

**APPENDIX 1-1**

**UNDERGROUND INJECTION CONTROL PERMIT**



# Department of Environmental Protection

Jeb Bush  
Governor

Southeast District  
400 North Congress Avenue, Suite 200  
West Palm Beach, Florida 33401

David B. Struhs  
Secretary

## NOTICE OF PERMIT

Henry Dean  
Executive Director  
South Florida Water Management District  
3301 Gun Club Road  
West Palm Beach, FL 33406-4680

HENDRY COUNTY  
UIC - BERRY GROVES EXPLORATORY WELL  
FILE: 201247-001-UC  
(EXPLORATORY WELL EXBRY-1)

Dear Mr. Dean:

Enclosed is Permit Number 201247-001-UC, for one Class V, Group 9 exploratory well, EXBRY-1, to be located southwest of the City of LaBelle, south of the State Road 80 and a header canal, and directly east of the Townsend Canal in western-most, Hendry County, Florida. This permit is issued pursuant to Section(s) 403.087, Florida Statutes and Florida Administrative Codes 62-4, 62-520, 62-522, 62-528 and 62-550.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, Mail Stop 35, 3900 Commonwealth Blvd., Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Should you have any questions, please contact Joseph R. May, P.G., or Len Fishkin, P.G. of this office at (561) 681-6691 or (561) 681-6750, respectively.

Executed in West Palm Beach, Florida.

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

  
John F. Moulton III  
Assistant Director of District Management  
Southeast District

  
Date

JFM/JLC/LAH/JRM/lf

Copies furnished to:

Nancy Marsh, USEPA/ATL  
Bob Renken, USGS/MIA  
Will Evans, FGS/TLH  
Jose Calas, FDEP/WPB  
Robert Verrastro, SFWMD/WPB  
Michael Bennett, SFWMD/WPB

Ron Reese, USGS/MIA  
Richard Deuerling, FDEP/TLH  
George Heuler, FDEP/TLH  
Steve Anderson, SFWMD/WPB  
Paul Linton, SFWMD/WPB  
Peter Kwiatkowski, SFWMD/WPB

Glenn Landers, USACE/JAX  
Jonathan Arthur, FGS/TLH  
Joseph May, FDEP/WPB  
Bart Bibler, FDOH/TLH  
Jack Maloy, SFWMD/WPB

## CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF PERMIT and all copies were mailed before the close of business on 4/14/03 to the listed persons.

4/14/03  
Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to the §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

  
Clerk

4/14/03  
Date



# Department of Environmental Protection

Jeb Bush  
Governor

Southeast District  
400 North Congress Avenue, Suite 200  
West Palm Beach, Florida 33401

David B. Struhs  
Secretary

PERMITTEE:  
Henry Dean  
Executive Director  
South Florida Water Management District  
3301 Gun Club Road  
West Palm Beach, FL 33406-4680

PERMIT/CERTIFICATION NUMBER: 201247-001-UC  
DATE OF ISSUANCE: April 14, 2003  
EXPIRATION DATE: April 13, 2008  
COUNTY: Hendry  
POSITION: 26° 41' 18" N / 81° 33' 27" W  
PROJECT: BERRY GROVES CLASS V, GROUP 9  
EXPLORATORY WELL EXBRY-1, PART  
OF THE CALOOSAHATCHEE RIVER  
ASR PILOT PROJECT

PROJECT: Exploratory well permit to construct and test a Class V, Group 9 exploratory well, EXBRY-1, in western-most Hendry County, Florida.

This permit is issued under the provisions of Chapter 403.087, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Rules 62-4, 62-520, 62-522, 62-528 and 62-550. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

**TO CONSTRUCT AND TEST:** One Class V, Group 9 exploratory well, EXBRY-1. Well EXBRY-1 shall be completed into the upper Floridan aquifer. This exploratory well shall be constructed with 24-inch outside diameter (O.D.) carbon steel casing extending to a depth of approximately 800 feet below land surface (bls). A nominal 23-inch open borehole shall be drilled to approximately 1,600 feet bls. Depending on the results of testing, the 23-inch open borehole may be partially plugged back. A request for approval of a preliminary uncased storage zone interval may be considered under this exploratory well permit (# 201247-001-UC) or be addressed when a subsequent construction and testing permit is issued. If a preliminary uncased storage zone interval is approved under this exploratory well permit, then the injection of fluids into EXBRY-1 may be authorized, as part of this permit, for a limited injection test using potable water. The objective of such a test would be to measure well hydraulics and facilitate the design of the recharge and recovery pumps for a prospective ASR system, pursuant to Specific Conditions (S.C.s) 2.u. and 2.v.

Under the exploratory well permit, the purpose of the exploratory well construction and testing program is to obtain sufficient data to make an initial determination concerning the feasibility of aquifer storage and recovery (ASR) at the site location. The projected future of use of Exploratory Well EXBRY-1 is as an ASR well. The Berry Groves exploratory well is part of the Caloosahatchee River ASR Pilot Project component of the Comprehensive Everglades Restoration Plan (CERP).

**IN ACCORDANCE WITH:** Application to Construct a Class V exploratory well received July 1, 2002; Request for Information (RFI) dated July 30, 2002; response to RFI received August 16, 2002; additional information received by the Department on October 17, 2002; comments from the Underground Injection Control - Technical Advisory Committee (UIC-TAC); publication of the Notice of Draft Permit 210247-001-UC in the Hendry-Glades Sunday News on November 17, 2002; and in consideration of receipt of public comment received as a result of a public meeting held on December 20, 2002 at the LaBelle City Hall Building; and publication of the Notice of Intent to Issue 210247-001-UC in the Caloosa Belle on March 12, 2003.

**LOCATED AT:** southwest of the City of LaBelle, south of the State Road 80 and a header canal, and directly east of the Townsend Canal on South Florida Water Management District (SFWMD)-owned land referred to as "Berry Groves" in western-most Hendry County, Florida.

**SUBJECT TO:** General Conditions 1-24 and Specific Conditions 1-8.

## GENERAL CONDITIONS:

The following **General Conditions** are referenced in Florida Administrative Code Rule 62-528.307.

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit are "permit conditions" and are binding and enforceable pursuant to Section 403.141, F.S.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action.
3. As provided in Subsection 403.087(7), F.S., the issuance of this permit does not convey any vested rights or exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land, water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefrom; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, or are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:
  - a. Have access to and copy any records that must be kept under conditions of this permit;
  - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
  - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.Reasonable time will depend on the nature of the concern being investigated.
8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
  - a. A description of and cause of noncompliance; and
  - b. The period of noncompliance, including dates and times; or, if not corrected the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent the recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

## GENERAL CONDITIONS

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-528.350, F.A.C. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. The permittee shall comply with the following:
  - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records shall be extended automatically unless the Department determines that the records are no longer required.
  - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
  - c. Records of monitoring information shall include:
    - 1) the date, exact place, and time of sampling or measurements;
    - 2) the person responsible for performing the sampling or measurements;
    - 3) the dates analyses were performed;
    - 4) the person responsible for performing the analyses;
    - 5) the analytical techniques or methods used
    - 6) the results of such analyses
  - d. The permittee shall furnish to the Department, within the time requested in writing, any information which the Department requests to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.
  - e. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.
14. All applications, reports, or information required by the Department shall be certified as being true, accurate, and complete.
15. Reports of compliance or noncompliance with, or any progress reports on, requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each scheduled date.
16. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

**GENERAL CONDITIONS:**

17. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
18. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.
19. This permit may be modified, revoked and reissued, or terminated for cause, as provided in 40 C.F.R. Sections 144.39(a), 144.40(a), and 144.41 (1998). The filing of a request by the permittee for a permit modification, revocation or reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
20. The permittee shall retain all records of all monitoring information concerning the nature and composition of injected fluid until five years after completion of any plugging and abandonment procedures specified under Rule 62-528.435, F.A.C. The permittee shall deliver the records to the Department office that issued the permit at the conclusion of the retention period unless the permittee elects to continue retention of the records.
21. All reports and other submittals required to comply with this permit shall be signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C. All reports shall contain the certification required in Rule 62-528.340(4), F.A.C.
22. The permittee shall notify the Department as soon as possible of any planned physical alterations or additions to the permitted facility. In addition, prior approval is required for activities described in Rule 62-528.410(1)(h).
23. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or injection activity which may result in noncompliance with permit requirements.
24. The permittee shall report any noncompliance which may endanger health or the environment including:
  - a. Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; or
  - b. Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.

All information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

## SPECIFIC CONDITIONS:

### 1. General Requirements

- a. This permit is to construct and test a Class V, Group 9 exploratory well, referred to herein as Well EXBRY-1. This permit allows only for the construction and testing of EXBRY-1 as an exploratory well in accordance with Chapter 62-528, F.A.C. A request for approval of a preliminary uncased storage zone interval may be considered under this exploratory well permit or be addressed when a subsequent construction and testing permit is issued. If a preliminary uncased storage zone interval is approved under this exploratory well permit, then the injection of fluids into EXBRY-1 may be authorized, as part of this permit, for a limited injection test using potable water (see Specific Condition [S.C.] 4.h.). The objective of such a test would be to measure well hydraulics and facilitate the design of the recharge and recovery pumps for a prospective ASR system, pursuant to S.C.s 2.u. and 2.v. Any modification of this exploratory well system to accept/inject waters — other than a limited injection test — must be accomplished through the regulatory process and will require an application for issuance of a new permit from the Department.
- b. The permittee shall be subject to all requirements and regulations of Hendry County and the South Florida Water Management District regarding the construction and testing of this exploratory well.
- c. Four permanent surficial aquifer monitor wells, identified as Pad Monitor Wells (PMWs), shall be located near the corners of the pad to be constructed for EXBRY-1, and shall be identified by location number and pad location, i.e. NW, NE, SW, and SE. If located in a traffic area the well head(s) must be protected by traffic bearing enclosure(s) and cover(s). Each cover must lock and be specifically marked to identify the well and its purpose. The PMWs shall be sampled as follows:
  - 1) During the construction and associated testing phases, the PMWs shall be sampled weekly for chlorides (mg/L), specific conductance ( $\mu\text{mho/cm}$  or  $\mu\text{S/cm}$ ), temperature and water level (relative to the North American Vertical Datum of 1988 [NAVD 88]).
  - 2) Initial PMW analyses shall be submitted prior to the onset of drilling activities.
  - 3) The PMWs shall also be sampled for total dissolved solids (mg/L) during the first four weeks of PMW sampling; prior to events as described under Item 4) below; and at all times when specifically requested by the Department.
  - 4) The PMWs shall be sampled 48 hours prior to any maintenance, testing (including mechanical integrity testing) or repairs to the system which represent an increased potential for accidental discharge to the surficial aquifer.

The results of the PMW analyses shall be submitted to the Department within 30 days of the completion of the activity. A summary sheet from the FDEP Southeast District is attached for your use when reporting the above information. The PMWs may be retained in service for subsequent sampling that may be required once a construction permit is granted.

- d. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures.

### 2. Construction and Testing Requirements

- a. Blow-out preventers shall be installed on the exploratory well prior to penetration of the Floridan Aquifer.
- b. The measurement points for drilling and logging operations shall be surveyed and referenced to the NGVD of 1988 prior to the onset of drilling activities for the exploratory well.

**SPECIFIC CONDITIONS:**

- c. No drilling operations shall begin without an approved disposal site for drilling fluids, cuttings, or waste. It shall be the permittee's responsibility to obtain the necessary approval(s) for disposal prior to the start of construction. Any formation waters discharged to surface or surficial aquifer waters during aquifer performance test shall require an Industrial Wastewater permit from the Department.
- d. The Department shall be notified within 48 hours after work has commenced.
- e. Hurricane Preparedness - Upon the issuance of a "Hurricane Watch" by the National Weather Service, the preparations to be made include but are not necessarily limited to the following:
  - 1) Secure all on-site salt and stockpiled additive materials to prevent surface and/or groundwater contamination.
  - 2) Properly secure drilling equipment and rig(s) to prevent damage to well(s) and on-site treatment process equipment.
- f. Waters spilled during construction or testing of the exploratory well shall be contained and properly disposed.
- g. Department approval and UIC-TAC review is required prior to the following stages of construction:
  - 1) Spud date
  - 2) Exploratory well (EXBRY-1) final casing seat
  - 3) Plugging back open hole in Exploratory Well EXBRY-1 (if proposed under this permit)
  - 4) Exploratory well (EXBRY-1) preliminary uncased storage zone interval (if proposed under this permit)
- h. Department notification is required prior to the following stages of construction and testing:
  - 1) Selection of interval-test intervals based upon testing at EXBRY-1
  - 2) Selection of core intervals
- i. The geophysical logging program, during the drilling of Exploratory Well EXBRY-1, shall at a minimum include:
  - 1) Pilot-hole from approximately 50 feet to 225 feet bls (base of surficial aquifer):
    - Caliper
    - Natural and spectral gamma
    - Dual induction
    - Spontaneous potential
    - Borehole compensated sonic
  - 2) Pilot-hole from approximately 200 feet to 850 feet bls:
    - Caliper
    - Natural gamma
    - Dual induction
    - Spontaneous potential
    - Borehole compensated sonic



**SPECIFIC CONDITIONS:**

- 3) Pilot-hole — as well as reamed hole — below the final casing to a maximum depth of approximately 1,600 feet bls (These logs shall be completed in at least two intervals that encompass the entire section from the base of the final casing to 1,600 feet bls):
  - Caliper
  - Natural gamma
  - Dual induction
  - Spontaneous potential
  - Borehole compensated sonic with VDL display
  - Fluid resistivity
  - Downhole video survey with rotating lens
  - Temperature
  - Flowmeter (run under pumping and static conditions)
  - Compensated-density neutron
  - Digital borehole televiewer
- 4) Completed well:
  - Downhole video survey with rotating lens
  - Cement bond log
- j. No less than 6 core samples shall be taken and analyzed during the construction of Exploratory Well EXBRY-1.
- k. Caliper and natural gamma logs shall be run on all reamed holes.
- l. Temperature and natural gamma logs shall be run after each stage of cementing on all casings to identify the top of the cement.
- m. Upon completion of well construction, background water quality sampling shall be performed to determine water quality characteristics (chlorides, conductivity, total dissolved solids, temperature and pH). If a preliminary uncased storage zone interval has been approved under this exploratory well permit, then the background water quality sampling shall also include the water quality parameters listed on Table B-3 of the exploratory well permit application document received July 1, 2002. [See S.C. 4.h.5]
- n. Hydrogeologic testing of the upper Floridan aquifer (from approximately 800 to 1,600 feet bls) shall include:
  - 1) Interval tests to be performed to determine the characteristics of the anticipated flow zones. A flow test shall be performed for each interval test and a water quality sample collected to determine the hydraulic and water quality characteristics of the tested intervals. Samples shall be analyzed for chlorides, temperature adjusted specific conductance, TDS, major cations and anions, SiO<sub>2</sub>, trace metals (including arsenic), and stable isotopes (including <sup>18</sup>O and deuterium). The flow test shall be of sufficient duration to achieve stabilization of water levels and water quality. Pre- and post-test monitoring shall be performed to achieve stabilization of water levels.
  - 2) Preliminary aquifer performance testing (APT) to include monitoring during:
    - a) 7-day background phase.
    - b) 24-hour constant rate discharge phase.
    - c) 12-hour recovery phase
- o. Towards the evaluation of the potential for upconing of poorer quality water, water quality samples shall be collected at the beginning, middle and end of the constant rate discharge phase of the APT. These samples shall be analyzed for chlorides (mg/L), pH, specific conductance (µmho/cm or µS/cm), temperature, and total dissolved solids (TDS), at a minimum.

### SPECIFIC CONDITIONS:

- p. The Department shall be notified at least 72 hours prior to all testing for mechanical integrity.
  - q. All testing for mechanical integrity must be initiated during normal business hours, Monday through Friday.
  - r. A pressure test for the final casing shall be performed. The final casing must be tested for sixty (60) minutes with a fluid-filled casing at 1.5 times the maximum expected operating pressure with a test tolerance of + or - 5%. A Certificate of Calibration of the pressure gauge must be provided to the Department staff witnessing the test, prior to commencement of the test, and with the final test reports.
  - s. UIC-TAC meetings are scheduled on the 2nd and 4th Tuesday of each month subject to a five (5) working day prior notice and timely receipt of critical data by all UIC-TAC members and the USEPA, Region IV, Atlanta. Emergency meetings may be arranged when justified to avoid undue construction delays.
  - t. Department approval at a scheduled UIC-TAC meeting shall be based on the permittee's presentation that shows compliance with Department rules and this permit.
  - u. No fluids shall be injected without prior written authorization from the Department.
  - v. The only source of injectate shall be water meeting all Primary and Secondary drinking water quality standards and minimum criteria parameters unless otherwise exempted. All parameters that are not exempted under a water quality criteria exemption, variance or waiver, as appropriate, shall meet the appropriate standard at all times.
3. Quality Assurance/Quality Control Requirements
- a. Pursuant to Rule 62-528 440(5)(b), F.A.C., the Professional Engineer(s) of Record shall certify all documents related to the completion of the exploratory well. The Department shall be notified immediately of any change of the Engineer(s) of Record.
  - b. In accordance with Section 492, Florida Statutes, all documents prepared for the geological/hydrogeological evaluation of the exploratory well shall be signed and sealed by a Florida Licensed Professional Geologist or qualified Florida Licensed Professional Engineer.
  - c. Continuous on-site supervision by qualified personnel (engineer or geologist) is required during all pilot-hole drilling, testing, geophysical logging, casing installation and cementing operations.
4. Reporting Requirements
- a. All reports and surveys required by this permit shall be submitted concurrently to all members of the UIC-TAC as well as to the Atlanta and West Palm Beach offices of USEPA, Region IV (see attached list). The UIC-TAC shall consist of representatives of the following agencies:
    - Department of Environmental Protection, West Palm Beach and Tallahassee
    - Florida Geological Survey, Tallahassee
    - United States Geological Survey (USGS), Miami
  - b. Prior to site preparation for the exploratory well (EXBRY-1), the following items shall be submitted to the Department, all members of the UIC-TAC and to the Atlanta and West Palm Beach offices of USEPA, Region IV:
    - 1) A drilling and construction schedule.
    - 2) Contract documents

**SPECIFIC CONDITIONS:**

- 3) Site drawing(s) produced at a scale that shows the location of EXBRY-1 and all surface features of the exploratory well system.
- c. Weekly progress reports — certified by a Florida Licensed Professional Geologist or qualified Florida Licensed Professional Engineer, pursuant to S.C. s 3.b. and 7.a. — shall be submitted throughout the construction period, and shall include at a minimum the following information:
- 1) A cover letter summary of the daily engineer report, driller's log and a projection for activities in the next reporting period.
  - 2) Daily engineers report and driller's log with detailed descriptions of all drilling progress, cementing, testing, logging, and casing installation activities.
  - 3) Lithologic and geophysical logs, hydrogeologic/specific capacity and APT results, and water quality test results.
  - 4) Well development records.
  - 5) Interpretations included with all test results, logs and well development activities submitted under Items 2), 3) and 4) above.
  - 6) Detailed description of any unusual construction-related events that occur during the reporting period.
  - 7) Weekly water quality analysis and water levels for the four PMWs.
- d. The Department and other applicable agencies must be notified of any unusual or abnormal events occurring during construction, and in the event the Permittee is temporarily unable to comply with the provisions of the permit (e.g., on-site spills, artesian flows, large volume circulation losses, equipment damage due to fire, wind and drilling difficulties, etc.). Any information shall be provided orally within 24 hours from the time that the permittee becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time that the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
- e. Per Rules 62-528.410(4)(c) and 62-528.605(2), F.A.C., the Department must approve the selection of the specific final casing seat. In order to obtain an approval, the permittee shall submit a request to the Department. Each request shall be submitted concurrently to all members of the UIC-TAC and to the Atlanta and West Palm Beach offices of USEPA, Region IV. To the extent possible, the casing seat request shall be accompanied by technical justification, including but not limited to, the following items:
- 1) Lithologic and geophysical logs with interpretations, as the interpretations relate to the casing seat.
  - 2) Water quality data.
  - 3) Identification of confining unit(s), including hydrogeologic data and interpretations.
  - 4) Identification of monitoring zone.
  - 5) Casing depth evaluation (mechanically secure formation, potential for grout seal).
  - 6) Lithologic drilling rate and weight on bit data, with interpretations (related to the casing seat).
- f. A submittal requesting a preliminary uncased storage zone interval for the exploratory well (EXBRY-1) — if proposed under this permit — shall include, but not necessarily be limited to, the following:
- 1) Lithologic and geophysical logs with interpretations, as the interpretations relate to the requested storage zone.
  - 2) Water quality of proposed storage zone.
  - 3) Identification of confining unit(s), including hydrogeologic data and interpretations.
  - 4) Transmissivity or specific capacity of proposed storage zone.
- g. A submittal for a request for approval to plug back the exploratory well open hole to modify the storage zone — if proposed under this permit — shall include:

**SPECIFIC CONDITIONS:**

- 1) Withdrawal test data for the storage zone, with interpretations and evaluation.
  - 2) Water quality reports.
  - 3) Geophysical log interpretations including flow analysis, as the interpretations relate to the request.
  - 4) Identification of storage zone boundaries and characteristics.
  - 5) Demonstration of confinement and evaluation of potential for upconing of poorer quality water.
- h. A request to perform a limited injection test (of short duration, in order to measure well hydraulics and facilitate the design of the recharge and recovery pumps of a prospective ASR system, pursuant to S.C. 2.v.) shall include:
- 1) Cement bond logs and interpretation.
  - 2) Final downhole television survey with interpretation.
  - 3) Demonstration of mechanical integrity.
  - 4) Planned injection procedures, including but not limited to duration of testing, and planned injection and recovery flow rates.
  - 5) Background water quality results from the storage zone of Well EXBRY-1, for the water quality parameters listed on Table B-3 of the exploratory well permit application document received July 1, 2002. [See S.C. 2.m.]
  - 6) Water quality results for the proposed potable water to be used for the limited injection test, sampled within six months of submission of the limited injection test request, for dissolved oxygen and total trihalomethanes.
- i. An interpretation of all test results must be submitted with all submittals.
- j. Upon completion of analysis of cores and sample cuttings, the permittee shall contact the UIC Section of the Department of Environmental Protection in Tallahassee to arrange their transfer to the Florida State Geologic Survey.
- k. The Florida Geological Survey (FGS) is currently involved in a study that is investigating the effects of ASR on the storage aquifers. For this reason, it is requested that at least one five (5)-gallon sample of ambient ground water be collected from the storage zone intervals where the interval/packer tests will be conducted for FGS analyses. Dr. Jon Arthur at the FGS will arrange for the samples to be collected. He can be contacted at the Florida Geological Survey at 903 West Tennessee Street, Tallahassee FL 32304-7700, phone number (850) 488-9380.
- l. A five (5) gallon sample of formation fluid shall be collected from the completed well after development but before injection begins. Samples should be labeled as to well number, depth, and type of sample. The samples shall be shipped to Florida State University, Department of Geological Sciences, 108 Carraway Building, Tallahassee, FL 32306-4100.
- m. Upon completion of construction and testing of the exploratory well, a final report shall be submitted to the Department, the UIC-TAC and to the Atlanta and West Palm Beach offices of USEPA, Region IV. The report shall include, but not be limited to, all information and data collected under Rules 62-528.605, 62-528.615, and 62-528.635, F.A.C., with appropriate interpretations. To the extent possible, the report should include:
- 1) Transmissivity test data for intervals tested in the upper Floridan aquifer, with evaluation.
  - 2) Evaluation of the maximum ASR capacity within safe pressure limits (if an ASR well open interval/storage zone is proposed and tested).
  - 3) Detailed results and analysis of aquifer performance testing.
  - 4) Evaluation of confinement and potential for upconing of poorer quality water.
  - 5) Record (as-built) drawings of the exploratory well (EXBRY-1) and surface equipment, certified by the engineer of record.
  - 6) Well location (EXBRY-1) surveyed relative to permanent reference points by a Florida registered land surveyor, and located on a site plan by latitude and longitude.
  - 7) Factory mill certificates for all casing pipe (EXBRY-1).
  - 8) Summary of all water quality, water level and well testing data collected, with conclusions and recommendations.

**SPECIFIC CONDITIONS:**

5. Surface Equipment

- a. The exploratory well surface equipment and piping shall be kept free of corrosion at all times.
- b. Spillage onto the exploratory well pad during construction activities, and any waters spilled during mechanical integrity testing, other maintenance, testing or repairs to the system shall be contained by an impermeable wall around the edge of the pad and disposed of via approved and permitted methods.
- c. The four surficial aquifer monitor wells installed at the corners of the well pad shall be secured, maintained, and retained in service.

6. Plugging and Abandonment

- a. The permittee shall unconditionally obligate themselves to plug and abandon the exploratory well, EXBRY-1 (with the appropriate Department permit), should the well become a threat to the waters of the State, if the well is no longer used or usable for its intended purpose or other purpose as approved by the Department, per Rule 62-528.645(1), F.A.C.
- b. In the event the exploratory well must be plugged and abandoned, the permittee shall obtain an FDEP permit, as required by Rule 62-528.645, F.A.C.

7. Signatories

- a. All reports and other submittals required to comply with this permit shall be signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C.
- b. In accordance with Rule 62-528.340(4), F.A.C., all reports and submittals shall contain the following certification signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C. or be included under such certification as may have been previously provided (i.e., responses to a Request for Information (RFI) which are simple clarifications are thereby certified):

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

8. Permit Extension(s) and Renewal(s)

- a. Pursuant to Rule 62-4.080(3), a permittee may request that a permit be extended as a modification of an existing permit. A request for an extension is the responsibility of the permittee and shall be submitted to the Department before the expiration of the permit. In accordance with Rule 62-4.070(4), F.A.C., a permit cannot be extended beyond the maximum 5-year statutory limit.

Mr. Henry Dean  
Executive Director  
South Florida Water Management District  
Page 12 of 12

PERMIT/CERTIFICATION NUMBER: 201247-001-UC  
DATE OF ISSUANCE: April 14, 2003  
EXPIRATION DATE: April 13, 2008

**SPECIFIC CONDITIONS:**

- b. If construction or testing of this well is to continue beyond the expiration date of this permit the permittee shall apply for, and obtain, a new exploratory well or construction permit.
- c. Testing of this exploratory well shall cease upon expiration of this permit, unless a new permit is issued by the Department, or a timely renewal application (Rules 62-4.090, F.A.C. and 62-528.307(2)(a), F.A.C.) for an exploratory well permit has been submitted to the Department.

Issued this 14th day of April, 2003

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

  
\_\_\_\_\_  
John F. Moulton III  
Assistant Director of District Management  
Southeast District

JFM/JLC/LAH/JRM/lf

PRIMARY & SECONDARY DRINKING WATER STANDARDS & MINIMUM CRITERIA  
 Updated May 6, 2002

**SOUTHEAST DISTRICT UIC SECTION  
 SURFICIAL AQUIFER MONITORING WELL (SAMW) REPORT**

**FACILITY NAME** \_\_\_\_\_  
**REPORT MONTH/YR.** \_\_\_\_\_

OPERATOR NAME \_\_\_\_\_ LICENSE # \_\_\_\_\_

INJECTION WELL # \_\_\_\_\_ PERMIT # \_\_\_\_\_

SAMPLING DATE \_\_\_\_\_ TIME \_\_\_\_\_

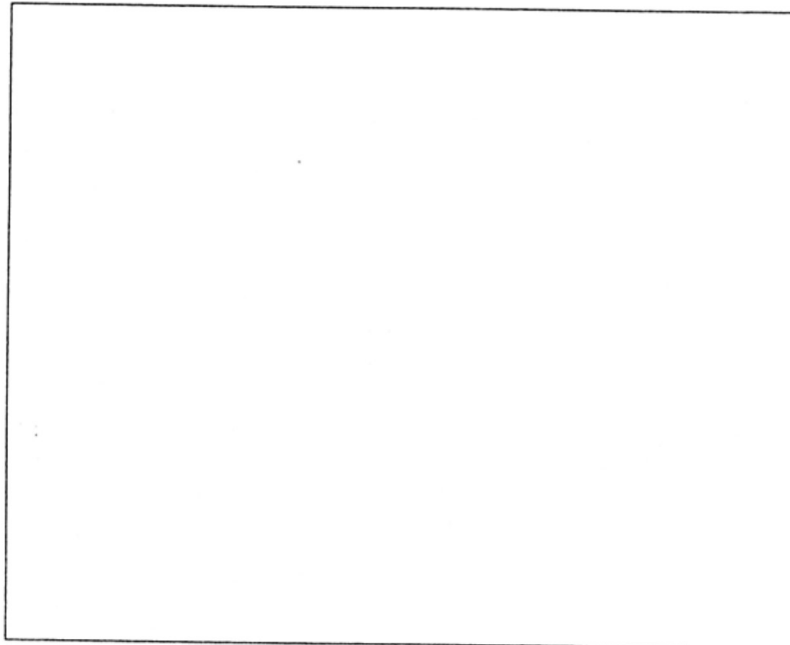
	SAMW #1	SAMW #2	SAMW #3	SAMW #4
LOCATION	NE CORNER	NW CORNER	SE CORNER	SW CORNER
ELEVATION OF TOC* (NGVD)				
DEPTH TO WATER (TOC*)				
WATER LEVEL (NGVD)				
CHLORIDE (mg/l)				
CONDUCTIVITY ( $\mu$ mhos/cm)				
TOTAL DISOLV. SOLIDS (mg/l)				
TEMPERATURE ( $^{\circ}$ F.)				

\* TOC: indicates the "top of the casing" of the Surficial Aquifer Monitoring Well

ANALYZED BY \_\_\_\_\_ SAMPLED BY \_\_\_\_\_

PHONE # \_\_\_\_\_ TITLE \_\_\_\_\_

**SITE PLAN OF SAMW LOCATIONS**



# PRIMARY & SECONDARY DRINKING WATER STANDARDS & MINIMUM CRITERIA

Updated May 6, 2002

## PRIMARY DRINKING WATER STANDARDS

### PARAMETER

Alachlor (Polychlorinated Biphenyl or PCB)  
Aldicarb  
Aldicarb sulfoxide  
Aldicarb sulfone  
Aroclors (Polychlorinated Biphenyls or PCBs)  
Alpha, Gross  
Antimony  
Arsenic  
Atrazine  
Barium  
Benzene  
Benzo(a)pyrene  
Beryllium  
Bis(2-ethylhexyl) adipate (Di(2-ethylhexyl) adipate)  
Bis(2-ethylhexyl) phthalate (Di(2-ethylhexyl) phthalate)  
Cadmium  
Carbofuran  
Carbon Tetrachloride (Tetrachloromethane)  
Chlordane  
Chlorobenzene (Monochlorobenzene)  
Chloroethylene (Vinyl Chloride)  
Chromium  
Coliforms, Total  
Cyanide  
2,4-D (2,4-Dichlorophenoxyacetic acid)  
Dalapon (2,2-Dichloropropionic acid)  
Dibromochloropropane (DBCP)  
1,2-Dibromoethane (EDB, Ethylene Dibromide)  
1,2-Dichlorobenzene (o-Dichlorobenzene)  
1,4-Dichlorobenzene (p-Dichlorobenzene or Para Dichlorobenzene)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1-Dichloroethylene (Vinylidene chloride)  
1,2-Dichloroethylene (cis-1,2-Dichloroethylene or trans-1,2-Dichloroethylene)  
cis-1,2-Dichloroethylene (1,2-Dichloroethylene)  
trans-1,2-Dichloroethylene (1,2-Dichloroethylene)  
Dichloromethane (Methylene chloride)  
1,2-Dichloropropane  
Di(2-ethylhexyl) adipate (Bis(2-ethylhexyl) adipate)  
Di(2-ethylhexyl) phthalate (Bis(2-ethylhexyl) phthalate)  
Dinoseb  
Diquat  
EDB (Ethylene dibromide, 1,2-Dibromoethane)  
Endothall  
Endrin  
Ethylbenzene  
Ethylene dichloride (1,2-Dichloroethane)  
Fluoride  
Glyphosate (Roundup)  
Gross Alpha  
Heptachlor  
Heptachlor Epoxide  
Hexachlorobenzene (HCB)  
gamma-Hexachlorocyclohexane (Lindane)  
Hexachlorocyclopentadiene  
Lead



# PRIMARY & SECONDARY DRINKING WATER STANDARDS & MINIMUM CRITERIA

Updated May 6, 2002

## PRIMARY DRINKING WATER STANDARDS, CONT'D

### PARAMETER

Lindane (gamma-Hexachlorocyclohexane)  
Mercury  
Methoxychlor  
Methylene chloride (Dichloromethane)  
Monochlorobenzene (Chlorobenzene)  
Nickel  
Nitrate (as N)  
Nitrite (as N)  
Total Nitrate + Nitrite (as N)  
Oxamyl  
p-Dichlorobenzene or Para Dichlorobenzene (1,4-Dichlorobenzene)  
Pentachlorophenol  
Perchloroethylene (Tetrachloroethylene)  
Picloram  
Polychlorinated biphenyl (PCB or Aroclors)  
Radium  
Roundup (Glyphosate)  
Selenium  
Silver  
Silvex (2,4,5-TP)  
Simazine  
Sodium  
Styrene (Vinyl benzene)  
Tetrachloroethylene (Perchloroethylene)  
Tetrachloromethane (Carbon Tetrachloride)  
Thallium  
Toluene  
Toxaphene  
2,4,5-TP (Silvex)  
1,2,4-Trichlorobenzene  
1,1,1-Trichloroethane  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene, TCE)  
Trihalomethanes, Total  
Vinyl Chloride (Chloroethylene)  
Xylenes (total)

## SECONDARY DRINKING WATER STANDARDS

### PARAMETER

Aluminum  
Chloride  
Color  
Copper  
Ethylbenzene  
Fluoride  
Foaming Agents (MBAS)  
Iron  
Manganese  
Odor  
pH  
Silver  
Sulfate  
Toluene  
Total Dissolved Solids (TDS)  
Xylenes  
Zinc

# PRIMARY & SECONDARY DRINKING WATER STANDARDS & MINIMUM CRITERIA

Updated May 6, 2002

## MUNICIPAL WASTEWATER MINIMUM CRITERIA GROUND WATER MONITORING PARAMETERS

### INORGANICS

Ammonia  
Nitrogen (organic)  
Total Kjeldahl Nitrogen  
Total Phosphorus (phosphate)

### VOLATILE ORGANICS

Chloroethane  
Chloroform  
para-Dichlorobenzene (1,4 Dichlorobenzene)  
1,2-Dichloroethylene (cis-1,2-Dichloroethylene or trans-1,2-Dichloroethylene)

### BASE/NEUTRAL ORGANICS

Anthracene  
Butylbenzylphthalate  
Dimethylphthalate  
Naphalene  
Phenanthrene

### PESTICIDES AND PCBs

Aldrin  
Dieldrin

### ACID EXTRACTABLES

2-chlorophenol  
Phenol  
2,4,6-trichlorophenol

### OTHER

Conductivity  
Biological Oxygen Demand  
Chemical Oxygen Demand  
Temperature