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## North Carolina Department of Environment and Natural Resources

Division of Water Quality

Charles Wakild, P. E.

Director

Pat McCrory  
GovernorJohn Skvarla  
Secretary

March 5, 2013

Curtis Michols, Senior Principal Specialist  
Abbott Laboratories  
Dept. 0539, Bldg. AP52-S  
200 Abbott Park Road  
Abbott Park, IL 60064

**Subject: Completion of 5I Injection Well Permit WI0600011**  
Former Abbott Laboratories Facility  
Scotland County

Dear Mr. Michols:

On September 22, 2006, the Aquifer Protection Section issued a 5I groundwater remediation permit to Abbott Laboratories for the remediation of contaminated groundwater located at the Former Abbott Laboratories Facility located at 16000 Joy Street, Laurinburg, Scotland County, North Carolina. The expiration date for the permit was September 30, 2008. A review of the file indicates the Final Project Evaluation or equivalent, and injection well construction and abandonment records (if applicable) have been received. This completes the monitoring and compliance reporting requirements of your permit.

Please be advised this permit is expired and no further injection activities are permitted. Any future injection activities must be conducted per the requirements of 15A NCAC 2C .0225 (Revised May 1, 2012). You must submit either (1) a Notification of Intent to Install groundwater remediation wells, or (2) an Application for Permit to Construct Wells for Injection (whichever is applicable). Please reference the expired permit number WI0600011 in any future correspondence.

Operating an injection well without a valid permit could result in a civil penalty of up to \$25,000 per day. Please contact Michael Rogers at 919-807-6406 or Debra Watts at 919-807-6338 if you have any questions.

Best Regards,

Michael Rogers, P.G. (NC & FL)  
Hydrogeologist

cc: Art Barnhardt, Fayetteville Regional Office  
Grant Watkins, AECOM, 8540 Colonnade Center Drive, Suite 306, Raleigh, NC 27615  
WI0600011 Permit File

AUG 17 2012

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## North Carolina Department of Environment and Natural Resources

Division of Water Quality  
Charles Wakild, P.E.  
DirectorDee Freeman  
SecretaryBeverly Eaves Perdue  
Governor

August 14, 2012

Jane K. Amelotte, Environmental Specialist  
Abbott Laboratories  
Dept. 0539, Bldg. AP52-S  
200 Abbott Park Road  
Abbott Park, IL 60064**Subject: Final Project Evaluation and Status of 5I Injection Well Permit WI0600011**Former Abbott Laboratories Facility  
Scotland County, North Carolina

Dear Ms. Amelotte:

On September 22, 2006, the Aquifer Protection Section issued a 5I groundwater remediation permit to Abbott Laboratories for remediation of groundwater at the Former Abbott Laboratories Facility located at 16000 Joy St., Laurinburg, Scotland County, North Carolina. The expiration date for the permit was September 30, 2008. Per permit conditions, a Final Project Evaluation (FPE) was to be submitted within 15 months after completing all injection activity. A review of our files indicates that this permit condition was not completed.

The FPE is a summary of all injection activities. It includes all monitoring data, contaminant plume and groundwater flow maps, injection well construction records (GW-1s), status of the injection wells (i.e. plugged and abandoned, converted to monitoring wells, etc.), Injection Event Records (Form UIC-IER), and injection project status (i.e. all injection activities completed and permit longer needed, request to renew, etc.). Although a FPE has not been submitted, it appears that the last several monitoring reports submitted fulfills much of the required information. However, a review of the file indicates information is lacking on the status of injection wells and injection project. If the injection wells are no longer being used they must be plugged and abandoned per NCAC 15A 2C .0214. After the wells are abandoned, please submit the well abandonment records (GW-30).

It appears that some injection events were via direct push technology (DPT). Even if injection was via DPT wells, a well construction form GW-1 needs to be submitted along with the well abandonment records GW-30. If construction and abandonment information is similar for the wells, then only one form needs to be submitted with the total number of wells listed on the forms. For your convenience, some blank forms are attached.

AQUIFER PROTECTION SECTION  
1636 Mail Service Center, Raleigh, North Carolina 27699-1636  
Location: 512 N. Salisbury St., Raleigh, North Carolina 27604  
Phone: 919-807-6464 \ FAX: 919-807-6496  
Internet: [www.ncwaterquality.org](http://www.ncwaterquality.org)One  
North Carolina  
*Naturally*

Please provide this supplemental information as we would like to close out this permit and change the status to 'Inactive' in our database. If you have any questions or comments, please contact me at 919-807-6406, or e-mail at Michael.Rogers@NCDENR.gov.

Best Regards,

A handwritten signature in cursive script that reads "Michael Rogers".

Michael Rogers, P.G. (NC & FL)  
Environmental Specialist

cc: Art Barnhardt, Fayetteville Regional Office  
Susanne Robbins, DWM - Superfund Section  
WI0600011 Permit File

# INJECTION EVENT RECORD

North Carolina Department of Environment and Natural Resources – Division of Water Quality  
Permit Number \_\_\_\_\_

## 1. Permit Information

\_\_\_\_\_  
Permittee

\_\_\_\_\_  
Facility Name

\_\_\_\_\_  
Facility Address

## 2. Injection Contractor Information

\_\_\_\_\_  
Injection Contractor / Company Name

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City State Zip Code

( ) \_\_\_\_\_  
Area code – Phone number

## 3. Well Information

Number of wells used for injection \_\_\_\_\_

Well names \_\_\_\_\_

Were any new wells installed during this injection event?

Yes  No

If yes, please provide the following information:

Number of Monitoring Wells \_\_\_\_\_

Number of Injection Wells \_\_\_\_\_

Type of Well Installed (Check applicable type):

Bored  Drilled  Direct-Push  
 Hand-Augured  Other (specify) \_\_\_\_\_

*Please include two copies of form GW-1b for each well installed.*

Were any wells abandoned during this injection event?

Yes  No

If yes, please provide the following information:

Number of Monitoring Wells \_\_\_\_\_

Number of Injection Wells \_\_\_\_\_

*Please include two copies of the GW-30 for each well abandoned.*

## 4. Injectant Information

\_\_\_\_\_  
Injectant Type

Concentration \_\_\_\_\_

If the injectant is diluted please indicate the source dilution fluid. \_\_\_\_\_

Total Volume Injected \_\_\_\_\_

Volume Injected per well \_\_\_\_\_

## 5. Injection History

Injection date(s) \_\_\_\_\_

Injection number (e.g. 3 of 5) \_\_\_\_\_

Is this the last injection at this site?

Yes  No

I DO HEREBY CERTIFY THAT ALL THE INFORMATION ON THIS FORM IS CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT THE INJECTION WAS PERFORMED WITHIN THE STANDARDS LAID OUT IN THE PERMIT.

\_\_\_\_\_  
SIGNATURE OF INJECTION CONTRACTOR DATE

\_\_\_\_\_  
PRINT NAME OF PERSON PERFORMING THE INJECTION





North Carolina Department of Environment and Natural Resources

Division of Water Quality

Coleen H. Sullins

Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

December 3, 2010

Corlis D. Murray, Vice President  
c/o Curt Michols  
Global Engineering Services  
Bldg. AP52-S, D0539  
Abbott Park, II 60064

**RECEIVED**

**DEC 09 2010**

DENR - FAYETTEVILLE REGIONAL OFFICE

**Ref: Permit Modification for Injection Permit WI0600055**  
Former Abbott Laboratories Facility Site  
Laurinburg, Scotland County, North Carolina.

Dear Mr. Murray:

This letter is being sent in reply to the letter received on October 4, 2010 regarding activities associated with permit WI0600055. Our office has noted that due to subsurface conditions you have modified the number and locations of the injection points from approximately 72 to 180. We also note that while you are increasing the number of injection points, you are going to maintain the original volume of injectant as proposed in the original application. The modification of the injection point grid has also slightly increased the overall volume of aquifer being impacted by the injection. This permit shall remain effective from the date of issuance until July 31, 2012, and shall be subject to the conditions and limitations stated therein, including the requirement to submit a final project evaluation as stated in PART VII - MONITORING AND REPORTING REQUIREMENTS.

In regards to the well construction and abandonment requirements of the permit, we are aware that these particular requirements are specific to permanent wells and they do not apply to temporary wells such as the direct-push injection points permitted for this site. As far as the grouting of the injection points post-injection, this information should be reported on the Well Abandonment Record (GW-30).

A point of clarification must be made in regards to the statement: "It is understood that a Well Abandonment Form to address post-injection grouting of the borehole does not mean that the well then has an abandoned or discontinued use status for our application." For each direct push point made, either a Well Construction (GW-1) AND Well Abandonment (GW-30) Record must be submitted, or an alternate form approved by the Division and includes the information as set forth in 15A NCAC 2C .0213(h)(1). These forms allow us to track wells across the state and are part of a database maintained by the Division of Water Quality and used in reporting activities to federal agencies.

AQUIFER PROTECTION SECTION

1636 Mail Service Center, Raleigh, North Carolina 27699-1636

Location: 2726 Capital Boulevard, Raleigh, North Carolina 27604

Phone: 919-733-3221 \ FAX 1: 919-715-0588; FAX 2: 919-715-6048 \ Customer Service: 1-877-623-6748

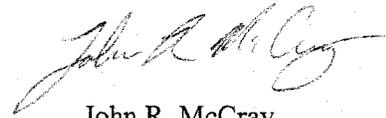
Internet: [www.ncwaterquality.org](http://www.ncwaterquality.org)

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One  
North Carolina  
*Naturally*

In order to continue uninterrupted legal use of the injection facility for the stated purpose, you must submit an application to renew the permit 120 days prior to its expiration date. Please contact me at (919)715-6168 or at john.mccray@ncdenr.gov if you have any questions about your permit.

Best Regards,



John R. McCray  
Environmental Specialist

cc: Art Barnhardt, Fayetteville Regional Office  
Grant Watkins, PG, RSM  
Qualpak, Inc.  
WI0600055 Permit File

Enc: Permit WI0600055

**NORTH CAROLINA**  
**ENVIRONMENTAL MANAGEMENT COMMISSION**  
**DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**  
**RALEIGH, NORTH CAROLINA**

PERMIT FOR THE CONSTRUCTION AND OPERATION OF A WELL FOR INJECTION

In accordance with the provisions of Article 7, Chapter 87; Article 21, Chapter 143, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

Abbott Laboratories

FOR THE OPERATION OF **180** TYPE 5I INJECTION WELLS, defined in Title 15A North Carolina Administrative Code 2C .0209(e)(3)(C), to inject Anaerobic BioChem (ABC) solution and RTB-1 (a proprietary blend of Dehalococcoides spp. bacteria), for the enhancement of bioremediation of chlorinated aliphatic solvents. These injection wells will be located at the former Abbott Facility now owned by QualPak, Inc., 16000 Joy St., Laurinburg, Scotland County, North Carolina, will be temporary in nature, constructed using direct-push probe technology, and will be operated in accordance with the application submitted April 27, 2010, and revisions submitted in the letter dated October 1, 2010, and in conformity with the specifications and supporting data submitted, all of which are filed with the Department of Environment and Natural Resources and are considered a part of this permit.

This permit is for Construction and Operation only, and does not waive any provisions of the Water Use Act or any other applicable Laws, Rules, or Regulations. Operation and use of an injection well shall be in compliance with Title 15A North Carolina Administrative Code 2C .0100 and .0200, and any other Laws, Rules, and Regulations pertaining to well construction and use.

This permit shall be effective, unless revoked, from the date of its issuance until July 31, 2012, and shall be subject to the specified conditions and limitations set forth in Parts I through X hereof.

Permit issued this the 3<sup>rd</sup> day of December, 2010.



FOR  
Coleen H. Sullins, Director  
Division of Water Quality

By Authority of the Environmental Management Commission.

## **PART I - WELL CONSTRUCTION GENERAL CONDITIONS**

1. The Permittee must comply with all conditions of this permit and with the standards and criteria specified in Criteria and Standards Applicable to Injection Wells (15A NCAC 2C .0200). Any noncompliance with conditions of this permit constitutes a violation of the North Carolina Well Construction Act and is grounds for enforcement action as provided for in N.C.G.S. 87-94.
2. This permit shall become voidable unless the facility is constructed in accordance with the conditions of this permit, the approved plans and specifications, and other supporting data.
3. This permit is valid only for construction of the number of injection wells described in the application and other supporting data. Construction of additional injection wells must be approved in advance by the Aquifer Protection Section.
4. Each injection well shall not hydraulically connect separate aquifers.
5. Each injection well shall be constructed in such a manner that water from land surface cannot migrate into the gravel pack or well screen.
6. Each injection well shall be secured to reasonably insure against unauthorized access and use. Each well shall be permanently labeled with a warning that it is for injection purposes and the entrance to each well must be secured with a locking cap.
7. Each injection well shall be afforded reasonable protection against damage during construction and use.
8. Each injection well shall have permanently affixed an identification plate.
9. Within 30 days of completion of well construction, a completed Well Construction Record (Form GW-1) must be submitted for each injection well to:

Aquifer Protection Section-UIC Staff  
DENR-Division of Water Quality  
1636 Mail Service Center  
Raleigh, NC 27699-1636

## **PART II - WELL CONSTRUCTION SPECIAL CONDITIONS**

At least forty-eight (48) hours prior to constructing each injection well, the Permittee shall notify the Aquifer Protection Section-Underground Injection Control (UIC) Central Office staff, telephone number (919) 715-6168 and the Fayetteville Regional Office Aquifer Protection Section Staff, telephone number (910) 433-3300.

### **PART III - OPERATION AND USE GENERAL CONDITIONS**

1. This permit is effective only with respect to the nature, volume of materials, rate of injection, and number of injection wells as described in the application and other supporting data.
2. This permit is not transferable without prior notice to, and approval by, the Director of the Division of Water Quality (Director). In the event there is a desire for the facility to change ownership, or there is a name change of the Permittee, a formal permit amendment request must be submitted to the Director, including any supporting materials as may be appropriate, at least 30 days prior to the date of the change.
3. The issuance of this permit shall not relieve the Permittee of the responsibility of complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other local, state, and federal agencies which have jurisdiction. Furthermore, the issuance of this permit does not imply that all regulatory requirements have been met.

### **PART IV - PERFORMANCE STANDARDS**

1. The injection facility shall be effectively maintained and operated at all times so that there is no contamination of groundwater which will render it unsatisfactory for normal use. In the event that the facility fails to perform satisfactorily, including the creation of nuisance conditions or failure of the injection zone to adequately assimilate the injected fluid, the Permittee shall take immediate corrective actions including those actions that may be required by the Division of Water Quality such as the repair, modification, or abandonment of the injection facility.
2. The Permittee shall be required to comply with the terms and conditions of this permit even if compliance requires a reduction or elimination of the permitted activity.
3. The issuance of this permit shall not relieve the Permittee of the responsibility for damages to surface or groundwater resulting from the operation of this facility.

### **PART V - OPERATION AND MAINTENANCE REQUIREMENTS**

1. The injection facility shall be properly maintained and operated at all times.
2. The Permittee must notify the Division and receive prior written approval from the Director of any planned physical alterations or additions in the permitted facility or activity not specifically authorized by the permit.
3. At least forty-eight (48) hours prior to the initiation of the operation of the facility for injection, the Permittee must notify by telephone the Aquifer Protection Section-UIC, Central Office staff, telephone number (919) 715-6168. Notification is required so that Division staff can inspect or otherwise review the injection facility and determine if it is in compliance with permit conditions.

## **PART VI - INSPECTIONS**

1. Any duly authorized officer, employee, or representative of the Division of Water Quality may, upon presentation of credentials, enter and inspect any property, premises, or place on or related to the injection facility at any reasonable time for the purpose of determining compliance with this permit, may inspect or copy any records that must be maintained under the terms and conditions of this permit, and may obtain samples of groundwater, surface water, or injection fluids.
2. Department representatives shall have reasonable access for purposes of inspection, observation, and sampling associated with injection and any related facilities as provided for in N.C.G.S. 87-90.
3. Provisions shall be made for collecting any necessary and appropriate samples associated with the injection facility activities.

## **PART VII - MONITORING AND REPORTING REQUIREMENTS**

1. The proposed monitoring plan included in the application shall be followed. All sample results shall be submitted to the Aquifer Protection Section's Fayetteville Regional Office and the Raleigh Central Office. Any monitoring (including groundwater, surface water, or soil sampling) deemed necessary by the Division of Water Quality to insure surface and ground water protection, will be established and an acceptable sampling reporting schedule shall be followed.
2. The Permittee shall submit an Injection Event Record within 30 days of completing each injection.
3. The Permittee shall produce a final project evaluation within 9 months after completing all injection-related activity associated with this permit or produce a project interim evaluation before submitting a renewal application for this permit. This document shall assess the injection projects findings in a written summary. The final project evaluation shall also contain monitoring well sampling data, contaminant plume maps and potentiometric surface maps.
4. The monitoring results and the final project evaluation shall be submitted to:

Aquifer Protection Section-UIC Staff  
DENR-Division of Water Quality  
1636 Mail Service Center  
Raleigh, NC 27699-1636

and to:

Aquifer Protection Section  
DENR-DWQ Fayetteville Regional Office  
225 Green St., Suite 714  
Fayetteville, NC 28301

5. The Permittee shall report by telephone, within 48 hours of the occurrence or first knowledge of the occurrence, to the Fayetteville Regional Office, telephone number (910)433-3300 , any of the following:
  - (A) Any occurrence at the injection facility which results in any unusual operating circumstances;
  - (B) Any failure due to known or unknown reasons, that renders the facility incapable of proper injection operations, such as mechanical or electrical failures.
6. Where the Permittee becomes aware of an omission of any relevant facts in a permit application, or of any incorrect information submitted in said application or in any report to the Director, the relevant and correct facts or information shall be promptly submitted to the Director by the Permittee.
7. In the event that the permitted facility fails to perform satisfactorily, the Permittee shall take such immediate action as may be required by the Director.

#### **PART VIII - PERMIT RENEWAL**

In order to continue uninterrupted legal use of the injection facility for the stated purpose, the Permittee must submit an application to renew the permit 120 days prior to its expiration date.

#### **PART IX - CHANGE OF WELL STATUS**

1. The Permittee shall provide written notification within 15 days of any change of status of an injection well. Such a change would include the discontinued use of a well for injection. If a well is taken completely out of service temporarily, the Permittee must install a sanitary seal. If a well is not to be used for any purpose that well must be permanently abandoned according to 15A NCAC 2C .0113, Well Construction Standards.
2. When operations have ceased at the facility and a well will no longer be used for any purpose, the Permittee shall abandon that injection well in accordance with the procedures specified in 15A NCAC 2C .0113(b), including but not limited to the following:
  - (A) All casing and screen materials may be removed prior to initiation of abandonment procedures if such removal will not cause or contribute to contamination of the groundwaters.
  - (B) The entire depth of each well shall be sounded before it is sealed to insure freedom from obstructions that may interfere with sealing operations.
  - (C) The well shall be thoroughly disinfected, prior to sealing, if the Director determines that failure to do so could lead to the contamination of an underground source of drinking water.

(D) Drilled wells shall be completely filled with cement grout, or bentonite grout which shall be introduced into the well through a pipe which extends to the bottom of the well and is raised as the well is filled.

(E) In the case of gravel-packed wells in which the casing and screens have not been removed, neat-cement, or bentonite grout shall be injected into the well completely filling it from the bottom of the casing to the top.

(F) In those cases when, as a result of the injection operations, a subsurface cavity has been created, each well shall be abandoned in such a manner that will prevent the movement of fluids into or between underground sources of drinking water and in accordance with the terms and conditions of the permit.

(G) The Permittee shall submit a Well Abandonment Record (Form GW-30) as specified in 15A NCAC 2C .0213(h)(1) within 30 days of completion of abandonment.

3. The written documentation required in Part IX (1) and (2) (G) shall be submitted to:

Aquifer Protection Section-UIC Staff  
DENR-Division of Water Quality  
1636 Mail Service Center  
Raleigh, NC 27699-1636

## **PART X – WORKER PRECAUTIONS DURING APPLICATION**

1. Some effects reported to be associated with the product proposed to be used are as follows: burns to the eyes, skin, nose, and throat can be caused by exposure; can cause dizziness, lightheadedness, and loss of consciousness; and can be significantly absorbed through the skin and lungs. If the product is released into the environment in a way that could result in a suspension of fine solid or liquid particles (e.g., grinding, blending, vigorous shaking or mixing), then it is imperative that proper personal protective equipment be used. The application process should be reviewed by an industrial hygienist to ensure that the most appropriate personal protective equipment is used.
2. Persons working with these products should wear goggles or a face shield, gloves, and protective clothing. Face and body protection should be used for anticipated splashes or sprays.
3. This product is highly flammable and vapors may form explosive mixtures with the air. Vapors may travel to an ignition source and flashback by spreading along the ground and collecting in low, confined areas. The storage containers for this product should be kept well closed and runoff to sewer may create a fire or explosion hazard. Also containers may explode when heated. In addition, this product releases toxic hydrogen sulfide on contact with acids and reacts violently with carbon, diazonium salts, n-dichloromethylamine, o-nitroaniline diazonium salt, and water.
4. Eating, drinking, smoking, handling contact lenses, and applying cosmetics should not be permitted in the application area during or immediately following application.

5. Site access should be limited to worker's involved in the injection of the solution. Safety controls should be in place to ensure that the check valve and the pressure delivery systems are working properly.
6. It is imperative that the Material Safety Data Sheets be followed to prevent incompatible or adverse reactions and injuries.

Barber, Jim

SCOTLAND

**From:** Barber, Jim  
**Sent:** Monday, November 01, 2010 11:55 AM  
**To:** Mccray, John  
**Cc:** Boyles, Sean; Barnhardt, Art  
**Subject:** RE: wi0600055 modification

John;

No real concerns from a regional standpoint. If you need for me to visit the site again for any addition information that you wish to have, don't hesitate to call or send me a email with the items/issues/information you would like for me to obtain.

With any new modifications or permits issued, please copy Sean Boyles with Inactive Hazardous Sites branch in Fayetteville or send two copies to my attention and I will hand deliver to Sean.

Jim Barber

---

**From:** Mccray, John  
**Sent:** Thursday, October 28, 2010 11:57 AM  
**To:** Barber, Jim  
**Subject:** wi0600055 modification

Mr. Barber,

I apologize for the second email, but let me know if you have any concerns or questions about the modification.

Regards,

John McCray

**Barber, Jim**

---

**From:** Mccray, John  
**Sent:** Thursday, October 28, 2010 11:51 AM  
**To:** Barber, Jim  
**Subject:** Permit WI0600055 modification  
**Attachments:** abbott labs letter.pdf

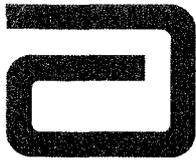
Mr. Barber,

Abbott Laboratories has sent us a letter stating that they need to modify the injection parameters for their direct push points. The problem has arisen due to depth of penetration issues, therefore they are going to decrease the injection depths, decrease the spacing of the injection "nodes", and increase the number of push points. They are keeping the same volume of injectant, so there should be no change in anticipated displacement concerns.

I have attached the letter I received explaining the change.

Best Regards,

John McCray



# ABBOTT LABORATORIES

Curtis R. Michols  
Principal Specialist  
Global Environment, Health, Safety & Energy

Dept. 539, Bldg. AP52-S  
200 Abbott Park Road  
Abbott Park, Illinois 60064-6212  
Office: (847) 937-0863  
Facsimile: (847) 937-9679  
Curtis.Michols@Abbott.com

October 1, 2010

Mr. John McCray  
North Carolina Department of Environment and Natural Resources  
Division of Water Quality, Aquifer Protection Section  
Underground Injection Control Program  
1636 Mail Service Center  
Raleigh, NC 27699-1636

Subject: Notification and Revisions Regarding Injection Control Permit WI0600055  
Former Abbott Labs Facility-Solvent Release Remediation  
Laurinburg, Scotland County, NC  
NCDENR-DWM #NONCD-000-0040

Dear Mr. McCray:

Abbott Laboratories (Abbott) is contacting you regarding several clarifications and proposed revisions for Injection Permit WI0600055 that was recently issued for the above-referenced facility. This information is provided as a follow-up to conversations that you had with our environmental consultant for the remediation we are conducting, Mr. Grant Watkins of AECOM on July 27, 2010 and on September 21, 2010 concerning initial estimates for the number of direct push injection boreholes and the procedures for notifying the NCDENR if additional injection boreholes are required. Based on current permit provisions and refinements of the injection plan, Abbott hereby presents an update to the proposed injection program for NCDENR's approval in accordance with Permit articles Part I.3 and Part III.1.

### Revisions to Injection Layout

The initial injection plan for the permit application in April 2010. Although the original plan estimated that up to 72 individual injection boreholes would be installed at twenty-five separate locations, it also stated that additional multi-depth injection boreholes may be necessary based on site-specific lithology and injection conditions. The Permit currently allows only 72 individual direct push injection boreholes, each of which we understand that NCDENR considers a separate Type 5I injection well. Since submittal of the permit application, the injection plan has been further refined by adding more closer-spaced borehole clusters and allowances for more than three injection depth intervals per location. The current 72-injection well limit in the Permit also

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does not allow sufficient capacity for the bioaugmentation injection boreholes, which will be installed separate from the ABC® injection boreholes.

A Preconstruction Report has been submitted to the NCDENR Division of Waste Management that describes the current, detailed injection plan. The only significant change being proposed is the number of locations and the total number of individual boreholes (i.e., injection wells) that may ultimately be required based on actual site conditions and injection responses. Please consider the following updated information for your review and approval:

- The number of injection locations (i.e., multi-depth “clusters”), is increased from 25 to 55. This is due to a larger number and closer spaced rows of injection boreholes and tightening of the location spacing from 30-foot centers to 20-foot centers. See the attached Figure 3-3 from the Preconstruction Report for more details on the revised layout.
- The total number of individual injection boreholes (Type 5I wells) is increased from 72 to 180. This increase is due to both the greater number of locations and the need for more flexibility in the number of individual injection depths targeted by the boreholes at each location based on subsurface conditions. The proposed increase allows more efficient distribution of the ABC® and also allows additional capacity for injection boreholes related to the bioaugmentation pilot test.
- The injection zone boundary has increased slightly to the south to allow ABC® substrate injection in areas closer to where the RTB-1 may be injected for the bioaugmentation pilot test. The depths of the injection zone have not changed from the original permit application.

There are several important factors to note about these proposed changes in the context of the overall injection program as currently permitted. First, the total volume of injectate fluids will not increase and will remain at 59,900 gallons or less per injection event. Second, the overall volume of the aquifer being treated increases to about 800,000 cubic feet by expanding the footprint 35 feet further to the south. In summary, compared to conditions in the permit application these proposed changes allow the same volume of ABC® injectate fluids to be injected into a slightly larger aquifer volume using a larger number of wells (boreholes) that are spaced closer together. Each individual borehole will therefore receive a lower volume of injectate fluid per injection depth interval than originally specified.

Also, we would like to clarify how the RTB-1 injection program will be conducted. The initial injections will be in a limited area and involve only 20 liters of RTB-1 to perform a bioaugmentation pilot study. Based on the outcome of the pilot study and other testing, Abbott may decide to expand the bioaugmentation program to larger areas of the dissolved plume prior to expiration of Permit WI0600055 in July 2012. The NCDENR Division of Water Quality will be notified if and when the bioaugmentation program will be expanded and if approval for additional injection wells (boreholes) are needed at that time.

Other Permit Issues and Clarifications

In our review of Injection Permit WI0600055, Abbott and AECOM noted that several permit requirements are listed that are not applicable to the injection processes planned for the Laurinburg site. Specifically, some provisions of the permit were written based on rules and requirements for construction, maintenance, and abandonment of permanent injection wells. No permanent injection wells will be used for our injection program, and the temporary direct push boreholes will function quite differently. Permit articles, as currently written, that are not applicable to our proposed injection process include but may not be limited to the following:

- Part I, Items 5, 6, 7, and 8.
- Part IX, Items 1, 2 (A), 2(B), 2(C), and 2(E).

To clarify our positions regarding these permit requirements, Abbott provides the following information regarding our plans and requests to NCDENR:

- Due to their construction nature, the temporary injection boreholes (wells) cannot be completed with secured locking caps or with permanently affixed identification plates or sanitary seals. So we propose to not have to perform these actions.
- A change of status notification for discontinued use of an injection well is not possible in our situation. Once the injectate fluid is introduced to the borehole the injection well becomes active and that is the only time injection will occur at that specific borehole. Other than the Permit expiration date, we cannot determine a date at which the injection well becomes inactive or its use is otherwise considered 'discontinued' as stated in the Permit.
- The temporary injection wells will be grouted to the ground surface within 12 hours after the one-time ABC<sup>®</sup> injection occurs at each borehole. Abbott requests confirmation if this grouting process fulfills the requirements for constructing the injection well and is reported on the Well Construction Record (Form GW-1); or if this process fulfills the requirement for well abandonment and is reported on a Well Abandonment Record (Form GW-30). It is understood that submittal of a Well Abandonment Form to address post-injection grouting of the borehole does not mean that the well then has an abandoned or discontinued use status for our application.

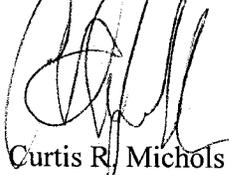
We appreciate your review of this submittal and look forward to NCDENR's prompt written response and approval to these requests. Currently we are planning to start injections on October 14, 2010 and would appreciate a response from NCDENR prior to that date, so that the field activity plans and schedules can be maintained. If you have any questions and/or require additional information, please contact either me or Grant Watkins with AECOM at 919-239-7183.

Mr. John McRay  
NC DENR  
Page 4 of 4

October 1, 2010

Best regards,

Abbott Laboratories



Curtis R. Michols  
Principal Specialist  
Global Environment, Health, Safety & Energy

c.c.: G. Watkins, AECOM





North Carolina Department of Environment and Natural Resources

Division of Water Quality

Coleen H. Sullins

Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

RECEIVED

August 24, 2010

SEP 13 2010

DENR--FAYETTEVILLE REGIONAL OFFICE

Corlis D. Murray, Vice President  
c/o Curt Michols  
Global Engineering Services  
Bldg. AP52-S, D0539  
Abbott Park, IL 60064

**Ref: Issuance of Injection Permit WI0600055**  
Former Abbott Laboratories Facility Site  
Laurinburg, Scotland County, North Carolina.

Dear Mr. Murray:

In accordance with the application received on April 27, 2010, we are forwarding permit number WI0600055. This permit is to inject Anaerobic BioChem (ABC) and RTB-1 solutions to remediate groundwater contaminated with chlorinated volatile organic compounds at the facility referenced above. This permit shall be effective from the date of issuance until July 31, 2012, and shall be subject to the conditions and limitations stated therein, including the requirement to submit a final project evaluation as stated in PART VII – MONITORING AND REPORTING REQUIREMENTS. Please read the entire permit to ensure that you are aware of all compliance requirements of the permit.

You will need to notify this office by telephone 48 hours prior to initiation of operation of the facility. In order to continue uninterrupted legal use of the injection facility for the stated purpose, you must submit an application to renew the permit 120 days prior to its expiration date. Please contact me at (919)715-6168 or at john.mccray@ncdenr.gov if you have any questions about your permit.

Best Regards,

John R. McCray  
Environmental Specialist

cc: Art Barnhardt, Fayetteville Regional Office  
Grant Watkins, PG, RSM  
Qualpak, Inc.  
WI0600055 Permit File

AQUIFER PROTECTION SECTION  
1636 Mail Service Center, Raleigh, North Carolina 27699-1636  
Location: 2728 Capital Boulevard, Raleigh, North Carolina 27604  
Phone: 919-733-3221 \ FAX 1: 919-715-0588; FAX 2: 919-715-6048 \ Customer Service: 1-877-623-6748  
Internet: [www.ncwaterquality.org](http://www.ncwaterquality.org)

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NORTH CAROLINA

ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
RALEIGH, NORTH CAROLINA

PERMIT FOR THE CONSTRUCTION AND OPERATION OF A WELL FOR INJECTION

In accordance with the provisions of Article 7, Chapter 87; Article 21, Chapter 143, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

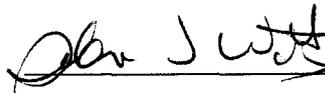
Abbott Laboratories

FOR THE OPERATION OF 72 TYPE 5I INJECTION WELLS, defined in Title 15A North Carolina Administrative Code 2C .0209(e)(3)(C), to inject Anaerobic BioChem (ABC) solution and RTB-1 ( a proprietary blend of Dehalococcoides spp. bacteria), for the enhancement of bioremediation of chlorinated aliphatic solvents. These injection points will be located at the former Abbott Facility now owned by QualPak, Inc., 16000 Joy St., Laurinburg, Scotland County, North Carolina, and will be operated in accordance with the application submitted April 27, 2010, and in conformity with the specifications and supporting data submitted, all of which are filed with the Department of Environment and Natural Resources and are considered a part of this permit.

This permit is for Construction and Operation only, and does not waive any provisions of the Water Use Act or any other applicable Laws, Rules, or Regulations. Operation and use of an injection well shall be in compliance with Title 15A North Carolina Administrative Code 2C .0100 and .0200, and any other Laws, Rules, and Regulations pertaining to well construction and use.

This permit shall be effective, unless revoked, from the date of its issuance until July 31, 2012, and shall be subject to the specified conditions and limitations set forth in Parts I through X hereof.

Permit issued this the 2<sup>ND</sup> day of September, 2010.



for Coleen H. Sullins, Director  
Division of Water Quality

By Authority of the Environmental Management Commission.

## **PART I - WELL CONSTRUCTION GENERAL CONDITIONS**

1. The Permittee must comply with all conditions of this permit and with the standards and criteria specified in Criteria and Standards Applicable to Injection Wells (15A NCAC 2C .0200). Any noncompliance with conditions of this permit constitutes a violation of the North Carolina Well Construction Act and is grounds for enforcement action as provided for in N.C.G.S. 87-94.
2. This permit shall become voidable unless the facility is constructed in accordance with the conditions of this permit, the approved plans and specifications, and other supporting data.
3. This permit is valid only for construction of the number of injection wells described in the application and other supporting data. Construction of additional injection wells must be approved in advance by the Aquifer Protection Section.
4. Each injection well shall not hydraulically connect separate aquifers.
5. Each injection well shall be constructed in such a manner that water from land surface cannot migrate into the gravel pack or well screen.
6. Each injection well shall be secured to reasonably insure against unauthorized access and use. Each well shall be permanently labeled with a warning that it is for injection purposes and the entrance to each well must be secured with a locking cap.
7. Each injection well shall be afforded reasonable protection against damage during construction and use.
8. Each injection well shall have permanently affixed an identification plate.
9. Within 30 days of completion of well construction, a completed Well Construction Record (Form GW-1) must be submitted for each injection well to:

Aquifer Protection Section-UIC Staff  
DENR-Division of Water Quality  
1636 Mail Service Center  
Raleigh, NC 27699-1636

## **PART II - WELL CONSTRUCTION SPECIAL CONDITIONS**

At least forty-eight (48) hours prior to constructing each injection well, the Permittee shall notify the Aquifer Protection Section-Underground Injection Control (UIC) Central Office staff, telephone number (919) 715-6168 and the Fayetteville Regional Office Aquifer Protection Section Staff, telephone number (910) 433-3300.

### **PART III - OPERATION AND USE GENERAL CONDITIONS**

1. This permit is effective only with respect to the nature, volume of materials, rate of injection, and number of injection wells as described in the application and other supporting data.
2. This permit is not transferable without prior notice to, and approval by, the Director of the Division of Water Quality (Director). In the event there is a desire for the facility to change ownership, or there is a name change of the Permittee, a formal permit amendment request must be submitted to the Director, including any supporting materials as may be appropriate, at least 30 days prior to the date of the change.
3. The issuance of this permit shall not relieve the Permittee of the responsibility of complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other local, state, and federal agencies which have jurisdiction. Furthermore, the issuance of this permit does not imply that all regulatory requirements have been met.

### **PART IV - PERFORMANCE STANDARDS**

1. The injection facility shall be effectively maintained and operated at all times so that there is no contamination of groundwater which will render it unsatisfactory for normal use. In the event that the facility fails to perform satisfactorily, including the creation of nuisance conditions or failure of the injection zone to adequately assimilate the injected fluid, the Permittee shall take immediate corrective actions including those actions that may be required by the Division of Water Quality such as the repair, modification, or abandonment of the injection facility.
2. The Permittee shall be required to comply with the terms and conditions of this permit even if compliance requires a reduction or elimination of the permitted activity.
3. The issuance of this permit shall not relieve the Permittee of the responsibility for damages to surface or groundwater resulting from the operation of this facility.

### **PART V - OPERATION AND MAINTENANCE REQUIREMENTS**

1. The injection facility shall be properly maintained and operated at all times.
2. The Permittee must notify the Division and receive prior written approval from the Director of any planned physical alterations or additions in the permitted facility or activity not specifically authorized by the permit.
3. At least forty-eight (48) hours prior to the initiation of the operation of the facility for injection, the Permittee must notify by telephone the Aquifer Protection Section-UIC, Central Office staff, telephone number (919) 715-6168. Notification is required so that Division staff can inspect or otherwise review the injection facility and determine if it is in compliance with permit conditions.

## **PART VI - INSPECTIONS**

1. Any duly authorized officer, employee, or representative of the Division of Water Quality may, upon presentation of credentials, enter and inspect any property, premises, or place on or related to the injection facility at any reasonable time for the purpose of determining compliance with this permit, may inspect or copy any records that must be maintained under the terms and conditions of this permit, and may obtain samples of groundwater, surface water, or injection fluids.
2. Department representatives shall have reasonable access for purposes of inspection, observation, and sampling associated with injection and any related facilities as provided for in N.C.G.S. 87-90.
3. Provisions shall be made for collecting any necessary and appropriate samples associated with the injection facility activities.

## **PART VII - MONITORING AND REPORTING REQUIREMENTS**

1. The proposed monitoring plan included in the application shall be followed. All sample results shall be submitted to the Aquifer Protection Section's Fayetteville Regional Office and the Raleigh Central Office. Any monitoring (including groundwater, surface water, or soil sampling) deemed necessary by the Division of Water Quality to insure surface and ground water protection, will be established and an acceptable sampling reporting schedule shall be followed.
2. The Permittee shall submit an Injection Event Record within 30 days of completing each injection.
3. The Permittee shall produce a final project evaluation within 9 months after completing all injection-related activity associated with this permit or produce a project interim evaluation before submitting a renewal application for this permit. This document shall assess the injection projects findings in a written summary. The final project evaluation shall also contain monitoring well sampling data, contaminant plume maps and potentiometric surface maps.
4. The monitoring results and the final project evaluation shall be submitted to:

Aquifer Protection Section-UIC Staff  
DENR-Division of Water Quality  
1636 Mail Service Center  
Raleigh, NC 27699-1636

and to:

Aquifer Protection Section  
DENR-DWQ Fayetteville Regional Office  
225 Green St., Suite 714  
Fayetteville, NC 28301

5. The Permittee shall report by telephone, within 48 hours of the occurrence or first knowledge of the occurrence, to the Fayetteville Regional Office, telephone number (910)433-3300, any of the following:
  - (A) Any occurrence at the injection facility which results in any unusual operating circumstances;
  - (B) Any failure due to known or unknown reasons, that renders the facility incapable of proper injection operations, such as mechanical or electrical failures.
6. Where the Permittee becomes aware of an omission of any relevant facts in a permit application, or of any incorrect information submitted in said application or in any report to the Director, the relevant and correct facts or information shall be promptly submitted to the Director by the Permittee.
7. In the event that the permitted facility fails to perform satisfactorily, the Permittee shall take such immediate action as may be required by the Director.

#### **PART VIII - PERMIT RENEWAL**

In order to continue uninterrupted legal use of the injection facility for the stated purpose, the Permittee must submit an application to renew the permit 120 days prior to its expiration date.

#### **PART IX - CHANGE OF WELL STATUS**

1. The Permittee shall provide written notification within 15 days of any change of status of an injection well. Such a change would include the discontinued use of a well for injection. If a well is taken completely out of service temporarily, the Permittee must install a sanitary seal. If a well is not to be used for any purpose that well must be permanently abandoned according to 15A NCAC 2C .0113, Well Construction Standards.
2. When operations have ceased at the facility and a well will no longer be used for any purpose, the Permittee shall abandon that injection well in accordance with the procedures specified in 15A NCAC 2C .0113(b), including but not limited to the following:
  - (A) All casing and screen materials may be removed prior to initiation of abandonment procedures if such removal will not cause or contribute to contamination of the groundwaters.
  - (B) The entire depth of each well shall be sounded before it is sealed to insure freedom from obstructions that may interfere with sealing operations.
  - (C) The well shall be thoroughly disinfected, prior to sealing, if the Director determines that failure to do so could lead to the contamination of an underground source of drinking water.

- (D) Drilled wells shall be completely filled with cement grout, or bentonite grout which shall be introduced into the well through a pipe which extends to the bottom of the well and is raised as the well is filled.
- (E) In the case of gravel-packed wells in which the casing and screens have not been removed, neat-cement, or bentonite grout shall be injected into the well completely filling it from the bottom of the casing to the top.
- (F) In those cases when, as a result of the injection operations, a subsurface cavity has been created, each well shall be abandoned in such a manner that will prevent the movement of fluids into or between underground sources of drinking water and in accordance with the terms and conditions of the permit.
- (G) The Permittee shall submit a Well Abandonment Record (Form GW-30) as specified in 15A NCAC 2C .0213(h)(1) within 30 days of completion of abandonment.

3. The written documentation required in Part IX (1) and (2) (G) shall be submitted to:

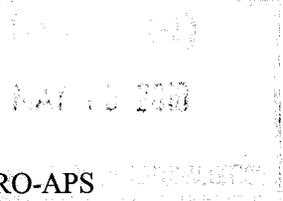
Aquifer Protection Section-UIC Staff  
DENR-Division of Water Quality  
1636 Mail Service Center  
Raleigh, NC 27699-1636

## **PART X – WORKER PRECAUTIONS DURING APPLICATION**

1. Some effects reported to be associated with the product proposed to be used are as follows: burns to the eyes, skin, nose, and throat can be caused by exposure; can cause dizziness, lightheadedness, and loss of consciousness; and can be significantly absorbed through the skin and lungs. If the product is released into the environment in a way that could result in a suspension of fine solid or liquid particles (e.g., grinding, blending, vigorous shaking or mixing), then it is imperative that proper personal protective equipment be used. The application process should be reviewed by an industrial hygienist to ensure that the most appropriate personal protective equipment is used.
2. Persons working with these products should wear goggles or a face shield, gloves, and protective clothing. Face and body protection should be used for anticipated splashes or sprays.
3. This product is highly flammable and vapors may form explosive mixtures with the air. Vapors may travel to an ignition source and flashback by spreading along the ground and collecting in low, confined areas. The storage containers for this product should be kept well closed and runoff to sewer may create a fire or explosion hazard. Also containers may explode when heated. In addition, this product releases toxic hydrogen sulfide on contact with acids and reacts violently with carbon, diazonium salts, n-dichloromethylamine, o-nitroaniline diazonium salt, and water.
4. Eating, drinking, smoking, handling contact lenses, and applying cosmetics should not be permitted in the application area during or immediately following application.

5. Site access should be limited to worker's involved in the injection of the solution. Safety controls should be in place to ensure that the check valve and the pressure delivery systems are working properly.
6. It is imperative that the Material Safety Data Sheets be followed to prevent incompatible or adverse reactions and injuries.

**AQUIFER PROTECTION SECTION**  
**APPLICATION REVIEW REQUEST FORM**



**Date:** May 6, 2010

- To:**  Landon Davidson, ARO-APS  
 Art Barnhardt, FRO-APS  
 Andrew Pitner, MRO-APS  
 Jay Zimmerman, RRO-APS

- David May, WaRO-APS  
 Charlie Stehman, WiRO-APS  
 Sherri Knight, WSRO-APS

**From:** John McCray, Groundwater Protection Unit

**Telephone:** (919) 715-6168

**Fax:** (919) 715-0588

**E-Mail:** john.mccray@ncdenr.gov

**A. Permit Number:** WI0600055

**B. Owner:** Abbott Laboratories

**C. Facility/Operation:** Former Abbott Facility (QualPak, Inc)

- Proposed     Existing     Facility     Operation

**D. Application:**

- 1. Permit Type:**  Animal     Surface Irrigation     Reuse     H-R Infiltration  
 Recycle     I/E Lagoon     GW Remediation (ND)  
 UIC - (5I) in-situ groundwater remediation \_\_\_\_\_

- For Residuals:*     Land App.     D&M     Surface Disposal  
 503     503 Exempt     Animal

- 2. Project Type:**  New     Major Mod.     Minor Mod.     Renewal     Renewal w/ Mod.

**E. Comments/Other Information:**     I would like to accompany you on a site visit.

Attached, you will find all information submitted in support of the above-referenced application for your review, comment, and/or action. Within 30 calendar days, please take the following actions:

- Return a Completed Form APSSRR.  
 Attach Well Construction Data Sheet.  
 Attach Attachment B for Certification by the LAPCU.  
 Issue an Attachment B Certification from the RO\*.

\* Remember that you will be responsible for coordinating site visits, reviews, as well as additional information requests with other RO-APS representatives in order to prepare a complete Attachment B for certification. Refer to the RPP SOP for additional detail.

When you receive this request form, please write your name and dates in the spaces below, make a copy of this sheet, and return it to the appropriate Central Office-Aquifer Protection Section contact person listed above.

**RO-APS Reviewer:** Jim Bader

**Date:** 5/20/10

# AQUIFER PROTECTION SECTION REGIONAL STAFF REPORT

Date: 05/20/10

County: Scotland

To: Aquifer Protection Section Central Office

Permittee: Abbott Laboratories

Central Office Reviewer: J. McCray Project Name: Abbott/QualPak Remediation Project

Regional Login No: ??

Application No.: WI00600055

## I. GENERAL INFORMATION

1. This application is (check all that apply):  New  Renewal  
 Minor Modification  Major Modification

- Surface Irrigation  Reuse  Recycle  High Rate Infiltration  Evaporation/Infiltration Lagoon  
 Land Application of Residuals  Attachment B included  503 regulated  503 exempt  
 Distribution of Residuals  Surface Disposal  
 Closed-loop Groundwater Remediation  Other Injection Wells (including *in situ* remediation)

Was a site visit conducted in order to prepare this report?  Yes or  No.

- a. Date of site visit: 05/13/10  
b. Person contacted and contact information: Sean Boyles - DWM/Superfund/Inactive Hazardous Sites Branch/Fayetteville Regional Office  
c. Site visit conducted by: Jim Barber  
d. Inspection Report Attached:  Yes or  No.

2. Is the following information entered into the BIMS record for this application correct?

Yes or  No. If no, please complete the following or indicate that it is correct on the current application.

### For Treatment Facilities:

- a. Location: \_\_\_\_\_  
b. Driving Directions: \_\_\_\_\_  
c. USGS Quadrangle Map name and number: \_\_\_\_\_  
d. Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_  
e. Regulated Activities / Type of Wastes (e.g., subdivision, food processing, municipal wastewater):  
Groundwater remediation system consisting of injection wells for the remediation of solvent/VOC contamination due to waste pit operations by Abbott Laboratories (former owner of site).

### For Disposal and Injection Sites:

(If multiple sites either indicate which sites the information applies to, copy and paste a new section into the document for each site, or attach additional pages for each site)

- a. Location(s): 16000 Joy Street, Laurinburg NC 28352 (QualPak facility today)  
b. Driving Directions: From the Fayetteville Regional Office travel to Laurinburg on Hwy 401. Upon entering Laurinburg city limits, take Hwy 401 Bypass, to the exit for Hwy 15/501 to Aberdeen. The former Abbott Labs/QualPak facility is on the immediate right.  
c. USGS Quadrangle Map name and number: Laurinburg, NC (H-21-SW)  
d. Latitude: 34.800726 N Longitude: -79.455245 W (approx. location of injection zone "A")

# AQUIFER PROTECTION SECTION REGIONAL STAFF REPORT

## II. NEW AND MAJOR MODIFICATION APPLICATIONS (this section not needed for renewals or minor modifications, skip to next section)

### Description Of Waste(S) And Facilities

1. Please attach completed rating sheet. Facility Classification: \_\_\_\_\_
2. Are the new treatment facilities adequate for the type of waste and disposal system?  
 Yes  No  N/A. If no, please explain: \_\_\_\_\_
3. Are the new site conditions (soils, topography, depth to water table, etc) consistent with what was reported by the soil scientist and/or Professional Engineer?  Yes  No  N/A. If no, please explain: \_\_\_\_\_
4. Does the application (maps, plans, etc.) represent the actual site (property lines, wells, surface drainage)?  Yes  No  N/A. If no, please explain: \_\_\_\_\_
5. Is the proposed residuals management plan adequate and/or acceptable to the Division.  Yes  No  N/A. If no, please explain: \_\_\_\_\_
6. Are the proposed application rates for new sites (hydraulic or nutrient) acceptable?  
 Yes  No  N/A. If no, please explain: \_\_\_\_\_
7. Are the new treatment facilities or any new disposal sites located in a 100-year floodplain?  
 Yes  No  N/A. If yes, please attach a map showing areas of 100-year floodplain and please explain and recommend any mitigative measures/special conditions in Part IV: \_\_\_\_\_
8. Are there any buffer conflicts (new treatment facilities or new disposal sites)?  Yes or  No. If yes, please attach a map showing conflict areas or attach any new maps you have received from the applicant to be incorporated into the permit: \_\_\_\_\_
9. Is proposed and/or existing groundwater monitoring program (number of wells, frequency of monitoring, monitoring parameters, etc.) adequate?  Yes  No  N/A. Attach map of existing monitoring well network if applicable. Indicate the review and compliance boundaries. If No, explain and recommend any changes to the groundwater monitoring program: \_\_\_\_\_
10. For residuals, will seasonal or other restrictions be required?  Yes  No  N/A If yes, attach list of sites with restrictions (Certification B?)

## III. RENEWAL AND MODIFICATION APPLICATIONS (use previous section for new or major modification systems)

### Description Of Waste(S) And Facilities

1. Are there appropriately certified ORCs for the facilities?  Yes or  No.  
Operator in Charge: \_\_\_\_\_ Certificate #: \_\_\_\_\_  
Backup- Operator in Charge: \_\_\_\_\_ Certificate #: \_\_\_\_\_

# AQUIFER PROTECTION SECTION REGIONAL STAFF REPORT

2. Is the design, maintenance and operation (e.g. adequate aeration, sludge wasting, sludge storage, effluent storage, etc) of the treatment facilities adequate for the type of waste and disposal system?  Yes or  No. If no, please explain: \_\_\_\_\_
3. Are the site conditions (soils, topography, depth to water table, etc) maintained appropriately and adequately assimilating the waste?  Yes or  No. If no, please explain: \_\_\_\_\_
4. Has the site changed in any way that may affect permit (drainage added, new wells inside the compliance boundary, new development, etc.)? If yes, please explain: \_\_\_\_\_
5. Is the residuals management plan for the facility adequate and/or acceptable to the Division?  
 Yes or  No. If no, please explain: \_\_\_\_\_
6. Are the existing application rates (hydraulic or nutrient) still acceptable?  Yes or  No. If no, please explain: \_\_\_\_\_
7. Is the existing groundwater monitoring program (number of wells, frequency of monitoring, monitoring parameters, etc.) adequate?  Yes  No  N/A. Attach map of existing monitoring well network if applicable. Indicate the review and compliance boundaries. If No, explain and recommend any changes to the groundwater monitoring program: \_\_\_\_\_
8. Will seasonal or other restrictions be required for added sites?  Yes  No  N/A If yes, attach list of sites with restrictions (Certification B?)
9. Are there any buffer conflicts (treatment facilities or disposal sites)?  Yes or  No. If yes, please attach a map showing conflict areas or attach any new maps you have received from the applicant to be incorporated into the permit: \_\_\_\_\_
10. Is the description of the facilities, type and/or volume of waste(s) as written in the existing permit correct?  Yes or  No. If no, please explain: \_\_\_\_\_
11. Were monitoring wells properly constructed and located?  Yes or  No  N/A. If no, please explain: \_\_\_\_\_
12. Has a review of all self-monitoring data been conducted (GW, NDMR, and NDAR as applicable)?  Yes or  No  N/A. Please summarize any findings resulting from this review: \_\_\_\_\_
13. Check all that apply:  No compliance issues;  Notice(s) of violation within the last permit cycle;  Current enforcement action(s)  Currently under SOC;  Currently under JOC;  Currently under moratorium. If any items checked, please explain and attach any documents that may help clarify answer/comments (such as NOV, NOD etc): \_\_\_\_\_
14. Have all compliance dates/conditions in the existing permit, (SOC, JOC, etc.) been complied with?  Yes  No  Not Determined  N/A.. If no, please explain: \_\_\_\_\_
15. Are there any issues related to compliance/enforcement that should be resolved before issuing this permit?  Yes or  No  N/A. If yes, please explain: \_\_\_\_\_

# AQUIFER PROTECTION SECTION REGIONAL STAFF REPORT

**IV. INJECTION WELL PERMIT APPLICATIONS** (Complete these two sections for all systems that use injection wells, including closed-loop groundwater remediation effluent injection wells, in situ remediation injection wells, and heat pump injection wells.)

## **Description Of Well(S) And Facilities – New, Renewal, And Modification**

1. Type of injection system:
  - Heating/cooling water return flow (5A7)
  - Closed-loop heat pump system (5QM/5QW)
  - In situ* remediation (5I)
  - Closed-loop groundwater remediation effluent injection (5L/"Non-Discharge")
  - Other (Specify: \_\_\_\_\_)
2. Does system use same well for water source and injection?  Yes  No
3. Are there any potential pollution sources that may affect injection?  Yes  No  
What is/are the pollution source(s)? \_\_\_\_\_. What is the distance of the injection well(s) from the pollution source(s)? \_\_\_\_\_ ft.
4. What is the minimum distance of proposed injection wells from the property boundary? 200' + ft.
5. Quality of drainage at site:  Good  Adequate  Poor
6. Flooding potential of site:  Low  Moderate  High
7. For groundwater remediation systems, is the proposed and/or existing groundwater monitoring program (number of wells, frequency of monitoring, monitoring parameters, etc.) adequate?  Yes  No. Attach map of existing monitoring well network if applicable. If No, explain and recommend any changes to the groundwater monitoring program: The site is the jurisdiction of the Division of Waste Management - Superfund Section - Inactive Hazardous Sites Branch, with oversight for facility activities by the Fayetteville Regional Office staff (Sean Boyles: 910-433-3345).
8. Does the map presented represent the actual site (property lines, wells, surface drainage)?  Yes or  No. If no or no map, please attach a sketch of the site. Show property boundaries, buildings, wells, potential pollution sources, roads, approximate scale, and north arrow.

## **Injection Well Permit Renewal And Modification Only:**

1. For heat pump systems, are there any abnormalities in heat pump or injection well operation (e.g. turbid water, failure to assimilate injected fluid, poor heating/cooling)?  
 Yes  No. If yes, explain: \_\_\_\_\_
2. For **closed-loop heat pump** systems, has system lost pressure or required make-up fluid since permit issuance or last inspection?  Yes  No. If yes, explain: \_\_\_\_\_

# AQUIFER PROTECTION SECTION REGIONAL STAFF REPORT

3. For renewal or modification of groundwater remediation permits (of any type), will continued/additional/modified injections have an adverse impact on migration of the plume or management of the contamination incident?  Yes  No. If yes, explain: \_\_\_\_\_
  
4. Drilling contractor: Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Certification number: \_\_\_\_\_
  
5. Complete and attach Well Construction Data Sheet.



# AQUIFER PROTECTION SECTION REGIONAL STAFF REPORT

the vicinity of the former Abbott Laboratories facility. The building located at the site is in use by QualPak producing hand sanitizer. Site conditions, in and around the facility, have not changed since the issuance of the original permit dated 22 September 2006.

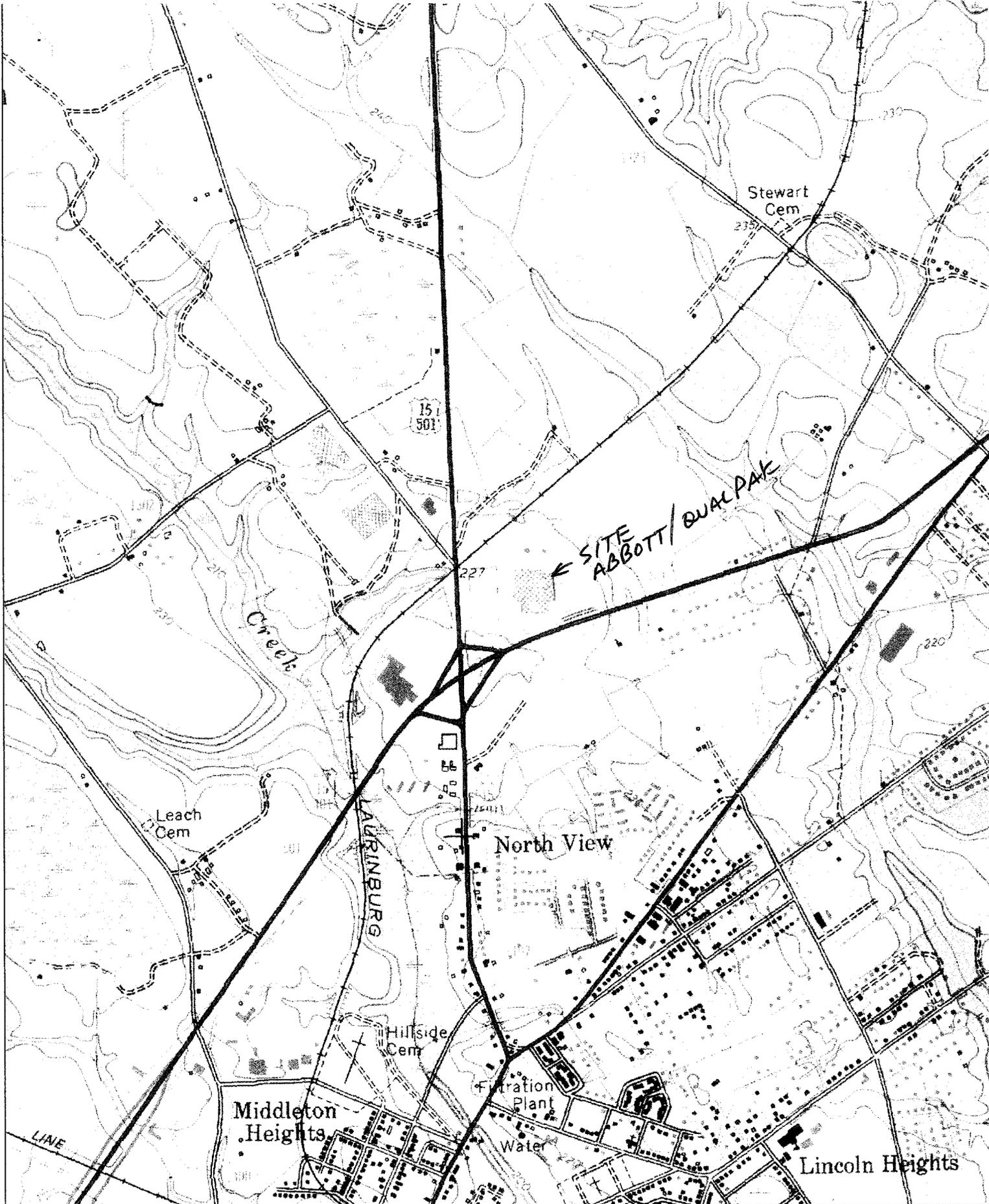
A copy of the final UIC permit should be provided to the Inactive Sites Branch, Superfund Section, in the Division of Waste Management. The contact person for this site is Mr. Sean Boyles (910-433-3345). The mailing address is as follows:

Division of Waste Management

Inactive Sites Branch

225 Green Street, Suite 714

Fayetteville, NC 28301



0 ————— 0.5 Mi  
0 ————— 2000 Ft

Map provided by MyTopo.com



North Carolina Department of Environment and Natural Resources

Division of Water Quality  
Coleen H. Sullins  
Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

May 5, 2010

Corlis D. Murray - Vice President Global Engineering Svcs  
Abbott Laboratories  
Bldg. AP52-S, D0539  
200 Abbott Park Road  
Abbott Park, IL 60064



Subject: Acknowledgement of Application No. WI0600055  
Injection In situ Groundwater Remediation Well (5I)  
Former Abbott Facility (QualPac, Inc)  
Scotland

Dear Mr. Murray:

The Aquifer Protection Section of the Division of Water Quality (Division) acknowledges receipt of your permit application and supporting materials on April 27, 2010. This application package has been assigned the number listed above and will be reviewed by John McCray.

The reviewer will perform a detailed review and contact you with a request for additional information if necessary. To ensure the maximum efficiency in processing permit applications, the Division requests your assistance in providing a timely and complete response to any additional information requests.

Please be aware that the Division's Regional Office, copied below, must provide recommendations prior to final action by the Division. Please also note at this time, processing permit applications can take as long as 60 - 90 days after receipt of a complete application.

If you have any questions, please contact John McCray at 919-715-6168, or via e-mail at [john.mccray@ncdenr.gov](mailto:john.mccray@ncdenr.gov). If the reviewer is unavailable, you may leave a message, and they will respond promptly. Also note that the Division has reorganized. To review our new organizational chart, go to [http://h2o.enr.state.nc.us/documents/dwq\\_orgchart.pdf](http://h2o.enr.state.nc.us/documents/dwq_orgchart.pdf).

**PLEASE REFER TO THE ABOVE APPLICATION NUMBER WHEN MAKING INQUIRIES ON THIS PROJECT.**

Sincerely,

for Debra J. Watts  
Supervisor

cc: Fayetteville Regional Office, Aquifer Protection Section  
Grant Watkins (AECOM - 8540 Colonnade Drive, Raleigh, NC 27616)  
Permit Application File WI0600055

AQUIFER PROTECTION SECTION  
1636 Mail Service Center, Raleigh, North Carolina 27699-1636  
Location: 2728 Capital Boulevard, Raleigh, North Carolina 27604  
Phone: 919-733-3221 \ FAX 1: 919-715-0588; FAX 2: 919-715-6048 \ Customer Service: 1-877-623-6748  
Internet: [www.ncwaterquality.org](http://www.ncwaterquality.org)

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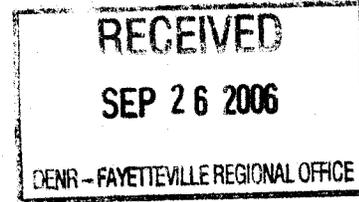
SCOTLAND  
WI0600011

Michael F. Easley, Governor

William G. Ross Jr., Secretary  
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director  
Division of Water Quality

September 22, 2006



Mr. Curtis Michols  
Abbott Laboratories, Inc.  
Dept. 539, Building AP52 South  
200 Abbott Park Road  
Abbott Park, IL 60064-6212

Dear Mr. Michols:

In accordance with your application received on July 20, 2006, we are forwarding Permit No. WI0600011 for the construction and operation of Type 5I injection wells at the former Abbott Laboratories site located at the Junction of Highways 15/501 & 401, Laurinburg, North Carolina.

This permit shall be effective from the date of issuance until September 30, 2008, and shall be subject to the conditions and limitations stated therein, including the requirement to submit a **final project evaluation** as stated in PART VII-MONITORING AND REPORTING REQUIREMENTS. You will also need to notify this office by telephone 48 hours prior to initiation of injection at this facility. In order to continue uninterrupted legal use of this injectant for the stated purpose, you should submit an application to renew the permit three months prior to its expiration date.

If you have any questions regarding your permit please contact me at (919) 715-6935.

Sincerely,

Qu Qi, PG  
UIC Program Manager

cc: Charla Reinganum, P.E., Phoenix Environmental  
CO-UIC file  
Art Barnhardt, Fayetteville Regional Office

Enclosures

One North Carolina  
Naturally

**NORTH CAROLINA**  
**ENVIRONMENTAL MANAGEMENT COMMISSION**  
**DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**  
**RALEIGH, NORTH CAROLINA**

PERMIT FOR THE CONSTRUCTION AND OPERATION OF A WELL FOR INJECTION

In accordance with the provisions of Article 7, Chapter 87; Article 21, Chapter 143, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

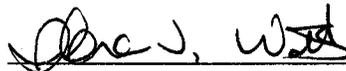
Abbott Laboratories, Inc.

FOR THE CONSTRUCTION AND OPERATION OF TYPE 5I INJECTION WELLS, defined in Title 15A North Carolina Administrative Code 2C .0209(e)(3)(C), to inject HRC™ slurry for reductive dechlorination of dissolved chlorinated solvent contamination. These injection wells/points will be located at the junction of Highways 15/501 & 401, Laurinburg, North Carolina, and will be operated in accordance with the application submitted May 28, 2002 and modification request submitted February 26, 2004 and modification request submitted July 18, 2006 and in conformity with the specifications and supporting data submitted, all of which are filed with the Department of Environment and Natural Resources and are considered a part of this permit.

This permit is for Construction and Operation only, and does not waive any provisions of the Water Use Act or any other applicable Laws, Rules, or Regulations. Operation and use of an injection well shall be in compliance with Title 15A North Carolina Administrative Code 2C .0100 and .0200, and any other Laws, Rules, and Regulations pertaining to well construction and use.

This permit shall be effective, unless revoked, from the date of its issuance until September 30, 2008, and shall be subject to the specified conditions and limitations set forth in Parts I through X hereof. This permit replaces and supercedes the permits issued on October 16, 2002 and March 23, 2004.

Permit issued this the 22<sup>nd</sup> day of September, 2006.

  
\_\_\_\_\_

for Alan W. Klimek, Director  
Division of Water Quality

By Authority of the Environmental Management Commission.

## **PART I - WELL CONSTRUCTION GENERAL CONDITIONS**

1. The Permittee must comply with all conditions of this permit and with the standards and criteria specified in Criteria and Standards Applicable to Injection Wells (15A NCAC 2C .0200). Any noncompliance with conditions of this permit constitutes a violation of the North Carolina Well Construction Act and is grounds for enforcement action as provided for in N.C.G.S. 87-94.
2. This permit shall become voidable unless the facility is constructed in accordance with the conditions of this permit, the approved plans and specifications, and other supporting data.
3. This permit is valid only for construction of the number of injection wells described in the application and other supporting data. Construction of additional injection wells must be approved in advance by the Aquifer Protection Section.
4. Each injection well shall not hydraulically connect separate aquifers.
5. Each injection well shall be constructed in such a manner that water from land surface cannot migrate into the gravel pack or well screen.
6. Each injection well shall be secured to reasonably insure against unauthorized access and use. Each well shall be permanently labeled with a warning that it is for injection purposes and the entrance to each well must be secured with a locking cap.
7. Each injection well shall be afforded reasonable protection against damage during construction and use.
8. Each injection well shall have permanently affixed an identification plate.
9. Within 30 days of completion of well construction, a completed Well Construction Record (Form GW-1) must be submitted for each injection well to:

Aquifer Protection Section-UIC Staff  
DENR-Division of Water Quality  
1636 Mail Service Center  
Raleigh, NC 27699-1636

## **PART II - WELL CONSTRUCTION SPECIAL CONDITIONS**

1. At least forty-eight (48) hours prior to constructing each injection well, the Permittee shall notify the Aquifer Protection Section-Underground Injection Control (UIC) Central Office staff, telephone number (919) 715-6935 and the Fayetteville Regional Office Aquifer Protection Section Staff, telephone number (910)433-3300.

### **PART III - OPERATION AND USE GENERAL CONDITIONS**

1. This permit is effective only with respect to the nature, volume of materials, rate of injection, and number of injection wells as described in the application and other supporting data.
2. This permit is not transferable without prior notice to, and approval by, the Director of the Division of Water Quality (Director). In the event there is a desire for the facility to change ownership, or there is a name change of the Permittee, a formal permit amendment request must be submitted to the Director, including any supporting materials as may be appropriate, at least 30 days prior to the date of the change.
3. The issuance of this permit shall not relieve the Permittee of the responsibility of complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other local, state, and federal agencies which have jurisdiction. Furthermore, the issuance of this permit does not imply that all regulatory requirements have been met.

### **PART IV - PERFORMANCE STANDARDS**

1. The injection facility shall be effectively maintained and operated at all times so that there is no contamination of groundwater which will render it unsatisfactory for normal use. In the event that the facility fails to perform satisfactorily, including the creation of nuisance conditions or failure of the injection zone to adequately assimilate the injected fluid, the Permittee shall take immediate corrective actions including those actions that may be required by the Division of Water Quality such as the repair, modification, or abandonment of the injection facility.
2. The Permittee shall be required to comply with the terms and conditions of this permit even if compliance requires a reduction or elimination of the permitted activity.
3. The issuance of this permit shall not relieve the Permittee of the responsibility for damages to surface or groundwater resulting from the operation of this facility.

### **PART V - OPERATION AND MAINTENANCE REQUIREMENTS**

1. The injection facility shall be properly maintained and operated at all times.
2. The Permittee must notify the Division and receive prior written approval from the Director of any planned physical alterations or additions in the permitted facility or activity not specifically authorized by the permit.
3. At least forty-eight (48) hours prior to the initiation of the operation of the facility for injection, the Permittee must notify by telephone the Aquifer Protection Section-UIC, Central Office staff, telephone number (919) 715-6935. Notification is required so that Division staff can inspect or otherwise review the injection facility and determine if it is in compliance with

permit conditions.

## **PART VI - INSPECTIONS**

1. Any duly authorized officer, employee, or representative of the Division of Water Quality may, upon presentation of credentials, enter and inspect any property, premises, or place on or related to the injection facility at any reasonable time for the purpose of determining compliance with this permit, may inspect or copy any records that must be maintained under the terms and conditions of this permit, and may obtain samples of groundwater, surface water, or injection fluids.
2. Department representatives shall have reasonable access for purposes of inspection, observation, and sampling associated with injection and any related facilities as provided for in N.C.G.S. 87-90.
3. Provisions shall be made for collecting any necessary and appropriate samples associated with the injection facility activities.

## **PART VII - MONITORING AND REPORTING REQUIREMENTS**

1. The proposed monitoring plan included in the application shall be followed. All sample results shall be submitted to the Aquifer Protection Section's Fayetteville Regional Office and the Raleigh Central Office. Any monitoring (including groundwater, surface water, or soil sampling) deemed necessary by the Division of Water Quality to insure surface and ground water protection, will be established and an acceptable sampling reporting schedule shall be followed.
2. The Permittee shall produce a final project evaluation within 9 months after completing all injection-related activity associated with the permit application. This document shall assess the injection projects findings in a written summary. The final project evaluation shall also contain monitoring well sampling data, contaminant plume maps and potentiometric surface maps.
3. The monitoring results and the final project evaluation shall be submitted to:

Aquifer Protection Section-UIC Staff  
DENR-Division of Water Quality  
1636 Mail Service Center  
Raleigh, NC 27699-1636

and to:

Aquifer Protection Section  
DENR-DWQ Fayetteville Regional Office  
Systel Building  
225 Green St., Suite 714  
Fayetteville, NC 28301-5094

4. The Permittee shall report by telephone, within 48 hours of the occurrence or first knowledge of the occurrence, to the Fayetteville Regional Office, telephone number (910)433-3300, any of the following:
  - (A) Any occurrence at the injection facility which results in any unusual operating circumstances;
  - (B) Any failure due to known or unknown reasons, that renders the facility incapable of proper injection operations, such as mechanical or electrical failures.
5. Where the Permittee becomes aware of an omission of any relevant facts in a permit application, or of any incorrect information submitted in said application or in any report to the Director, the relevant and correct facts or information shall be promptly submitted to the Director by the Permittee.
6. In the event that the permitted facility fails to perform satisfactorily, the Permittee shall take such immediate action as may be required by the Director.

#### **PART VIII - PERMIT RENEWAL**

In order to continue uninterrupted legal use of the injection facility for the stated purpose, the Permittee must submit an application to renew the permit 120 days prior to its expiration date.

#### **PART IX - CHANGE OF WELL STATUS**

1. The Permittee shall provide written notification within 15 days of any change of status of an injection well. Such a change would include the discontinued use of a well for injection. If a well is taken completely out of service temporarily, the Permittee must install a sanitary seal. If a well is not to be used for any purpose that well must be permanently abandoned according to 15A NCAC 2C .0113, Well Construction Standards.
2. When operations have ceased at the facility and a well will no longer be used for any purpose, the Permittee shall abandon that injection well in accordance with the procedures specified in 15A NCAC 2C .0113(b), including but not limited to the following:
  - (A) All casing and screen materials may be removed prior to initiation of abandonment procedures if such removal will not cause or contribute to contamination of the groundwaters.
  - (B) The entire depth of each well shall be sounded before it is sealed to insure freedom from obstructions that may interfere with sealing operations.
  - (C) The well shall be thoroughly disinfected, prior to sealing, if the Director determines that failure to do so could lead to the contamination of an underground source of drinking water.

(D) Drilled wells shall be completely filled with cement grout, or bentonite grout which shall be introduced into the well through a pipe which extends to the bottom of the well and is raised as the well is filled.

(E) In the case of gravel-packed wells in which the casing and screens have not been removed, neat-cement, or bentonite grout shall be injected into the well completely filling it from the bottom of the casing to the top.

(F) In those cases when, as a result of the injection operations, a subsurface cavity has been created, each well shall be abandoned in such a manner that will prevent the movement of fluids into or between underground sources of drinking water and in accordance with the terms and conditions of the permit.

(G) The Permittee shall submit a Well Abandonment Record (Form GW-30) as specified in 15A NCAC 2C .0213(h)(1) within 30 days of completion of abandonment.

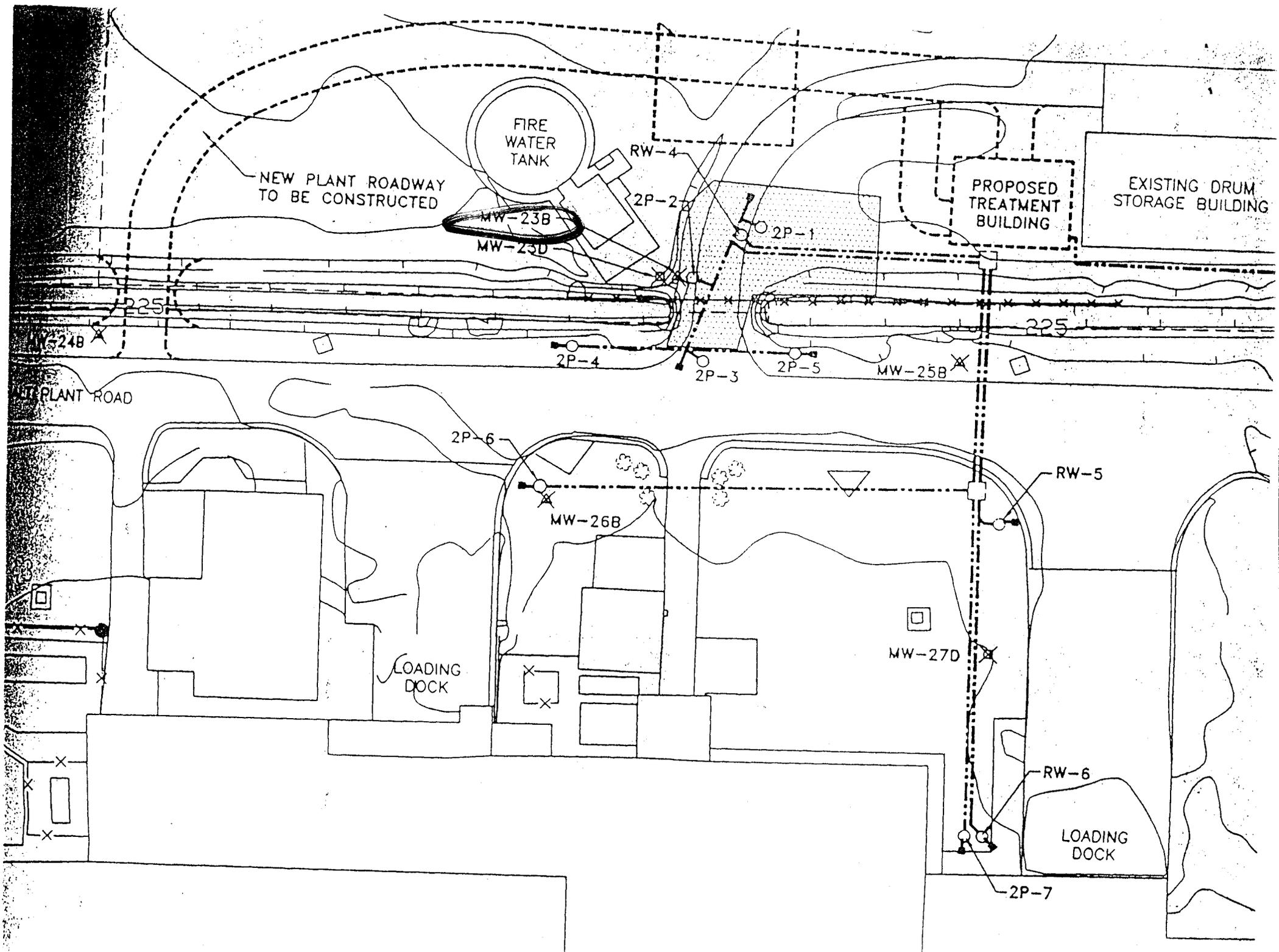
3. The written documentation required in Part IX (1) and (2) (G) shall be submitted to:

Aquifer Protection Section-UIC Staff  
DENR-Division of Water Quality  
1636 Mail Service Center  
Raleigh, NC 27699-1636

#### **PART X – WORKER PRECAUTIONS DURING APPLICATION**

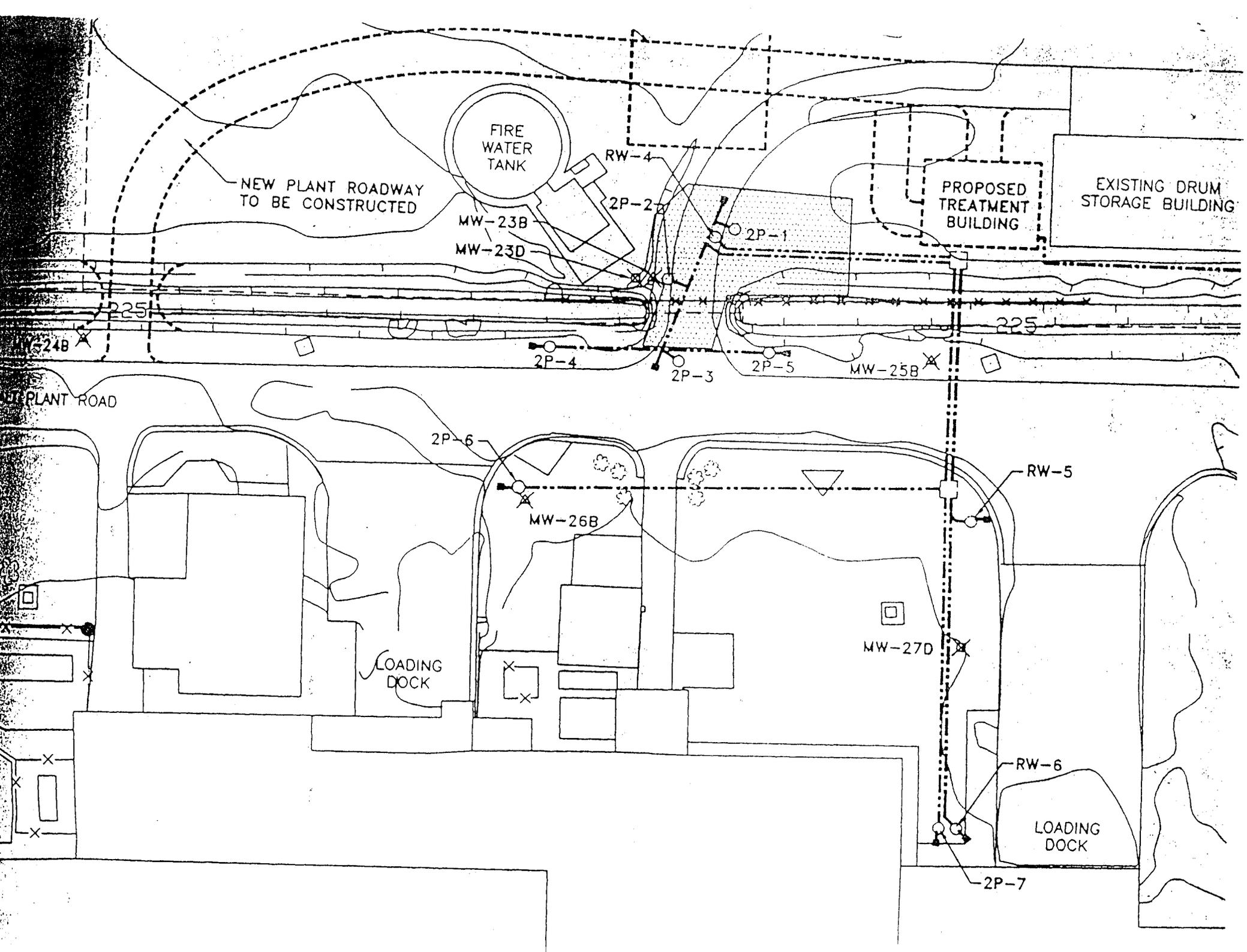
1. Some effects reported to be associated with the product proposed to be used are as follows: eye, skin, nose, throat and lung irritation. If the product is released into the environment in a way that could result in a suspension of fine solid or liquid particles (e.g., grinding, blending, vigorous shaking or mixing), then proper personal protective equipment should be used. The application process should be reviewed by an industrial hygienist to ensure that the most appropriate personal protective equipment is used.
2. Persons working with these products should wear goggles or a face shield, gloves, and protective clothing. Face and body protection should be used for anticipated splashes or sprays.
3. Eating, drinking, smoking, handling contact lenses, and applying cosmetics should not be permitted in the application area during or immediately following application.
4. Safety controls should be in place to ensure that the check valve and the pressure delivery systems are working properly.
5. The Material Safety Data Sheets should be followed to prevent incompatible or adverse reactions and injuries.



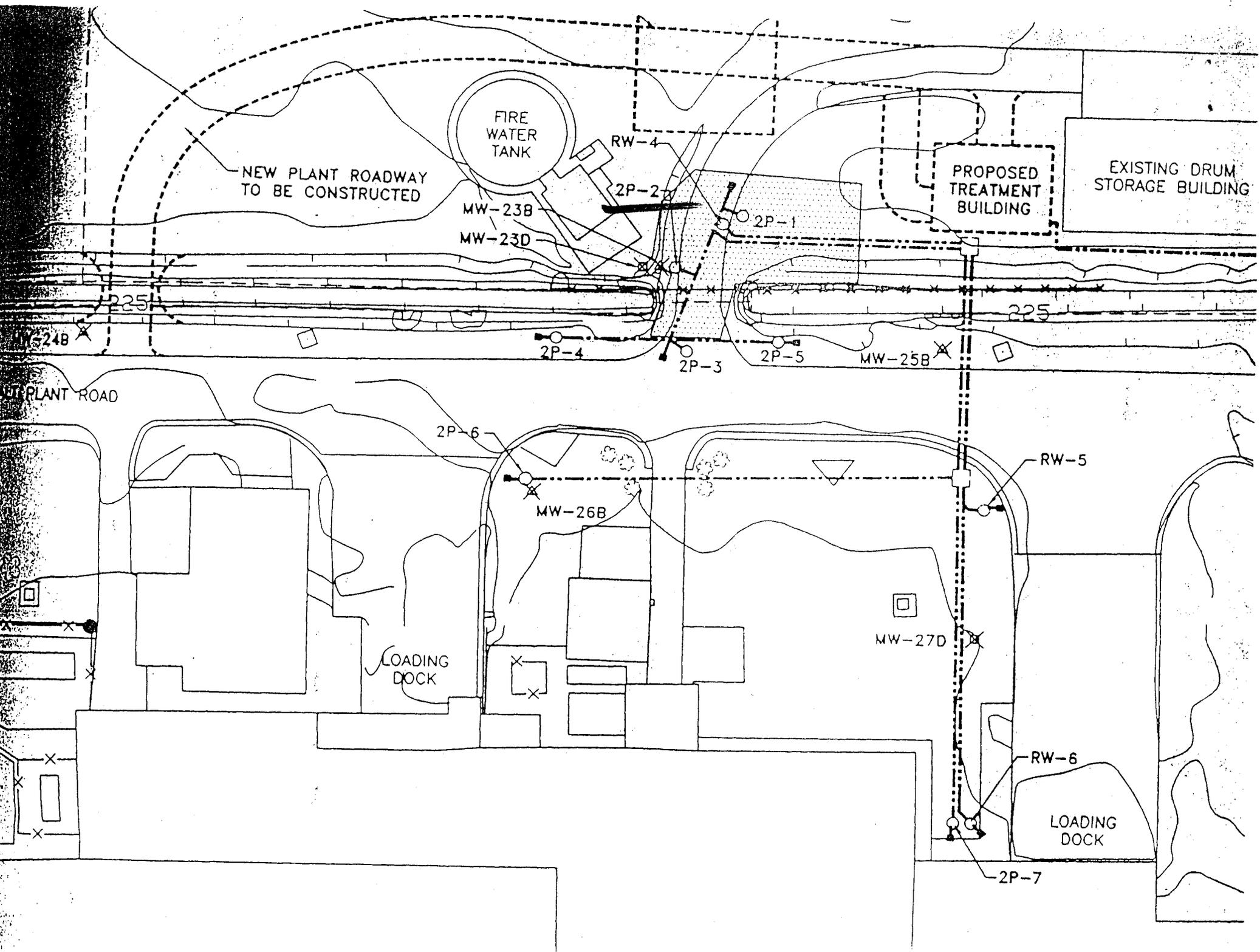




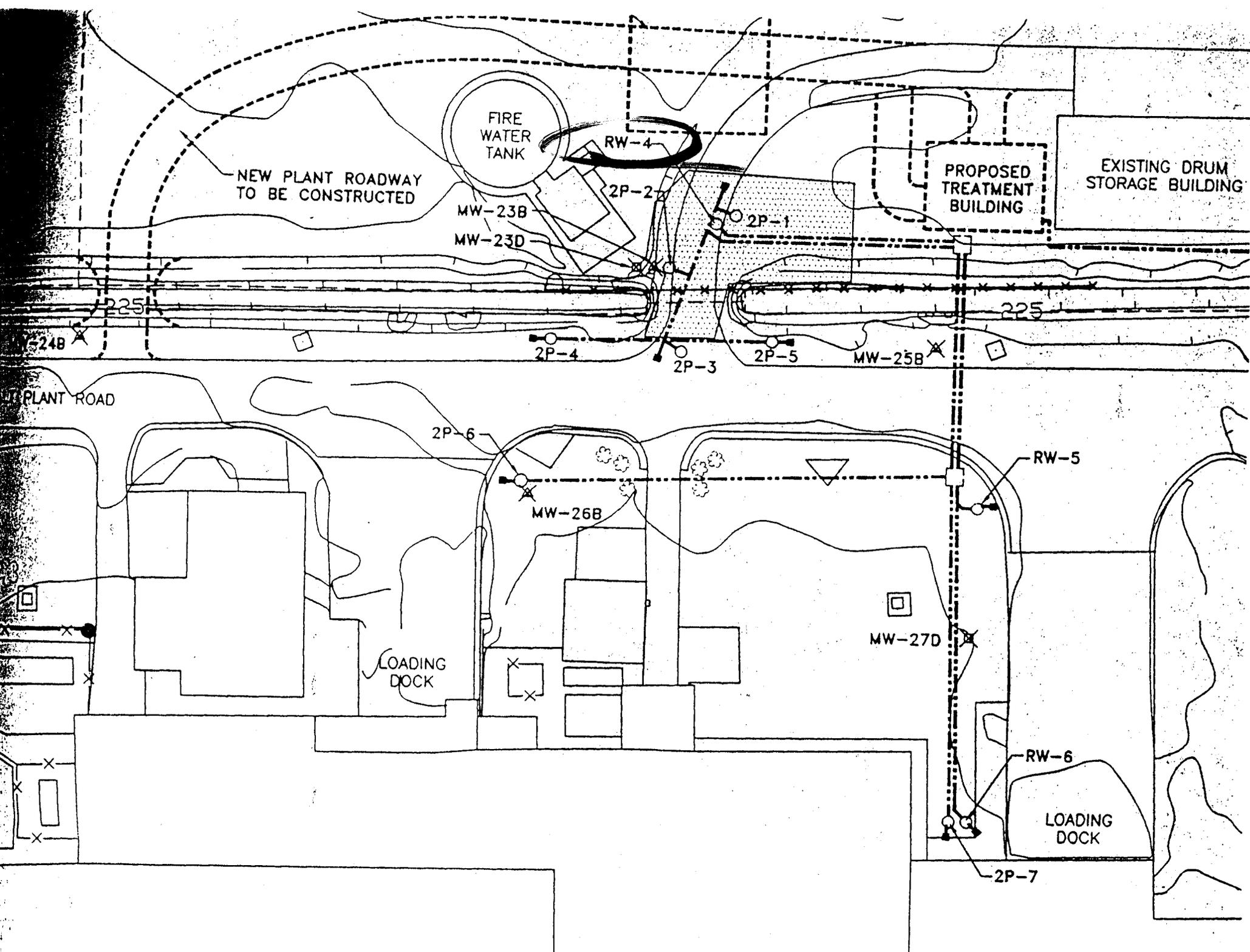




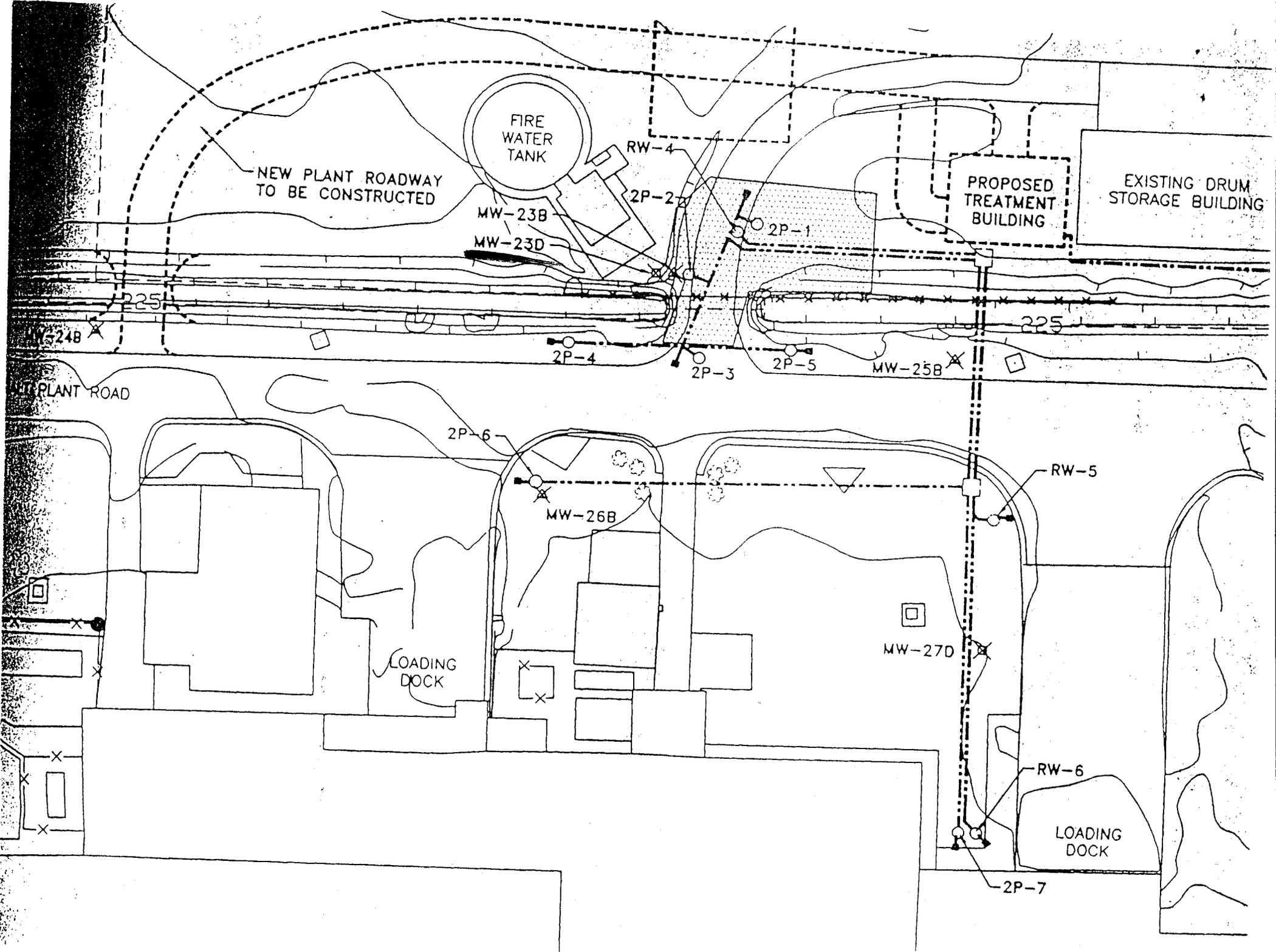




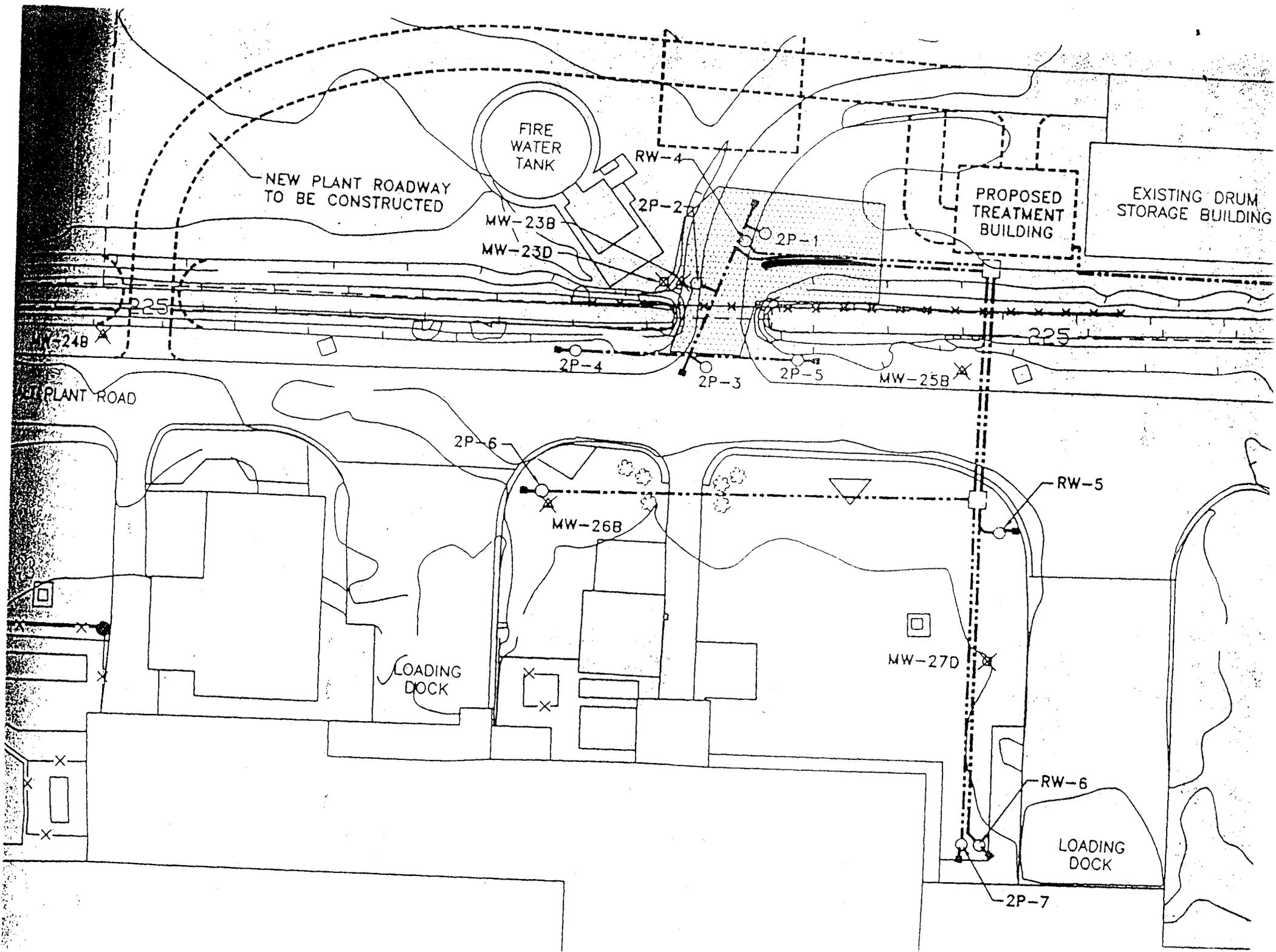




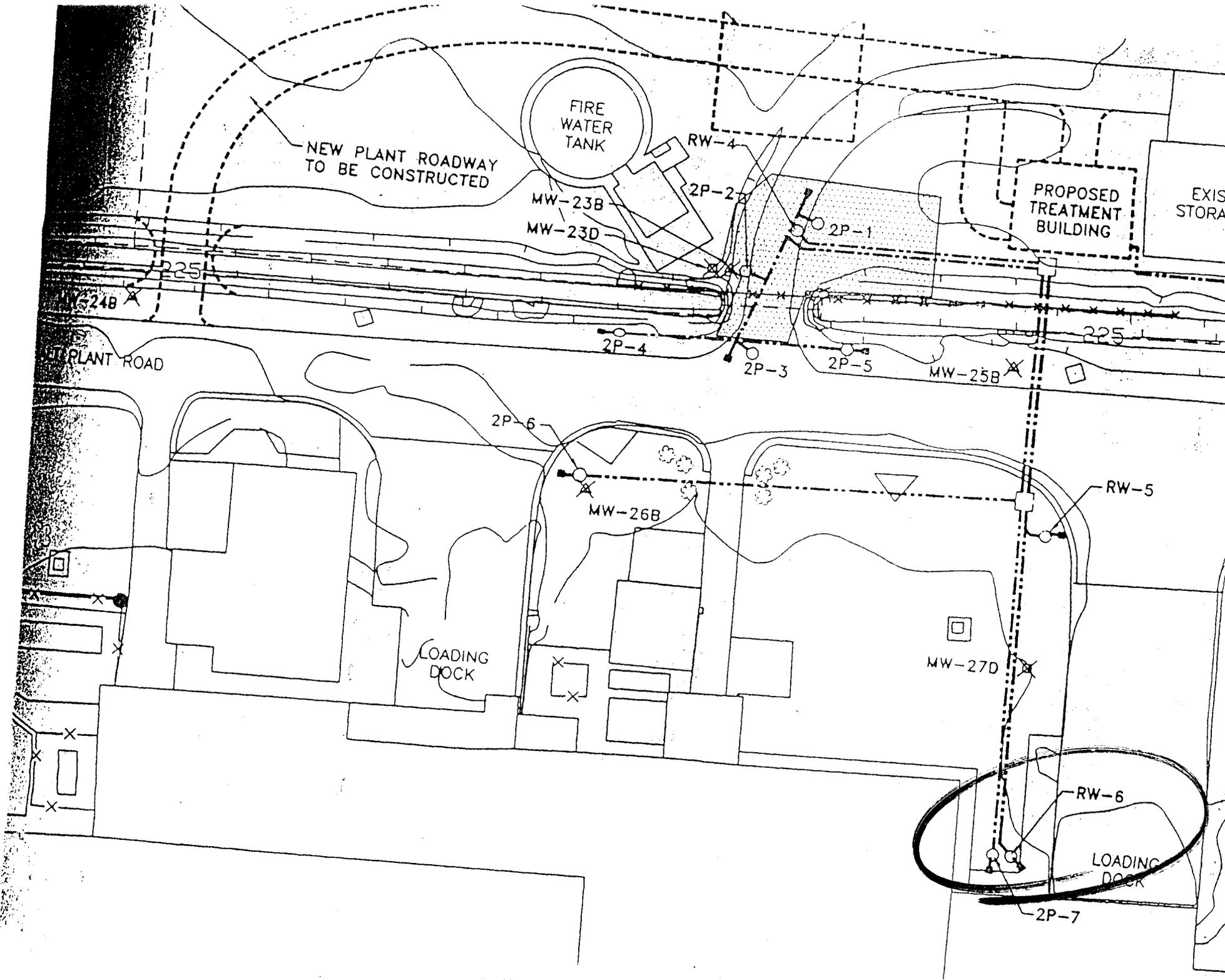












2005

FOR OFFICE USE ONLY

Job No. \_\_\_\_\_ Date Recd. \_\_\_\_\_

Lat. \_\_\_\_\_ Long. \_\_\_\_\_

Water Basin \_\_\_\_\_

Basin Code \_\_\_\_\_

Header Ent. \_\_\_\_\_

GW-1 Ent.

170405

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Groundwater Protection, Inc.

DRILLER REGISTRATION NUMBER 1105

STATE WELL CONSTRUCTION PERMIT NUMBER \_\_\_\_\_

WELL LOCATION: (Show sketch of the location below)

Nearest Town Laurinburg N.C.

County ROBERTSON

(Road, Community, or Subdivision and Lot No.)

OWNER ABBOTT Lab

Depth \_\_\_\_\_ DRILLING LOG

From \_\_\_\_\_ To \_\_\_\_\_

Formation Description \_\_\_\_\_

ADDRESS Hwy 401 + Hwy 501  
Laurinburg N.C.  
 (Street or Route No.)

City or Town \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

DATE DRILLED 1-17-96 USE OF WELL RW

0 - 75' sand clay

TOTAL DEPTH 75' CUTTINGS COLLECTED  Yes  No

DOES WELL REPLACE EXISTING WELL?  Yes  No

STATIC WATER LEVEL: 3' FT.  above TOP OF CASING.

TOP OF CASING IS 0 FT. ABOVE LAND SURFACE.  below

YIELD (gpm): N/A METHOD OF TEST N/A

WATER ZONES (depth): N/A

CHLORINATION: Type N/A Amount N/A

CASING:

From 0 To 35' Depth Diameter 4" Wall Thickness or Weight/Fl. \_\_\_\_\_ Material 5/8

From \_\_\_\_\_ To \_\_\_\_\_ Ft. \_\_\_\_\_

From \_\_\_\_\_ To \_\_\_\_\_ Ft. \_\_\_\_\_

GROUT:

From 0 To 31 Depth Material TYPE Method Trimatic

From \_\_\_\_\_ To \_\_\_\_\_ Ft. \_\_\_\_\_

SCREEN:

From 35 To 75 Depth Diameter 4" Slot Size .020 Material 5/8

From \_\_\_\_\_ To \_\_\_\_\_ Ft. \_\_\_\_\_ in. \_\_\_\_\_ in.

From \_\_\_\_\_ To \_\_\_\_\_ Ft. \_\_\_\_\_ in. \_\_\_\_\_ in.

GRAVEL PACK:

From 33 To 75 Depth Size 20/40 Material sand

From \_\_\_\_\_ To \_\_\_\_\_ Ft. \_\_\_\_\_

REMARKS Bentonite pellets from 31 to 733

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

RECEIVED/EHNR  
 DEM. GROUND WATER SEC.  
 96 AUG -7 PM 1:47

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

[Signature] 1-19-96  
 SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Environmental Management and copy to well owner

