicate
Step5_lab_results_Sampler	Text	Sampler name
Wo_Number	Double	Work order number from the analyzing lab
Step5_lab_results_Sample_Id	Text	Sample ID from chain of custody form
Lab_Sample_Id	Text	Lab assigned sample ID number
Matrix	Text	W – water, WW – wastewater
Date Collected	Date/Time	Date sample was collected
Time Collected	Date/Time	Time sample was collected

Date Received	Date/Time	Date sample was received
Time Received	Date/Time	Time sample was received
Sample_temp_preservation intact?	Text	Was the sample temperature and preservation intact?
DOH NELAP certification number	Text	DOH NELAP certification number
Total Alkalinity_Method	Text	Analysis method for Total Alkalinity
Total Alkalinity Result	Double	Total Alkalinity result
Total Alkalinity RL	Double	Total Alkalinity reporting limit
Total Alkalinity MDL	Double	Total Alkalinity method detection limit
Total Alkalinity Units	Text	Units Total Alkalinity was measured in
Total Alkalinity DF	Double	Dilution factor for Total Alkalinity
Total Alkalinity Analysis Date	Date/Time	Total Alkalinity analysis date
Total Alkalinity Analysis Time	Date/Time	Total Alkalinity analysis time
Total Alkalinity Flag	Text	Total Alkalinity flag
Total Alkalinity Comments	Text	Total Alkalinity Comments
Total CBOD_Method	Text	Analysis method for CBOD5
CBOD5 Result	Double	CBOD5 result
CBOD5 RL	Double	CBOD5 reporting limit
CBOD5 MDL	Double	CBOD5 method detection limit
CBOD5 Units	Text	Units CBOD5 was measured in
CBOD5 DF	Double	Dilution factor for CBOD5
CBOD5 Analysis Date	Date/Time	CBOD5 analysis date
CBOD5 Analysis Time	Date/Time	CBOD5 analysis time
CBOD5 Flag	Text	CBOD5 flag
CBOD5 Comments	Text	CBOD5 Comments
TKN Method	Text	Analysis method for TKN
TKN Result	Double	TKN result
TKN RL	Double	TKN reporting limit
TKN MDL	Double	TKN method detection limit
TKN Units	Text	Units TKN was measured in
TKN DF	Double	Dilution factor for TKN
TKN Analysis Date	Date/Time	TKN analysis date
TKN Analysis Time	Date/Time	TKN analysis time
TKN Flag	Text	TKN flag
TKN Comments	Text	TKN Comments
Nitrate-Nitrite Method	Text	Analysis method for Nitrate-Nitrite
Nitrate-Nitrite Result	Double	Nitrate-Nitrite result
Nitrate-Nitrite RL	Double	Nitrate-Nitrite reporting limit
Nitrate-Nitrite MDL	Double	Nitrate-Nitrite method detection limit
Nitrate-Nitrite Units	Text	Units Nitrate-Nitrite was measured in

Nitrate-Nitrite DF	Double	Dilution factor for Nitrate-Nitrite
Nitrate-Nitrite Analysis Date	Date/Time	Nitrate-Nitrite analysis date
Nitrate-Nitrite Analysis Time	Date/Time	Nitrate-Nitrite analysis time
Nitrate-Nitrite Flag	Text	Nitrate-Nitrite flag
Nitrate-Nitrite Comments	Text	Nitrate-Nitrite Comments
TSS Method	Text	Analysis method for TSS
TSS Result	Double	TSS result
TSS RL	Double	TSS reporting limit
TSS MDL	Double	TSS method detection limit
TSS Units	Text	Units TSS was measured in
TSS DL	Double	Dilution factor for TSS
TSS Analysis Date	Date/Time	TSS analysis date
TSS Analysis Time	Date/Time	TSS analysis time
TSS Flag	Text	TSS flag
TSS Comments	Text	TSS Comments
Total Nitrogen Method	Text	Analysis method for Total Nitrogen
Total Nitrogen Result	Double	Total Nitrogen result (calculated by adding TKN and Nitrate-Nitrite)
Total Nitrogen RL	Double	Total Nitrogen reporting limit
Total Nitrogen MDL	Double	Total Nitrogen method detection limit
Total Nitrogen Units	Text	Units Total Nitrogen was measured in
Total Nitrogen DF	Double	Dilution factor for Total Nitrogen
Total Nitrogen Analysis Date	Date/Time	Total Nitrogen analysis date
Total Nitrogen Analysis Time	Date/Time	Total Nitrogen analysis time
Total Nitrogen Flag	Text	Total Nitrogen flag
Total Nitrogen Comments	Text	Total Nitrogen Comments
Total Phosphorus Method	Text	Analysis method for Total Phosphorus
Total Phosphorus Result	Double	Total Phosphorus result
Total Phosphorus RL	Double	Total Phosphorus reporting limit
Total Phosphorus MDL	Double	Total Phosphorus method detection limit
Total Phosphorus Units	Text	Units Total Phosphorus was measured in
Total Phosphorus DF	Double	Dilution factor for Total Phosphorus
Total Phosphorus Analysis Date	Date/Time	Total Phosphorus analysis date
Total Phosphorus Analysis Time	Date/Time	Total Phosphorus analysis time
Total Phosphorus Flag	Text	Total Phosphorus flag
Total Phosphorus Comments	Memo	Total Phosphorus Comments
Total Alkalinity QC	Text	QC results for Total Alkalinity
CBOD5 QC	Text	QC results for CBOD5
TKN QC	Text	QC results for TKN

Nitrate-Nitrite QC	Text	QC results for Nitrate-Nitrite
TSS QC	Text	QC results for TSS
Total Nitrogen QC	Text	QC results for Total Nitrogen
Total Phosphorus QC	Text	QC results for Total Phosphorus
Step5_lab_results_QC Comments	Text	Comments on QC results
Step5_lab_results_Region	Double	Region where sample was taken
Step5_fecal_lab_resultstable_ Sampler	Text	Sampler name for fecal sample collection
Step5_fecal_lab_resultstable_Sy stem ID	Double	System ID number assigned for this project for fecal sample taken
Step5_fecal_lab_resultstable_Sa mple Type	Text	Eff =effluent Inf=Influent Tap=tap water QC=quality control
Step5_fecal_lab_resultstable_Sa mpling Location	Text	AC-aeration chamber CL-clarifier DS- disinfection ND- not determined OT- other MF-media filter PO-phosphorus sorption PU- pump/dosing/ recirc chamber SP-sampling port TT- trash/pretrmt tank PEB-pre-cleaned EB FBL-field blank FEB-field-cleaned EB
Step5_fecal_lab_resultstable_Sa mpling Method	Text	i=intermediate container d=directly from free fall, spigot etc. p=peristaltic pump
Step5_fecal_lab_resultstable_Or iginal/Duplicate	Text	01-original sample 02-duplicate
Step5_fecal_lab_resultstable_Sa mple_Id	Text	Sample ID from fecal sample chain of custody form
Fecal_Lab_Sample_Id	Text	Fecal lab assigned sample ID number
Fecal Date Collected	Date/Time	Date sample was collected
Fecal Time Collected	Date/Time	Time sample was collected
Fecal Date Received	Date/Time	Date sample was received
Fecal Time Received	Date/Time	Time sample was received
Fecal Sample temp_preservative intact?	Text	Was the sample temperature and preservation intact?
Fecal Lab DOH NELAP certification number	Text	DOH NELAP certification number
Fecal Method	Text	Analysis method for Fecal Coliform
Fecal Result	Double	Fecal Coliform result
Fecal RL	Text	Fecal Coliform reporting limit
Fecal MDL	Text	Fecal Coliform method detection limit

Fecal Units	Text	Units Fecal Coliform was measured in
Fecal DF	Double	Dilution factor for Fecal Coliform
Fecal Analysis Date	Date/Time	Fecal Coliform analysis date
Fecal Analysis Time	Text	Fecal Coliform analysis time
Fecal Flag	Text	Fecal Coliform flag
Fecal Comments	Text	Fecal Coliform Comments
PREPDATE	Date/Time	Date fecal sample was prepped
PREPTIME	Text	Time fecal sample was prepped
Fecal QC	Text	QC results for fecal samples
Step5_fecal_lab_resultstable_Q C Comments	Text	Comments on QC results for fecal samples
Step5_fecal_lab_resultstable_R egion	Double	Region where fecal sample was taken

Appendix B: Database Forms

System ID: Address: Construction Permit No: Old_carmodyID:
 Operating Permit No:

Record Inquiry _Status | Construction Permit Review | Operating Permit Review | PBTs Review | Treatment Train | File Review Status

Selected for Sampling? Address_change? Permit_number_change?
 Which permit number changed?

Record Inquiry First Attempt
 Requested files when:
 From whom:
 Received files when:
 Source:
 Reviewed by:
 Reviewed on (mm/dd/yyyy):

Second Attempt
 Requested files when:
 Received files when:
 Source:
 Omitted Documents:

Third Attempt
 Requested files when:
 Received files when:
 Source:
 Omitted Documents:

List of Requested Documents Received:

- Construction Permit Application
- Site Evaluation
- Construction Permit
- Final Inspection
- Site Plan
- Operating Permit
- Operating Permit Application
- Maintenance Entity Contract
- CHD Inspection Reports
- Maintenance Entity Inspection Reports
- Engineer Design Drawing
- As-Built
- Inspection Checklist
- File Activity Checklist
- Enforcement Action for Advanced System?
- Construction information available?
- Operating information available?
- PBTs/Innovative System Design Calculations
- PBTs/Innovative System Design Criteria
- PBTs/Innovative Soil Treatment Description
- PBTs/Innovative Contingency Plan
- PBTs/Innovative Certification of Design
- PBTs/Innovative Operation and Maintenance Manua
- PBTs/Innovative Applicant Cover Letter
- PBTs/Innovative Monitoring Requirements
- Engineers Certificate of Compliance

Record Inquiry Complete?

Status
 System_status_is:
 System treatment category is:

Comments on file search:

QC Comments Record Inquiry Status:

Sample information

Sample_Id	Date Collected

Survey Results

instrument_stat	System_set_ID
0. Unreturned	
1. Returned -- Complete	1.4 Returned -- Complete Late
1.1 Return Complete 2nd Mailing	
1.2 Returned -- Complete from new address	
1.3 Returned-- Complete Spanish	1.31 Spanish Late
2. Returned -- P.O. New address	
2.1 Returned -- old changes	
2.2 sent to new address 2nd new address given	
2.3 returned undeliverable from 2nd new address	
2.4 3rd new address	
3. Returned - (undeliverable)	
3.1 Insufficient Address	
3.2 Moved, left no address	
3.3 Forward expired	
3.4 Not deliverable as addressed/Unable To Forward	
3.5 Attempted -- not known	
3.55 No mail receptacle	
3.6 Temporarily Away	
3.7 No such street/number	
3.8 Vacant	
3.12 Box closed	
3.13 Returned for better address	
3.14 returned for postage	
3.15 Out of state change of address	
3.16 Refused/unclaim	
4. Returned -- SRL found new address	
4.1 SRL found new address -- not yet mailed	
5. Second Return -- Bad Address	
5.1 second return -- new address	
6. Out of district change of address	
7. Deceased	
8. Returned -- Not interested	
8.1 Returned -- Blank	
9. N/A - Removed	
10. SRL could not find new address	

Figure 1. Screenshot of Step 1 Record Review Form Page 1


	System ID: <input type="text"/>	Address: <input type="text"/>	Construction Permit No: <input type="text"/>	Old_carmodyID: <input type="text"/>				
	<input type="text"/>	<input type="text"/>	Operating Permit No: <input type="text"/>	<input type="text"/>				
Record Inquiry _Status	Construction Permit Review	Operating Permit Review	PBTS Review	Treatment Train	File Review Status			
Final File Review by: <input type="text"/>	QC_check_by: <input type="text"/>	QC Comments Record Inquiry:	<input type="text"/>					
Final File Review on (mm/dd/yyyy): <input type="text"/>	QC_check_on: <input type="text"/>	QC Comments Construction Permit Review:				<input type="text"/>		
Final File Review Comments:	QC_results: <input type="text"/>	QC Comments Operating Permit Review:						
<input type="text"/>	QC Review Status: <input type="text"/>	QC Comments PBTS Review:				<input type="text"/>		
		QC Comments Treatment Train:	<input type="text"/>					

Figure 2. Screenshot of Step 1 Record Review Form Page 2

<p>Construction Permit <input type="checkbox"/> Construction Permit Received?</p> <p>Date Issued: <input type="text"/></p> <p>Permit DF #1 size: <input type="text"/> Permit DF #2 size: <input type="text"/></p> <p>Permit tank #1 size: <input type="text"/> Permit tank #2 size: <input type="text"/></p> <p>Drainfield_type: <input type="text"/> <input type="checkbox"/> Construction permit signed and approved?</p> <p>Drainfield_config: <input type="text"/> Is a grease trap present? 1=yes; 0=no <input type="text"/></p> <p>Permit_Comments: <input type="text"/></p>	<p>Site Evaluation <input type="checkbox"/> Site Evaluation Received?</p> <p>Estimated_sewage_flow_(table I): <input type="text"/> gpd <input type="text"/> Calculation feet to inches: <input type="text"/> ft = <input type="text"/> in</p> <p>Authorized sewage flow (gpd): <input type="text"/></p> <p>Net usable area available: <input type="text"/></p> <p>Site_elevation (in): <input type="text"/> benchmark/reference point</p> <p>EWSWT (in): <input type="text"/> existing grade</p>
<p>Final Inspection <input type="checkbox"/> Final Inspection Received? <input type="checkbox"/> Changes to final system approval?</p> <p>Tank Info: tank 1 legend: <input type="text"/> tank 2 legend: <input type="text"/></p> <p>Drainfield Info:</p> <p>Calculation of drainfield size: <input type="text"/> x <input type="text"/> = <input type="text"/> sq ft</p> <p>Final DF #1 size: <input type="text"/> Final DF #2 size: <input type="text"/></p> <p>elevation of drainfield (in): <input type="text"/> benchmark/reference point</p> <p>Drainfield_dosing: <input type="text"/> # of Dosing Pumps: <input type="text"/></p> <p>Drainfield_material: <input type="text"/> SetbackSurfaceWater: <input type="text"/></p> <p>Drainfield_flow_type: <input type="text"/></p> <p>Approval Info:</p> <p><input type="checkbox"/> Final inspection form signed and approved?</p> <p>Final Construction_approval_date: <input type="text"/></p> <p>FinalSystemApprovalDate: <input type="text"/></p>	<p>Site Plan <input type="checkbox"/> Site Plan Received?</p> <p><input type="checkbox"/> Monitoring_locations_shown? Monitoring_locations_where?: <input type="text"/></p> <p>Engineer Design <input type="checkbox"/> Engineer_designed? <input type="checkbox"/> Engineer Design Drawing Received?</p> <p>As Built <input type="checkbox"/> As-Built Received? Source_Asbuilt: <input type="text"/></p> <p>Miscellaneous</p> <p><input type="checkbox"/> Enforcement Action for Construction Permit?</p> <p>Drainfield_size_reduction: <input type="text"/></p> <p><input type="checkbox"/> Was a variance issued?</p> <p>Monitoring_instructions: <input type="text"/></p> <p>Monitoring_frequency: <input type="text"/></p> <p>Sampling_Requirements: <input type="text"/></p>
<p>Construction Application <input type="checkbox"/> Construction Permit Application Received? <i>Which multiple types were checked?</i></p> <p>application_type: <input type="text"/> application_type_comments: <input type="text"/></p> <p>I/M zoning: <input type="text"/></p> <p>res/com: <input type="text"/></p> <p>Establishment Type: <input type="text"/></p> <p>Establishment Type#2: <input type="text"/> Application Date: <input type="text"/></p>	<p>General Construction Permit Comments:</p> <p><input type="text"/></p>
<p>QC Comments Construction Permit Review: <input type="text"/></p>	

Figure 3. Screenshot of Step 2a Construction Permit Review Form

System treatment category is: PBTS_Present

PBTS_application signed and sealed?
 Authorized sewage flow increase
 Setback reductions_horizontal?
 Setback reductions_vertical

Performance_standard_class:

cBOD5 (mg/L):
TSS(mg/L):
TN(mg/L):
TP(mg/L):
fecal coliform (cfu/100mL):
comments_performance_standard:

Frequency_of_maintenance_and_monitoring:

Are_there_sampling_requirements?:

Sampling_Requirements:

Additional comments:

QC Comments PBTS Review:

List of Requested Documents Received:

- PBTS/Innovative System Design Calculations
- PBTS/Innovative System Design Criteria
- PBTS/Innovative Soil Treatment Description
- PBTS/Innovative Contingency Plan
- PBTS/Innovative Certification of Design
- PBTS/Innovative Operation and Maintenance Manual
- PBTS/Innovative Applicant Cover Letter
- PBTS/Innovative Certificate of Compliance
- PBTS/Innovative Monitoring Requirements

HistoricalSampleResults

Figure 4. Screenshot of Step 2b PBTS Review Form

Transparent fields=information from permit info		Shaded fields=information for data entry							
Comp. 1 Source for 1st comp.: <input type="text" value="no info"/>		Treatment Train:							
Manufacturer: <input type="text"/> Component: <input type="text"/> Technology/Product Line: <input type="text"/> Model: <input type="text"/> Modifier: <input type="text"/> Aeration: <input type="text"/> Aeration Comments: <input type="text"/>		Pretreatment:							
Comp. 2 Source: <input type="text" value="0"/>		Pretreatment? <input type="text"/> Grease_Int._goes_to: <input type="text"/> Pretreatment_vol(gal): <input type="text"/> Dosing_into_treatment? <input type="text"/>							
Component: <input type="text"/> Manufacturer: <input type="text"/> Approach: <input type="text"/> Technology/Product Line: <input type="text"/> Modifier: <input type="text"/> Model: <input type="text"/>		Advanced system core (usually aerobic treatment step):							
Tanks		Treatment unit desc.: <input type="text"/>							
tank 1 legend: <input type="text"/> Tank1: <input type="text"/> <input type="text"/>		<table border="1"> <tr> <td></td> <td>Pretreatment_compartment</td> <td>Clarifier_compartment</td> </tr> <tr> <td>▶</td> <td></td> <td></td> </tr> </table>			Pretreatment_compartment	Clarifier_compartment	▶		
	Pretreatment_compartment	Clarifier_compartment							
▶									
tank 2 legend: <input type="text"/> Tank2: <input type="text"/> <input type="text"/>		multiple ATUs: <input type="text" value="No"/> Capacity from OP: <input type="text"/>							
legend1_comb: <input type="text"/> legend2_comb: <input type="text"/>		How many >1?: <input type="text"/> capacity (gpd): <input type="text"/>							
GreaseInt. (gal): <input type="text"/> Grease_Trap: <input type="text"/>		same or different? <input type="text"/> ATU_compt_vol(gal): <input type="text"/>							
Dos.tank (gal): <input type="text"/> Estimated_flow (gpd) <input type="text"/>		configuration: <input type="text"/> Clarifier? <input type="text"/>							
<input type="checkbox"/> Changes_to_previous_info Which changes? <input type="text"/>		Configuration:							
QC Comments <input type="text"/>		Dosing tank? <input type="text"/>							
Treatment Train: <input type="text"/>		Modifier of configuration: <input type="text"/>							
System_set_ID: <input type="text" value="512"/>		Recirc_from: <input type="text"/>							
		Recirc_to: <input type="text"/>							
		Recirc_rate (%): <input type="text"/>							
		Additional Treatment:							
		additional_tank1_purpose: <input type="text"/>							
		additional_tank2_purpose: <input type="text"/>							
		Chlorination:							
		Phosphorus reduction:							
		P-approach: <input type="text"/> P_tank(gal): <input type="text"/>							
		P-sat_unsat: <input type="text"/>							
		Disposal:							
		Drainfield_flow_type: <input type="text"/>							
		Discharge_to: <input type="text"/>							
		Monitoring Locations: <input type="text"/>							

Figure 5. Screenshot of Step 2c Treatment Train Form

Operating Permit Application		Maintenance / Inspections	
<input type="checkbox"/> Operating_Permit_Application_Received? New / Amended / Renewal: <input type="text"/> Type of OP application: <input type="text"/> Date of aerobic system installation approval: <input type="text"/> Aerobic Unit Manufacturer: <input type="text"/> ATU type: <input type="text"/> <input type="checkbox"/> >1500 gpd unit <input type="checkbox"/> multiple ATUs TreatmentUnit: <input type="text"/> <input type="text"/> GreaseTrapGallons: <input type="text"/> Approved BusinessType: <input type="text"/> DosingTankGallons: <input type="text"/> Drainfield Size Sq. Feet: <input type="text"/> LotSizeSquareFeet: <input type="text"/> DrainfieldDescription: <input type="text"/> SqFtAcres: <input type="text"/> DrainfieldType: <input type="text"/> Date_of_OP_application: <input type="text"/> DrainfieldLayout: <input type="text"/> Approval date on OP application: <input type="text"/> OriginalApplicationDate: <input type="text"/> <input type="checkbox"/> Operating permit ever issued?		Effective_date_of_previous OP_permit_year_completed: <input type="text" value="6/28/2010"/> <input type="checkbox"/> Inspection_1_by_CHDs Calculated number: <input type="text" value="6/28/2010"/> <input type="checkbox"/> Inspection_1_by_ME <input type="checkbox"/> Inspection_2_by_ME <input type="checkbox"/> Inspection_>2_by_ME <input type="checkbox"/> Maintenance_Entity_Contract Maintenance_Contract_Expiration: <input type="text"/> Last_ME_Inspection: <input type="text"/> Monitoring_submitted: <input type="text"/>	
Operating Permit <input type="checkbox"/> Operating_Permit_Received? <input type="checkbox"/> Operating permit current? Expiration of latest operating permit: <input type="text"/> PermitIssueDate: <input type="text"/> Documentation for lack of OP: <i>(vacant house, enforcement ongoing)</i> <input type="text"/> Operating conditions: <input type="text"/> <div style="border: 1px solid red; padding: 2px; width: fit-content;">DO NOT type in this field unless the information is incorrect</div>		Operating Permit Enforcement List Technical Problems: <input type="text"/> Description of violations: <input type="text"/> ME sent notice of discontinuation: <input type="text"/> CHD Sent reminder to ME: <input type="text"/> CHD sent reminder to owner: <input type="text"/> CHD sent NOV to owner: <input type="text"/> CHD sent notice of intended action: <input type="text"/> CHD sent citation: <input type="text"/> CHD sent administrative complaint: <input type="text"/> Enforcement action results?: <input type="text"/> General_Operating_permit_Questions: <input type="text"/>	
QC Comments Operating Permit Review: <input type="text"/>			

Figure 6. Screenshot of Step 2d Operating Permit Review Form

Step 3 Page 1 | Step 3 Page 2 | Step 4 Page 1 | Step 4 Page 2 | Field Measurements | Calibration and QC

Initial System Evaluation (Step 3 in System Review) Date: Sampler: Step34ID#: (AutoNumber) QC Check By:

A. System Information Permit_number_change Which permit number change: Task 5 Site?

System Ref. #: Construction Permit #: Operating Permit #:

Site Address:

City/State/Zip:

County:

Dates of two previous maintenance entity visits: Date of previous CHD inspections:

OperatingPermitCurrent: MaintenanceContractCurrent:

Parties present at this visit: Maintenance Entity: CHD: Owner/UserPresent?

Site Visit was announced by to days in advance.

Comments:

B. Access to General Site Location **C. Base for Initial System Evaluation (Check all that apply)** **D. System Sketch (attach to form), see system components**

Access to site:

How many systems are at this address? If not one, comment:

E. System Evaluation (elaborating on HSES 10-006)

Observe and record the general appearance/functioning of the treatment system.

Are there any signs of surfacing or breakouts near the treatment system?

Are tanks, lids, or access covers broken or missing?

Are there any signs of settling or erosion near the system components?

Does it appear as though the system is subject to vehicular traffic?

Is there any encroachment onto the system? If yes, what is within 5 ft of system? Other:

Evaluate presence of odor within 10 ft of perimeter of system: **Evaluate presence of sound (except alarm) within 10 ft of perimeter of syst**

OdorIntensity: SoundIntensity:

OdorQuality: Other: SoundSource:

OdorSource: SoundComments:

Does the system appear water-tight?:

If no, where does water seem to Other:

Are any alarms on? If yes, Other:

Is there a means to assess sewage flow? (water meter, event counter, flow meter) If yes and influent is available for sampling, document meter reading

Comments:

Observe if system has been altered or the site has changed since approval.

Any landscape construction, utility work, or changes in drainage patterns?

Has system been obstructed?

Any apparent recent additions to the building(s) connected to system?

Are any components missing or modified?

Figure 7. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Step 3 Page 1

Step 3 Page 1 | Step 3 Page 2 | Step 4 Page 1 | Step 4 Page 2 | Field Measurements | Calibration and QC

Components that are on this site, and their order: not determined:

Component	Order	Recirc. from:	Recirc. to:	FilterTankMedia:	Disinfection Other:	Comp. Type Other:
	0	0	0			

Record: 1 of 1

Comments:

Observe that there is power to the system.

Is control panel for treatment visible?:

Is control panel for treatment system accessible?:

Does power indicator, if present, indicate that power is on?:

Does operation of system (aerator) indicate that power is on?:

Does it appear that the power is switched off?:

Comments:

Observe that there is an alarm and, if possible, test it.

Is an alarm present for the treatment unit?:

If yes, which of the following are operational?:

Is an alarm present for the dosing tank, if tank is present?:

If yes, which of the following are operational?:

Comments:

Are there any trees in the drainfield?

Relative to surrounding areas, how does the vegetation on the drainfield look? Locations:

Is there evidence that there is ponding in the drainfield? Other:

Observation port shows inches of standing water

Comments:

F. Access to Sewage

Is there an effluent sample port installed?

Location: Type:

Odor within sample port:

Intensity:

Quality: Other:

Can you get access to the treatment tank?

Access location(s): Buried:

Are access covers securely fastened?:

Are access covers in operable condition?:

Is it feasible to obtain an influent sample from this system?

Location:

Comments:

System ID:

Figure 8. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Step 3 Page 2

Step 3 Page 1 | Step 3 Page 2 | Step 4 Page 1 | Step 4 Page 2 | Field Measurements | Calibration and QC

System Operation Evaluation (Step 4 in System Review)

Date: Region: Sampler: **Regions:** **System ID**

Time: Cloud Cover (%): Rainfall: prev. 7 days (inches)

A. System Information

System ref. #: Construction Permit #: Operating Permit #:

Date of Last Pumpout:

QryStep34ComponentsFinal

Order	ComponentType	Function	FunctionOther	Material	MaterialOther	Tank structural condition	TankCondition Other	LiquidLevelOfOutlet	LiquidLevelOfInlet	LiquidLevel Higher?	LiquidLevel Dropped?	Non-sewage Inflow?	Watertight?	OilyFilm/ Sheen?	OdorIntens /Quality
0															

Figure 9. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Step 4 Page 1 Part 1

Regions: **System ID**

Monroe
Charlotte
Lee
Statewide
Volusia
Headquarters

LiquidLevel Dropped?	Non-sewage Inflow?	Watertight?	OilyFilm/ Sheen?	OdorIntens /Quality	Sample Taken?	Scum			Clear Zone			Sludge			Comments		
						Depth	Color	ColorOther	Clarity/Structure	Depth	Color	ColorOther	Clarity/Structure	Depth		Color	ColorOther
						0				0				0			

Figure 10. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Step 4 Page 1 Part 2

Step 3 Page 1 | Step 3 Page 2 | Step 4 Page 1 | Step 4 Page 2 | Field Measurements | Calibration and QC

Aeration Chamber [dropdown] **System ID** [input]

Access? [dropdown]

Mixing in aeration chamber: [dropdown]

Settled Sludge Volume test: Sample obtained [dropdown]

Settled [input] mL/L, Floating [input] mL/L, in [input] min
 Settled [input] mL/L, Qualifier [input] Floating [input] mL/L, in [input] min

Biomass Color: [dropdown] Other: [input]

Biomass Structure: [dropdown]

Supernatant: [dropdown]

Additional tasks for attached-growth media evaluation:
 Plugging [dropdown]
 Floating [dropdown]
 Media Replaced: [dropdown]

Media Filters [dropdown] **Chlorination System** [dropdown]

Distribution of sewage across media: [dropdown]
 Device: [input]
 Uniform distribution [dropdown]
 Operating properly [dropdown]
 Pondering [dropdown]
 Comments: [input]

Filter drainage systems:
 Pondering in media filter sump [dropdown]
 Gravity drainage operational [dropdown]
 Solids buildup in sump area [dropdown]
 Underdrain vents present [dropdown]
 Underdrain vents operable [dropdown]

Chlorination:
 Manufacturer: [input]
 Chlorinator: [input] Dechlorinator: [input]
 Model #: [input]
 Method: [dropdown]
 Unit appears in good condition [dropdown]
 Location in/after tank #: [input]

Tablet chlorination (if applicable):
 Chlorinator appears operable [dropdown]
 Chlorine tablets in place [dropdown]
 Tablets in contact with effluent [dropdown]
 Contact chamber operable [dropdown]
 Chlorine residual: Free [input] ppm
 Total [input] ppm

Effluent screen/tertiary filter location: [input] evidence of clogging [dropdown]

QryStep34ComponentsYSI

Tank#	StationDesc.	Date	Time	WaterTemp	DO	%Sat	%SatTrend	ORP	Cond	Salinity	pH	Comments
0				0	0	0		0	0	0	0	

Record: [input] 1 of 1

Figure 11. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Step 4 Page 2

Step 3 Page 1 | Step 3 Page 2 | Step 4 Page 1 | Step 4 Page 2 | Field Measurements | Calibration and QC

System ID

Sampler	AnalystsInitials	AnalysisHours	System_set_ID	Sample#	SampleType	SampleLocation	SampleMethod	Original/Duplicate	SampleDate	SampleTime	LabSampleTa	OdorIntens
		0	0	0				0				0

Record: 1 of 1

Figure 12. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Field Measurements Part 1

Step 3 Page 1 | Step 3 Page 2 | Step 4 Page 1 | Step 4 Page 2 | Field Measurements | Calibration and QC

System ID

LabSampleTa	OdorIntens	OdorQuality	Color	Clarity	HACH_Turbidity	Turb_qualifier	HACH_Apparent_Color	AC_qualifier	HACH_NO3-N	NO3-N_qualifier	HACH_NH4-N	NH4-N_qualif
	0				0		0					

Record: 1 of 1

Figure 13. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Field Measurements Part 2

Step 3 Page 1 | Step 3 Page 2 | Step 4 Page 1 | Step 4 Page 2 | Field Measurements | Calibration and QC

System ID:

NH4-N_qualifier	HACH_PO4	**Calc. #**	HACH_PO4-P	PO4-P_qualifier	Alkalinity(Taylor)	Alkalinity(Taylor)_qualifier	pH(Taylor)	pH(Taylor)_qualifier	PO4 (strip)	NO3 (strip)	NO2 (strip)	NH4-N (strip)

Record: 1 of 1

Figure 14. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Field Measurements Part 3

Step 3 Page 1 | Step 3 Page 2 | Step 4 Page 1 | Step 4 Page 2 | Field Measurements | Calibration and QC

System ID:

NO2 (strip)	NH4-N (strip)	Total Alkalinity (strip)	Cl (strip)	pH (strip)	TestStripExpDate	Comments

Record: 1 of 1

Figure 15. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Field Measurements Part 4

The screenshot shows a software interface for data entry. At the top, there is a navigation bar with tabs: 'Step 3 Page 1', 'Step 3 Page 2', 'Step 4 Page 1', 'Step 4 Page 2', 'Field Measurements', and 'Calibration and QC'. The 'Calibration and QC' tab is active. Below the navigation bar is a table with the following columns: 'Date', 'Initials', 'pH Data Useable?', 'Dissolved Oxygen Data U', 'Specific Conductance Dat', and 'Region'. The table body is currently empty. At the bottom left of the table area, there is a 'Record:' label followed by navigation icons (back, forward, search) and a small input field.

Figure 16. Screenshot of Step 3 & 4 Field Evaluation Data Entry Form Calibration and QC Results

Appendix C: Electronic Database