TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 4, 2014

Dr. Paul Richter
Richter-Land, LLC
3126 Falling Brook
San Antonio, Texas 78258

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: Stor-Haus Self Storage; Located approximately 315 feet northwest of the intersection of FM 2722 and Lone Oak Road; New Braunfels, Texas

TYPE OF PLAN: Request for Approval of a Modification of an Approved Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Regulated Entity No.: RN105645634; Additional ID No. 13-13052203; Investigation No. 1094518

Dear Dr. Richter:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP Modification for the above-referenced project submitted to the San Antonio Regional Office by Dye Development on behalf of Richter-Land, LLC on May 22, 2013. Final review of the WPAP Modification was completed after additional material was received on August 16, November 5, 2013, February 11, and March 10, 2014. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

A Water Pollution Abatement Plan for the site was approved on January 7, 2009. The project was to have an area of approximately 3.38 acres and 2.57 acres impervious cover (76.0 percent). The site improvements were to include the construction of seven buildings to serve as a self-storage facility. The site was constructed without the required BMPs.

PROJECT DESCRIPTION

The proposed project will be to construct two interconnected single chamber sand filtration basins and a wet well. According to a letter dated, October 27, 2008, signed by Robert Boyd, P.E. with Comal County, the site in the development is acceptable for the use of on-site sewage facilities.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, a sedimentation/filtration basin, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required (and provided) total suspended solids (TSS) treatment for this project is 2,468 pounds of TSS generated from the 2.77 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The individual treatment measures will consist of interconnected single-chamber sand filtration basins with a wet well to pump treated water to discharge. The sand filtration area required to be provided is 1,350 square feet (3,528 provided). The required water quality volume is 16,205 cubic feet (16,288 provided). A six inch layer of gravel is overlain by an 18-inch layer of sand meeting ASTM C-33. A perforated PVC underdrain lies within the gravel layer.

GEOLOGY

According to the Geologic Assessment, the site lies over the leached and collapsed member of the Person Formation. The Geologic Assessment identified five manmade features in bedrock, a water well, septic tank, and partial excavations for the water quality basins and the wet well. The retention basin excavations and the wet well excavation were rated as sensitive. No site assessment was performed by the TCEQ San Antonio Regional Office.

SPECIAL CONDITIONS

I. This modification is subject to all Special and Standard Conditions listed in the WPAP approval letter dated January 7, 2009.

II. All sediment and/or media removed from the water quality basin during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

III. Since the site was constructed, the interconnected single chamber sand filtration basins with wet well shall be constructed within 120 days of the date of this approval letter. Within 150 days of the date of this approval letter, submit an original, signed letter to the San Antonio Regional Office stating that the permanent BMP has been constructed along with photos showing the completed interconnected single chamber sand filtration basins with wet well.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.

2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
13. One well exists on site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

<u>After Completion of Construction:</u>

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.
19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on

the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

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22. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Michael Isley of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4057.

Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region Office
Texas Commission on Environmental Quality

LMB/MI/eg

Enclosure: Deed Recordation Affidavit, Form TCEQ-0625
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. David Dye, P.E., Dye Development
Mr. Thomas Hornseth, P.E., Comal County
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. James Klein, P.E., City of New Braunfels
TCEQ Central Records, Building F, MC 212

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Sincerely,

Lynn Bumguardner, Water Section Manager
San Antonio Region Office
Texas Commission on Environmental Quality

LMB/MI/eg

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cc: Mr. David Dye, P.E., Dye Development
Mr. Thomas Hornseth, P.E., Comal County
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. James Klein, P.E., City of New Braunfels
TCEQ Central Records, Building F, MC 212

Dye Development, Inc.

Real Estate Development •Engineers • Surveyors • Planners
TBPE: Texas Registered Firm F-9539
TBPLS: Texas Registered Firm #10092200

March 10, 2014

Mr. Mike Isley
TCEQ
Aquifer Protection Program
14250 Judson Road
San Antonio, TX 78233

Re: Review Comments Submittal per NOD dated 12/03/13 (email 12/18/13)
Stor Haus Self Storage
Modification to a WPAP
TCEQ File #: 2845.03
RE#: RN105645634
Additional ID No. 13-13052203
Investigation No. 1094518

Dear Mr. Isley:

Please accept this letter and attachments as our formal response to the above NOD (attached) and in accordance with our time extension granted last week. I have corrected the plans to correctly reflect the revisions made and approved prior to the above NOD date, and have revised sheets 4.0 and 5.0 to reflect the NOD's comments. All revisions to the plan sheets for this NOD are designated by a revision note #3. The following addresses each review comment.

12/3/13 (email 12/18/13) NOD

1. Revised as requested. We have attached a copy of the "TCEQ TSS Removal Calculations 04-20-2009" printout for this project, a revised copy of Attachment C to TCEQ-0600, and sheets 4.0 and 5.0 of the plan set. We did not utilize the thousandths of an acre because that was not the cause of the discrepancy. We originally used 0.65 for the Post Development Runoff Coefficient, whereas we should have used 0.73. This has been corrected. We had to slightly enlarge the volume of the basins, which we did by increasing the depth of each basin. The grades and inflow structure have been revised accordingly, and we have added additional riprap where required for erosion control purposes. We also previously emailed you a copy of the "TCEQ TSS Removal Calculations 04-20-2009" spreadsheet.

david3@dyedvpt.com • www.dyedvpt.com
17174 Irongate Rail • San Antonio • Texas 78247
Phone (210) 685-9193

We have attached one original and five copies of each revised page/sheet as requested. We have addressed your review comments and respectfully request that you approve our Modification request.

Thank you for your help during this process, and especially for the time extension. Please let me know if you have any questions or desire further information.

Sincerely,

David W. Dye III P.E., R.P.L.S.
President

david3@dyedvpt.com • www.dyedvpt.com
17174 Irongate Rail • San Antonio • Texas 78247
Phone (210) 685-9193

TCEQ

Protecting Texas by Reducing and Preventing Pollution

FAX TRANSMITTAL

DATE: **12/03/2013** NUMBER OF PAGES (including this cover sheet) 2

TO: NAME **David Dye, P.E.**

ORGANIZATION **Dye Development, Inc.**

FAX Number **210-598-9758**

TO: NAME **Dr. Paul Richter**

ORGANIZATION **Richter-Land, LLC**

FAX NUMBER **210-479-9879**

FROM: TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NAME **Michael Isley, P.E.** MI

Division/Region **San Antonio Regional Office – Edwards Program**

Telephone Number **210-403-4057**

FAX Number **210-545-4329**

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Stor-Haus Self Storage; Located approximately 315 feet northwest of the intersection of FM 2722 and Lone Oak Road, New Braunfels, Texas
TYPE OF PLAN: Application for Approval of a Modification to a Water Pollution Prevention Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer Protection Program
Edwards Aquifer Protection Program (EAPP) File No. 2845.03

Dear Mr. Dye:

We are in the process of technically reviewing the WPAP Modification application you submitted on the above-referenced project. Before we can proceed with our review, the following comments relating to the application must be addressed.

WPAP Modification Application

1. Please check your values for total water quality volume, total suspended solids required to be removed and sand filter size (areal extent) while also accounting for uncaptured impervious cover runoff. Please utilize thousandths of an acre for the TCEQ spreadsheet as the TCEQ is arriving at different results than what was submitted potentially due to rounding issues.

We ask that you submit one original and five copies of the amended materials to supplement the WPAP Modification application to this office by no later than 14 days from the date of this letter. We only need the individual pages/drawings that were changed, not complete, new application packages. If the response to this notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, additional comments may be generated.

If you have any questions or require additional information, please contact Michael Isley, P.E. of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4057. **END**

ATTACHMENT C TO TCEQ-0600

BMPs FOR ON-SITE STORMWATER

The BMP proposed for the on-site stormwater runoff of the storage facility is a sand filtration system which will be placed on the down-gradient end of the property. The anticipated pollutants would be oil and grease from the vehicles of the patrons parked on the property and the suspended solids and sediments brought on site by the vehicles. The basin has been sized to capture the first 1.70 inches of runoff, based on a post development runoff coefficient of 0.73, providing a minimum of 80% removal of the pollutants. The sand filtration system is considered a single chamber sand filter basin. Two basins were needed in order to achieve the required water quality volume and sand filter area around an existing water well. Stormwater runoff will be captured by both basins, and both basins will fill and empty at an equal rate due to the conjoining 36-inch pipe. This pipe exists and was originally sized by the former engineer to allow the 25 year event to pass freely between the basins without creating a hydraulic imbalance. Thus the two basins will receive stormwater and discharge treated water as if it where one basin.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Stor Haus Self Storage
Date Prepared: 1/23/2014

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

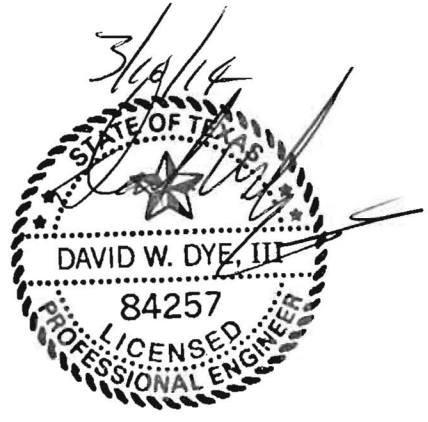
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	3.38	acres
Predevelopment impervious area within the limits of the plan * =	0.02	acres
Total post-development impervious area within the limits of the plan* =	2.77	acres
Total post-development impervious cover fraction * =	0.82	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	2468	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 1



2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	3.01	acres
Predevelopment impervious area within drainage basin/outfall area =	0.02	acres
Post-development impervious area within drainage basin/outfall area =	2.68	acres
Post-development impervious fraction within drainage basin/outfall area =	0.89	
$L_{M\ THIS\ BASIN}$ =	2388	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Sand Filter**
Removal efficiency = **89** percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:

A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C = **3.01** acres
A_I = **2.68** acres
A_P = **0.33** acres
L_R = **2729** lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = **2468** lbs.

F = **0.90**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth = **1.70** inches
Post Development Runoff Coefficient = **0.73**
On-site Water Quality Volume = **13504** cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres	
Off-site Impervious cover draining to BMP =	0.00	acres	
Impervious fraction of off-site area =	0		
Off-site Runoff Coefficient =	0.00		
Off-site Water Quality Volume =	0	cubic feet	
Storage for Sediment =	2701		
Total Capture Volume (required water quality volume(s) x 1.20) =	16205	cubic feet	

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin =	NA	cubic feet	
Irrigation Area Calculations:			
Soil infiltration/permeability rate =	0.1	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin =	NA	cubic feet	

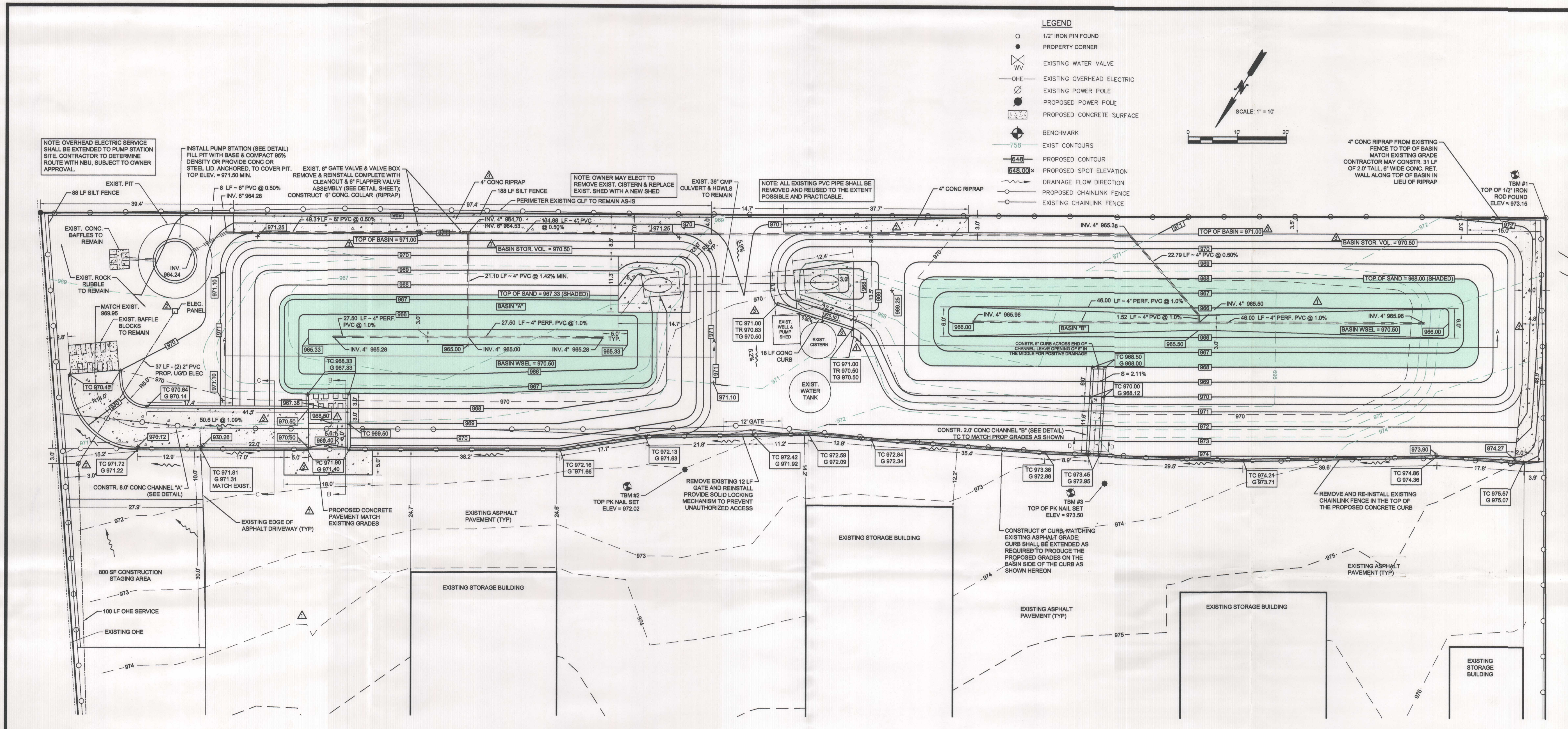
9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	16205	cubic feet	
Minimum filter basin area =	750	square feet	
Maximum sedimentation basin area =	6752	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	1688	square feet	For maximum water depth of 8 feet

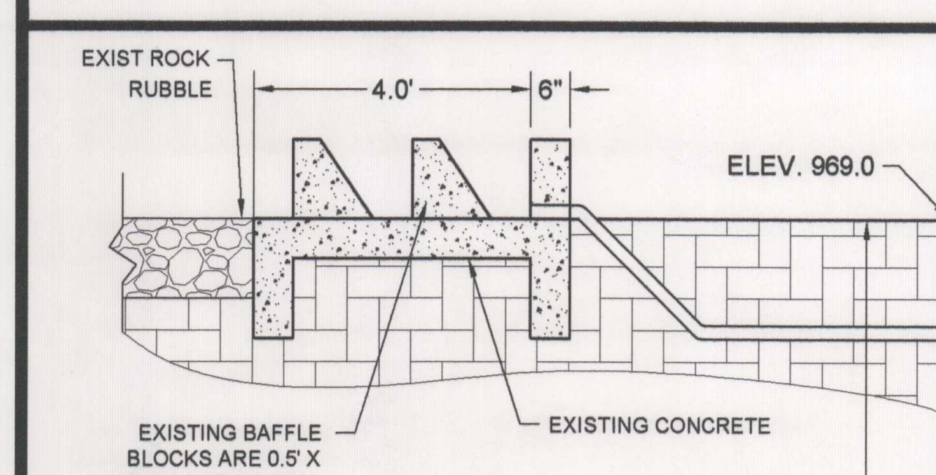
9B. Partial Sedimentation and Filtration System

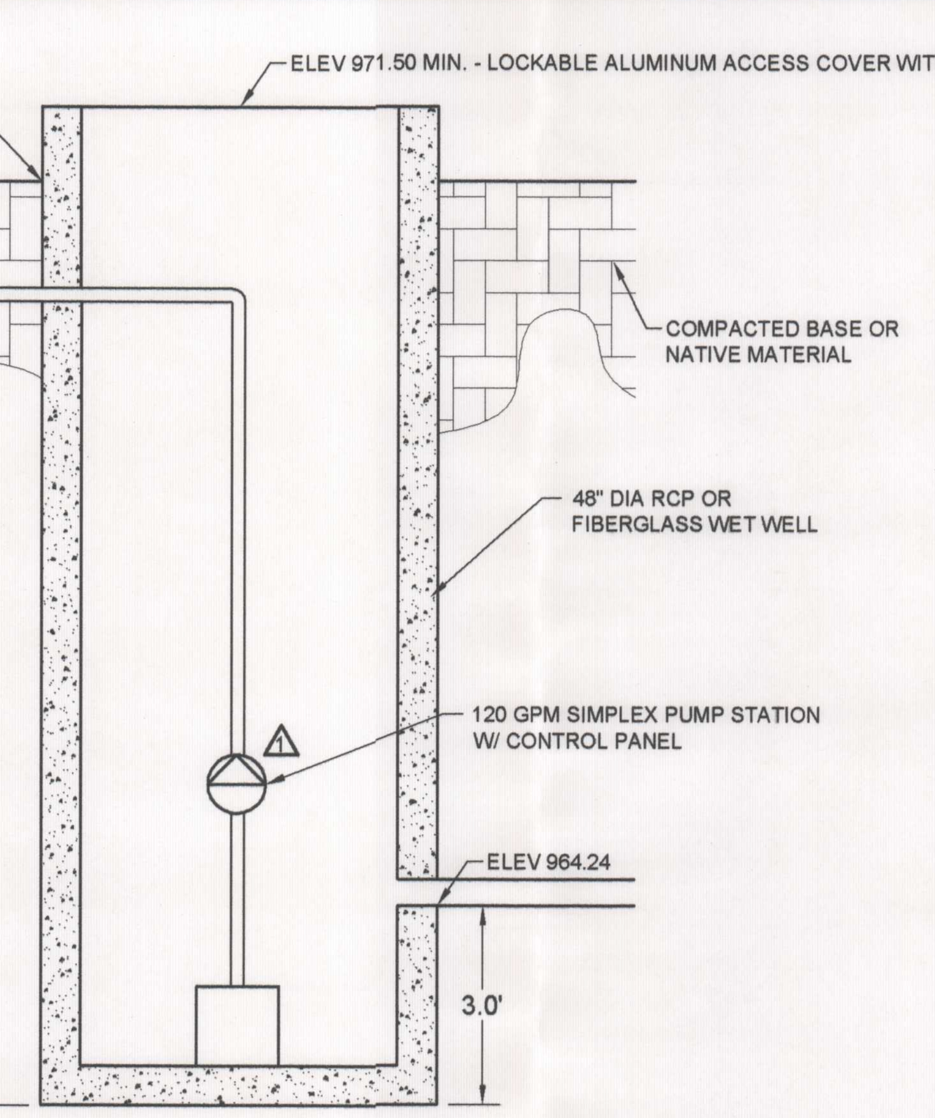
Water Quality Volume for combined basins =	16205	cubic feet	
Minimum filter basin area =	1350	square feet	
Maximum sedimentation basin area =	5402	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	338	square feet	For maximum water depth of 8 feet



PLAN VIEW OF BASINS

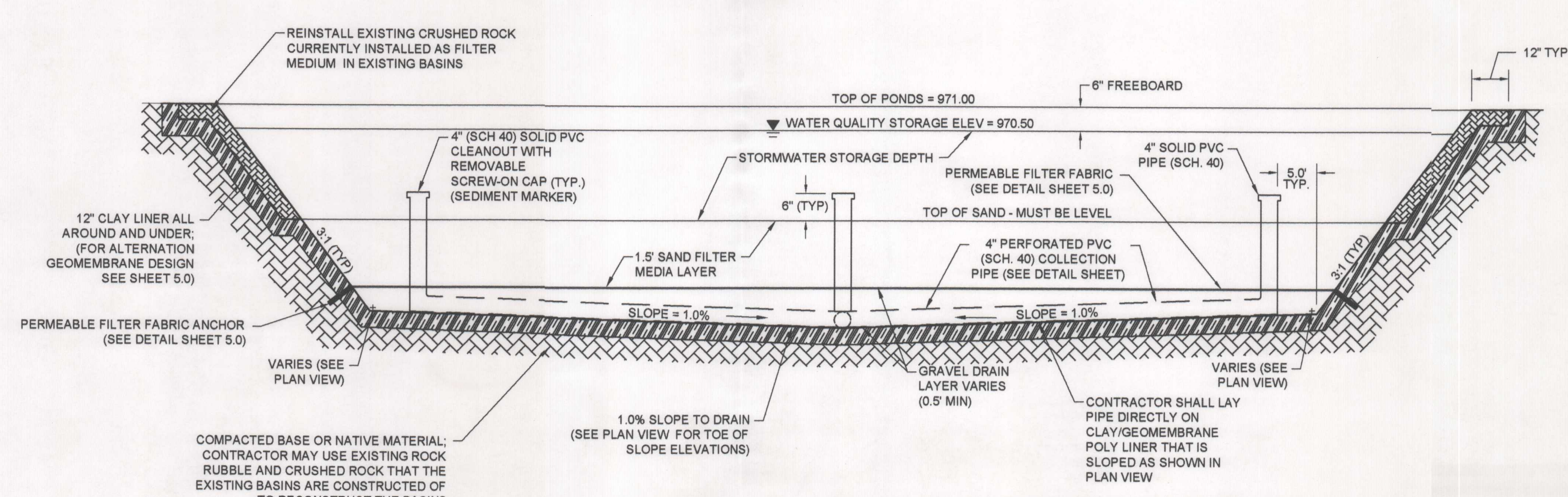
SCALE 1"=10'





NOTES:
1. A SIGN IS TO BE PLACED BESIDE THE PROPOSED WET WELL AND ON THE BMP'S ACCESS GATE DISPLAYING THE NAME AND PHONE NUMBER OF THE PARTY RESPONSIBLE FOR ITS OPERATION.
2. THE WET WELL REQUIRES A HIGH WATER ALARM WITH RED LIGHT SIGNALIZATION EXTENDING GREATER THAN 5 FT ABOVE GROUND. AN EMERGENCY SHUT OFF SWITCH IS ALSO REQUIRED.
3. THE ALARM SHALL SIGNAL WHEN THE PUMP IS NOT OPERATIONAL OR NEEDS MAINTENANCE.
4. UPON COMPLETING CONSTRUCTION OF THE STORMWATER QUALITY BASIN THE CONTRACTOR SHALL STABILIZE THE SURROUNDING DISTURBED AREA.
5. STAGING AREA REQUIREMENT (800 SQ. FT.) IS SATISFIED BY UTILIZING AREA ADJACENT TO THE BASIN AS DESIGNATED IN THE PLAN VIEW (THIS SHEET).

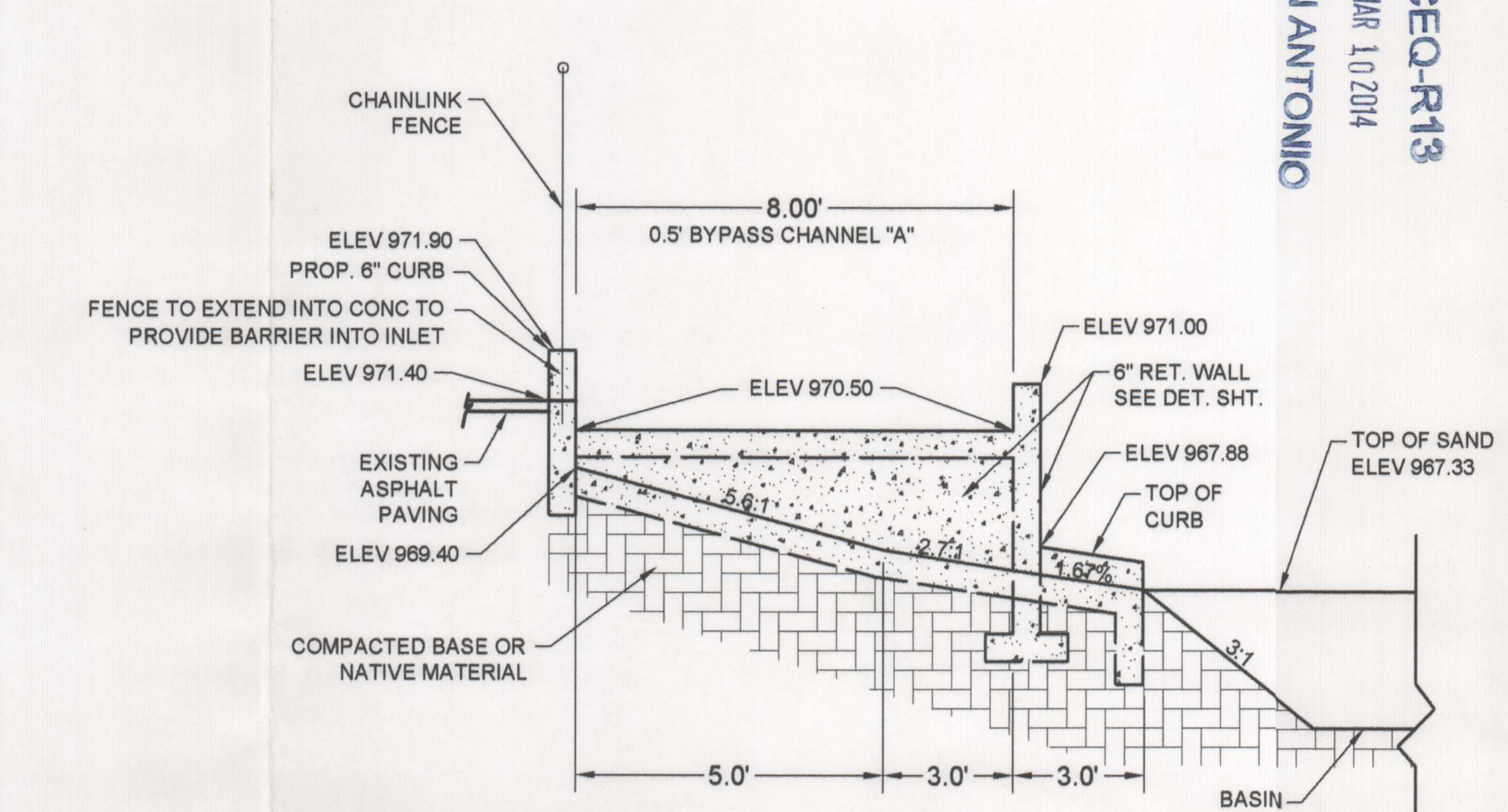
NOTES:
1. A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN EACH SEDIMENTATION BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EQUALS 6" AND SEDIMENT REMOVAL IS REQUIRED.
2. SAND PROPERTIES – THE SAND GRAIN SIZE DISTRIBUTION SHOULD BE COMPARABLE TO THAT OF TXDOT Mn SAND GRADING 1 (421-FINE).
3. ALL DISTURBED GROUND SURFACES SHALL BE COVERED WITH TOP SOIL AND SOD OR COVERED WITH THE EXISTING ROCK RUBBLE AND CRUSHED STONE THAT THE BASINS ARE CURRENTLY CONSTRUCTED WITH.
4. ALL RIPRAP SHALL BE 6" CONCRETE WITH 6" x 6" WWM.
5. THE EXISTING CRUSHED ROCK FILTER MEDIUM SHALL NOT BE USED IN LIEU OF SAND, BUT CAN BE USED AS BACKFILL AND AS A SURFACE TREATMENT.
6. GRAVEL DRAIN SHALL CONSIST OF 3/4" TO 1" CRUSHED ROCK



SECTION A - A

NTS - TYPICAL BOTH BASINS

TCEQ-R13
MAR 10 2014
SAN ANTONIO



SECTION B - B

NTS

R E V I S I O N S NO.	DATE	COMMENTS
1	08-15-13	BAFFLES; SAND HATCH; BASIN SECTION; RISER PIPES; PUMP SYMBOL; ALARM;
2	11-05-13	TCEQ 8/30/13 REVIEW COMMENTS; ELEC SERV.
3	03-10-14	TCEQ 12/03/13 & 12/18/13 REVIEW COMMENTS & REVISED EXIST. CTRS NEAR MAIN INLET TO REFLECT NEW DATA FROM STAKING

STATE OF TEXAS
DAVID W. DYE III, P.E.
84257
LICENSED PROFESSIONAL ENGINEER
3/10/14

DYE DEVELOPMENT, INC.
TBPE: F-9539 – TBPE: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9758

STOR-HAUS SELF STORAGE

BASIN DESIGN

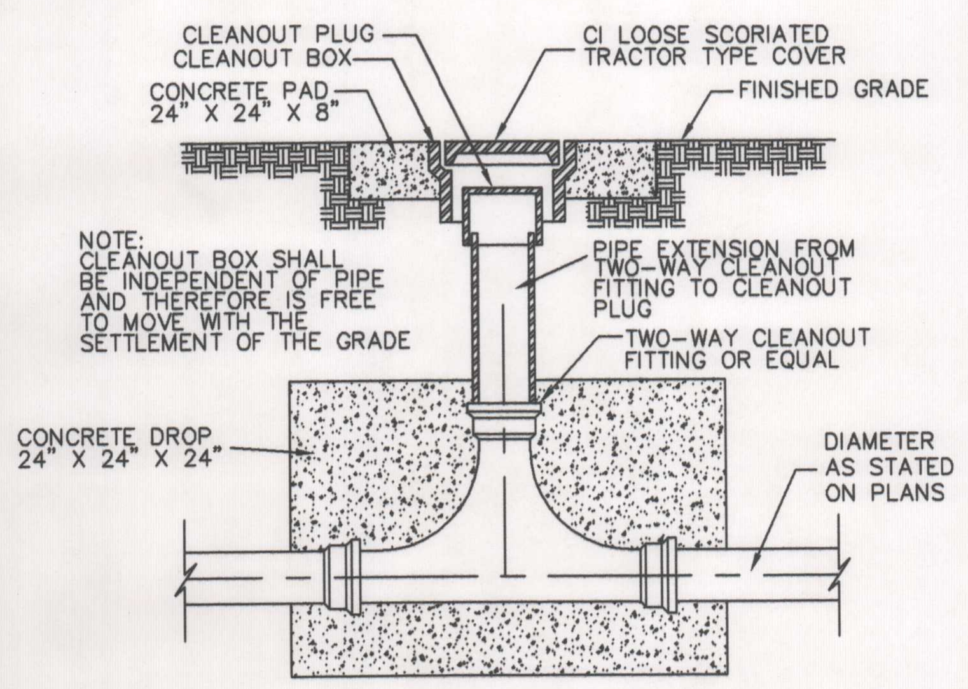
WPAP MODIFICATION

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

Z:\0 Current Projects\DD Projects\Stor Haus Self Storage\Site Devt Plans\4.0 Stor Haus Basin Design.dwg

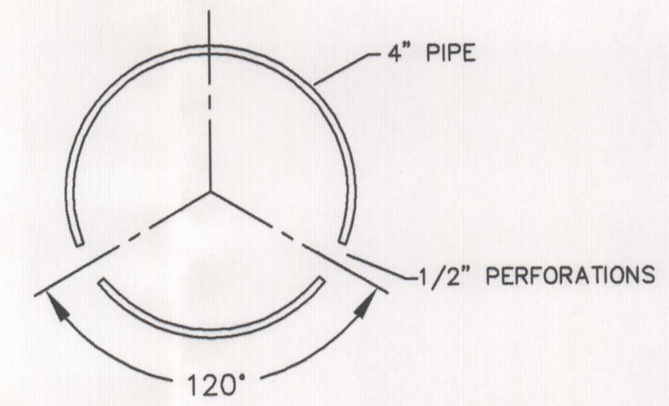
DRAWN BY: DWD
CHECKED BY: DWD
DATE: 03/10/14
PROJECT NO: STOR-HAUS

SHEET
4.0



CLEANOUT DETAIL

(DUAL DIRECTION)
NOT TO SCALE



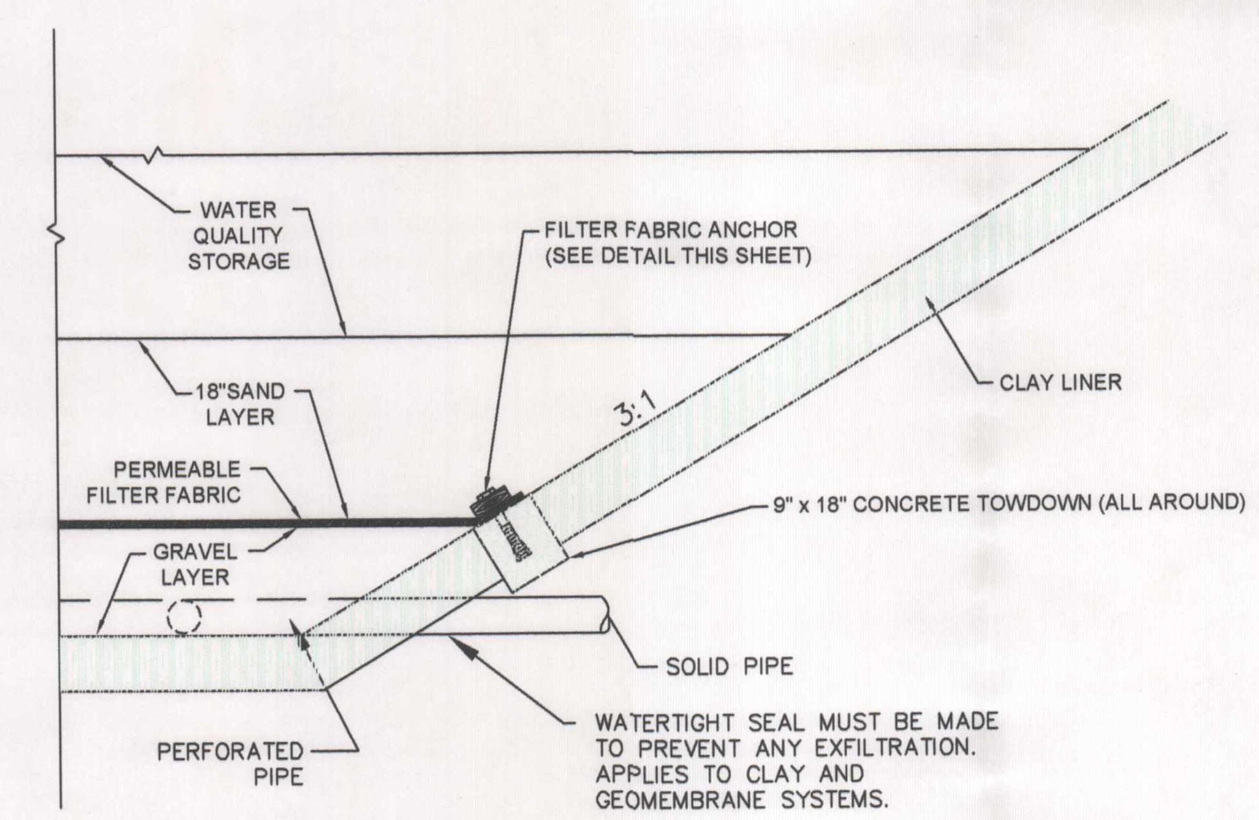
NOTE:

1. MINIMUM DIAMETER = 4"; SCHEDULE 40 PVC. (SEE PLAN VIEW)
2. THE MAXIMUM SPACING BETWEEN ROWS OF PERFORATIONS SHOULD NOT EXCEED 6".
3. SET PERFORATIONS DOWN.
4. PERFORATIONS SHOULD BE LESS THAN A 1/2" DIAMETER.
5. PIPES SHOULD LIE FLAT ON CONCRETE BOTTOM WHICH HAS BEEN GRADED TO DRAIN AS SHOWN ON PLAN VIEW.
6. ALL CLEANOUTS SHALL BE SOLID PIPE WITH A CLEANOUT AT THE END OF EACH LINE.
7. ALL PIPES WITHIN GRAVEL LAYER SHALL BE PERFORATED.

4" PERFORATED PIPE

NOT TO SCALE

NOTE: CONTRACTOR TO COORDINATE THIS CONSTRUCTION WITH THE LINER MANUFACTURER TO MINIMIZE LEAKAGE OF WATER BEING TREATED IN THE BASINS (FOR ALTERNATE GEOMEMBRANE DESIGN).

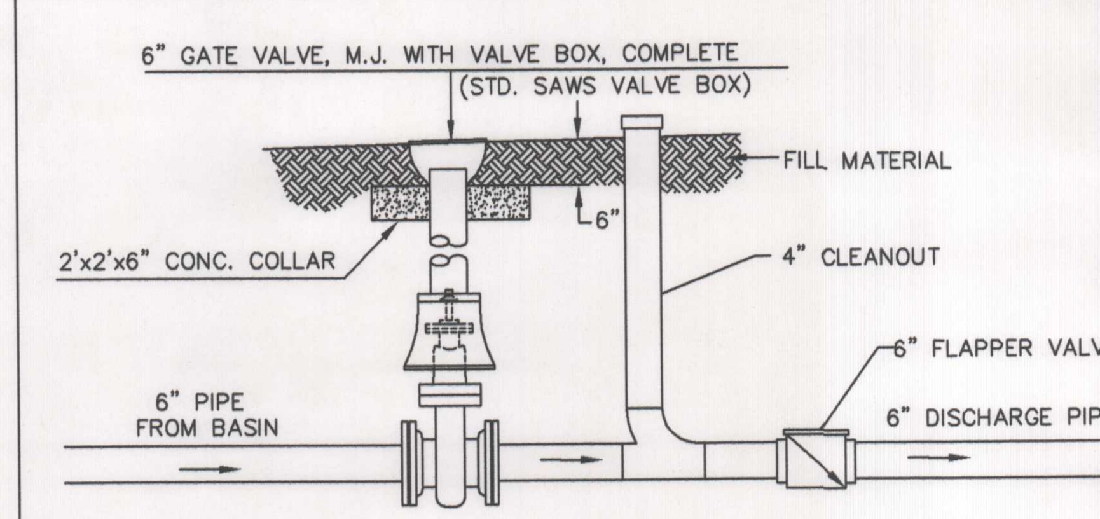


PIPE DISCHARGE AT LINER DETAIL & EXISTING 36" CMP

NOT TO SCALE

NOTES TO CONTRACTOR

1. CONTRACTOR IS ADVISED THAT TCEQ DOES NOT ALLOW CHANGES TO PERMANENT POLLUTION ABATEMENT MEASURES WITHOUT THEIR PRIOR APPROVAL.
2. CONTRACTOR SHALL NOTIFY CERTIFYING ENGINEER WHEN BASIN CONSTRUCTION HAS PROGRESSED TO EACH OF THE FOLLOWING MILESTONES:
   a. CONCRETE FORMS FOR CURBING AND CHANNELS HAVE BEEN INSTALLED AND BASIN GRADING HAS BEEN COMPLETED. ENGINEER WILL INSPECT AND VERIFY GRADES PRIOR TO ADDITIONAL WORK BEING PERFORMED.
   b. BASIN LINER AND PVC DRAIN PIPE HAS BEEN LAID BUT NOT BACKFILLED. ENGINEER SHALL VERIFY PIPE INVERTS & GRADES.
   c. GRAVEL AND FILTER FABRIC HAS BEEN PLACED. ENGINEER SHALL INSPECT AND VERIFY GRADES.
   d. SAND HAS BEEN PLACED. ENGINEER SHALL INSPECT AND VERIFY GRADES.
   e. PUMP STATION IS COMPLETE. ENGINEER SHALL INSPECT AND VERIFY PROPER FUNCTION.
   f. CONSTRUCTION COMPLETE, INCLUDING ALL RIP-RAP OR SOD/SEED/ROCK PLACEMENT ON SIDE SLOPES (WHERE APPLICABLE).
3. WORK SHALL NOT CONTINUE ON THE BASIN UNTIL THE ENGINEER HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION AT EACH STAGE. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 24 HOURS ADVANCE NOTICE PRIOR TO TIME THE BASIN WILL BE AT THE REQUIRED STAGE. ENGINEER WILL OBTAIN AS-BUILT ELEVATIONS OF THE WORK COMPLETED AT EACH STAGE. WORK NOT CONSTRUCTED AT THE PROPER ELEVATION WILL BE REQUIRED TO BE RE-INSTALLED AT CONTRACTOR'S EXPENSE. ENGINEER WILL RELY ON THIS DATA TO PROVIDE FINAL AS-BUILT CERTIFICATION AS REQUIRED BY THE TCEQ.
4. BEFORE FINAL ACCEPTANCE OF CONSTRUCTION BY THE OWNER, THE CONTRACTOR WILL REMOVE ALL TRASH, DEBRIS, AND ACCUMULATED SILT FROM THE BASINS AND REESTABLISH THEM TO THE PROPER OPERATING CONDITION.
5. THE MINIMUM DRAIN TIME FOR A FULL BASIN IS 24 HOURS, PER TCEQ SPECS. THE CONTRACTOR SHALL RESTRICT THE FLOW THROUGH ADJUSTING OF THE GATE VALVE ON THE DISCHARGE PIPE, SO AS TO PROVIDE THE MINIMUM 24 HOUR DRAW DOWN TIME.



NOTE:

1. VALVE WILL BE SET PARTIALLY CLOSED SO AS TO PROVIDE A MINIMUM DRAWDOWN TIME OF 24 HOURS.
2. CONTRACTOR SHALL PROVIDE OWNER WITH VALVE OPERATING KEY/ROD PRIOR TO PROJECT COMPLETION.

6" GATE & FLAPPER VALVE DETAIL

NOT TO SCALE

BASIN DESIGN DATA

BASINS WATERSHED AREA	3.01 AC
RUN OFF DEPTH	1.70 INCH
REQUIRED CAPTURE VOLUME	16,205 CF
REQUIRED SAND AREA	1,688 SF
BASIN "A"	
DEPTH (AVG.)	3.17 FT*
CAPTURE VOLUME	8,004 CF*
SAND AREA	1,484 SF
BASIN "B"	
DEPTH (AVG.)	2.50 FT*
CAPTURE VOLUME	8,284 CF*
SAND AREA	2,044 SF
TOTAL (BASIN "A" & "B")	
CAPTURE VOLUME	16,288 CF
SAND AREA	3,528 SF
OVERFLOW WEIR ELEVATION	970.28

*EXCLUDES 0.5 FOOT FREEBOARD

BMP SIZING CALCULATION

County =	Comal	
Total project area included in plan * =	3.38	acres
Predevelopment impervious area within the limits of the plan * =	0.02	acres
Total post-development impervious area within the limits of the plan* =	2.77	acres
Total post-development impervious cover fraction * =	82%	
P =	33.00	inches
LM TOTAL PROJECT =	2,468	lbs.
TSS Reduction for Sand Filters =	89%	
Number of drainage basins / outfalls areas leaving the plan area =	1	

RG-348 Page 3-33 Equation 3.7: LR =(BMP efficiency) x P x (AI x 34.6 + AP x 0.54)

AC = Total On-Site drainage area in the BMP catchment area

AI = Impervious area proposed in the BMP catchment area

AP = Pervious area remaining in the BMP catchment area

LR = TSS Load removed from this catchment area by the proposed BMP

AC =	3.01	acres
AI =	2.68	acres
AP =	0.33	acres
LR =	2729	lbs
Desired LM THIS BASIN =	2468	lbs.
F =	0.90	
Rainfall Depth =	1.70	inches
Post Development Runoff Coefficient =	0.73	
On-site Water Quality Volume =	13504	cubic feet
Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	2701	
Total Capture Volume (required water quality volume(s) x 1.20) =	16205	cubic feet

Filter Area for Sand Filters

Water Quality Volume for Sedimentation Basin =	16205	cubic feet
Minimum Filter Basin Area (Includes additional 20% for Single Chamber Sand Filter Basin) =	1688	square feet

THE SEPARATION LAYER BETWEEN THE SAND FILTER AND GRAVEL LAYERS SHALL BE A PERMEABLE DRAINAGE MATTING CONSISTING OF NON-WOVEN FILTER FABRIC MEETING THE FOLLOWING SPECIFICATIONS (UNLESS OTHERWISE APPROVED BY THE ENGINEER BEFOREHAND, IN WRITING):

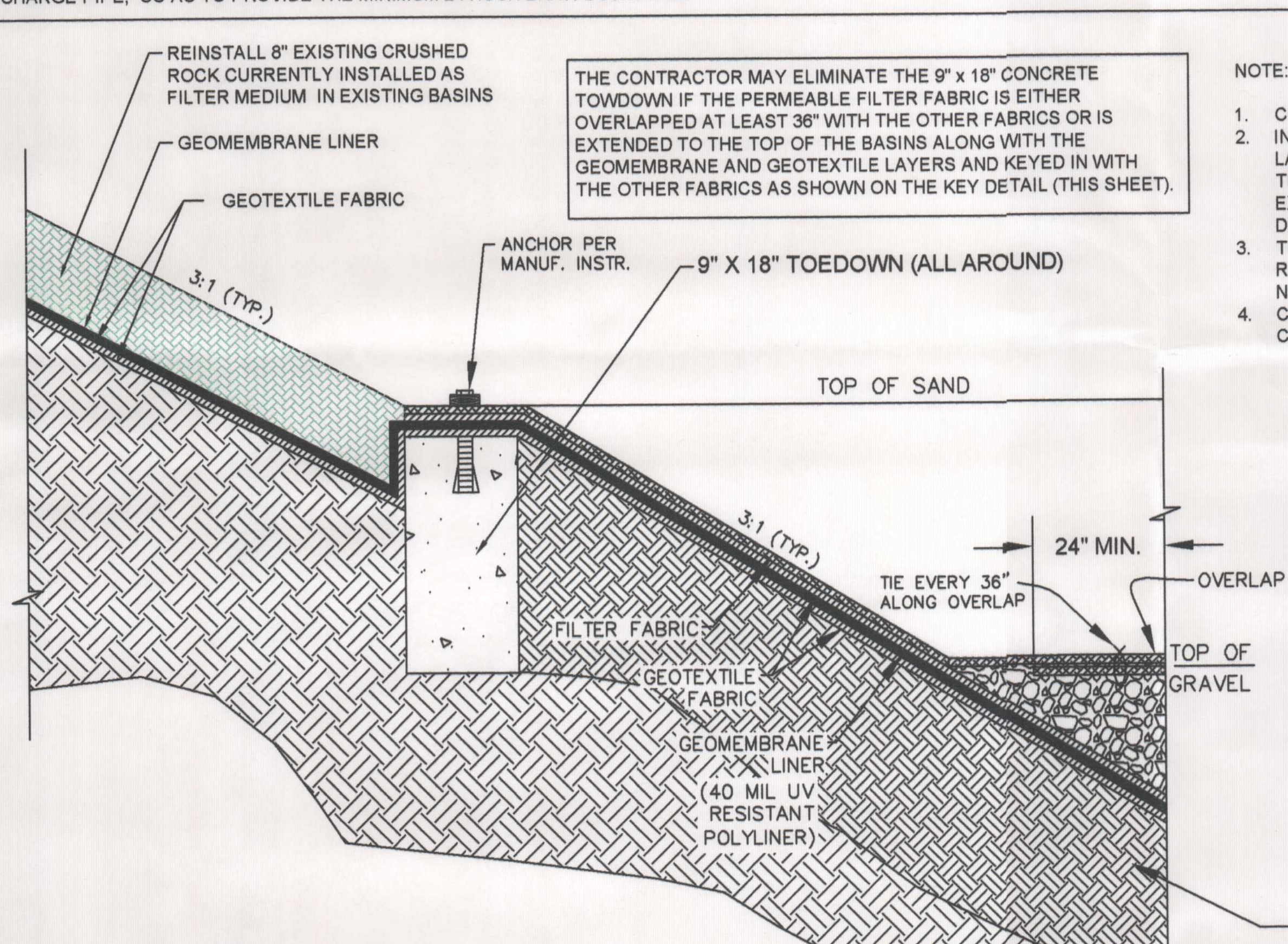
SAND/GRAVEL PERMEABLE FILTER FABRIC SPECIFICATIONS

PROPERTY	TEST METHOD	SPECIFICATION
WEIGHT (OZ/SY)	ASTM D 3776	4.0
GRAB STRENGTH (LBS.)	ASTM D 4632	90
ELONGATIONS (%)	ASTM D 4632	55
PUNCTURE (LBS)	ASTM D 3787	60
AOS (SIEVE #)	ASTM D 4751	70-80
FLOW RATE (GPM/SF)	ASTM D 4491	120

1. FABRIC OVERLAP SHALL BE A MINIMUM OF 24".
2. ALL OVERLAPS SHALL BE WIRE TIED AT A MAXIMUM OF 36" INTERVALS.
3. PERMEABLE FILTER FABRIC TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
4. SEE FABRIC FILTER ANCHORING DETAIL THIS SHEET.

SAND AND GRAVEL LAYER NOTES:

1. SAND FILTER MATERIAL SHALL BE COMPARABLE TO THAT OF TXDOT Mn SAND GRADING 1 (421-FINE).
2. ROCK FOR GRAVEL LAYER SHALL BE 3/4" TO 1" DIAMETER CRUSHED ROCK.



THE CONTRACTOR MAY ELIMINATE THE 9" x 18" CONCRETE TOWDOWN IF THE PERMEABLE FILTER FABRIC IS EITHER OVERLAPPED AT LEAST 36" WITH THE OTHER FABRICS OR IS EXTENDED TO THE TOP OF THE BASINS ALONG WITH THE GEOMEMBRANE AND GEOTEXTILE LAYERS AND KEYED IN WITH THE OTHER FABRICS AS SHOWN ON THE KEY DETAIL (THIS SHEET).

NOTE:

1. CONTRACTOR TO PLACE ANCHOR BOLTS AT 5'-0" O.C.
2. IN ORDER TO SECURE FILTER FABRIC TO CONCRETE TOEDOWN WITH GEOMEMBRANE/GEOTEXTILE LAYERS, IT IS RECOMMENDED THAT THE CONTRACTOR INSTALL A LENGTH OF FILTER FABRIC WITH THE OTHER LAYERS SUCH THAT SUBSEQUENT LAYERS CAN BE OVERLAPPED AND TIED TO THE EXPOSED FILTER FABRIC. THIS WILL PROVIDE FOR EASIER MAINTENANCE IN THE FUTURE WITHOUT DESTROYING CONCRETE OR WATER TIGHT LINER.
3. THE GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF 40 MILS AND BE ULTRAVIOLET RESISTANT. THE GEOTEXTILE FABRIC (FOR PROTECTION OF GEOMEMBRANE) SHOULD BE NON-WOVEN GEOTEXTILE FABRIC AND MEET THE SPECIFICATIONS BELOW.
4. CONTRACTOR SHALL PREVENT ANY TEARING OR PUNCTURE TO THE POLY LINER DURING CONSTRUCTION. ENTIRE LINER MUST BE WATER TIGHT.

Geotextile Fabric Specifications (COA, 2004)

Property	Test Method	Unit	Specification (min)
Unit Weight	ASTM D-5261	oz/yd2	8
Filtration Rate	ASTM D-4491	cm/sec	0.20
Puncture Strength	ASTM D-4833	lb.	125
Mullen Burst Strength	ASTM D-3786	psi	400
Tensile Strength	ASTM D-4632	lb.	200
Equiv. Opening Size	US Standard Sieve	No.	80
Overlap	Manuf. Recommend	inch	36

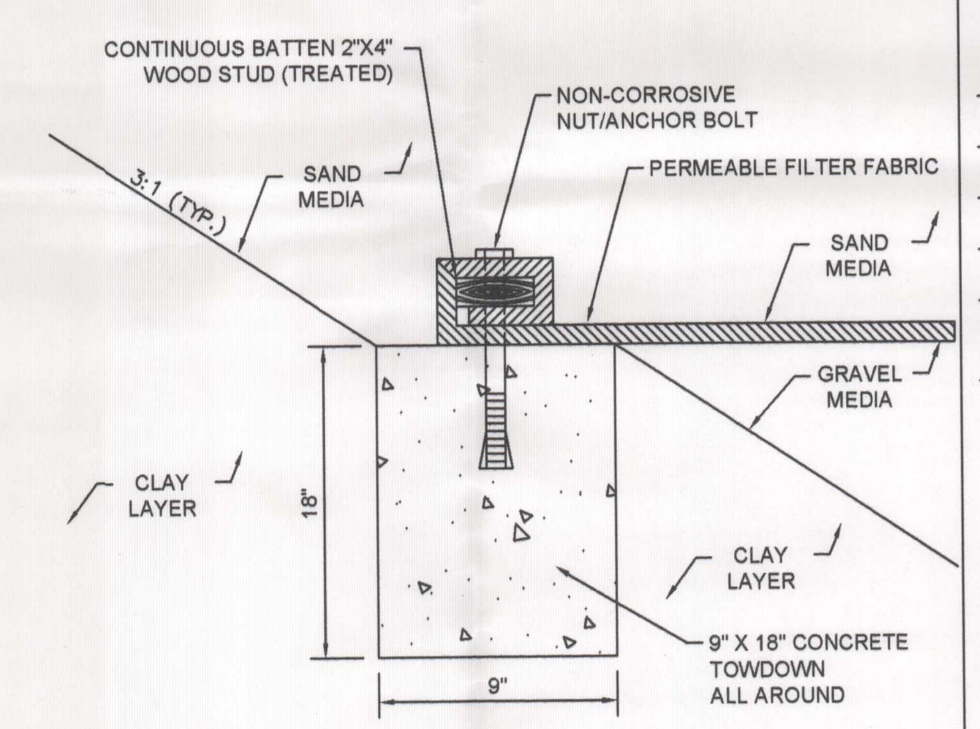
INSTALLATION METHODS FOR GEOMEMBRANE LINERS VARY ACCORDING TO THE SITE REQUIREMENTS. SEE DETAIL FOR TYPICAL INSTALLATION METHOD.

6"-12" BEDDING MATERIAL UNDER LINER MUST BE SUITABLE MATERIAL (NOT SAND) AND COMPACTED TO A DENSITY OF 95%. CONTRACTOR SHALL REFER TO MANUFACTURERS SPECIFICATIONS FOR GEOMEMBRANE BEDDING MATERIAL. BEDDING MUST BE COMPACTED & SLOPED AT 1% (MIN.) TO DRAIN AS SHOWN IN PLAN VIEW PRIOR TO PLACEMENT OF LINERS

ALTERNATIVE FILTER FABRIC & LINER OVERLAP & ANCHORING DETAIL

NOT TO SCALE

THE CONTRACTOR MAY ELIMINATE THE 9" x 18" CONCRETE TOWDOWN IF THE PERMEABLE FILTER FABRIC IS EXTENDED TO THE TOP OF THE BASINS AND KEYED IN AS SHOWN ON THE KEY DETAIL (THIS SHEET).



NOTE:
CONTRACTOR TO PLACE ANCHOR BOLTS AT 5'-0" O.C.

PERMEABLE FILTER FABRIC ANCHORING DETAIL

NOT TO SCALE

GEOMEMBRANE POLY LINER

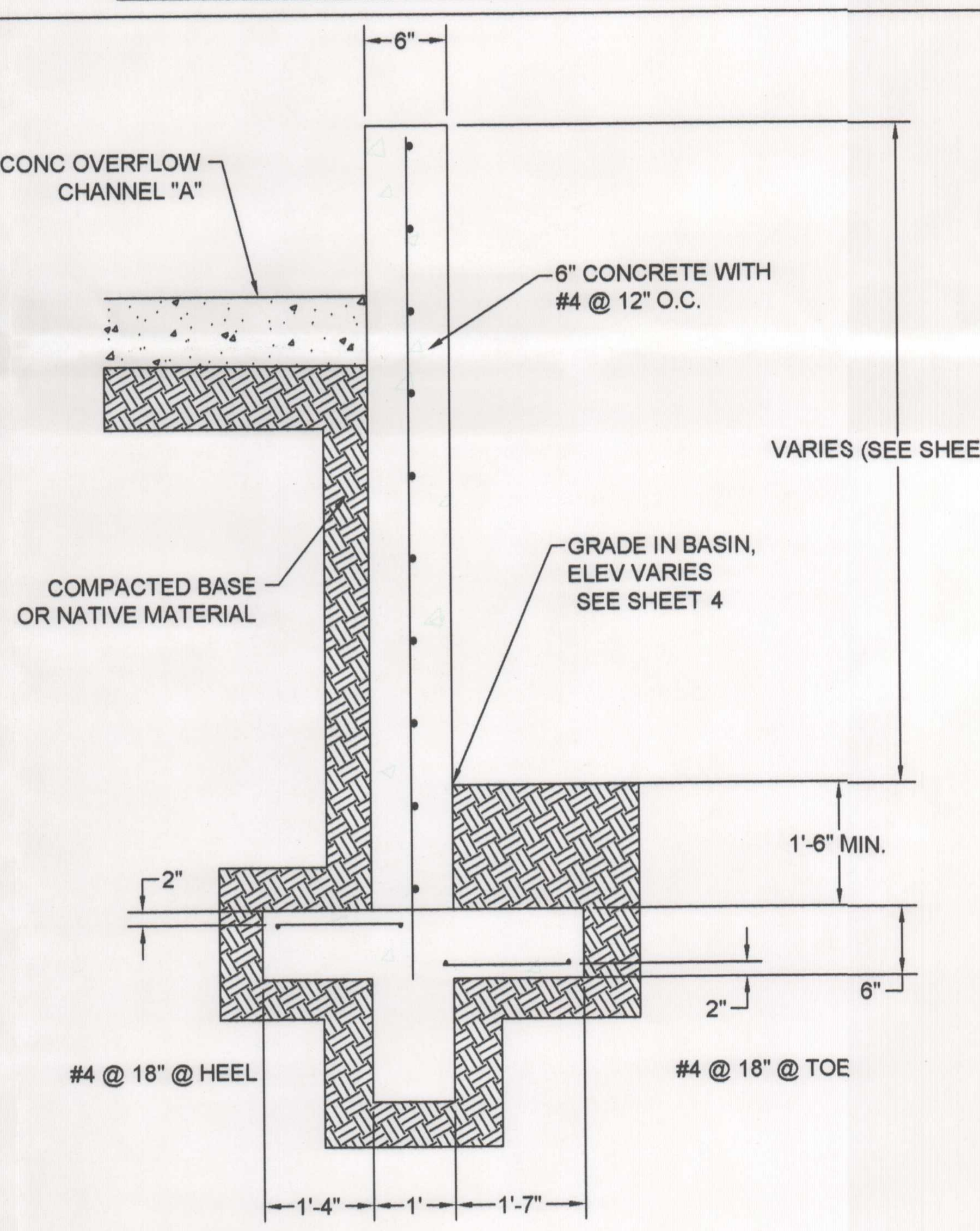
- ULTRAVIOLET RESISTANT
- THICKNESS = 40 MILS MINIMUM
- JOINTS SHALL BE WATER TIGHT AT SEAMS.
- WATERTIGHT SEAL BETWEEN POLY LINER AND TRANSITION SURFACES.
- BEDDING MATERIAL SHALL BE SUITABLY COMPACTED MATERIAL IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- PROTECTIVE GEOTEXTILE FABRIC TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

CLAY LINER SPECIFICATIONS

TABLE 3

PROPERTY	STANDARD TEST METHOD	SPECIFICATION
HYDRAULIC CONDUCTIVITY	ASTM D5084	NOT HIGHER THAN $1.0x10^{-6}$ cm/sec
PLASTICITY INDEX OF CLAY	ASTM D4318	NOT LESS THAN 15
LIQUID LIMIT OF CLAY	ASTM D4318	NOT LESS THAN 30
CLAY PARTICLES PASSING	ASTM D422	NOT LESS THAN 30
SOIL COMPACTION	ASTM D698	NOT LESS THAN 95% OF STANDARD PROCTOR DENSITY

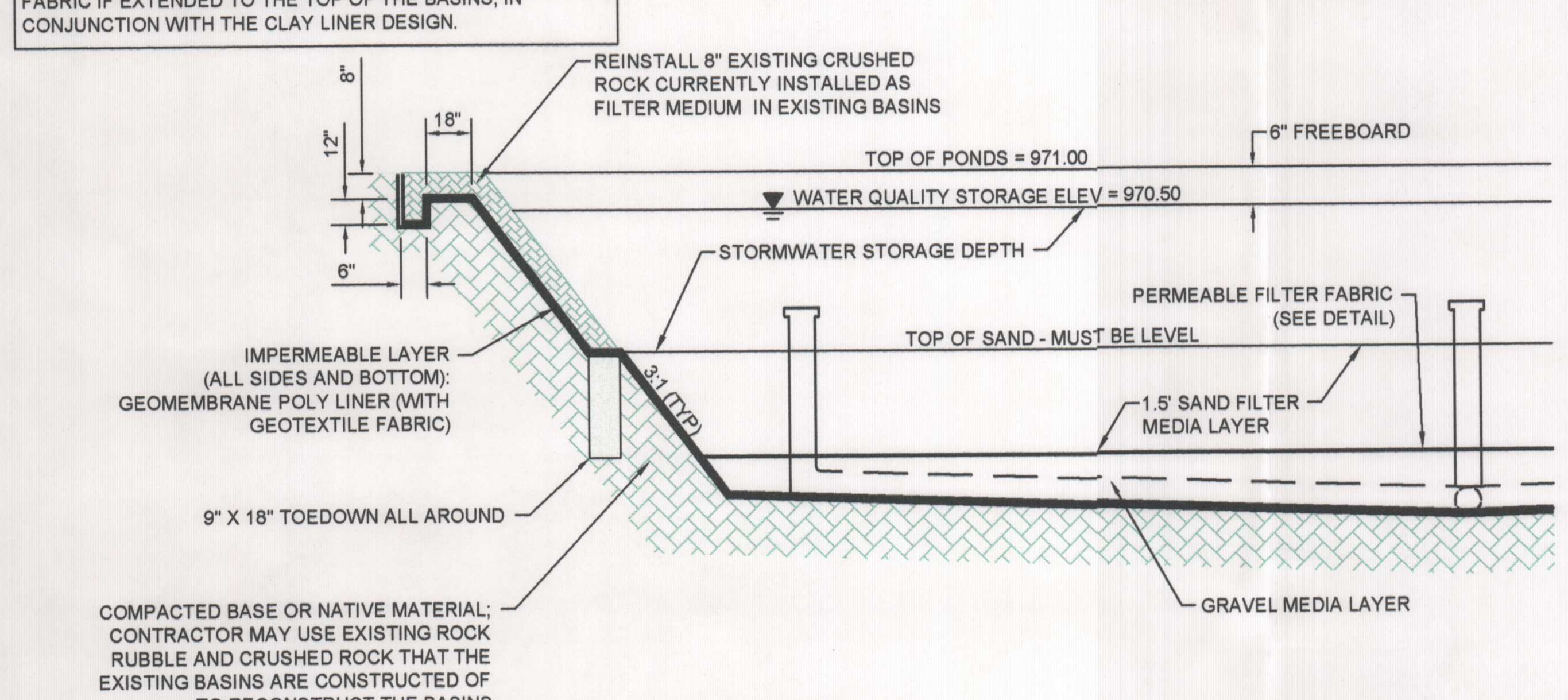
1. LINERS SHALL BE AT LEAST 12 INCHES THICK.
2. ALL STANDARD TEST METHODS SHOULD BE CURRENTLY ACTIVE.
3. CURRENTLY ACTIVE TxDOT AND U.S ARMY CORPS OF ENGINEERS STANDARD TEST METHODS ARE ALSO ACCEPTABLE.



RETAINING WALL DETAIL

NOT TO SCALE

THIS KEY DETAIL ALSO APPLIES TO THE PERMEABLE FILTER FABRIC IF EXTENDED TO THE TOP OF THE BASINS, IN CONJUNCTION WITH THE CLAY LINER DESIGN.



ALTERNATIVE IMPERMEABLE LINER INSTALL ON EARTHEN SLOPE & KEY DETAIL

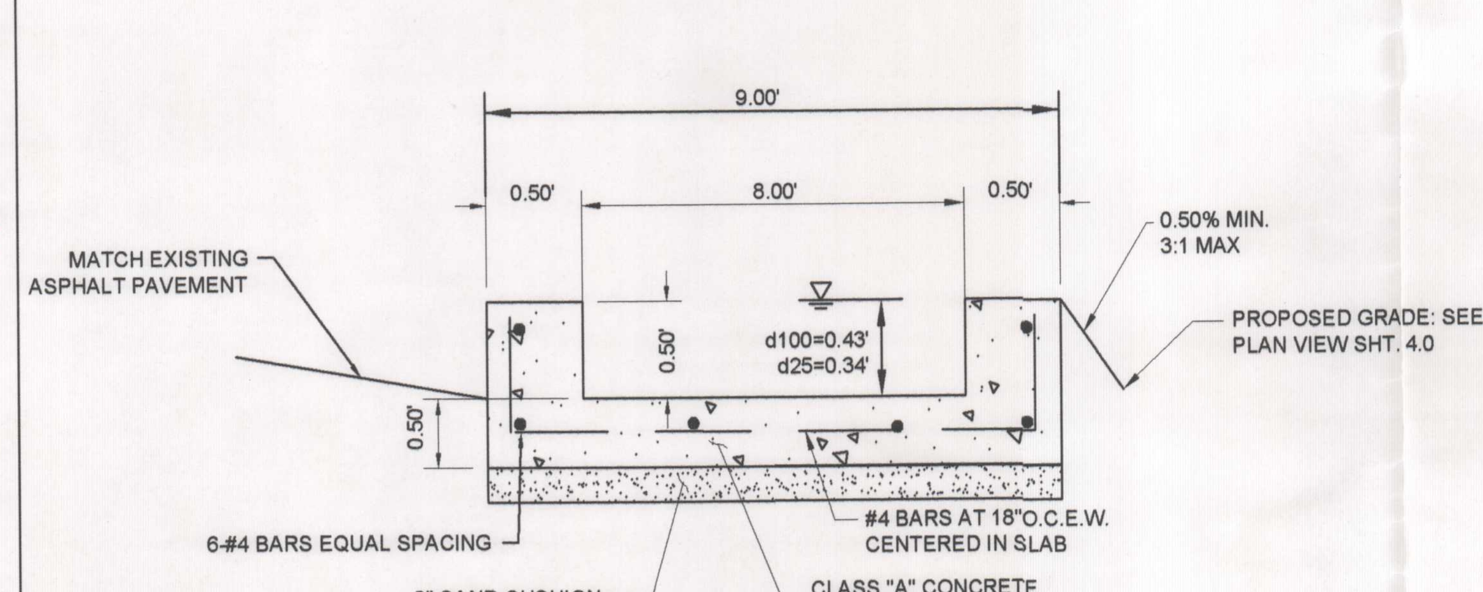
NOT TO SCALE

CONC. CHANNEL "A" CALCULATIONS

n = 0.013 (concrete)
S = 1.09%

Q25 = 14.40 cfs
d25 = 0.34'
V25 = 5.29 fps

Q100 = 21.40 cfs
d100 = 0.43'
V25 = 6.22 fps



SECTION "C-C"

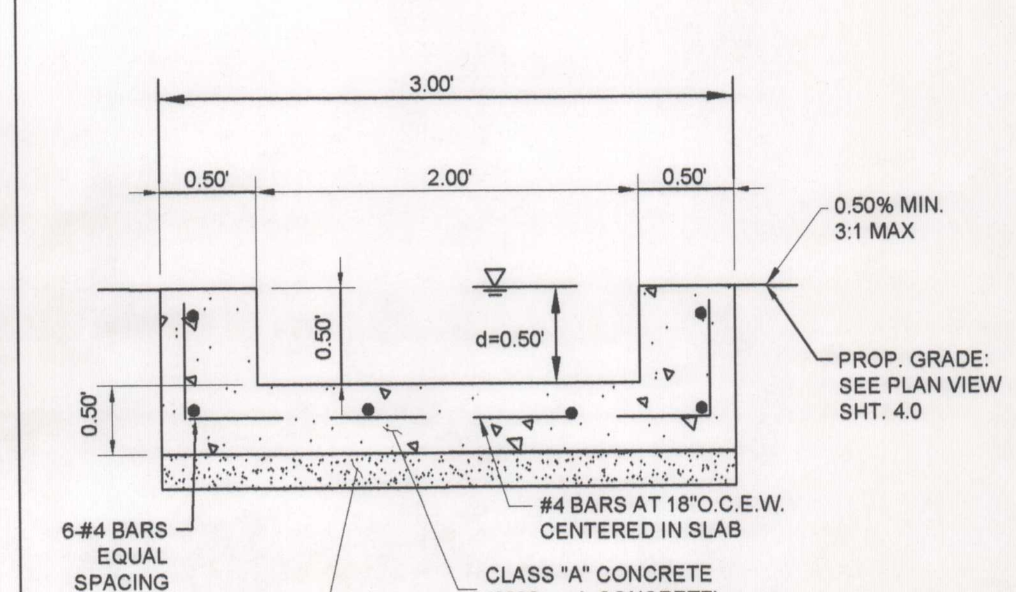
CHANNEL "A"

NOT TO SCALE

CONC. CHANNEL "B" CALCULATIONS

n = 0.013 (concrete)
S = 2.11 % (inlet cross flow & channel outfall)

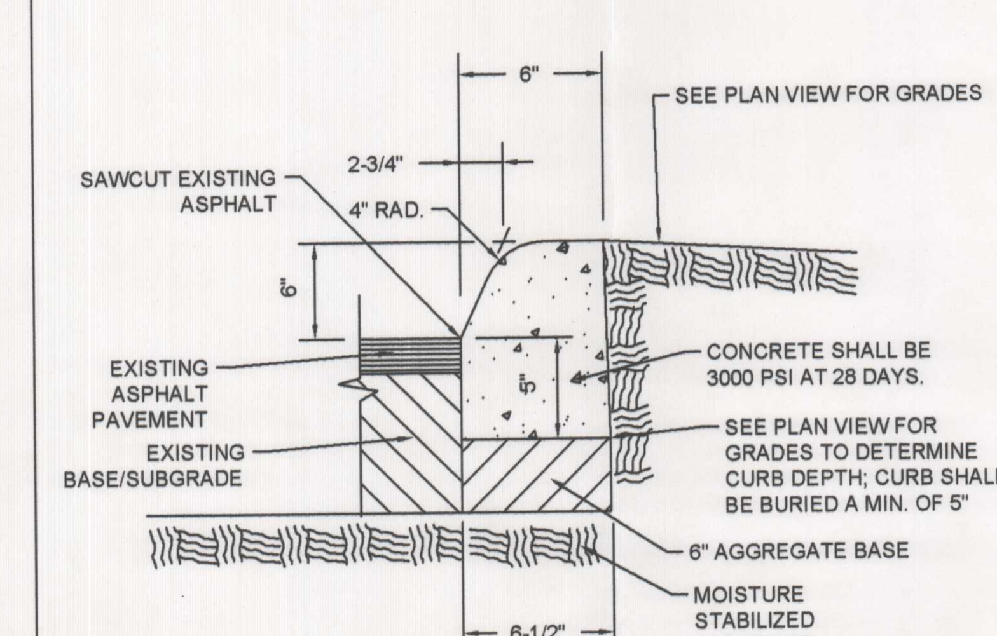
BASIN INFLOW & OUTFLOW
Q = 7.98 cfs
d = 0.50'
V = 7.98 fps



SECTION "D-D"

CHANNEL "B"

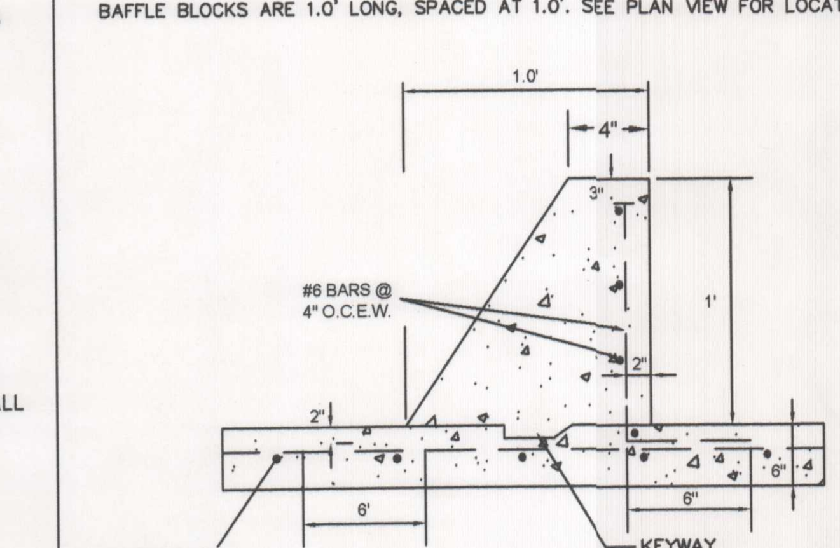
NOT TO SCALE



6" CONCRETE CURB DETAIL

N.T.S.

BAFFLE BLOCKS ARE 1.0' LONG, SPACED AT 1.0'. SEE PLAN VIEW FOR LOCATIONS.



BAFFLE BLOCK DETAIL

NOT TO SCALE

NO.	DATE	COMMENTS
1	08-15-13	FILTER FABRIC & CLAY SPECS; SEALING NOTE; FILTER FABRIC ANCHOR DETAILS; BAFFLE BLOCK DETAIL
2	11-05-13	TCEQ 8/30/13 REVIEW COMMENTS
3	03-10-14	TCEQ 12/03/13 & 12/18/13 REVIEW COMMENTS & CURB DETAIL

REVISIONS

DYE DEVELOPMENT, INC.
TBPE: F-9539 – TBPE: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9758

STOR-HAUS SELF STORAGE

DETAILS

WPAP MODIFICATION

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

Z:\0 Current Projects\DD Projects\Stor Haus Self Storage\Site Dvpt Plans\5.0 Stor Haus Details.dwg

DRAWN BY: DWD
CHECKED BY: DWD
DATE: 03/10/14
PROJECT NO: STOR-HAUS

SHEET 5.0

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 3, 2014

Dr. Paul Richter
Richter-Land, LLC
3126 Falling Brook
San Antonio, Texas 78258

Re: Edwards Aquifer, Comal County
Name of Plan: Stor-Haus Self Storage; Located approximately 315 feet northwest of the intersection of FM 2722 and Lone Oak Road; New Braunfels, Texas

Type of Plan: Application for Approval of a Modification to a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer Protection Program

Regulated Entity No.: RN105645634; Additional ID No. 13-13052203; Investigation No.1094518

Dear Dr. Richter:

Following the notice of deficiency letters sent to you on June 21, August 30, December 3, and December 18, 2013 and after completing our technical review of the materials submitted by Dye Development, we are unable to approve the above referenced plan. A response to the December 18, 2013 notice of deficiency was received on February 11, 2014. The response did not resolve the previously documented outstanding deficiencies. In addition, the submitted responses show a pattern of inconsistency of compliance with the applicable design criteria.

The TCEQ asks that you withdraw the WPAP application since there are still outstanding issues

The application will be denied unless you provide written notification by 5:00 PM on March 5, 2014, that the application is being withdrawn. Please note that the application fee will be forfeited if the plan is not withdrawn. If you do indicate that the plan is to be withdrawn, please inform the TCEQ as to whether you would prefer the fee be refunded or retained for application towards future plan submission. If you have any questions or require additional information, please contact Michael Isley, P.E., of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4057.

Sincerely,

for Lynn Bumguardner, Water Section Manager
San Antonio Regional Office

LMB/MI/eg

cc: Mr. David Dye, P.E., Dye Development
Mr. Thomas Hornseth, P.E., Comal County
Mr. Roland Ruiz, Edwards Aquifer Authority
Mr. James Klein, P.E., City of New Braunfels

Dye Development, Inc.

Real Estate Development •Engineers • Surveyors • Planners
TBPE: Texas Registered Firm F-9539
TBPLS: Texas Registered Firm #10092200

February 11, 2014

Mr. Mike Isley
TCEQ
Aquifer Protection Program
14250 Judson Road
San Antonio, TX 78233

Re: Review Comments Submittal per NOD dated 12/03/13
Modification to a WPAP
TCEQ File #: 2845.03
Stor Haus Self Storage

Dear Mr. Isley:

Please accept this letter and attachments as our response to your 12/3/13 review letter (attached). All revisions to the plan sheets are designated by a revision note #2. The following addresses each review comment.

12/3/13 Review Letter

1. Revised as requested. We have attached a copy of the "TCEQ TSS Removal Calculations 04-20-2009" printout for this project, as well as sheets 4.0 and 5.0 of the plan set. We did not utilize the thousandths of an acre because that was not the cause of the discrepancy. We originally used 0.65 for the Post Development Runoff Coefficient, whereas we should have used 0.73. This has been corrected. We had to slightly enlarge the volume of the basins, which we did by increasing the depth of each basin. The grades and inflow structure have been revised accordingly, and we have added additional riprap where required for erosion control purposes.

We have attached one original and five copies of each revised page/sheet as requested. We have addressed your review comments and respectfully request that you approve our Modification request.

Thank you for your help during this process. Please let me know if you have any questions or desire further information.

Sincerely,

David W. Dye III P.E., R.P.L.S.
President

david3@dyedvpt.com • www.dyedvpt.com
17174 Irongate Rail • San Antonio • Texas 78247
Phone (210) 685-9193

TCEQ

Protecting Texas by Reducing and Preventing Pollution

FAX TRANSMITTAL

DATE: 12/03/2013 NUMBER OF PAGES (including this cover sheet) 2

TO: NAME **David Dye, P.E.**

ORGANIZATION **Dye Development, Inc.**

FAX Number **210-598-9758**

TO: NAME **Dr. Paul Richter**

ORGANIZATION **Richter-Land, LLC**

FAX NUMBER **210-479-9879**

FROM: TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NAME **Michael Isley, P.E.** MCI

Division/Region **San Antonio Regional Office – Edwards Program**

Telephone Number **210-403-4057**

FAX Number **210-545-4329**

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Stor-Haus Self Storage; Located approximately 315 feet northwest of the intersection of FM 2722 and Lone Oak Road, New Braunfels, Texas
TYPE OF PLAN: Application for Approval of a Modification to a Water Pollution Prevention Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer Protection Program
Edwards Aquifer Protection Program (EAPP) File No. 2845.03

Dear Mr. Dye:

We are in the process of technically reviewing the WPAP Modification application you submitted on the above-referenced project. Before we can proceed with our review, the following comments relating to the application must be addressed.

WPAP Modification Application

1. Please check your values for total water quality volume, total suspended solids required to be removed and sand filter size (areal extent) while also accounting for uncaptured impervious cover runoff. Please utilize thousandths of an acre for the TCEQ spreadsheet as the TCEQ is arriving at different results than what was submitted potentially due to rounding issues.

We ask that you submit one original and five copies of the amended materials to supplement the WPAP Modification application to this office by no later than 14 days from the date of this letter. We only need the individual pages/drawings that were changed, not complete, new application packages. If the response to this notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, additional comments may be generated.

If you have any questions or require additional information, please contact Michael Isley, P.E. of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4057. **END**

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Stor Haus Self Storage
Date Prepared: 1/23/2014

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	3.38	acres
Predevelopment impervious area within the limits of the plan * =	0.02	acres
Total post-development impervious area within the limits of the plan* =	2.77	acres
Total post-development impervious cover fraction * =	0.82	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	**2468**	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 1

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	3.01	acres
Predevelopment impervious area within drainage basin/outfall area =	0.02	acres
Post-development impervious area within drainage basin/outfall area =	2.68	acres
Post-development impervious fraction within drainage basin/outfall area =	0.89	
$L_{M\ THIS\ BASIN}$ =	**2388**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Sand Filter**
Removal efficiency = **89** percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:

A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C = **3.01** acres
A_I = **2.68** acres
A_P = **0.33** acres
L_R = **2729** lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = **2468** lbs.

F = **0.90**

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth = **1.70** inches
Post Development Runoff Coefficient = **0.73**
On-site Water Quality Volume = **13504** cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	2701	
Total Capture Volume (required water quality volume(s) x 1.20) =	16205	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin =	NA	cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	0.1	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin =	NA	cubic feet

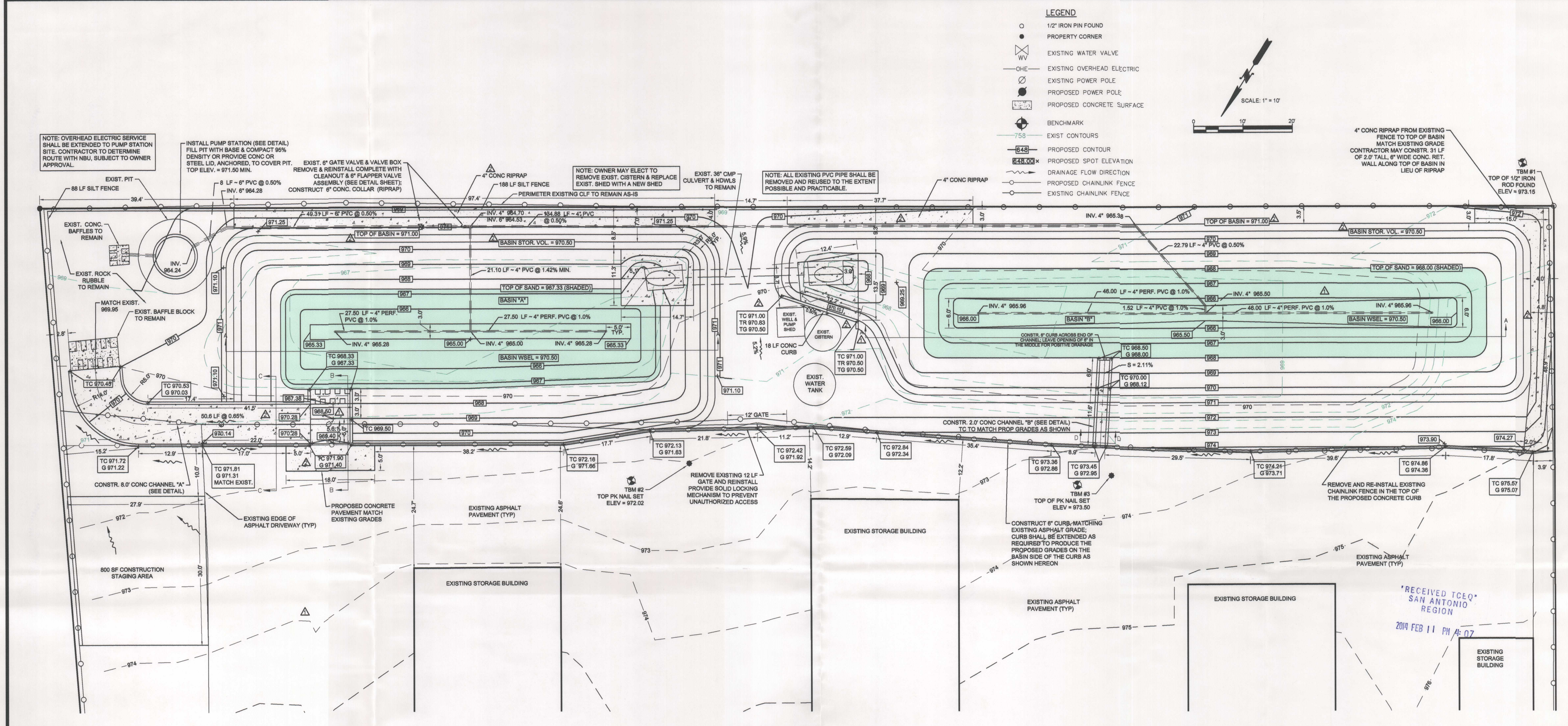
9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	16205	cubic feet	
Minimum filter basin area =	750	square feet	
Maximum sedimentation basin area =	6752	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	1688	square feet	For maximum water depth of 8 feet

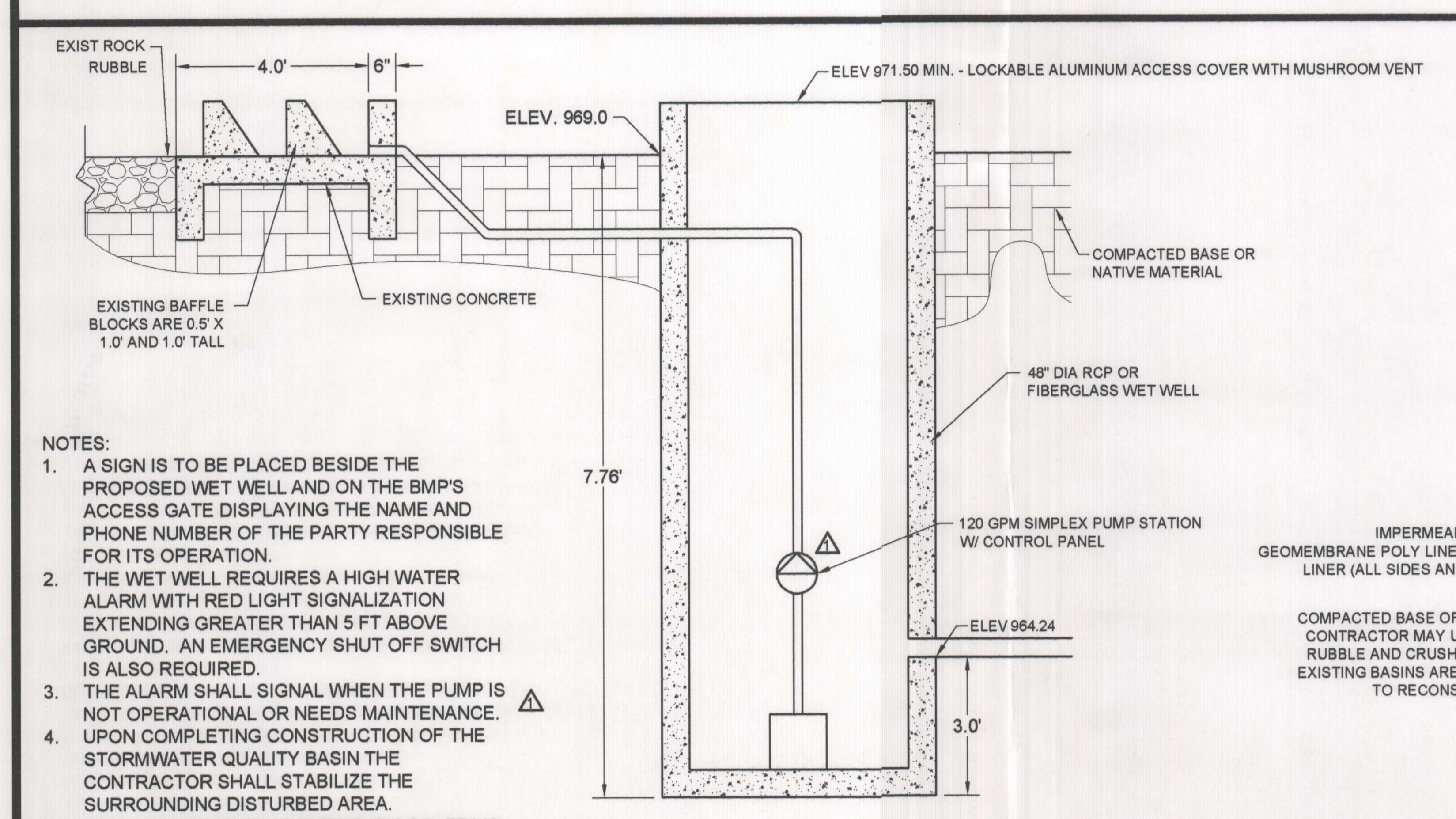
9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	16205	cubic feet	
Minimum filter basin area =	1350	square feet	
Maximum sedimentation basin area =	5402	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	338	square feet	For maximum water depth of 8 feet



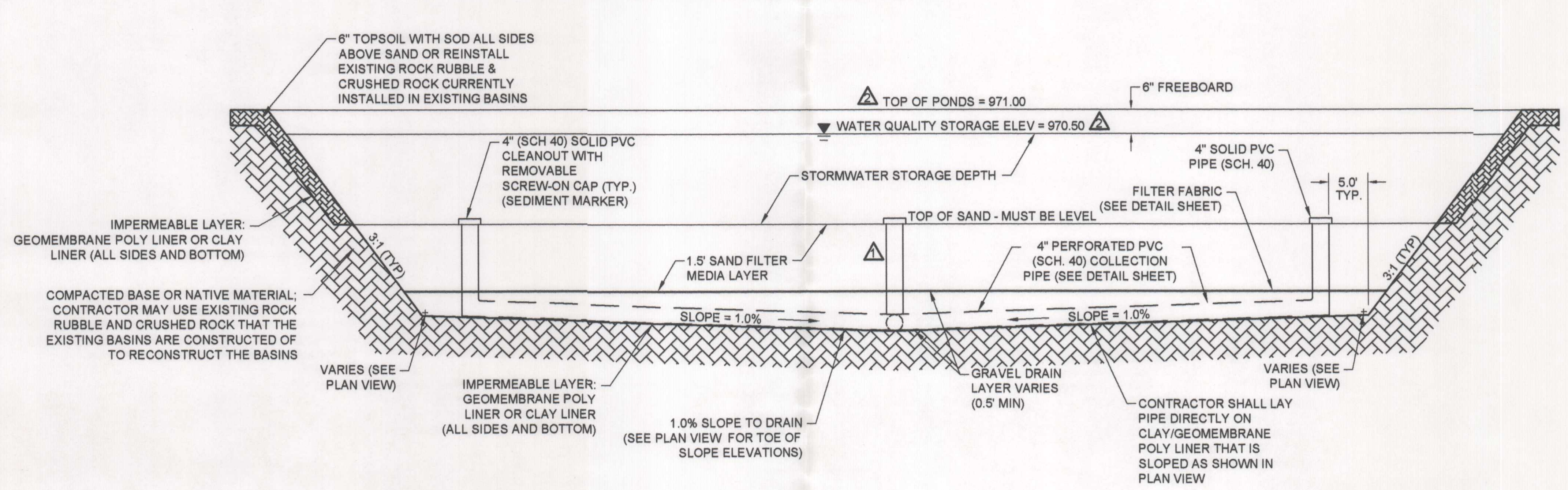
PLAN VIEW OF BASINS

SCALE 1"=10'



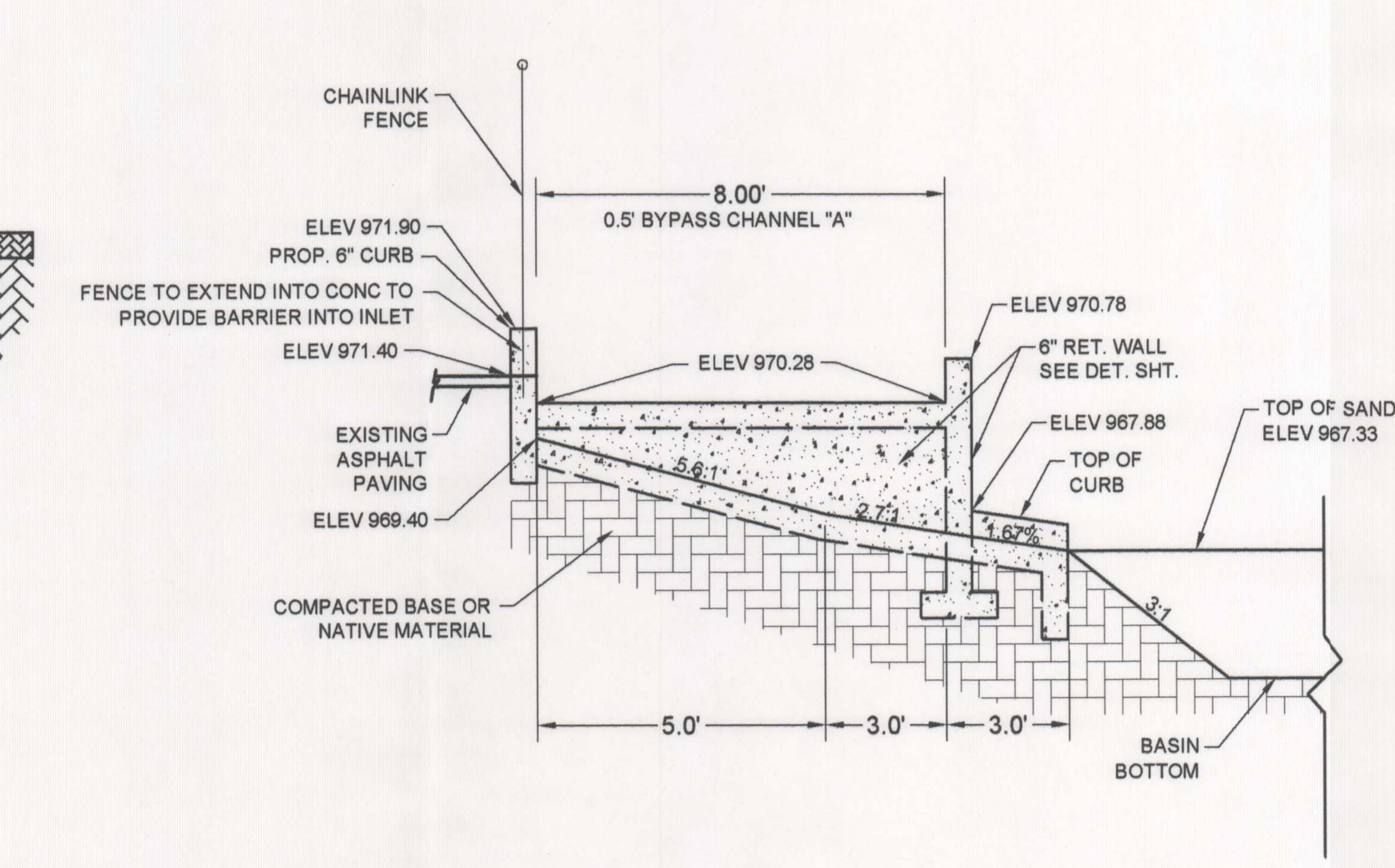
NOTES:
1. A SIGN IS TO BE PLACED BESIDE THE PROPOSED WET WELL AND ON THE BMP'S ACCESS GATE DISPLAYING THE NAME AND PHONE NUMBER OF THE PARTY RESPONSIBLE FOR ITS OPERATION.
2. THE WET WELL REQUIRES A HIGH WATER ALARM WITH RED LIGHT SIGNALIZATION EXTENDING GREATER THAN 5 FT ABOVE GROUND. AN EMERGENCY SHUT OFF SWITCH IS ALSO REQUIRED.
3. THE ALARM SHALL SIGNAL WHEN THE PUMP IS NOT OPERATIONAL OR NEEDS MAINTENANCE. ⚠1
4. UPON COMPLETING CONSTRUCTION OF THE STORMWATER QUALITY BASIN THE CONTRACTOR SHALL STABILIZE THE SURROUNDING DISTURBED AREA.
5. STAGING AREA REQUIREMENT (800 SQ. FT.) IS SATISFIED BY UTILIZING AREA ADJACENT TO THE BASIN AS DESIGNATED IN THE PLAN VIEW (THIS SHEET).

NOTES:
1. A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN EACH SEDIMENTATION BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EQUALS 6" AND SEDIMENT REMOVAL IS REQUIRED.
2. *SAND PROPERTIES* – THE SAND GRAIN SIZE DISTRIBUTION SHOULD BE COMPARABLE TO THAT OF TXDOT Mn SAND GRADING 1 (421-FINE).
3. ALL DISTURBED GROUND SURFACES SHALL BE COVERED WITH TOP SOIL AND SOD OR COVERED WITH THE EXISTING ROCK RUBBLE AND CRUSHED STONE THAT THE BASINS ARE CURRENTLY CONSTRUCTED WITH.
4. ALL RIPRAP SHALL BE 6" CONCRETE WITH 6" x 6" WWM.
5. THE EXISTING CRUSHED ROCK FILTER MEDIUM SHALL NOT BE USED IN LIEU OF SAND, BUT CAN BE USED AS BACKFILL AND AS A SURFACE TREATMENT.
6. GRAVEL DRAIN SHALL CONSIST OF 3/4" TO 1" CRUSHED ROCK



SECTION A - A

NTS - TYPICAL BOTH BASINS



⚠ SECTION B - B

NTS

REVISIONS NO.	DATE	COMMENTS
1	08-15-13	BAFFLES; SAND HATCH; BASIN SECTION; RISER PIPES; PUMP SYMBOL; ALARM;
2	02-11-14	TCEQ REVIEW COMMENTS

DYE DEVELOPMENT, INC.
TBPE: F-9539 – TBPE: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9758

STATE OF TEXAS — DAVID W. DYE, III, P.E. — 84257 — LICENSED PROFESSIONAL ENGINEER

STOR-HAUS SELF STORAGE

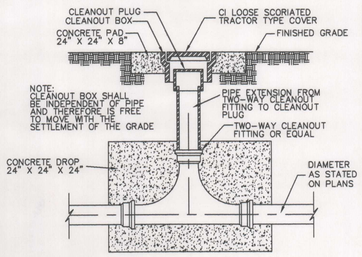
BASIN DESIGN
WPAP MODIFICATION

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

Z:\0 Current Projects\DD Projects\Stor Haus Self Storage\Site Devt Plans\4.0 Stor Haus Basin Design.dwg

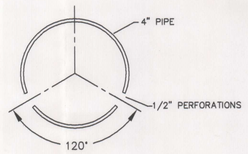
DRAWN BY: DWD
CHECKED BY: DWD
DATE: 05/22/13
PROJECT NO: STOR-HAUS

SHEET
4.0



CLEANOUT DETAIL

(DUAL DIRECTION)
NOT TO SCALE



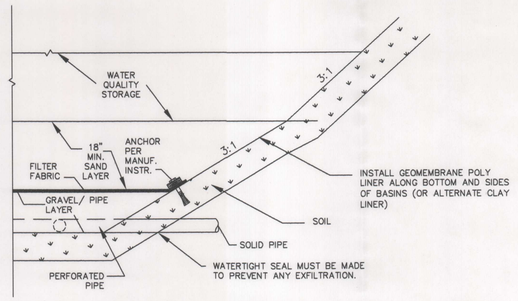
NOTE:

1. MINIMUM DIAMETER = 4"; SCHEDULE 40 PVC. (SEE PLAN VIEW)
2. THE MAXIMUM SPACING BETWEEN ROWS OF PERFORATIONS SHOULD NOT EXCEED 6".
3. SET PERFORATIONS DOWN.
4. PERFORATIONS SHOULD BE LESS THAN A 1/2" DIAMETER.
5. PIPES SHOULD LIE FLAT ON CONCRETE BOTTOM WHICH HAS BEEN GRADED TO DRAIN AS SHOWN ON PLAN VIEW.
6. ALL CLEANOUTS SHALL BE SOLID PIPE WITH A CLEANOUT AT THE END OF EACH LINE.
7. ALL PIPES WITHIN GRAVEL LAYER SHALL BE PERFORATED.

4" PERFORATED PIPE

NOT TO SCALE

⚠ NOTE: CONTRACTOR TO COORDINATE THIS CONSTRUCTION WITH THE LINER MANUFACTURER TO MINIMIZE LEAKAGE OF WATER BEING TREATED IN THE BASINS.



PIPE DISCHARGE AT LINER DETAIL & EXISTING 36" CMP

NOT TO SCALE

⚠ BASIN DESIGN DATA	
BASINS WATERSHED AREA	3.01 AC
RUN OFF DEPTH	1.70 INCH
REQUIRED CAPTURE VOLUME	16,205 CF
REQUIRED SAND AREA	1,688 SF
BASIN "A"	
DEPTH (AVG.)	3.17 FT*
CAPTURE VOLUME	8,004 CF*
SAND AREA	1,484 SF
BASIN "B"	
DEPTH (AVG.)	2.50 FT*
CAPTURE VOLUME	8,284 CF*
SAND AREA	2,044 SF
TOTAL (BASIN "A" & "B")	
CAPTURE VOLUME	16,288 CF
SAND AREA	3,528 SF
OVERFLOW WEIR ELEVATION	970.28

*EXCLUDES 0.5 FOOT FREEBOARD

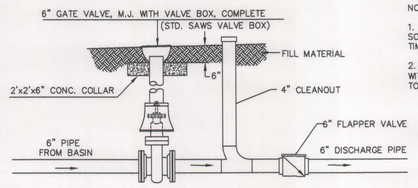
⚠ BMP SIZING CALCULATION		
County =	Comal	
Total project area included in plan * =	3.38	acres
Predevelopment impervious area within the limits of the plan * =	0.02	acres
Total post-development impervious area within the limits of the plan* =	2.77	acres
Total post-development impervious cover fraction * =	82%	
P =	33.00	inches
LM TOTAL PROJECT =	2,468	lbs.
TSS Reduction for Sand Filters =	89%	
Number of drainage basins / outfalls areas leaving the plan area =	1	

⚠ RG-348 Page 3-33 Equation 3.7: LR =(BMP efficiency) x P x (Ai x 34.6 + AP x 0.54)		
AC = Total On-Site drainage area in the BMP catchment area		
AI = Impervious area proposed in the BMP catchment area		
AP = Pervious area remaining in the BMP catchment area		
LR = TSS Load removed from this catchment area by the proposed BMP		
AC =	3.01	acres
AI =	2.68	acres
AP =	0.33	acres
LR =	2729	lbs
Desired LM THIS BASIN =	2468	lbs.
F =	0.90	
Rainfall Depth =	1.70	inches
Post Development Runoff Coefficient =	0.73	
On-site Water Quality Volume =	13504	cubic feet
Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	2701	
Total Capture Volume (required water quality volume(s) x 1.20) =	16205	cubic feet

Filter Area for Sand Filters		
Water Quality Volume for Sedimentation Basin =	16205	cubic feet
Minimum Filter Basin Area (includes additional 20% for Single Chamber Sand Filter Basin) =	1688	square feet

NOTES TO CONTRACTOR

1. CONTRACTOR IS ADVISED THAT TCEQ DOES NOT ALLOW CHANGES TO PERMANENT POLLUTION ABATEMENT MEASURES WITHOUT THEIR PRIOR APPROVAL.
2. CONTRACTOR SHALL NOTIFY CERTIFYING ENGINEER WHEN BASIN CONSTRUCTION HAS PROGRESSED TO EACH OF THE FOLLOWING MILESTONES:
   a. CONCRETE FORMS FOR CURBING AND CHANNELS HAVE BEEN INSTALLED AND BASIN GRADING HAS BEEN COMPLETED. ENGINEER WILL INSPECT AND VERIFY GRADES PRIOR TO ADDITIONAL WORK BEING PERFORMED.
   b. BASIN LINER AND PVC DRAIN PIPE HAS BEEN LAID BUT NOT BACKFILLED. ENGINEER SHALL VERIFY PIPE INVERTS & GRADES.
   c. GRAVEL AND FILTER FABRIC HAS BEEN PLACED. ENGINEER SHALL INSPECT AND VERIFY GRADES.
   d. SAND HAS BEEN PLACED. ENGINEER SHALL INSPECT AND VERIFY GRADES.
   e. PUMP STATION IS COMPLETE. ENGINEER SHALL INSPECT AND VERIFY PROPER FUNCTION.
   f. CONSTRUCTION COMPLETE, INCLUDING ALL RIP-RAP OR SOD/SEED/ROCK PLACEMENT ON SIDE SLOPES (WHERE APPLICABLE).
3. WORK SHALL NOT CONTINUE ON THE BASIN UNTIL THE ENGINEER HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION AT EACH STAGE. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 24 HOURS ADVANCE NOTICE PRIOR TO TIME THE BASIN WILL BE AT THE REQUIRED STAGE. ENGINEER WILL OBTAIN AS-BUILT ELEVATIONS OF THE WORK COMPLETED AT EACH STAGE. WORK NOT CONSTRUCTED AT THE PROPER ELEVATION WILL BE REQUIRED TO BE RE-INSTALLED AT CONTRACTOR'S EXPENSE. ENGINEER WILL RELY ON THIS DATA TO PROVIDE FINAL AS-BUILT CERTIFICATION AS REQUIRED BY THE TCEQ.
4. BEFORE FINAL ACCEPTANCE OF CONSTRUCTION BY THE OWNER, THE CONTRACTOR WILL REMOVE ALL TRASH, DEBRIS, AND ACCUMULATED SILT FROM THE BASINS AND REESTABLISH THEM TO THE PROPER OPERATING CONDITION.
5. THE MINIMUM DRAIN TIME FOR A FULL BASIN IS 24 HOURS, PER TCEQ SPECS. THE CONTRACTOR SHALL RESTRICT THE FLOW THROUGH ADJUSTING OF THE GATE VALVE ON THE DISCHARGE PIPE, SO AS TO PROVIDE THE MINIMUM 24 HOUR DRAW DOWN TIME.



NOTE:

1. VALVE WILL BE SET PARTIALLY CLOSED SO AS TO PROVIDE A MINIMUM DRAWDOWN TIME OF 24 HOURS.
2. CONTRACTOR SHALL PROVIDE OWNER WITH VALVE OPERATING KEY/ROD PRIOR TO PROJECT COMPLETION.

6" GATE & FLAPPER VALVE DETAIL

NOT TO SCALE

THE SEPARATION LAYER BETWEEN THE SAND FILTER AND GRAVEL LAYERS SHALL BE A DRAINAGE MATTING CONSISTING OF NON-WOVEN FILTER FABRIC MEETING THE FOLLOWING SPECIFICATIONS (UNLESS OTHERWISE APPROVED BY THE ENGINEER BEFOREHAND, IN WRITING):

⚠ FILTER FABRIC SPECIFICATIONS

PROPERTY	TEST METHOD	SPECIFICATION
WEIGHT (OZ/SY)	ASTM D 3776	4.0
GRAB STRENGTH (LBS.)	ASTM D 4632	90
ELONGATIONS (%)	ASTM D 4632	55
PUNCTURE (LBS)	ASTM D 3787	60
AOS (SIEVE #)	ASTM D 4751	70-80
FLOW RATE (GPM/SF)	ASTM D 4491	120

FABRIC OVERLAP SHALL BE A MINIMUM OF 24".
ALL OVERLAPS SHALL BE WIRE TIED AT A MAXIMUM OF 36" INTERVALS

NOTE:
SAND FILTER MATERIAL SHALL BE COMPARABLE TO THAT OF TXDOT Mn SAND GRADING 1 (421-FINE).

ROCK FOR GRAVEL LAYER SHALL BE 3/4" TO 1" DIAMETER CRUSHED ROCK.

GEOMEMBRANE POLY LINER

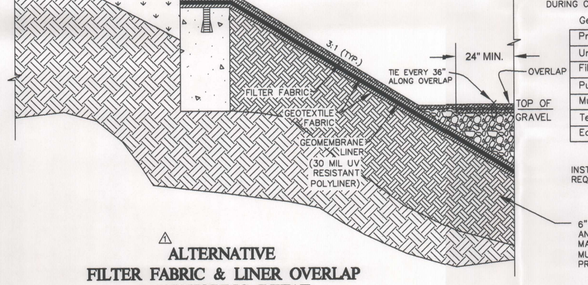
- ULTRAVIOLET RESISTANT
- THICKNESS = 30 MILS MINIMUM, RECOMMENDED 40 MILS.
- JOINTS SHALL BE WATER TIGHT AT SEAMS.
- WATERTIGHT SEAL BETWEEN POLY LINER AND TRANSITION SURFACES.
- BEDDING MATERIAL SHALL BE SUITABLY COMPACTED MATERIAL IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- PROTECTIVE GEOTEXTILE FABRIC TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

⚠ CLAY LINER SPECIFICATIONS

TABLE 3-6, PG.3-38, RG-348

PROPERTY	TEST METHOD	UNIT	SPECIFICATION
PERMEABILITY	ASTM D-2434	CM/SEC	1×10^{-6}
PLASTICITY INDEX OF CLAY	ASTM D-423 & D-424	%	NOT LESS THAN 15
LIQUID LIMIT OF CLAY	ASTM D-2216	%	NOT LESS THAN 30
CLAY PARTICLES PASSING	ASTM D-422	%	NOT LESS THAN 30
CLAY COMPACTION	ASTM D-2216	%	95% OF STANDARD PROCTOR DENSITY

THE CLAY LINER SHALL HAVE A MINIMUM THICKNESS OF TWELVE (12) INCHES.



⚠ ALTERNATIVE FILTER FABRIC & LINER OVERLAP & ANCHORING DETAIL

NOT TO SCALE

NOTE:

1. CONTRACTOR TO PLACE ANCHOR BOLTS AT 5'-0" O.C.
2. IN ORDER TO SECURE FILTER FABRIC TO SIDEWALLS WITH GEOMEMBRANE/GEOTEXTILE LAYERS, IT IS RECOMMENDED THAT THE CONTRACTOR INSTALL A LENGTH OF FILTER FABRIC WITH THE OTHER LAYERS SUCH THAT SUBSEQUENT LAYERS CAN BE OVERLAPPED AND TIED TO THE EXPOSED FILTER FABRIC. THIS WILL PROVIDE FOR EASIER MAINTENANCE IN THE FUTURE WITHOUT DESTROYING CONCRETE OR WATER TIGHT LINER.
3. IF A GEOMEMBRANE LINER IS USED IT SHOULD HAVE A MINIMUM THICKNESS OF 30 MILS (40 MILS, RECOMMENDED) AND BE ULTRAVIOLET RESISTANT. THE GEOTEXTILE FABRIC (FOR PROTECTION OF GEOMEMBRANE) SHOULD BE NON-WOVEN GEOTEXTILE FABRIC AND MEET THE SPECIFICATIONS BELOW.
4. CONTRACTOR SHALL PREVENT ANY TEARING OR PUNCTURE TO THE POLY LINER DURING CONSTRUCTION. ENTIRE LINER MUST BE WATER TIGHT.

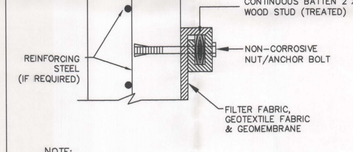
Geotextile Fabric Specifications (COA, 2004)

Property	Test Method	Unit	Specification (min)
Unit Weight	ASTM D-5261	oz/yd2	8
Filtration Rate	ASTM D-4491	cm/sec	0.20
Puncture Strength	ASTM D-4833	lb.	125
Mullen Burst Strength	ASTM D-3786	psi	400
Tensile Strength	ASTM D-4632	lb.	200
Equiv. Opening Size	US Standard Sieve	No.	80

INSTALLATION METHODS FOR GEOMEMBRANE LINERS VARY ACCORDING TO THE SITE REQUIREMENTS. SEE DETAIL FOR TYPICAL INSTALLATION METHOD.

6"-12" BEDDING MATERIAL UNDER LINER MUST BE SUITABLE MATERIAL (NOT SAND) AND COMPACTED TO A DENSITY OF 95%. CONTRACTOR SHALL REFER TO MANUFACTURERS SPECIFICATIONS FOR GEOMEMBRANE BEDDING MATERIAL. BEDDING MUST BE COMPACTED & SLOPED AT 1% (MIN.) TO DRAIN AS SHOWN IN PLAN VIEW PRIOR TO PLACEMENT OF LINERS

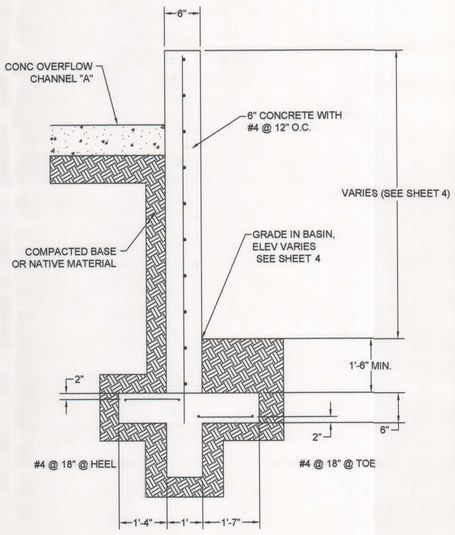
NOTE: GEOMEMBRANE AND PROTECTIVE GEOTEXTILE FABRIC TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.



NOTE:
CONTRACTOR TO PLACE ANCHOR BOLTS AT 5'-0" O.C.

⚠ FILTER FABRIC ANCHORING DETAIL

NOT TO SCALE



RETAINING WALL DETAIL

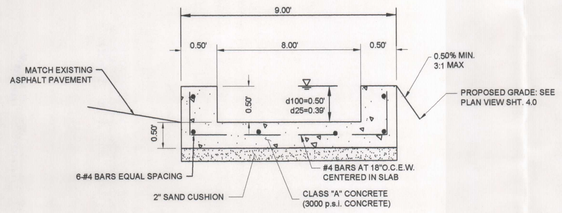
NOT TO SCALE

CONC. CHANNEL "A" CALCULATIONS

n = 0.013 (concrete)
S = 0.65%

Q25 = 14.40 cfs
d25 = 0.39'
V25 = 4.63 fps

Q100 = 21.40 cfs
d100 = 0.50'
V25 = 5.38 fps



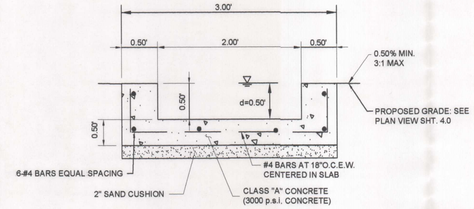
SECTION "C-C"
CHANNEL "A"

NOT TO SCALE

CONC. CHANNEL "A" CALCULATIONS

n = 0.013 (concrete)
S = 2.11 % (inlet cross flow & channel outfall)

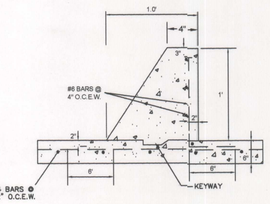
BASIN INFLOW & OUTFLOW
Q = 7.98 cfs
d = 0.50'
V = 7.98 fps



SECTION "D-D"
CHANNEL "B"

NOT TO SCALE

BAFFLE BLOCKS ARE 1.0' LONG, SPACED AT 1.0'. SEE PLAN VIEW FOR LOCATIONS.



⚠ BAFFLE BLOCK DETAIL

NOT TO SCALE

NO.	DATE	COMMENTS
1	08-15-13	FILTER FABRIC & CLAY SPECS, SEALING NOTE; TCEQ COMMENTS; ANCHOR DETAILS, BAFFLE BLOCK DETAIL
2	02-11-14	TCEQ COMMENTS

RECEIVED
2014 FEB 11 PM 4:07
TCEQ
SAN ANTONIO REGION

DYE DEVELOPMENT, INC.
TBPE: F-9539 — TBPE: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9758

DAVID W. DYE, JR. 84257 LICENSED PROFESSIONAL ENGINEER

STOR-HAUS SELF STORAGE

DETAILS
WPAP MODIFICATION

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78130

Z:\0 Current Projects\013 Projects\Stor-Haus Self Storage\Site Data Plans\Stor-Haus Details.dwg

DRAWN BY: DWD
CHECKED BY: DWD
DATE: 05/06/13
PROJECT NO: STOR-HAUS

SHEET
5.0

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

May 29, 2013

Mr. Thomas H. Hornseth, P.E.
Comal County Engineer
195 David Jonas Drive
New Braunfels TX 78132-3710

Re: Edwards Aquifer, Comal County
PROJECT NAME: Stor-Haus Self Storage, located approximately 315 feet northwest of the intersection of FM 2722 and Lone Oak Road, New Braunfels, Texas
PLAN TYPE: Application for Approval of a Water Pollution Plan (WPAP) 30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program
EAPP File No.: 2845.03

Dear Mr. Hornseth:

The referenced application is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval.

Please forward your comments to this office by June 29, 2013.

The Texas Commission on Environmental Quality appreciates your assistance in this matter and your compliance efforts to ensure protection of the State's environment. If you or members of your staff have any questions regarding these matters, please feel free to contact the San Antonio Region Office at (210) 490-3096.

Sincerely

for

Todd Jones
Water Section Work Leader
San Antonio Regional Office

TJ/eg

RECEIVED
JUN 0 3 2013
COUNTY ENGINEER

STOR-HAUS SELF STORAGE

MODIFICATION OF A PREVIOUSLY APPROVED

WATER POLLUTION ABATEMENT PLAN

Prepared for:

Richter-Land, LLC
3126 Falling Brook
San Antonio, Texas 78258

Prepared by:

Dye Development, Inc.
17174 Irongate Rail
San Antonio, Texas 78247

April 2013

4/2/13

Modification of a Previously Approved Plan Checklist

✓ General Information Form (*TCEQ-0587*)
- ATTACHMENT A - Road Map
- ATTACHMENT B - USGS / Edwards Recharge Zone Map
- ATTACHMENT C - Project Description

✓ Geologic Assessment Form (*TCEQ-0585*)
- ATTACHMENT A - Geologic Assessment Table, *TCEQ-0585-Table*
- Comments to the Geologic Assessment Table
- ATTACHMENT B - Soil Profile and Narrative of Soil Units
- ATTACHMENT C - Stratigraphic Column
- ATTACHMENT D - Narrative of Site Specific Geology
- Site Geologic Map(s)
- Table or list for the position of features' latitude/longitude (if mapped using GPS)

✓ Modification of a Previously Approved Plan (*TCEQ-0590*)
- ATTACHMENT A - Original Approval Letter and Approved Modification Letters
- ATTACHMENT B - Narrative of Proposed Modification
- ATTACHMENT C - Current Site Plan of the Approved Project

✓ Application Form (appropriate for the modification)
- Aboveground Storage Tank Facility Plan (*TCEQ-0575*)
- Organized Sewage Collection System Plan (*TCEQ-0582*)
- Underground Storage Tank Facility Plan (*TCEQ-0583*)
- Water Pollution Abatement Plan Application Form (*TCEQ-0584*)
- Lift Station / Force Main System Application (*TCEQ-0624*)

✓ Temporary Stormwater Section (*TCEQ-0602*), if necessary
- ATTACHMENT A - Spill Response Actions
- ATTACHMENT B - Potential Sources of Contamination
- ATTACHMENT C - Sequence of Major Activities
- ATTACHMENT D - Temporary Best Management Practices and Measures
- ATTACHMENT E - Request to Temporarily Seal a Feature, if sealing a feature
- ATTACHMENT F - Structural Practices
- ATTACHMENT G - Drainage Area Map
- ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations
- ATTACHMENT I - Inspection and Maintenance for BMPs
- ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices

✓ Permanent Stormwater Section (*TCEQ-0600*), if necessary
- ATTACHMENT A - 20% or Less Impervious Cover Waiver, if project is multi-family residential, a school, or a small business and 20% or less impervious cover is proposed for the site
- ATTACHMENT B - BMPs for Upgradient Stormwater
- ATTACHMENT C - BMPs for On-site Stormwater
- ATTACHMENT D - BMPs for Surface Streams
- ATTACHMENT E - Request to Seal Features, if sealing a feature
- ATTACHMENT F - Construction Plans
- ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan
- ATTACHMENT H - Pilot-Scale Field Testing Plan, if BMPs not based on *Complying with the Edwards Aquifer Rules: Technical Guidance for BMPs*
- ATTACHMENT I -Measures for Minimizing Surface Stream Contamination

Modification of a Previously Approved Plan Checklist (continued)

- ✓ Agent Authorization Form (*TCEQ-0599*), if application submitted by agent
- ✓ Application Fee Form (*TCEQ-0574*)
- ✓ Check Payable to the "Texas Commission on Environmental Quality"
- ✓ Core Data Form (*TCEQ-10400*)

General Information Form

General Information Form

For Regulated Activities on the
Edwards Aquifer Recharge and Transition Zones
and Relating to 30 TAC §213.4(b) & §213.5(b)(2)(A), (B)
Effective June 1, 1999

REGULATED ENTITY NAME: Stor-Haus Self Storage
COUNTY: Comal STREAM BASIN: Blieders Creek

EDWARDS AQUIFER: X RECHARGE ZONE
__ TRANSITION ZONE

PLAN TYPE: __ WPAP __ AST __ EXCEPTION
__ SCS __ UST X MODIFICATION

CUSTOMER INFORMATION

1. Customer (Applicant):

Contact Person: Dr. Paul Richter
Entity: Richter-Land, LLC
Mailing Address: 3126 Falling Brook
City, State: San Antonio Zip: 78258
Telephone: 830-227-5299 FAX: 210-479-9879

Agent/Representative (If any):

Contact Person: David Dye, P.E.
Entity: Dye Development, Inc.
Mailing Address: 17174 Irongate Rail
City, State: San Antonio, Texas Zip: 78247
Telephone: (210) 685-9193 FAX: (210) 598-9758

2. __ This project is inside the city limits of _____
X This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of New Braunfels
__ This project is not located within any city's limits or ETJ.

3. The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

The site is located approximately 315 feet northwest of the intersection of FM 2722 and Lone Oak Road.

4. X **ATTACHMENT A - ROAD MAP**. A road map showing directions to and the location of the project site is attached at the end of this form.

5. X **ATTACHMENT B - USGS / EDWARDS RECHARGE ZONE MAP**. A copy of the official 7 /21 minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is

attached behind this sheet. The map(s) should clearly show:

X Project site.
X USGS Quadrangle Name(s).
X Boundaries of the Recharge Zone (and Transition Zone, if applicable).
X Drainage path from the project to the boundary of the Recharge Zone.

6. X Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment. **The TCEQ must be able to inspect the project site or the application will be returned.**

7. X **ATTACHMENT C - PROJECT DESCRIPTION**. Attached at the end of this form is a detailed narrative description of the proposed project.

8. Existing project site conditions are noted below:
   - X Existing commercial site
   - ___ Existing industrial site
   - ___ Existing residential site
   - ___ Existing paved and/or unpaved roads
   - ___ Undeveloped (Cleared)
   - ___ Undeveloped (Undisturbed/Uncleared)
   - ___ Other: _____

PROHIBITED ACTIVITIES

9. X I am aware that the following activities are prohibited on the **Recharge Zone** and are not proposed for this project:

   (1) waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
   (2) new feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
   (3) land disposal of Class I wastes, as defined in 30 TAC §335.1;
   (4) the use of sewage holding tanks as parts of organized collection systems; and
   (5) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

10. NA I am aware that the following activities are prohibited on the **Transition Zone** and are not proposed for this project:

   (1) waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);
   (2) land disposal of Class I wastes, as defined in 30 TAC §335.1; and
   (3) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

ADMINISTRATIVE INFORMATION

11. The fee for the plan(s) is based on:

X For a Water Pollution Abatement Plan and Modifications, the total acreage of the site where regulated activities will occur.

__ For an Organized Sewage Collection System Plans and Modifications, the total linear footage of all collection system lines.

__ For a UST Facility Plan or an AST Facility Plan, the total number of tanks or piping systems.

__ A Contributing Zone Plan.

__ A request for an exception to any substantive portion of the regulations related to the protection of water quality.

__ A request for an extension to a previously approved plan.

12. Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

__ TCEQ cashier

__ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)

X San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

13. X Submit one (1) original and three (3) copies of the completed application to the appropriate regional office for distribution by the TCEQ to the local municipality or county, groundwater conservation districts, and the TCEQ's Central Office.

14. X No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the executive director.

__ No person shall commence any regulated activity until the Contributing Zone Plan for the activity has been filed with the executive director.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **GENERAL INFORMATION FORM** is hereby submitted for TCEQ review. The application was prepared by:

Dr. Paul Richter
Print Name of Customer/Agent

Signature of Customer/Agent

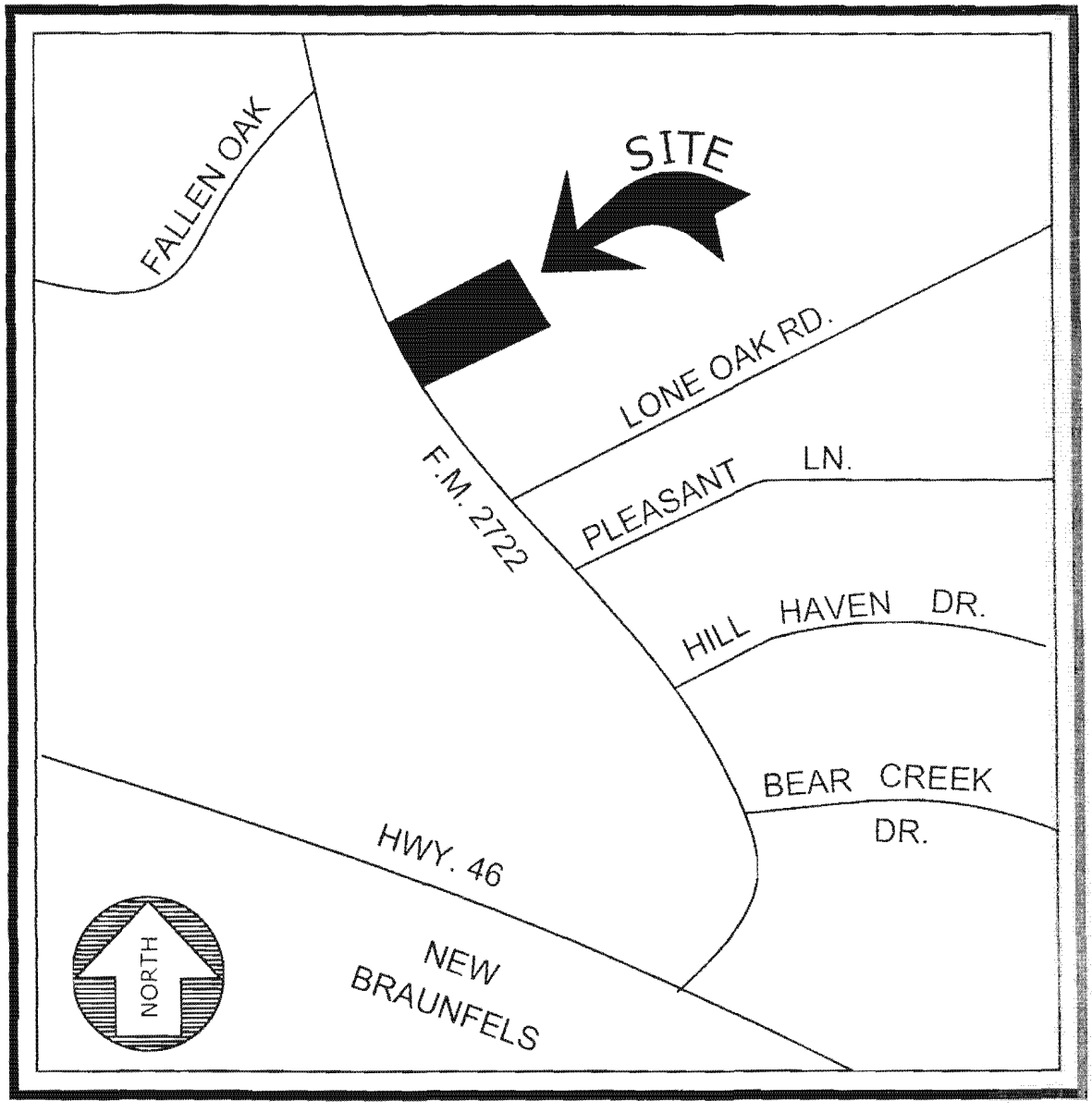
3/8/13
Date

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

ATTACHMENT A TO TCEQ-0587

ROAD MAP & TRIP DIRECTIONS



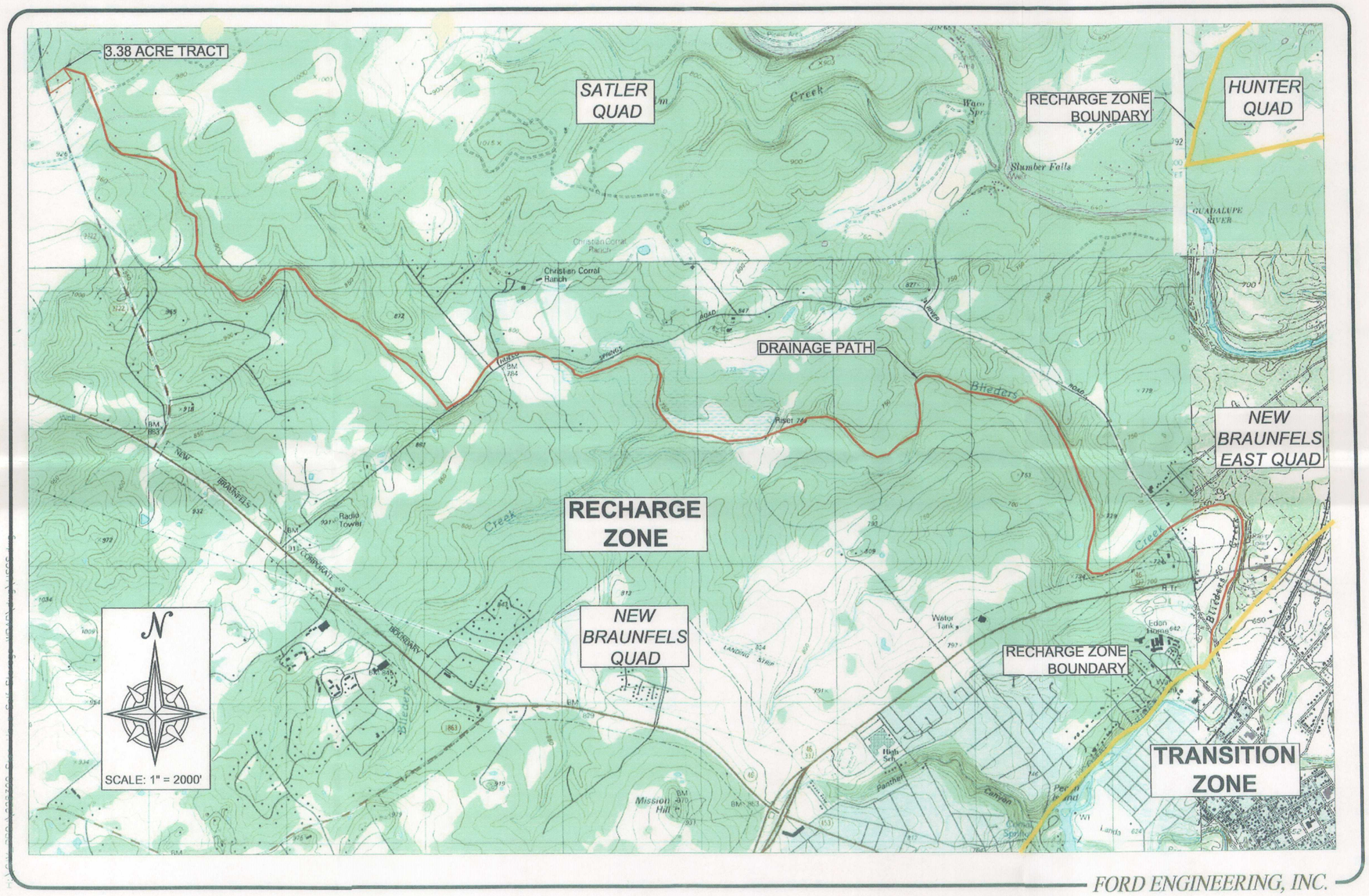
LOCATION MAP

NOT TO SCALE

ATTACHMENT C TO TCEQ-0587

PROJECT NARRATIVE

This project, Stor-Haus Self Storage, is an existing commercial mini-storage development on 3.38 acres, also known as Tract 1, Encino Hills. The site is located along the east right-of-way of FM 2722 approximately 315 feet northwest of FM 2722 intersection with Lone Oak Road. The site is an operating business, and has mini-storage units that people can rent, as well as RV and boat storage capabilities. There is also a manager's residence, a water well, and asphalt paving and gravel parking. The site also has two BMP basins that are in non-compliance. This modification project consists of the re-design and re-construction of the BMP facility with the intent to bring the facility into full compliance with the TCEQ. The BMP facility will consist of two sand filtration basins.



FORD ENGINEERING, INC.

Geologic Assessment Form

Geologic Assessment
For Regulated Activities
on The Edwards Aquifer Recharge/transition Zones
and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

REGULATED ENTITY NAME: Stor Haus Self Storage

TYPE OF PROJECT: _X_ WPAP __ AST __ SCS __ UST

LOCATION OF PROJECT: _X_ Recharge Zone __ Transition Zone __ Contributing Zone within the Transition Zone

PROJECT INFORMATION

1. _X_ Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE**.

2. Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (*Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A*, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Soil Units, Infiltration Characteristics & Thickness		
Soil Name	Group*	Thickness (feet)
Rumple-Comfort Association		

* Soil Group Definitions (Abbreviated)

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate infiltration rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

3. _X_ A **STRATIGRAPHIC COLUMN** is attached at the end of this form that shows formations, members, and thicknesses. The outcropping unit should be at the top of the stratigraphic column.

4. _X_ A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.

5. _X_ Appropriate **SITE GEOLOGIC MAP(S)** are attached:

The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1" : 400'

Applicant's Site Plan Scale 1" = 20' '
Site Geologic Map Scale 1" = 20' '
Site Soils Map Scale (if more than 1 soil type) 1" = _____ '

6. Method of collecting positional data:
_X_ Global Positioning System (GPS) technology.
__ Other method(s).

7. X The project site is shown and labeled on the Site Geologic Map.

8. X Surface geologic units are shown and labeled on the Site Geologic Map.

9. X Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
__ Geologic or manmade features were not discovered on the project site during the field investigation.

10. X The Recharge Zone boundary is shown and labeled, if appropriate.

11. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.):

X There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
__ The wells are not in use and have been properly abandoned.
__ The wells are not in use and will be properly abandoned.
X The wells are in use and comply with 16 TAC Chapter 76.
__ There are no wells or test holes of any kind known to exist on the project site.

ADMINISTRATIVE INFORMATION

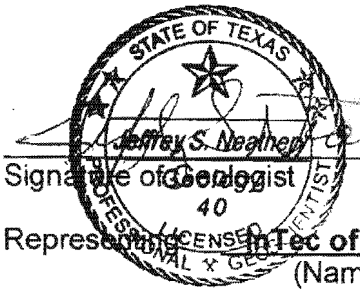
12. X Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

Date(s) Geologic Assessment was performed: **May 2, 2013**
Date(s)

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Jeffrey S. Neathery, P.G. **(210) 710-6406**
Print Name of Geologist Telephone

Fax



Signature of Geologist **May 3, 2013**
Date

Representing: **InTec of San Antonio**
(Name of Company)

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Store Haus

LOCATION							FEATURE CHARACTERISTICS											EVALUATION			PHYSICAL SETTING		
1A	1B *			1C*			2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE			LONGITUDE			FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	INCD	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
	D	M	S	D	M	S				X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	29	45	45.31	98	12	37.18	MB	30	Kep	12	5	?					X	0	30	30		X		hillside
S-2	29	45	46.31	98	12	36.00	MB	30	Kep	1	1	?					X	0	30	30		X		hillside
S-3	29	45	45.52	98	12	35.67	MB	30	Kep	150	40	8					N	15	45		45		X	hillside
S-4	29	45	46.70	98	12	36.39	MB	30	Kep	90	40	6					N	15	45		45		X	hillside
S-5	29	45	47.22	98	12	36.64	MB	30	Kep	6	6	3					N	15	45		45		X	hillside

* DATUM: NAD83

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials

12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, understood and have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

STATE OF TEXAS — Jeffrey S. Neathery — Geology 40 — LICENSED PROFESSIONAL GEOSCIENTIST

Date: May 2, 2013

Sheet 1 of 1

TCEQ-0585-Table (Rev. 10-01-04)

Site Specific Soils

The site lies on a side of a gently sloping hill. This site is completely developed. There are no native soils exposed.

According to the U.S. Soil Conservation Service, the soils beneath the SITE are classified as Rumple-Comfort association, undulating.

This association consists of shallow and moderately deep soils on uplands in the Edwards Plateau. Rumple soils make up about 60 percent of the association. Comfort soils make up about 20 percent. The remainder consists mostly of Tarpley soils. These soils are well drained. Surface runoff is medium. Permeability is moderately slow in Rumple soils and slow in Comfort soils. Water erosion is a moderate hazard.

Stratigraphic Column

Group	Formation	Member	Thickness (ft)
Del Rio Clay			40-50
Edwards Limestone	Georgetown		20-40
	Person	Cyclic and Marine	80-100
		Leached and Collapsed	60-90
		Regional Dense	20-24
	Kainer	Grainstone	50-60
		Kirschberg Evaporite	50-70
		Dolomitic	110-150
		Basal Nodular	40-60
Glen Rose Limestone	Upper Glen Rose		350-500

(From U.S.G.S., 1996)

Site Specific Geology

According to the official Recharge Zone maps, the site lies within the Edwards Aquifer Recharge Zone. According to the literature (USGS, 1996), the majority of the site lies on the Leached and Collapsed Member of the Person formation.

The site lies on a side of a gently sloping hill. The site is developed. It is covered with asphalt and crushed granite. No rock outcrops are visible. There are two storm water retention ponds at the downstream side of the site.

According to the literature, there is a large fault north of the site and south of the site. Since no rock outcrops were visible, there was no evidence of the fault observed in the field.

The site does not lie within the 100-year floodplain.

Feature Comments

S-1 This feature is a septic tank.

S-2 This feature is a water well. It is currently being used to supply water to the site.

S-3 This feature is a retention pond.

S-4 This feature is a retention pond.

S-5 This feature is a pump sump for the retention pond. It appears that this feature was never fully constructed.

References

Bureau of Economic Geology (1982) *Geologic Atlas of Texas, San Antonio Sheet*

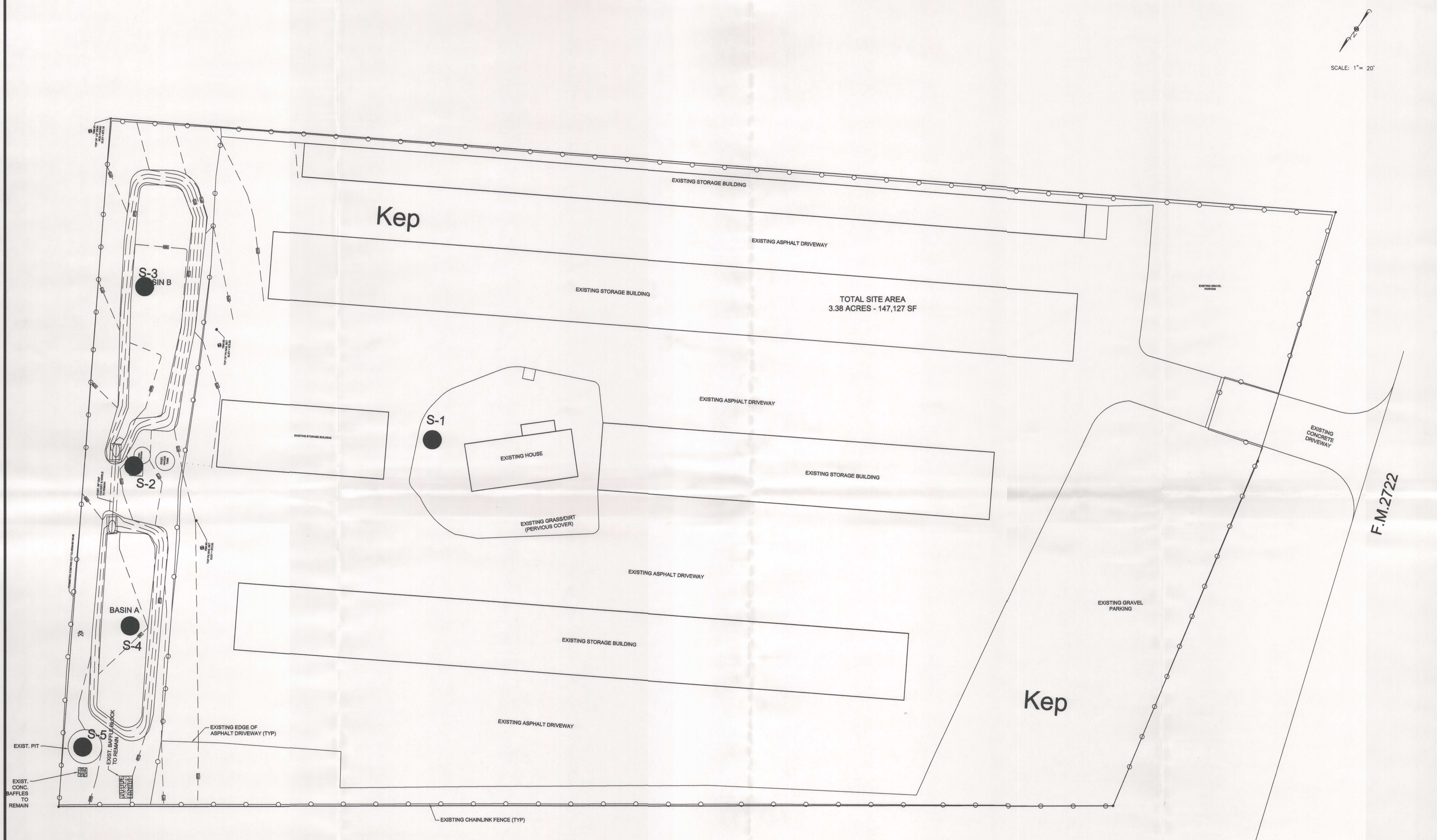
Soil Conservation Service (1991), *Soil Survey of Comal County Texas*, US Department of Agriculture

Texas Administrative Code (1999), *Official Edwards Aquifer Recharge Zone Map*, 30 TAC, Chapter 313, Subchapter A, San Antonio Region, Sattler Quadrangle

Texas Natural Resource Conservation Commission (2004), *Instructions to Geologists,* TCEQ-0585 Instructions

U.S. Geological Survey (1992), *Sattler, Texas* 7.5-Minute Series (Topographic)

U.S. Geological Survey (1996), *Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, Bexar County, Texas*, Water Resources Investigations Report 95-4030



SCALE: 1"= 20'
EXISTING STORAGE BUILDING
Kep
EXISTING ASPHALT DRIVEWAY
S-3
BASIN B
EXISTING STORAGE BUILDING
TOTAL SITE AREA
3.38 ACRES - 147,127 SF
EXISTING GRAVEL PARKING
EXISTING ASPHALT DRIVEWAY
S-1
EXISTING STORAGE BUILDING
EXISTING HOUSE
S-2
EXISTING STORAGE BUILDING
EXISTING CONCRETE DRIVEWAY
EXISTING GRASS/DIRT (PERVIOUS COVER)
F.M.2722
EXISTING ASPHALT DRIVEWAY
BASIN A
S-4
EXISTING STORAGE BUILDING
EXISTING GRAVEL PARKING
Kep
EXISTING ASPHALT DRIVEWAY
S-5
EXIST. PIT
EXIST. BAFFLE BLOCK TO REMAIN
EXISTING EDGE OF ASPHALT DRIVEWAY (TYP)
EXIST. CONC. BAFFLES TO REMAIN
EXISTING CHAINLINK FENCE (TYP)

REVISIONS		
NO.	DATE	COMMENTS

InTEC OF SAN ANTONIO, LP
12028 RADIUM DRIVE
SAN ANTONIO, TEXAS 78216
TEL (210) 525-9033

STOR-HAUS SELF STORAGE

SITE GEOLOGIC MAP

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

DRAWN BY: JN
CHECKED BY: JN
DATE: 05-03-13
PROJECT NO: STOR-HAUS

SHEET
G1.0

TCEQ-R13
MAY 22 2013
SAN ANTONIO

Application Fee Form

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
Application Fee Form

NAME OF PROPOSED REGULATED ENTITY: Stor-Haus Self Storage
REGULATED ENTITY LOCATION: New Braunfels, Comal County, Texas
NAME OF CUSTOMER: Richter-Land, LLC
CONTACT PERSON: David W. Dye III, P.E. PHONE: 210-685-9193
(Please Print)

Customer Reference Number (if issued): CN 603421520 (nine digits)

Regulated Entity Reference Number (if issued): RN 105645634 (nine digits)

Austin Regional Office (3373) ☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362) ☐ Bexar ☒ Comal ☐ Medina ☐ Kinney ☐ Uvalde

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment.** This payment is being submitted to (Check One):

☐ **Austin Regional Office**

☐ **Mailed to TCEQ**:
TCEQ – Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☒ **San Antonio Regional Office**

☐ **Overnight Delivery to TCEQ**:
TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
512/239-0347

Site Location (Check All That Apply): ☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	Size		Fee Due
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling		Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks		Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	3.38	Acres	$ 4,000.00
Sewage Collection System		L.F.	$
Lift Stations without sewer lines		Acres	$
Underground or Aboveground Storage Tank Facility		Tanks	$
Piping System(s)(only)		Each	$
Exception		Each	$
Extension of Time		Each	$

Signature

3/8/13
Date

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
Application Fee Schedule
30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications
Contributing Zone Plans and Modifications

PROJECT	PROJECT AREA IN ACRES	FEE
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

PROJECT	COST PER LINEAR FOOT	MINIMUM FEE MAXIMUM FEE
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

PROJECT	COST PER TANK OR PIPING SYSTEM	MINIMUM FEE MAXIMUM FEE
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

PROJECT	FEE
Exception Request	$500

Extension of Time Requests

PROJECT	FEE
Extension of Time Request	$150

Agent Authorization Form

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Dr. Paul Richter
Print Name

Owner
Title - Owner/President/Other

of Richter-Land, LLC
Corporation/Partnership/Entity Name

have authorized David W. Dye III, P.E.
Print Name of Agent/Engineer

of Dye Development, Inc.
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 2 13 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For applicants who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

Paul Ritcher
Applicant's Signature

4/3/13
Date

THE STATE OF TX §
County of Comal §

BEFORE ME, the undersigned authority, on this day personally appeared Paul Ritcher known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 3rd day of April 2013

Regina A Young
NOTARY PUBLIC

Regina A. Young
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 4-13-13

NOTARY PUBLIC STATE OF TEXAS
REGINA A. YOUNG
My Commission Expires
April 13, 2013

Core Data Form

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided)*

☐ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☒ Other **WPAP Modification**

2. Attachments — Describe Any Attachments: *(ex. Title V Application, Waste Transporter Application, etc.)*

☒ Yes ☐ No — Water Pollution Abatement Plan Modification Application

3. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	4. Regulated Entity Reference Number *(if issued)*
CN 603421520		RN 105645634

SECTION II: Customer Information

5. Effective Date for Customer Information Updates (mm/dd/yyyy): 3/7/2013

6. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check only one of the following:*

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other: _____

7. General Customer Information

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State) ☐ No Change**

If "No Change" and Section I is complete, skip to Section III – Regulated Entity Information.

8. Type of Customer:	☒ Corporation	☐ Individual	☐ Sole Proprietorship- D.B.A
☐ City Government	☐ County Government	☐ Federal Government	☐ State Government
☐ Other Government	☐ General Partnership	☐ Limited Partnership	☐ Other:

9. Customer Legal Name *(If an individual, print last name first: ex: Doe, John)*	*If new Customer, enter previous Customer below*	*End Date:*
Richter-Land, LLC		

10. Mailing Address:	3126 Falling Brook						
City	San Antonio	State	TX	ZIP	78258	ZIP + 4	4541

11. Country Mailing Information *(if outside USA)*	12. E-Mail Address *(if applicable)*

13. Telephone Number	14. Extension or Code	15. Fax Number *(if applicable)*
(830) 227-5299		(210) 479-9879

16. Federal Tax ID *(9 digits)*	17. TX State Franchise Tax ID *(11 digits)*	18. DUNS Number *(if applicable)*	19. TX SOS Filing Number *(if applicable)*
587700131	32036825498		0800967524

20. Number of Employees: ☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

21. Independently Owned and Operated? ☒ Yes ☐ No

SECTION III: Regulated Entity Information

22. General Regulated Entity Information *(If 'New Regulated Entity' is selected below this form should be accompanied by a permit application)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information ☐ No Change** *(See below)*

**If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.

23. Regulated Entity Name *(name of the site where the regulated action is taking place)*

Stor-Haus Self Storage

24. Street Address of the Regulated Entity: *(No P.O. Boxes)*	1936 FM 2722							
	City	New Braunfels	State	TX	ZIP	78136	ZIP + 4	
25. Mailing Address:	3126 Falling Brook							
	City	San Antonio	State	TX	ZIP	78258	ZIP + 4	

26. E-Mail Address:	richter_paul@hotmail.com	
27. Telephone Number	28. Extension or Code	29. Fax Number *(if applicable)*
(830) 227-5299		(210) 479-9879

30. Primary SIC Code (4 digits)	31. Secondary SIC Code (4 digits)	32. Primary NAICS Code (5 or 6 digits)	33. Secondary NAICS Code (5 or 6 digits)
4225		531130	

34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)*

Storage Facility / Land Purchases

Questions 34 – 37 address geographic location. Please refer to the instructions for applicability.

35. Description to Physical Location:	This site is located approximately 315 feet northwest of the intersection of FM 2722 and Lone Oak Road.

36. Nearest City	County	State	Nearest ZIP Code
New Braunfels	Comal	TX	78132

37. Latitude (N) In Decimal:	29.7625		38. Longitude (W) In Decimal:	98.2106	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	45	45	98	12	38

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form or the updates may not be made. If your Program is not listed, check other and write it in. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Industrial Hazardous Waste	☐ Municipal Solid Waste
☐ New Source Review – Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS	☐ Sludge
☐ Stormwater	☐ Title V – Air	☐ Tires	☐ Used Oil	☐ Utilities
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	David Dye, P.E.	41. Title:	Project Engineer

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(210) 685-9193		(210) 598-9758	david3@dyedvpt.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 9 and/or as required for the updates to the ID numbers identified in field 39.

(See the Core Data Form instructions for more information on who should sign this form.)

Company:	Richter-Land, LLC	Job Title:	Managing Member
Name *(In Print)*:	Dr. Paul Richter	Phone:	(830) 227-5299
Signature:	Paul Richter	Date:	3/8/13

Temporary Stormwater Section

Temporary Stormwater Section
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

REGULATED ENTITY NAME: Stor-Haus Self Storage

POTENTIAL SOURCES OF CONTAMINATION

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ___ Aboveground storage tanks with a cumulative storage capacity of less that 250 gallons will be stored on the site for less than one (1) year.
   ___ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.
   ___ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An **Aboveground Storage Tank Facility Plan** application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
   _X_ Fuels and hazardous substances will not be stored on-site.

2. _X_ **ATTACHMENT A - Spill Response Actions**. A description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is provided at the end of this form.

3. _X_ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. _X_ **ATTACHMENT B - Potential Sources of Contamination.** Describe in an attachment at the end of this form any other activities or processes which may be a potential source of contamination.
   ___ There are no other potential sources of contamination.

SEQUENCE OF CONSTRUCTION

5. _X_ **ATTACHMENT C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is provided at the end of this form. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.

6. _X_ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Blieders Creek

TEMPORARY BEST MANAGEMENT PRACTICES (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. **All structural BMPs must be shown**

on the site plan.

7. _X_ **ATTACHMENT D - Temporary Best Management Practices and Measures.** A description of the TBMPs and measures that will be used during and after construction are provided at the end of this form. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

_X_ TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information has been provided in the attachment at the end of this form

a. A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

b. A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

c. A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

d. A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

___ **ATTACHMENT E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is provided at the end of this form. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

_X_ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. _X_ **ATTACHMENT F - Structural Practices.** Describe the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site. Placement of structural practices in floodplains has been avoided.

10. _X_ **ATTACHMENT G - Drainage Area Map**. A drainage area map is provided at the end of this form to support the following requirements.

___ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

___ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

___ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

X There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

11. N/A **ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure has been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are provided as at the end of this form.

12. X **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, repairs, and, if necessary, retrofit is provided at the end of this form. A description of documentation procedures and recordkeeping practices is included in the plan.

13. X All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. X If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. N/A Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. X Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

SOIL STABILIZATION PRACTICES

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. X **ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices.** A schedule of the interim and permanent soil stabilization practices for the site is attached at the end of this form.

18. X Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. X Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

ADMINISTRATIVE INFORMATION

20. X All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. X If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. X Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **TEMPORARY STORMWATER SECTION** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

David W. Dye III, P.E.
Print Name of Customer/Agent

Signature of Customer/Agent

4/2/13
Date

ATTACHMENT A TO TCEQ-0602

SPILL RESPONSE ACTIONS

The objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

1. Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.
2. Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
3. Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
4. Establish a continuing education program to indoctrinate new employees.
5. Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

1. To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
2. Store hazardous materials and wastes in covered containers and protect from vandalism.
3. Place a stockpile of spill cleanup materials where it will be readily accessible.
4. Train employees in spill prevention and cleanup.
5. Designate responsible individuals to oversee and enforce control measures.
6. Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.
7. Do not bury or wash spills with water.
8. Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
9. Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.

10. Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

11. Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

12. Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

1. Clean up leaks and spills immediately.

2. Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.

3. Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly.

Minor Spills

1. Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.

2. Use absorbent materials on small spills rather than hosing down or burying the spill.

3. Absorbent materials should be promptly removed and disposed of properly. Follow the practice below for a minor spill:

4. Contain the spread of the spill.

5. Recover spilled materials.

6. Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

Spills should be cleaned up immediately:

1. Contain spread of the spill.

2. Notify the project foreman immediately.

3. If the spill occurs on paved or impermeable-surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.

4. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.

5. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

For significant or hazardous spills that are in reportable quantities:

1. Notify the TCEQ by telephone as soon as possible and within 24 hours at 512339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

2. For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.

3. Notification should first be made by telephone and followed up with a written report.The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.

4. Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

ATTACHMENT B TO TCEQ-0602

POTENTIAL SOURCE OF CONTAMINATION

A. Oil, grease, fuel and hydraulic fluid contamination from construction equipment and vehicle leakage.
Remedy: Lubrication and fueling will be performed in a designated area in the staging area. This area will be monitored daily for contamination.

B. Miscellaneous trash and litter from construction workers.
Remedy: Designated receptacles will be strategically located and workers will be directed to deposit trash there.

C. Construction debris.
Remedy: Debris will be collected weekly and deposited in bins for offsite disposal. Situations requiring immediate attention will be handled on a case by case basis.

D. Storm water contamination from excess application of fertilizers, herbicides, and pesticides.
Remedy: Fertilizers, herbicides, and pesticides will only be applied when necessary and in accordance with the manufacturers recommendations.

ATTACHMENT C TO TCEQ-0602

SEQUENCE OF MAJOR ACTIVITIES

A. Install pollution prevention measures.

B. Construction of sedimentation/filtration basin and concrete by-pass. (0.10 acres disturbed)

ATTACHMENT D TO TCEQ-0602

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

A construction exit will be provided at the gate location to the BMP. The stabilized construction exit will prevent sediments collected on the tires of the construction vehicles from being tracked onto the existing asphalt driveways.

Silt fencing will be installed on the down-gradient sides of the basins, along the specifically along the northeast and northwest boundaries as necessary. The silt fencing shall remain in place until the project construction has been completed. After the site is regraded and curbing installed, the stormwater runoff would be directed to the sedimentation basin. The basins will be subject to frequent cleaning until the construction is completed. The silt fencing will prevent on-site sedimentation from the grading and construction activities to wash down-gradient onto the adjacent property's surface drainage system. The silt fencing will also minimize down-gradient erosion of the disturbed soil area.

The proposed activities and the use of the silt fencing and the stabilized construction exits will not alter the stormwater runoff flows to any naturally-occurring sensitive features identified in the geologic assessment. If any sensitive features are discovered in the process of excavating for the sand filtration basin or while regrading the site, those features will be addressed on an individual basis.

ATTACHMENT E TO TCEQ-0602

REQUEST TO TEMPORARILY SEAL A FEATURE

N/A

ATTACHMENT F TO TCEQ-0602

STRUCTURAL PRACTICES

The development of the site would eliminate flows across exposed soils, other than the rainfall directly on the area of the exposed soil. The relatively small area of disturbance would not be expected to result in significant amounts of pollutant discharge that could not be adequately handled by the silt fencing.

ATTACHMENT G TO TCEQ-0602

DRAINAGE AREA MAP

SEE THE FULL SET OF CONSTRUCTION PLANS

ATTACHMENT H TO TCEQ-0602

TEMPORARY SEDIMENT POND(S) PLANS AND CALCULATIONS

N/A

ATTACHMENT I TO TCEQ-0602

INSPECTION AND MAINTENANCE FOR BMPs

SILT FENCE

- Inspect silt fences daily during periods of prolonged rainfall, immediately after each rainfall event, and weekly during periods of no rainfall. Make any required repairs immediately.
- Sediment must be removed when it reaches a depth of 6". Take care to avoid damaging the fence during cleanout.
- Silt fences should not be removed until the upslope area has been permanently stabilized. Contaminated sediment deposits must be removed and disposed of off-site in accordance with applicable regulations. Uncontaminated sediment deposits remaining in place after the silt fence has been removed should be dressed to conform with the final grading and stabilized.
- Clean or remove and replace stone filter or filter fabric if they become clogged.
- Maintain records of inspection, routine maintenance and repair for the duration of the project, or longer if required by other regulations.

ATTACHMENT J TO TCEQ-0602

SCHEDULE OF INTERIM AND PERMANENT SOIL STABILIZATION PRACTICES

Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

1. After completion of the basin construction, all exposed soil shall either be sodded and grass sod placed, or the existing stone in the basins may be used to cover said exposed soil. Existing areas that are disturbed will receive the same treatment to replace vegetation lost during construction.

2. Daily records will be kept, detailing among other things, beginning of major grading operations, cessation of construction, either temporary or permanent, and dates when stabilization measures are implemented.

3. It is not anticipated that interim soil stabilization practices will be required. In the event that interim soil stabilization is needed the site or portion of the site requiring stabilization shall implement one or more of the following methods.
    a) Temporary Vegetation: Select vegetation based on weather conditions and time of year.
    b) Interceptor Swale: Use as a perimeter control devise or to lessen the slope of a given area.
    c) Diversion Dike: Use to route runoff away from a disturbed area.

Permanent Stormwater Section

Permanent Stormwater Section

for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b)(4)(C), (D)(li), (E), and (5), Effective June 1, 1999

REGULATED ENTITY NAME: Stor-Haus Self Storage

Permanent best management practices (BMPs) and measures that will be used during and after construction is completed.

1. X Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

2. X These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

   X The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

   ___ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is provided below:

   _____

   _____

3. X Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

4. N/A Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ___ This site will be used for low density single-family residential development and has 20% or less impervious cover.

   ___ This site will be used for low density single-family residential development but has more than 20% impervious cover.

   X This site will not be used for low density single-family residential development.

5. N/A The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

__ **ATTACHMENT A - 20% or Less Impervious Cover Waiver.** This site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is found at the end of this form.

_X_ This site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.

__ This site will not be used for multi-family residential developments, schools, or small business sites.

6. **ATTACHMENT B - BMPs for Upgradient Stormwater.**

__ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is identified as **ATTACHMENT B** at the end of this form.

_X_ If no surface water, groundwater or stormwater originates upgradient from the site and flows across the site, an explanation is provided as **ATTACHMENT B** at the end of this form.

__ If permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, an explanation is provided as **ATTACHMENT B** at the end of this form.

7. **ATTACHMENT C - BMPs for On-site Stormwater.**

_X_ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is identified as **ATTACHMENT C** at the end of this form.

__ If permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, an explanation is provided as **ATTACHMENT C** at the end of this form.

8. _X_ **ATTACHMENT D - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is provided at the end of this form. Each feature identified in the Geologic Assessment as "sensitive" has been addressed.

9. _X_ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

_X_ The permanent sealing of or diversion of flow from a naturally-occurring "sensitive" or "possibly sensitive" feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed for any naturally-occurring "sensitive" or "possibly sensitive" features on this site.

__ **ATTACHMENT E - Request to Seal Features.** A request to seal a naturally-occurring "sensitive" or "possibly sensitive" feature, that includes a justification as to why no reasonable and practicable alternative exists, is found at the end of this form. A request and justification has been provided for each feature.

10. _X_ **ATTACHMENT F - Construction Plans.** Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information have been signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed permanent BMPs and measures are provided at the end of this form. Design Calculations, TCEQ

Construction Notes, all man-made or naturally occurring geologic features, all proposed structural measures, and appropriate details must be shown on the construction plans.

11. _X_ **ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan.** A plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is provided at the end of this form. The plan has been prepared and certified by the engineer designing the permanent BMPs and measures. The plan has been signed by the owner or responsible party. The plan includes procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofits as well as a discussion of record keeping procedures.

12. _X_ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

___ Pilot-scale field testing (including water quality monitoring) may be required for BMPs that are not contained in technical guidance recognized by or prepared by the executive director.

N/A **ATTACHMENT H - Pilot-Scale Field Testing Plan.** A plan for pilot-scale field testing is provided at the end of this form.

13. _X_ **ATTACHMENT I -Measures for Minimizing Surface Stream Contamination.** A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is provided at the end of this form. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity which increase erosion that results in water quality degradation.

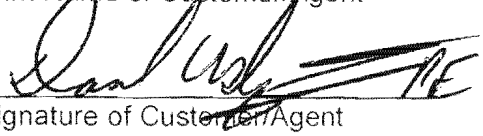
Responsibility for maintenance of permanent BMPs and measures after construction is complete.

14. _X_ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

15. _X_ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **PERMANENT STORMWATER SECTION** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

David W. Dye III, P.E.
Print Name of Customer/Agent



Signature of Customer/Agent

4/2/13
Date

ATTACHMENT A TO TCEQ-0600

20% OR LESS IMPERVIOUS COVER WAIVER

N/A

ATTACHMENT B TO TCEQ-0600

BMPs FOR UPGRADIENT STORMWATER

This site generally slopes from southwest to northeast. The southern boundary of the site is adjacent to FM 2722 which has an existing bar ditch graded from west to east which captures and conveys upgradient runoff. Additionally, the property to the west has an existing gravel roadway with bar ditches which capture and conveys runoff which would otherwise enter the site. Therefore, BMPs for upgradient stormwater will not be necessary for the site.

ATTACHMENT C TO TCEQ-0600

BMPs FOR ON-SITE STORMWATER

The BMP proposed for the on-site stormwater runoff of the storage facility is a sand filtration system which will be placed on the down-gradient end of the property. The anticipated pollutants would be oil and grease from the vehicles of the patrons parked on the property and the suspended solids and sediments brought on site by the vehicles. The basin has been sized to capture the first 1.70 inches of runoff, based on a post development runoff coefficient of 0.65, providing a minimum of 80% removal of the pollutants. The sand filtration system is considered a single chamber sand filter basin. Two basins were needed in order to achieve the required water quality volume and sand filter area around an existing water well. Stormwater runoff will be captured by both basins, and both basins will fill and empty at an equal rate due to the conjoining 36-inch pipe. This pipe exists and was originally sized by the former engineer to allow the 25 year event to pass freely between the basins without creating a hydraulic imbalance. Thus the two basins will receive stormwater and discharge treated water as if it where one basin.

ATTACHMENT D TO TCEQ-0600

BMPs FOR SURFACE STREAMS

The proposed BMP will remove at least 80% of potential pollutants from entering the surface streams located north of the site. Velocity Dissipaters exist at the discharge of the BMP and will act as an erosion and pollution control device once the project's construction is completed.

ATTACHMENT E TO TCEQ-0600

REQUEST TO SEAL FEATURES

N/A

ATTACHMENT F TO TCEQ-0600

SEE CONSTRUCTION PLANS

ATTACHMENT G TO TCEQ-0600

INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

PERMANENT POLLUTION ABATEMENT MEASURES
MAINTENANCE SCHEDULE AND MAINTENANCE PROCEDURES

Richter-Land, LLC, owner of the Stor-Haus Self Storage (Project) hereby verifies that Richter-Land, LLC agrees to accept responsibility for maintenance of the Permanent Structural Best Management Practice (BMP) associated with this Project, and already has a letter on file with the TCEQ further verifying this fact. The permanent BMP, located in the northeast corner of Project is to be maintained in accordance with the approved Water Pollution Abatement Plan associated with this Project.

This document has been prepared to provide a description and schedule for the performance of maintenance on permanent pollution abatement measures. Maintenance measures to be performed will be dependent on what permanent pollution abatement measures are incorporated into the project. The project specific water pollution abatement plan should be reviewed to determine what permanent pollution abatement measures are incorporated in to a project.

It should also be noted that the timing and procedures presented herein are general guidelines, adjustment to the timing and procedures may have to be made depending on project specific characteristics as well as weather related conditions.

Where a project is occupied by the owner, the owner may provide for maintenance with his own skilled forces or contract for recommended maintenance of Permanent Best Management Practices. Where a project is occupied or leased by a tenant, the owner shall require tenants to contract for such maintenance services either through a lease agreement, property owners association covenants, or other binding document.

Richter-Land, LLC understands that it is responsible for maintenance of the Permanent Pollution Abatement Measures included in this project until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property or ownership is transferred.

	OWNER	5/14/13
Paul Richter Richter-Land, LLC	Title	Date

INSPECTION AND MAINTENANCE SCHEDULE FOR PERMANENT POLLUTION ABATEMENT MEASURES

Recommended Frequency	Task to be Performed													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
After Rainfall	√							√	√	√	√		√	
Biannually*	√	√	√	√	√	√	√	√	√		√	√	√	√

**At least one biannual inspection must occur during or immediately after a rainfall event.*
√Indicates maintenance procedure that applies to this specific site.

See description of maintenance task to be performed on the following pages. Frequency of maintenance tasks may vary depending on amount of rainfall and other weather related conditions.

A written record should be kept of inspection results and maintenance performed.

Task No. & Description	*Included in this project*	
1. Check Depth of Vegetation	Yes	~~No~~
2. Check Depth of Silt Deposit in Basin	Yes	~~No~~
3. Removal of Debris and Trash	Yes	~~No~~
4. Cut-off Valve	Yes	~~No~~
5. Inlet Splash Pad	Yes	~~No~~
6. Underdrain System	Yes	~~No~~
7. Structural Integrity	Yes	~~No~~
8. Discharge Pipe	Yes	~~No~~
9. Drawdown Time	Yes	~~No~~
10. Vegetated Filter Strips	~~Yes~~	No
11. For Pump Stations	Yes	~~No~~
12. For Pump Stations	Yes	~~No~~
13. For Pump Stations	Yes	~~No~~
14. Visually Inspect Security Fencing for Damage or Breach	Yes	~~No~~

MAINTENANCE PROCEDURES FOR PERMANENT POLLUTION ABATEMENT MEASURES

Note: Additional guidance can be obtained from TCEQ's Technical Guidance Manual (TGM) RG-348 (2005) Section 3.5.

1. Check Depth of Vegetation. Vegetation in the basin shall not exceed 18-inches in depth. When vegetation needs to be cut, it shall be cut to an approximately 4-inch height. *A written record should be kept of inspection results and maintenance performed.*

2. Check Depth of Silt Deposit in Basin. Top of cleanouts shall be set 4-inches above sand layer. When silt has accumulated to top of cleanouts, the silt shall be removed the top 2 inches of the sand media shall also be removed and replaced with clean silica based sand. Written record should be kept of inspection results and maintenance performed.

3. Removal of Debris and Trash. The basin and inlet structure shall be checked for the accumulation of debris and trash such as brush, limbs, leaves, paper cups, aluminum cans, plastic bottles etc. Accumulated trash and debris shall be raked or collected from the basin and inlet structure and disposed of properly. *Written record should be kept of inspection results and maintenance performed.*

4. Cut-off Valve. The cut-off valve shall be turned to confirm full opening and full closure. Prior to operating the valve, the valve setting shall be checked to determine the position to which the valve is to be returned (which should limit drawdown time of the basin between 24-hours and 48-hours). Count should be kept of number of turns to open and close the valve so that the valve can be reset to the starting position. Defects in the operation of the cut-off valve shall be corrected within 7 working days. *A written record should be kept of inspection results and maintenance performed.*

5. Inlet Splash Pad. The filter area around the inlet splash pad shall be checked for erosion and for the condition of the rock rubble. Erosion or disturbance of the rock rubble should be corrected by removing the rock rubble, restoring missing sand media to appropriate depth and replacement of the rock rubble. If the condition persists in subsequent inspections, the size of the rock rubble should be increased. Rubble should be placed to a density that minimizes the amount of exposed sand between the rock rubble. Deficiencies should be corrected within seven working days. A w*ritten record should be kept of inspection results and maintenance performed.*

6. Underdrain System. The underdrain system shall be visually inspected for the accumulation of silt in the pipe system. The pipe clean-outs shall have the caps removed and visually inspected for accumulation of silt deposits. If silt deposits appear to have accumulated so as to significantly reduce the drain capacity of the pipes then maintenance shall be performed. When silt deposits have accumulated to the stage described above, the clean-outs and drainpipes can be flushed with a high-pressure water flushing process. Clean-out caps must be replaced onto the clean-outs after maintenance so as to avoid the possibility of short circuiting the filtering process. Sediment accumulation at outlet pipe or in wet well due to flushing shall be removed and disposed of properly. *A written record should be kept of inspection results and the maintenance performed.*

7. Structural Integrity. In addition to Items 1 through 6 the following are measures which should be reviewed during a check of structural integrity:
   - Observe the height of the confining berm for visible signs of erosion or potential breach. Signs of erosion should be corrected within 2 weeks or immediately in case of emergency conditions. Corrective measures include but are not limited to addition of topsoil or appropriate soil material so as to restore the original berm height of the sand filter basin. Restored areas shall be protected through placement of solid block sod.

- Bypass of filter process. This condition can manifest itself in several ways. One way is by visually inspecting the clean-outs for accumulation of silt as described in Item 6. Significant accumulations of silt could be a sign of a torn filter fabric. Observations should be made over several inspection cycles to determine whether the condition persists. A second non-intrusive way of making observations for structural condition would be to visually look for collapsed or depressed areas along the edge of the filter media interface with basin side slope. If condition exists, corrective action should be performed within 15 working days. Removal of sand and replacement of filter fabric and/or pipe and gravel may be necessary. *A written record should be kept of inspection results and corrective measures taken.*

8. Discharge Pipe. The basin discharge pipe shall be checked for accumulation of silt, debris or other obstructions which could block flow. Soil accumulations, vegetative overgrowth and other blockages should be cleared from the pipe discharge point. Erosion at the point of discharge shall be monitored. If erosion occurs, the addition of rock rubble to disperse the flow should be accomplished. *A written record should be kept of inspection results and corrective measures taken*

9. Drawdown Time. This characteristic can be a sign of the need for maintenance. The minimum drawdown time is 24 hours. If drawdown time is less than 24 hours, the gate valve shall be checked and partially closed to limit the drawdown time. Extensive drawdown time greater than 48 hours may indicated blockage of the sand media, the underdrain system and/or the discharge pipe. Corrective actions should be performed and completed within 15 working days. *A written record of the inspection findings and corrective actions performed should be made.*

10. Vegetated Filter Strips. Vegetation height for native grasses shall be limited to no more than 18-inches. When vegetation exceeds that height, the filter strip shall be cut to a height of

approximately 4 inches. Turf grass shall be limited to a height of 4-inches with regular maintenance that utilizes a mulching mower. Trash and debris shall be removed from filter strip prior to cutting. Check filter strip for signs of concentrated flow and erosion. Areas of filter strip showing signs of erosion shall be repaired by scarifying the eroded area, reshaping, regrading and placement of block sod in a checkerboard pattern over the affected area. *A written record of the inspection findings and corrective actions performed should be made*

11. For Pump Stations. Check wet well discharge pipe to confirm flow through the pump system. If flow is not present, allow sufficient time for pump to cycle on and off. If flow does not occur, the wet well should be checked for the level of water. The wet well should be opened and the on/off float switches should be moved up and down to activate the pump. If the pump does not start, a repair technician shall be called in to repair the malfunction within 5 working days. *A written record of the inspection findings and corrective actions performed should be made*

12. For Pump Stations. Check the wet well for accumulation for trash, debris and silt. Trash and debris shall be removed and disposed of properly. Silt depth can be checked by probing the bottom of the wet well with a stick or PVC pipe. Silt accumulations should be removed when silt collects to a depth of three (3) inches over the entire wet well bottom. Silt can be removed by vacuum pump method. If silt buildup continues, underdrain system shall be inspected. *Written record should be kept of inspection results and maintenance performed.*

13. For Pump Stations. Visually check aboveground pump wiring and connections for damage. Damaged or loose connections should be repaired within 5 working days. *A written record should be kept of inspection results and the maintenance performed.*

14. Visually Inspect Security Fencing for Damage or Breach. Check maintenance access gates for proper operation. Damage to fencing or gates shall be repaired within 5 working days. *A written record should be kept of inspection results and maintenance performed.*

ATTACHMENT H TO TCEQ-0600

PILOT-SCALE FIELD TESTING PLAN

N/A

ATTACHMENT I TO TCEQ-0600

MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

The proposed filtration system will minimize surface stream contamination by removing at least 80% of the potential pollutants. The existing runoff equals the proposed runoff, and is 14.4 cfs for a 25-year frequency design storm and 21.4 cfs for a 100-year frequency design storm. The BMP outfall will be equipped with energy dissipaters which will reduce the exit velocity and reduce or eliminate erosion problems due to the increase in flow from the site.

Water Pollution Abatement Plan Application Form

Water Pollution Abatement Plan Application
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b), Effective June 1, 1999

REGULATED ENTITY NAME: Stor-Haus Self Storage

REGULATED ENTITY INFORMATION

1. The type of project is:
   - ___ Residential: # of Lots: _____
   - ___ Residential: # of Living Unit Equivalents: _____
   - _X_ Commercial
   - ___ Industrial
   - ___ Other: _____

2. Total site acreage (size of property): 3.38 Acres

3. Projected population: 0-20

4. The amount and type of impervious cover expected after construction are shown below:

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	33,633	÷ 43,560 =	0.77
Parking	66,953	÷ 43,560 =	1.54
Other paved surfaces	19940	÷ 43,560 =	0.46
Total Impervious Cover	120,526	÷ 43,560 =	2.77
Total Impervious Cover ÷ Total Acreage x 100 =			82%

5. _X_ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided at the end of this form.

6. _X_ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

FOR ROAD PROJECTS ONLY

Complete questions 7-12 if this application is exclusively for a road project.

7. Type of project:
   - ___ TXDOT road project.
   - ___ County road or roads built to county specifications.
   - ___ City thoroughfare or roads to be dedicated to a municipality.
   - ___ Street or road providing access to private driveways.

8. Type of pavement or road surface to be used:
   - ___ Concrete
   - ___ Asphaltic concrete pavement
   - ___ Other: _____

9. Length of Right of Way (R.O.W.): ____ feet.
Width of R.O.W.: ____ feet.
L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = ____ acres.

10. Length of pavement area: ____ feet.
Width of pavement area: ____ feet.
L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = ____ acres.
Pavement area ____ acres ÷ R.O.W. area ____ acres x 100 = ___% impervious cover.

11. __ A rest stop will be included in this project.
__ A rest stop will **not** be included in this project.

12. __ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

STORMWATER TO BE GENERATED BY THE PROPOSED PROJECT

13. _X_ **ATTACHMENT B - Volume and Character of Stormwater.** A description of the volume and character (quality) of the stormwater runoff which is expected to occur from the proposed project is provided at the end of this form. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT *(THIS MODIFICATION DOES NOT PROPOSE ANY ADDITIONAL WASTEWATER)*

14. The character and volume of wastewater is shown below:

__% Domestic _____ gallons/day
__% Industrial _____ gallons/day
__% Commingled _____ gallons/day

TOTAL_____ gallons/day

15. Wastewater will be disposed of by:

__ **On-Site** Sewage Facility (OSSF/Septic Tank):

__ **ATTACHMENT C - Suitability Letter from Authorized Agent.** An on-site sewage facility will be used to treat and dispose of the wastewater. The appropriate licensing authority's (authorized agent) written approval is provided at the end of this form. It states that the land is suitable for the use of an on-site sewage facility or identifies areas that are not suitable.

__ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

__ Sewage Collection System (Sewer Lines):

__ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.

__ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

__ The SCS was previously submitted on _____.

__ The SCS was submitted with this application.

__ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.

The sewage collection system will convey the wastewater to the _____ (name) Treatment Plant. The treatment facility is:

__ existing.
__ proposed.

16. __ All private service laterals will be inspected as required in 30 TAC §213.5.

SITE PLAN REQUIREMENTS

Items 17 through 27 must be included on the Site Plan.

17. The Site Plan must have a minimum scale of 1" = 400'.
Site Plan Scale: 1" = 20'.

18. 100-year floodplain boundaries
__ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
X No part of the project site is located within the 100-year floodplain.

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s):
FEMA FIRM 48091C0265F DATED 9/2/2009

19. X The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.
__ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):
X There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
__ The wells are not in use and have been properly abandoned.
__ The wells are not in use and will be properly abandoned.
1 The wells are in use and comply with 16 TAC §76. *Per existing WPAP.*
__ There are no wells or test holes of any kind known to exist on the project site.

21. Geologic or manmade features which are on the site:
X All **sensitive** geologic or manmade features identified in the Geologic Assessment are shown and labeled. *SEE EXISTING WPAP DATA/GEOLOGIC REPORT. NO CHANGE.*
__ No **sensitive** geologic or manmade features were identified in the Geologic Assessment.
__ **ATTACHMENT D - Exception to the Required Geologic Assessment**. An exception to the Geologic Assessment requirement is requested and explained at the end of this form.

22. X The drainage patterns and approximate slopes anticipated after major grading activities.

23. X Areas of soil disturbance and areas which will not be disturbed.

24. _X_ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

25. _X_ Locations where soil stabilization practices are expected to occur.

26. _N/A_ Surface waters (including wetlands).

27. __ Locations where stormwater discharges to surface water or sensitive features.
_X_ There will be no discharges to surface water or sensitive features.

ADMINISTRATIVE INFORMATION

28. _X_ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

29. _X_ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **WATER POLLUTION ABATEMENT PLAN APPLICATION FORM** is hereby submitted for TCEQ review and Executive Director approval. The form was prepared by:

David W. Dye III, P.E.
Print Name of Customer/Agent

Signature of Customer/Agent

4/2/13
Date

ATTACHMENT A TO TCEQ-0584

FACTORS AFFECTING WATER QUALITY

DURING CONSTRUCTION

- Vehicle maintenance operations
- Excavation and grading
- Paving
- Human generated debris
- Construction trash and debris
- Application of excessive fertilizers, herbicides, and pesticides

POST CONSTRUCTION

- Debris and contaminants tracked on site by vehicles
- Human generated debris
- Application of excessive fertilizers, herbicides, and pesticides
- Unusually heavy rainfall events

ATTACHMENT B TO TCEQ-0584

VOLUME AND CHARACTER OF STORMWATER

NOTE: EXISTING = PROPOSED

CHARACTER OF STORMWATER

Description	Area (sf)	Area (Ac)	Area (%)
Bldgs/Rooftops	33,633	0.77	23%
Parking	66,953	1.54	45%
Other paved surfaces (gravel)	19,940	0.46	14%
Total Impervious Cover	120,526	2.77	82%
% Total Impervious Cover	82%		
Total Pervious Cover	26,707	0.61	18%
Total Site	147,233	3.38	100%

SEE NEXT SHEET FOR DRAINAGE CALCULATIONS

VOLUME OF STORMWATER

Date : April 2, 2013

STOR HAUS MINI STORAGE - DRAINAGE CALCULATIONS
METHODOLOGY: CITY OF NEW BRAUNFELS RATIONAL METHOD PER DRAINAGE AND EROSION CONTROL MANUAL

ESTIMATED TIME OF CONCENTRATION: EXISTING CONDITIONS = PROPOSED CONDITIONS

		Initial: Ti	Sheet Flow: Tsh (Eqn. 5-4a, Pg. 21)					Shallow Conc. Flow Tsc (Eqn. 5-4b, Pg. 21)				Channel Flow Tch (Eqn. 5-4c, Pg. 21)				Tc Eqn. 5-3, Pg. 21
DRAINAGE AREA #	DESIGN POINT OF CONCENTRATION	Ti (Min.)	n (Table 5-4)	n (Descr)	LENGTH (LF)	SLOPE (ft/ft)	Tsh (Min.)	LENGTH (LF)	n (Table 5-4)	SLOPE (ft/ft)	Tsh (Min.)	LENGTH (LF)	V fps	V (Calc)	Tsh (Min.)	Tc (Min.)
Project Site	Basin Inlet	10	0.10	0-50% vegetated	136	0.0294	11.6	0	0.00	0.0000	0.0	n/a	n/a	n/a	n/a	22
		22	0.02	asphalt	164	0.0243	3.0	248	0.02	0.0363	0.4	n/a	n/a	n/a	n/a	25

RUNOFF CALCULATIONS FOR EXISTING = PROPOSED CONDITIONS (ONSITE ONLY - OFFSITE IS N/A)

								25 YEAR			100 YEAR		
DRAINAGE AREA #	DESIGN POINT OF CONCENTRATION	AREA (Ac.)	SUB-AREA (Ac.)	C (NB Table 5-2)	C (Descr)	CA (Composite)	Tc (Min.)	K (n/a)	I25 (in/hr)	Q25 (n/a)	K (n/a)	I100 (in/hr)	Q100 (n/a)
Existing = Proposed Conditions													
Project Site (less small area that drains to Hwy)	Basin Inlet	3.22		0.71	Post = Pre	2.28	25	1.10	5.75	14.4	1.25	7.51	21.4
			2.31	0.82	Asphalt/Roof								
			0.50	0.35	Grass, Avg								
			0.41	0.50	Gravel								
			3.22										

ATTACHMENT C TO TCEQ-0584

SUITABILITY LETTER FROM AUTHORIZED AGENT

N/A

ATTACHMENT D TO TCEQ-0584

EXCEPTION TO THE REQUIRED GEOLOGIC ASSESSMENT

N/A

Modification of a Previously Approved Plan Form (WPAP)

Modification of a Previously Approved Plan

for Regulated Activities on the
Edwards Aquifer Recharge Zone and Transition Zone
and Relating to 30 TAC 213.4(j), Effective June 1, 1999

1. Current Regulated Entity Name: Stor-Haus Self Storage
   Original Regulated Entity Name: same
   Assigned Regulated Entity Numbers (RN): 1) 105645634, 2) _____, 3) _____

   X The applicant has not changed and the Customer Number (CN) is: CN 603421520
   ___ The applicant has changed. A new Core Data Form has been provided.

2. X **Attachment A: Original Approval Letter and Approved Modification Letters:** A copy of the original approval letter and copies any letters approving modification are found at the end of this form.

3. A modification of a previously approved plan in requested for (check all that apply):

   X physical or operational modification of any water pollution abatement structure(s) including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;
   ___ change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;
   ___ development of land previously identified as undeveloped in the original water pollution abatement plan;
   ___ physical modification of the approved organized sewage collection system;
   ___ physical modification of the approved underground storage tank system;
   ___ physical modification of the approved aboveground storage tank system.

4. Summary of Proposed Modifications (select plan type being modified). If the approved plan has been modified more than once, copy the appropriate table below, as necessary, and complete the information for each additional modification.

WPAP Modification Summary	Approved Project	Proposed Modification
Acres	3.38	3.38
Type of Development	Commercial	Commercial
Number of Residential Lots	0	0
Impervious Cover (acres)	2.56	2.77
Impervious Cover (%)	76%	82%
Permanent BMPs	1	1
Other		

SCS Modification Summary	Approved Project	Proposed Modification
Linear Feet		
Pipe Diameter		
Other		

AST Modification Summary	Approved Project	Proposed Modification
Number of ASTs		
Volume of ASTs		
Other		

UST Modification Summary	Approved Project	Proposed Modification
Number of USTs		
Volume of USTs		
Other		

5. X **Attachment B: Narrative of Proposed Modification**. A narrative description of the nature of the proposed modification is provided at the end of this form. It discusses what was approved, including previous modifications, and how this proposed modification will change the approved plan.

6. X **Attachment C: Current site plan of the approved project.** A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is provided at the end of this form. A site plan detailing the changes proposed in the submitted modification is required elsewhere.

   ___ The approved construction has not commenced. The original approval letter, and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.

   ___ The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.

   X The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.

   ___ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.

   ___ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.

7. ___ The acreage of the approved plan has increased. A Geologic Assessment has been provided for the new acreage.

   X Acreage has not been added to **or** removed from the approved plan.

8. ___ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This request for a **MODIFICATION TO A PREVIOUSLY APPROVED PLAN** is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

David W. Dye III, P.E.
Print Name of Customer/Agent

Signature of Customer/Agent

3/29/13
Date

ATTACHMENT A TO TCEQ-0590

ORIGINAL APPROVAL LETTER

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 7, 2009

Dr. Paul Richter
Richter-Land, LLC
3126 Falling Brook
San Antonio, Texas 78258

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Stor-Haus Self Storage (aka Tract 1, Encino Hills); Located on the east side of FM 2722, approximately 315 feet north of Lone Oak Road; City of New Braunfels Extra-territorial jurisdiction, Texas
TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program ID No. 2845.00; Investigation No. 707389; Regulated Entity No. RN105645634

Dear Dr. Richter:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application for the above-referenced project submitted to the San Antonio Regional Office by Ford Engineering, Inc. on behalf of Richter-Land, LLC on October 31, 2008. Final review of the WPAP was completed after additional material was received on December 3, 2008, December 9, 2008, December 29, 2008, and January 5, 2009. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

A TCEQ investigation (Investigation 722911) was conducted on October 22, 2008 at the subject site that alleged unauthorized construction of regulated activities. The WPAP application for this project was submitted to the TCEQ on October 31, 2008.

PROJECT DESCRIPTION

The proposed commercial project will have an area of approximately 3.38 acres. It will include seven one-story buildings to be used as a self-storage facility with associated parking, utilities, and landscaping. The impervious cover will be 2.57 acres (76 percent). According to a letter dated, October 27, 2008, signed by Robert Boyd, P.E., with Comal County, the site in the development is acceptable for the use of on-site sewage facilities.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent pollution of stormwater runoff originating on-site or up-gradient of the site and potentially flowing across and off the site after construction, one partial sedimentation/filtration basin will be constructed. The basin is a variation of the 2005 edition of the TCEQ's "Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices," designed to treat 2,280 pounds of TSS. It is sized to capture the first 2.80 inches of stormwater run-off from 2.27 acres of drainage area (2.57 acres of impervious cover from the site) with a capture volume of 23,530 cubic feet (21,842 cubic feet required). The filtration system will consist of:

1. 2,240 square feet of sand (2,184 square feet required), which is 18 inches thick,
2. an underdrain piping covered with geotextile membrane, and
3. an impervious liner.

The approved measures have been presented to meet the required 80 percent removal of the increased load in total suspended solids caused by the project.

GEOLOGY

According to the geologic assessment included with the application, the site is located on the undivided Leached and Collapsed members of the Person Formation of the Cretaceous Edwards Group. The formation is up to 200 feet thick or more, and consists of limestone and marlstone, and forms the upper member of the Edwards Group. No geologic features were reported to be located on the site. One water well was reported to be present. The San Antonio Regional Office site assessment conducted on December 3, 2008, revealed that the site had been cleared and building slabs had been constructed, but no active construction was occurring. The water well appeared to be in active use, and the site was generally as described.

SPECIAL CONDITIONS

I. All permanent pollution abatement measures shall be operational prior to commercial operation of the facility.

II. All sediment and/or media removed from the permanent BMP during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

III. The pipe connecting the basins shall be included in the routine inspection of the basins.

IV. Regulated activities identified during a TCEQ site investigation conducted on October 22, 2008 are alleged to constitute construction without the prior approval of the water pollution abatement plan as required by Commission rules (30 TAC Chapter 213). Therefore, the applicant is hereby advised that the after-the-fact approval of the development, as provided by this letter, shall not absolve the applicant of any prior violations of Commission rules related to this project, and shall not necessarily preclude the Commission from pursuing appropriate enforcement actions and administrative penalties associated with such violations, as provided in 30 TAC §213.10 of Commission rules.

V. Storage of regulated quantities of hydrocarbons or hazardous substances requires separate approval.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.

2. The holder of the approved Edwards Aquifer Protection Plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, PST) can be required depending on the specifics of the plan.

3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.

5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.

6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.

7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.

8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.

12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.

13. One well exists on the site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.

14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.

15. Intentional discharges of sediment laden storm water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.

16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.

19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

21. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

22. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

If you have any questions or require additional information, please contact John Mauser of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210/403-4024.

Sincerely,

Mark R. Vickery, P.G.
Executive Director
Texas Commission on Environmental Quality

MRV/JKM/eg

Enclosures: Deed Recordation Affidavit, Form TCEQ-0625
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Lee Perry, P.E., Ford Engineering, Inc.
Mr. Tom Hornseth, P.E., Comal County
Mr. Velma Danielson, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC 212

ATTACHMENT B TO TCEQ-0590

NARRATIVE OF PROPOSED MODIFICATION

This project received WPAP approval on January 7, 2009. A contractor was hired to construct the approved plan. The contractor did not construct the facility in accordance with the approved plans, and actually constructed some facilities that were not included in the said design. Many of the improvements that were constructed were not constructed in their proper locations (horizontal and vertical). Now that the project has been found to be in non-compliance, Dye Development, Inc. was retained by the owner to perform an As-Built Survey of the existing BMP and perform a re-design of the entire BMP facility in order to bring the facility into compliance while attempting to minimize the financial impact to the owner. It is our professional opinion that the approved facility was an economically inefficient design, and we have modified the design accordingly. The original premise of treatment has not changed, just the design. It is our professional opinion that this design, when constructed properly, will bring the project back into TCEQ compliance, and will minimize the economic hardship to the owner.

ATTACHMENT C TO TCEQ-0590

CURRENT EXISTING AS-BUILT SITE PLAN

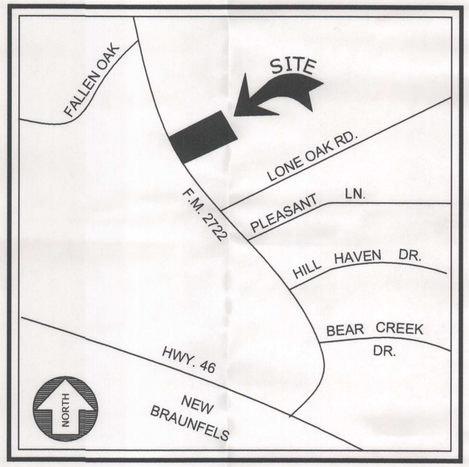
(SEE CONSTRUCTION PLAN SET)

STOR-HAUS SELF STORAGE

MODIFICATION TO AN EXISTING WATER POLLUTION ABATEMENT PLAN (WPAP)

for

RICHTER-LAND, LLC



LOCATION MAP

NOT TO SCALE

INDEX OF CIVIL SHEETS

RECEIVED
JUN 0 3 2013
COUNTY ENGINEER

TCEQ-R13
MAY 22 2013
SAN ANTONIO

REVISIONS

NO.	DATE	COMMENTS

DYE DEVELOPMENT, INC.
TBPE: F-9539 — TBPE: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9738

DAVID W. DYE, P.E.
92837
LICENSED PROFESSIONAL ENGINEER

STOR-HAUS SELF STORAGE

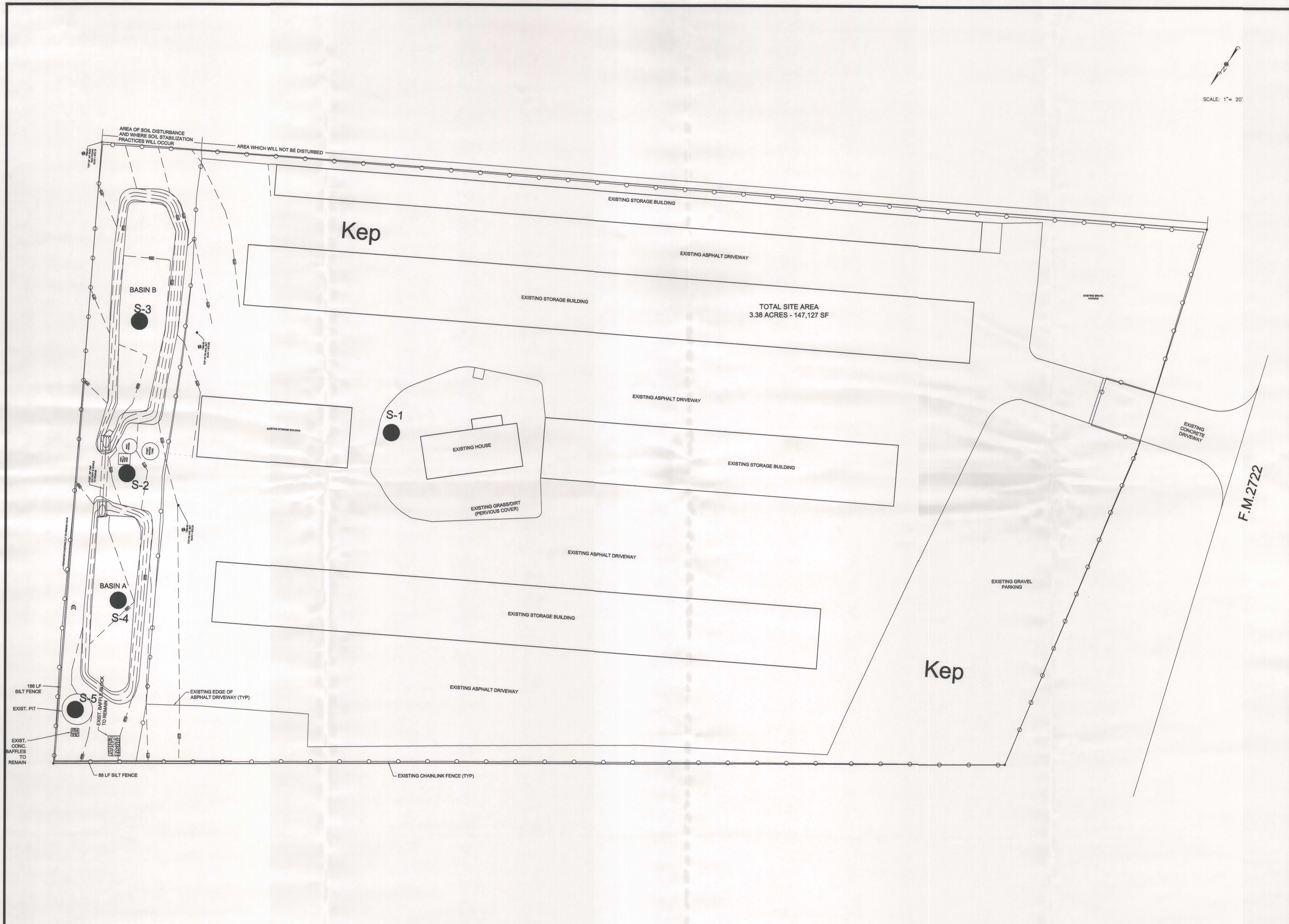
COVER SHEET
WPAP MODIFICATION

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

P:\0 Current Projects\DD Projects\Stor Haus Self Storage\Site Dwg Plans\0 Stor Haus Cover.dwg

DRAWN BY: DWD
CHECKED BY: DWD
DATE: 03/07/13
PROJECT NO: STOR-HAUS

SHEET
0.0


SCALE: 1"= 20'
AREA OF SOIL DISTURBANCE AND WHERE SOIL STABILIZATION PRACTICES WILL OCCUR
AREA WHICH WILL NOT BE DISTURBED
EXISTING STORAGE BUILDING
Kep
EXISTING ASPHALT DRIVEWAY
EXISTING STORAGE BUILDING
TOTAL SITE AREA
3.38 ACRES - 147,127 SF
EXISTING GRAVEL PARKING
BASIN B
S-3
EXISTING ASPHALT DRIVEWAY
S-1
EXISTING HOUSE
EXISTING STORAGE BUILDING
EXISTING CONCRETE DRIVEWAY
S-2
EXISTING GRASS/DIRT (PERVIOUS COVER)
F.M.2722
EXISTING ASPHALT DRIVEWAY
BASIN A
S-4
EXISTING STORAGE BUILDING
EXISTING GRAVEL PARKING
Kep
EXISTING ASPHALT DRIVEWAY
188 LF SILT FENCE
EXIST. PIT
S-5
EXIST. BAFFLE/BLOCK TO REMAIN
EXISTING EDGE OF ASPHALT DRIVEWAY (TYP)
EXIST. CONC. BAFFLES TO REMAIN
88 LF SILT FENCE
EXISTING CHAINLINK FENCE (TYP)

REVISIONS NO.	DATE	COMMENTS

DYE DEVELOPMENT, INC.
TBPE: F-9539 – TBPE: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9758

STOR-HAUS SELF STORAGE

AS-BUILT EXHIBIT

SITE PLAN

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

Z:\0 Current Projects\DD Projects\Stor Haus Self Storage\Site Dvpt Plans\1.0 As Built Exhibit Site Plan.dwg

DRAWN BY: DWD
CHECKED BY: DWD
DATE: 05-22-2013
PROJECT NO: STOR-HAUS

SHEET
C1.0

GENERAL NOTES

1. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
2. CONTRACTOR SHALL NOTIFY THE ENGINEER AND ALL RESPECTIVE GOVERNMENTAL OR UTILITY AGENCIES AFFECTED BY CONSTRUCTION 72 HOURS PRIOR TO STARTING CONSTRUCTION.
3. CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS. "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY VERTICAL AND HORIZONTAL ALIGNMENT.
4. ANY DISCREPANCY OR CONFLICT WITHIN THE DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. DISCREPANCIES OR CONFLICTS NOT BROUGHT TO THE ENGINEERS ATTENTION AND CLARIFIED DURING BIDDING OF THE PROJECT WILL BE DEEMED TO HAVE BEEN BID OR PROPOSED IN THE MORE COSTLY MANNER, AND THE BETTER QUALITY OR GREATER QUANTITY OF THE WORK SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH ENGINEERS INTERPRETATION. ALL ITEMS, WORK, AND IMPROVEMENTS SHOWN OR INDICATED IN THE CONSTRUCTION DOCUMENTS SHALL BE COMPLETED FOR THE PRICES BID, WHETHER OR NOT A SEPARATE PAY ITEM IS INCLUDED IN THE CONTRACT.
5. THE CONTRACTOR SHALL MAINTAIN "AS-BUILT" DRAWINGS THROUGH THE COURSE OF CONSTRUCTION AND SHALL SUBMIT SAME TO THE ENGINEER FOR APPROVAL PRIOR TO FINAL ACCEPTANCE OF THE WORK BY OWNER.
6. THE CONTRACTOR SHALL FURNISH ALL ASSISTANCE REQUIRED OF HIM BY OWNER/ENGINEER IN OBTAINING SAMPLES AT THE EXPENSE OF THE CONTRACTOR.
7. IF IN THE OPINION OF THE OWNER/ENGINEER, BASED ON TESTING SERVICE REPORTS AND INSPECTION, MATERIALS OR COMPACTION ARE BELOW THE SPECIFIED REQUIREMENTS THE CONTRACTOR SHALL CORRECT THE DEFICIENCY AND RE-TEST TO OBTAIN THE SPECIFIED PARAMETERS AT NO ADDITIONAL EXPENSE.
8. ALL PAVEMENTS, DRIVEWAYS, SIDEWALKS, CURBING, GUTTERS, FENCES, POLES, MAILBOXES, SIGNS, TREES, SHRUBBERY, LAWNS, SOD OR OTHER PROPERTY AND SURFACE STRUCTURES ON OR ADJACENT TO THE SITE OF THE WORK THAT ARE DAMAGED, DISTURBED, REMOVED OR DESTROYED BY THE CONTRACTOR DURING THE WORK SHALL BE REPAIRED, REPLACED OR RETURNED TO A CONDITION EQUAL TO THAT BEFORE THE WORK BEGAN. CONTRACTOR TO SUPPORT AND KEEP INTACT STORM DRAINS AND INLET STRUCTURES. ANY DAMAGES INCURRED WILL BE AT CONTRACTOR'S EXPENSE.
9. ALL EXPOSED VERTICAL SITE CONCRETE WORK SHALL HAVE A HAND RUBBED FINISH.
10. ALL CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I. @ 28 DAYS, UNLESS OTHERWISE STATED
11. PROVIDE A MINIMUM CONCRETE COVER OVER ALL REINFORCING OF 1-1/2".
12. PROVIDE EXPANSION JOINTS FOR CONCRETE CURBS. CUT TO SHAPE OF THE CURB EVERY 40'-0" AND AT ANGLE POINTS AND RETURNS.

UTILITIES

1. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, THE LOCAL GAS COMPANY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
2. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED IN THESE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED, BUT SHALL BE INVESTIGATED AND VERIFIED BY THE CONTRACTOR BEFORE STARTING WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO, AND FOR MAINTENANCE AND PROTECTION OF THE EXISTING UTILITIES EVEN IF THEY ARE NOT SHOWN ON THE PLANS. CONTRACTOR SHALL CONTACT ANY UTILITIES ENCOUNTERED FORTY-EIGHT HOURS (48) HOURS PRIOR TO EXCAVATION OPERATION.
3. THE FOLLOWING IS A LIST OF TELEPHONE NUMBERS OF THE UTILITY LOCATORS FOR THE VARIOUS UTILITIES THAT MAY BE ENCOUNTERED:

TEXAS ONE CALL	1-800-245-4545
C.C.M.A.	(210)-658-6241
CITY PUBLIC SERVICE	1-800-545-6005
NBU	(830) 608-8971
CENTERPIONT ENERGY ENTEX	(210)-659-6788
G.V.E.C.	(210)-672-2871
EL PASO PIPELINE CO	1-800-852-3602
TIME WARNER CABLE	(210)-352-4472
AT&T	1-800-828-5127
GREEN VALLEY TELEPHONE COMPANY	1-830-885-8277
EL PASO FIELD SERVICE	1-800-644-4773
GREEN VALLEY SPECIAL UTILITY DISTRICT	(830)-914-2330

4. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT NO OVERFLOWS OR SPILLAGE OF SEWER OCCURS. SHOULD THIS OCCUR, THE CONTRACTOR SHALL:
   A. IDENTIFY THE SOURCE OF THE SPILL AND ATTEMPT TO ELIMINATE ANY ADDITIONAL SPILLAGE. NOTIFY CONSTRUCTION INSPECTION.
   B. CONTAIN THE SPILL IN PLACE AND AVOID CONTAMINATION OF STREAMS.
   C. DISINFECT THE AREA OF THE SPILL WITH A MIXTURE OF HTH CHLORINE AND WATER.
5. NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR THIS WORK. ALL WORK SHALL BE DONE ACCORDING TO GUIDELINES SET BY THE TEXAS WATER COMMISSION.

TREES & VEGETATION

1. THE CONTRACTOR SHALL VERIFY WHICH TREES ARE TO BE SAVED AND PROTECTED PRIOR TO COMMENCING CONSTRUCTION. DURABLE FENCE PROTECTION BARRIERS SHALL BE INSTALLED AROUND ALL TREES TO BE SAVED WITH FENCE PLACEMENT A MINIMUM OF 10 FEET FROM TREE TRUNKS.
2. THE CONTRACTOR SHALL NOT DISTURB AREAS AROUND EXISTING TREES TO BE SAVED.
3. THE CONTRACTOR SHALL PROTECT EXISTING GRASS, LANDSCAPING AND TREES NOT IN DIRECT CONFLICT WITH PROPOSED IMPROVEMENTS DURING CONSTRUCTION. GRASSED AREAS DAMAGED DURING CONSTRUCTION SHALL BE RESTORED BY THE CONTRACTOR WITH TOPSOIL AND SODDED (NO SEPARATE PAYMENT).
4. THE CONTRACTOR SHALL REMOVE ALL VEGETATION, TREES, STUMPS, GRASSES ORGANIC SOIL, DEBRIS, AND DELETERIOUS MATERIALS IN CONFLICT WITH IMPROVEMENTS.
5. AFTER THE CONTRACTOR HAS REMOVED MATERIALS AS DESCRIBED ABOVE, HE SHALL STRIP SUITABLE TOPSOIL AND STOCKPILE FOR LANDSCAPING USE.
6. THE CONTRACTOR SHALL EXERCISE EXTRA CARE TO AVOID DAMAGE TO TREES AND ORNAMENTAL SHRUBS PLANTED AND MAINTAINED BY PROPERTY OWNERS IN THE TERRACES FRONTING THEIR PROPERTY.
7. CONTRACTOR SHALL COMPENSATE OWNER FOR DAMAGE TO TREES THAT WERE TO REMAIN.
8. OAK TREES DAMAGED DURING CONSTRUCTION SHALL BE SEALED WITHIN SIX HOURS OF DAMAGE TO PREVENT INFECTION BY OAK WILT.

TPDES/NPDES

1. THIS PROJECT WILL DISTURB LESS THAN 0.5 OF AN ACRE OF LAND, AND THEREFORE IS NOT REQUIRED TO OBTAIN COVERAGE UNDER THE TPDES/NPDES CONSTRUCTION GENERAL PERMIT TXR150000.

TRAFFIC

1. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE ONSITE RESIDENCE AND PATRONS OF THE BUSINESS AS NEEDED SO THEY MAY ACCESS THEIR STORAGE UNITS.
2. THE CONTRACTOR WILL BE REQUIRED TO FURNISH BARRICADES, WARNING SIGNS, LIGHTS, FLARES, FLAGS, FLAGMEN, ETC. WHERE NECESSARY AND AS DIRECTED BY THE ENGINEER, PARTICULARLY IN THOSE AREAS OF IMMEDIATE WORK.
3. BATTERY FLASHERS SHALL BE USED AND NUMBER SHALL BE EQUAL OR GREATER THAN INDICATED ON BARRICADING STANDARDS. WHEN A CLASS I BARRICADE PANEL OR CLASS II BARRICADE IS USED, EACH SHOULD BE EQUIPPED WITH A MINIMUM OF TWO (2) LIGHTS. ALL WARNING SIGNS NOT MOUNTED ON BARRICADES SHALL HAVE ONE (1) LIGHT.
4. BATTERY FLASHERS SHALL CONFORM TO PART V, SECTION D, LIGHTING DEVICES, TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.

Texas Commission on Environmental Quality
Water Pollution Abatement Plan
General Construction Notes

1. All construction shall be performed in accordance with the TCEQ approved WPAP Modification permit, 30 TAC Chapter 213, and TCEQ's Complying with the Edwards Aquifer Rules technical paper RG-348, revised July 2005. Contractor shall thoroughly familiarize themselves with the required regulations before commencing work.

2. Written construction notification must be given to the appropriate TCEQ regional office no later than 48 hours prior to commencement of the regulated activity. Information must include the date on which the regulated activity will commence, the name of the approved plan for the regulated activity, and the name of the prime contractor and the name and telephone number of the contact person.

3. All contractors conducting regulated activities associated with this project must be provided with complete copies of the approved Water Pollution Abatement Plan and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractors are required to keep on-site copies of the approved plan and approval letter.

4. If any sensitive feature is discovered during construction, all regulated activities near the sensitive feature must be suspended immediately. The appropriate TCEQ regional office must be immediately notified of any sensitive features encountered during construction. The regulated activities near the sensitive feature may not proceed until the TCEQ has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from any potentially adverse impacts to water quality.

5. No temporary aboveground hydrocarbon and hazardous substance storage tank system is installed within 150 feet of a domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

6. Prior to commencement of construction, all temporary erosion and sedimentation (E&S) control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. Controls specified in the temporary storm water section of the approved Edwards Aquifer Protection Plan are required during construction. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. The controls must remain in place until disturbed areas are revegetated and the areas have become permanently stabilized.

7. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

8. Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake must be provided that can indicate when the sediment occupies 50% of the basin volume.

9. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

10. All spoils (excavated material) generated from the project site must be stored on-site with proper E&S controls. For storage or disposal of spoils at another site on the Edwards Aquifer Recharge Zone, the owner of the site must receive approval of a water pollution abatement plan for the placement of fill material or mass grading prior to the placement of spoils at the other site.

11. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

12. The following records shall be maintained and made available to the TCEQ upon request: the dates when major grading activities occur; the dates when construction activities temporarily or permanently cease on a portion of the site; and the dates when stabilization measures are initiated.

13. The holder of any approved Edward Aquifer protection plan must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:

    A. any physical or operational modification of any water pollution abatement structure(s), including but not limited to ponds, dams, berms, sewage treatment plants, and diversionary structures;

    B. any change in the nature or character of the regulated activity from that which was originally approved or a change which would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;

    C. any development of land previously identified as undeveloped in the original water pollution abatement plan.

    Austin Regional Office
    2800 S. IH 35, Suite 100
    Austin, Texas 78704-5712
    Phone (512) 339-2929
    Fax (512) 339-3795

    San Antonio Regional Office
    14250 Judson Road
    San Antonio, Texas 78233-4480
    Phone (210) 490-3096
    Fax (210) 545-4329

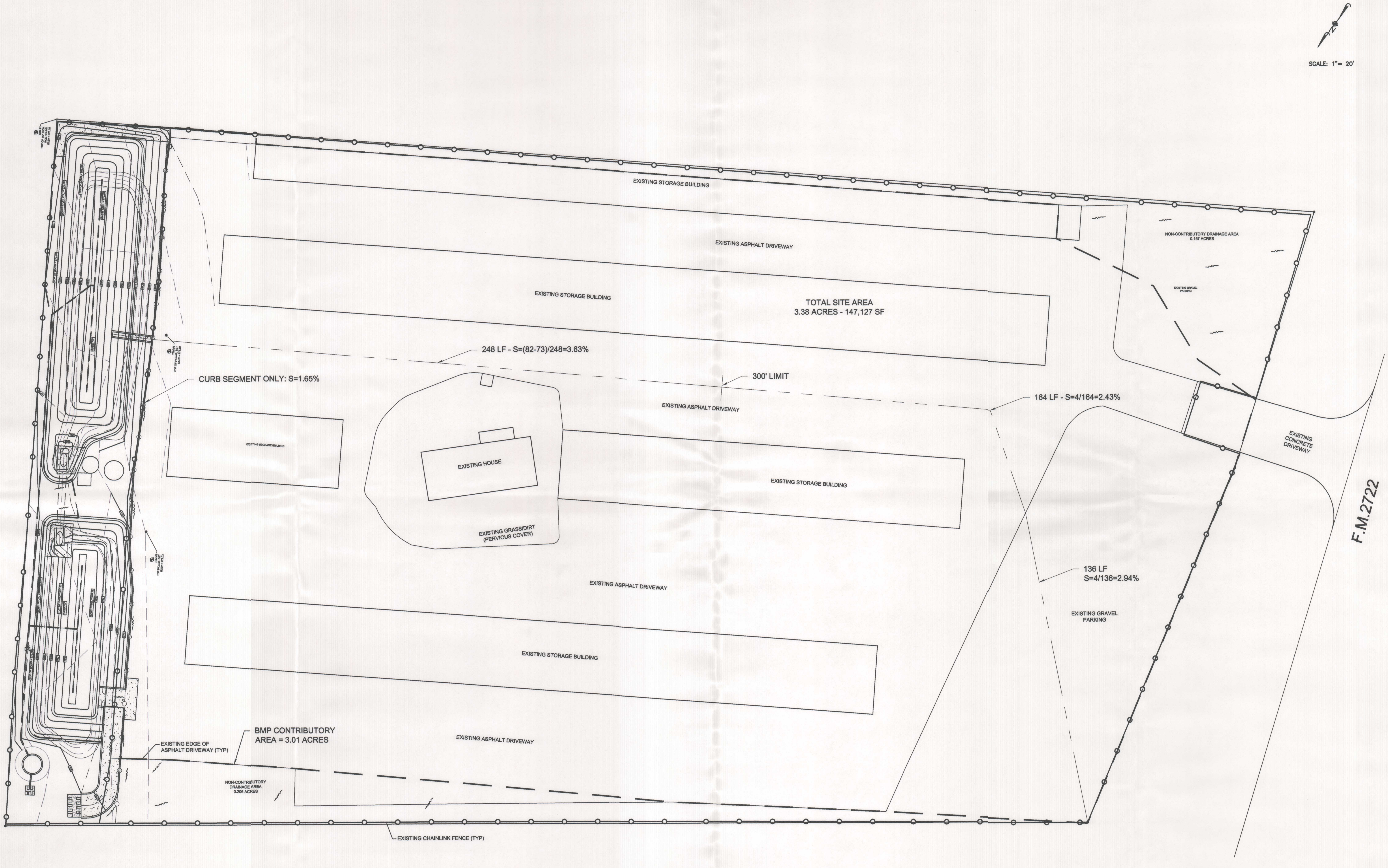
R E V I S I O N S	NO.	DATE	COMMENTS

DYE DEVELOPMENT, INC.
TBPE: F-9539 – TBPE: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9758

STOR-HAUS SELF STORAGE
NOTES
WPAP MODIFICATION
1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136
Z:\0 Current Projects\DD Projects\Stor Haus Self Storage\Site Dvpt Plans\2.0 Stor Haus Notes.dwg

DRAWN BY: DWD
CHECKED BY: DWD
DATE: 03/07/13
PROJECT NO: STOR-HAUS

SHEET
2.0


SCALE: 1"= 20'
EXISTING STORAGE BUILDING
EXISTING ASPHALT DRIVEWAY
NON-CONTRIBUTORY DRAINAGE AREA
0.187 ACRES
EXISTING GRAVEL PARKING
EXISTING STORAGE BUILDING
TOTAL SITE AREA
3.38 ACRES - 147,127 SF
248 LF - S=(82-73)/248=3.63%
CURB SEGMENT ONLY: S=1.65%
300' LIMIT
EXISTING ASPHALT DRIVEWAY
164 LF - S=4/164=2.43%
EXISTING CONCRETE DRIVEWAY
EXISTING HOUSE
EXISTING STORAGE BUILDING
EXISTING GRASS/DIRT
(PERVIOUS COVER)
F.M.2722
EXISTING ASPHALT DRIVEWAY
136 LF
S=4/136=2.94%
EXISTING GRAVEL PARKING
EXISTING STORAGE BUILDING
BMP CONTRIBUTORY
AREA = 3.01 ACRES
EXISTING EDGE OF
ASPHALT DRIVEWAY (TYP)
EXISTING ASPHALT DRIVEWAY
NON-CONTRIBUTORY
DRAINAGE AREA
0.206 ACRES
EXISTING CHAINLINK FENCE (TYP)

REVISIONS NO.	DATE	COMMENTS

DAVID W. DYE III, P.E. 84757 — STATE OF TEXAS — LICENSED PROFESSIONAL ENGINEER

DYE DEVELOPMENT, INC.
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STOR-HAUS SELF STORAGE

WPAP DRAINAGE AREA MAP

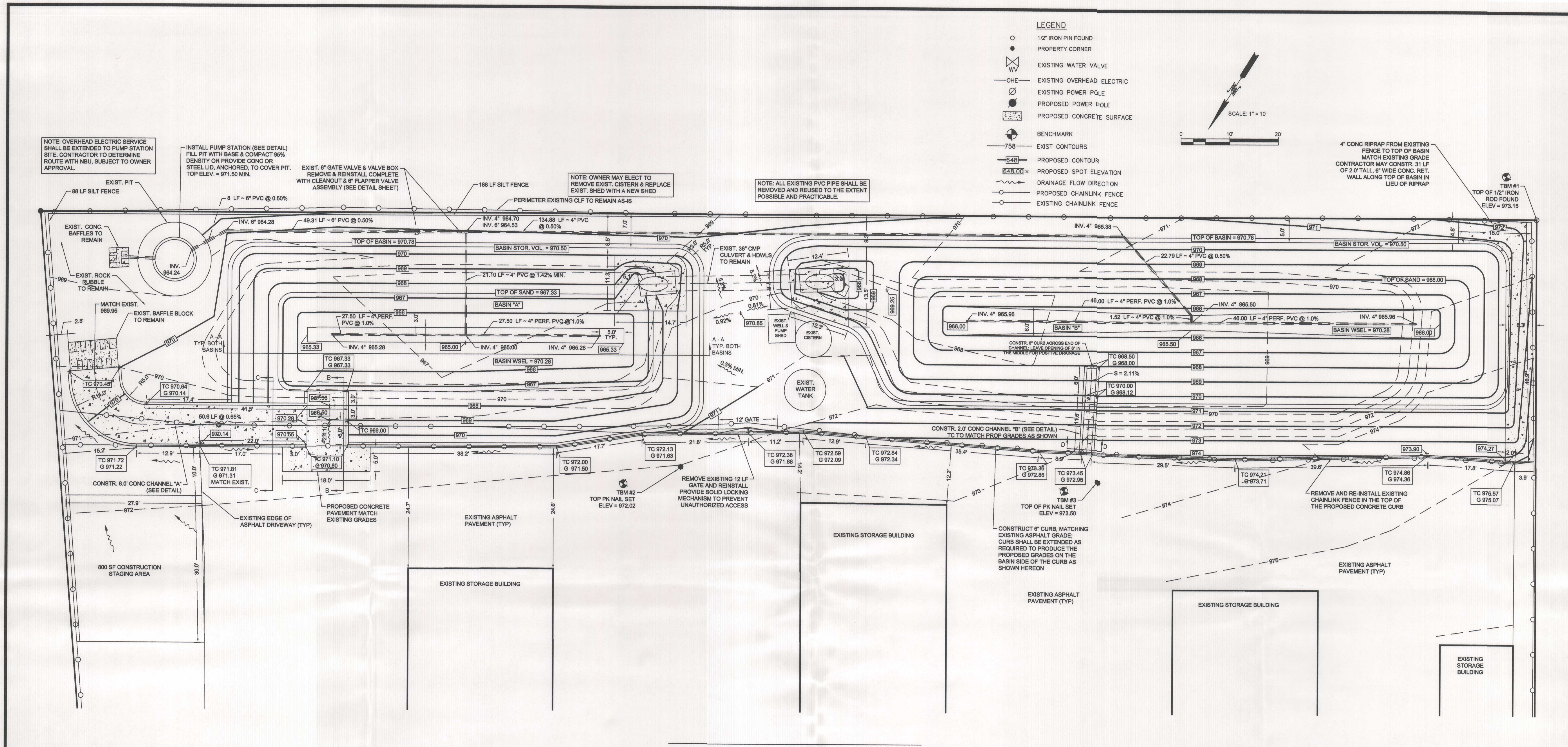
WPAP MODIFICATION

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

Z:\0 Current Projects\DD Projects\Stor Haus Self Storage\Site Dvpt Plans\3.0 Stor Haus WPAP Drainage Area Map.dwg

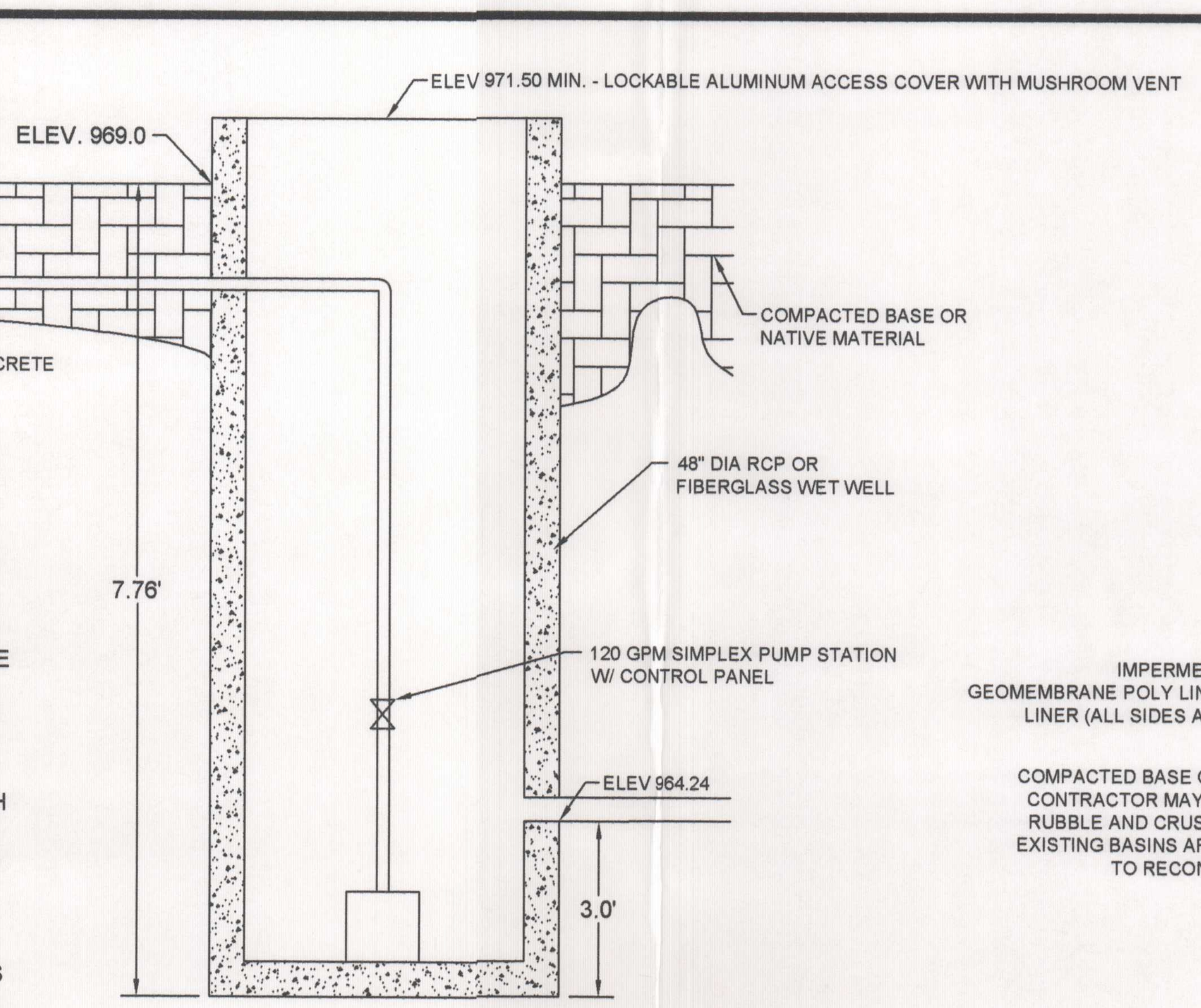
DRAWN BY: DWD
CHECKED BY: DWD
DATE: 03/07/13
PROJECT NO: STOR-HAUS

SHEET
3.0



PLAN VIEW OF BASINS

SCALE 1"=10'

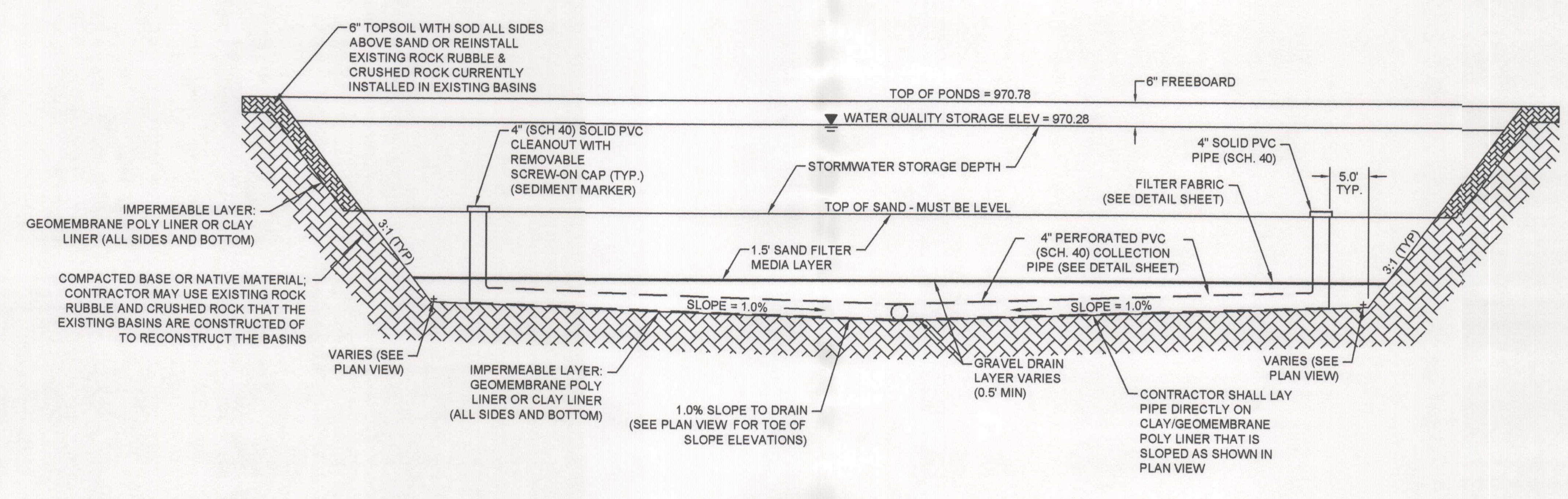


NOTES:

1. A SIGN IS TO BE PLACED BESIDE THE PROPOSED WET WELL AND ON THE BMP'S ACCESS GATE DISPLAYING THE NAME AND PHONE NUMBER OF THE PARTY RESPONSIBLE FOR ITS OPERATION.
2. THE WET WELL REQUIRES A HIGH WATER ALARM WITH RED LIGHT SIGNALIZATION EXTENDING GREATER THAN 5 FT ABOVE GROUND. AN EMERGENCY SHUT OFF SWITCH IS ALSO REQUIRED.
3. UPON COMPLETING CONSTRUCTION OF THE STORMWATER QUALITY BASIN THE CONTRACTOR SHALL STABILIZE THE SURROUNDING DISTURBED AREA.
4. STAGING AREA REQUIREMENT (800 SQ. FT.) IS SATISFIED BY UTILIZING AREA ADJACENT TO THE BASIN AS DESIGNATED IN THE PLAN VIEW (THIS SHEET).

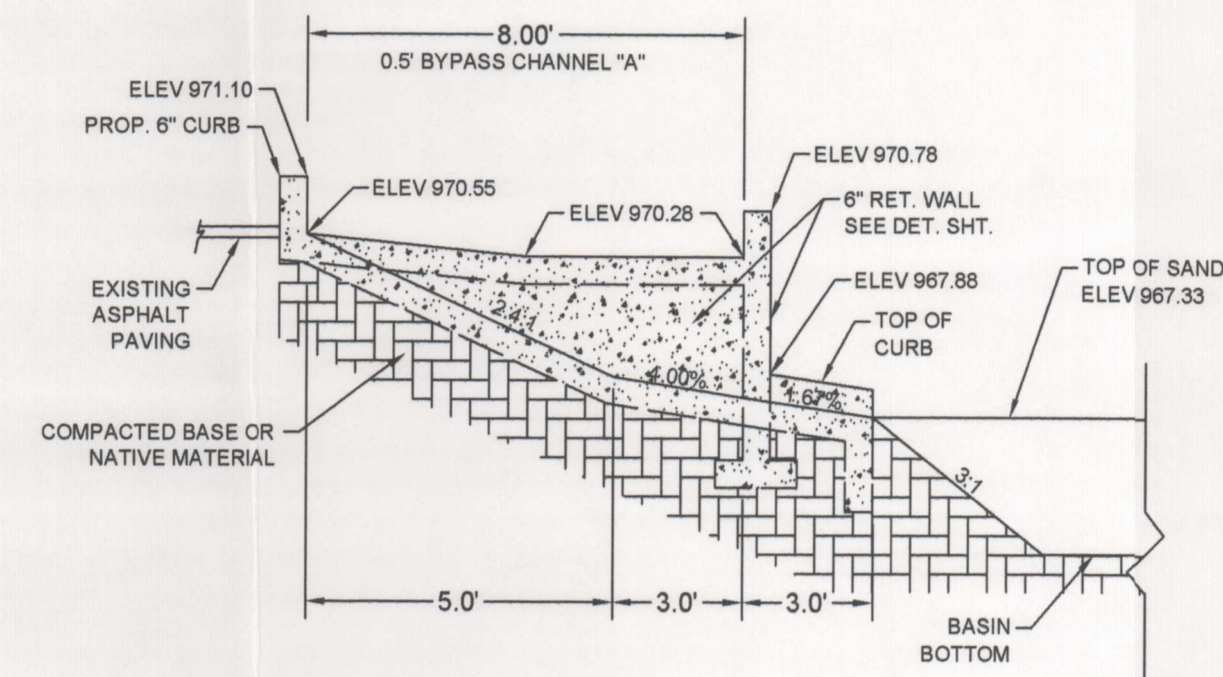
NOTES:

1. A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN EACH SEDIMENTATION BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EQUALS 6" AND SEDIMENT REMOVAL IS REQUIRED.
2. *SAND PROPERTIES* – THE SAND GRAIN SIZE DISTRIBUTION SHOULD BE COMPARABLE TO THAT OF TXDOT Mn SAND GRADING 1 (421-FINE).
3. ALL DISTURBED GROUND SURFACES SHALL BE COVERED WITH TOP SOIL AND SOD OR COVERED WITH THE EXISTING ROCK RUBBLE AND CRUSHED STONE THAT THE BASINS ARE CURRENTLY CONSTRUCTED WITH.
4. ALL RIPRAP SHALL BE 6" CONCRETE WITH 6" x 6" WWM.
5. THE EXISTING CRUSHED ROCK FILTER MEDIUM SHALL NOT BE USED IN LIEU OF SAND, BUT CAN BE USED AS BACKFILL AND AS A SURFACE TREATMENT.
6. GRAVEL DRAIN SHALL CONSIST OF 3/4" TO 1" CRUSHED ROCK



SECTION A - A

NTS



SECTION B - B

NTS

NO.	DATE	REVISIONS COMMENTS

DYE DEVELOPMENT, INC.
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17174 IRONGATE RAIL
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STOR-HAUS SELF STORAGE

BASIN DESIGN

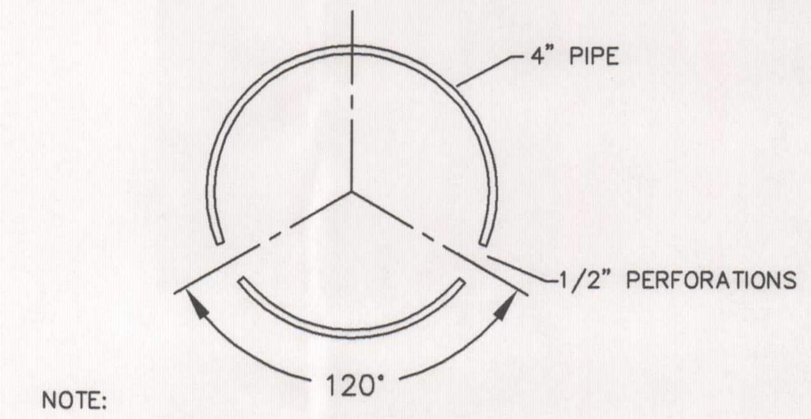
WPAP MODIFICATION

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

DRAWN BY: DWD
CHECKED BY: DWD
DATE: 05/22/13
PROJECT NO: STOR-HAUS

SHEET

4.0

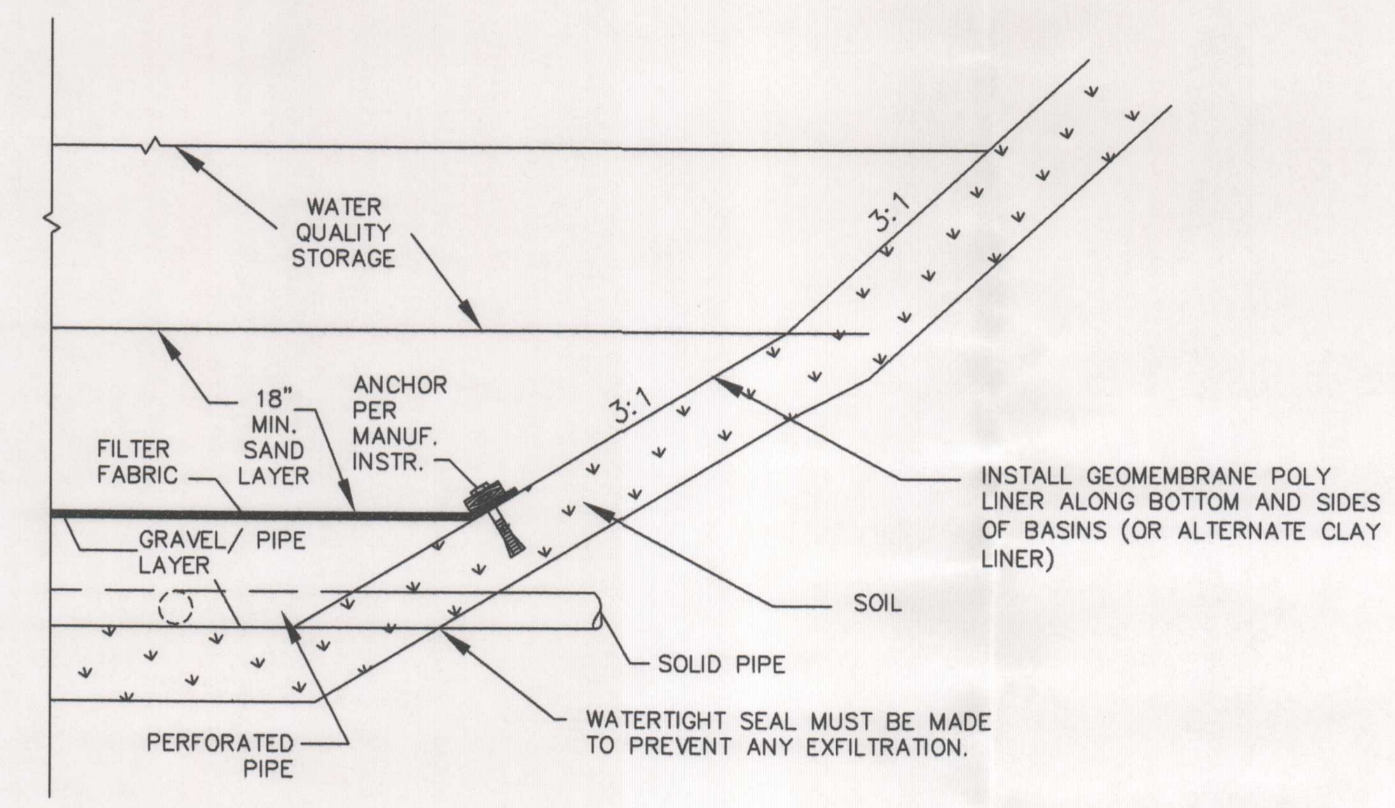


NOTE:

1. MINIMUM DIAMETER = 4"; SCHEDULE 40 PVC. (SEE PLAN VIEW)
2. THE MAXIMUM SPACING BETWEEN ROWS OF PERFORATIONS SHOULD NOT EXCEED 6".
3. SET PERFORATIONS DOWN.
4. PERFORATIONS SHOULD BE LESS THAN A 1/2" DIAMETER.
5. PIPES SHOULD LIE FLAT ON CONCRETE BOTTOM WHICH HAS BEEN GRADED TO DRAIN AS SHOWN ON PLAN VIEW.
6. ALL CLEANOUTS SHALL BE SOLID PIPE WITH A CLEANOUT AT THE END OF EACH LINE.
7. ALL PIPES WITHIN GRAVEL LAYER SHALL BE PERFORATED.

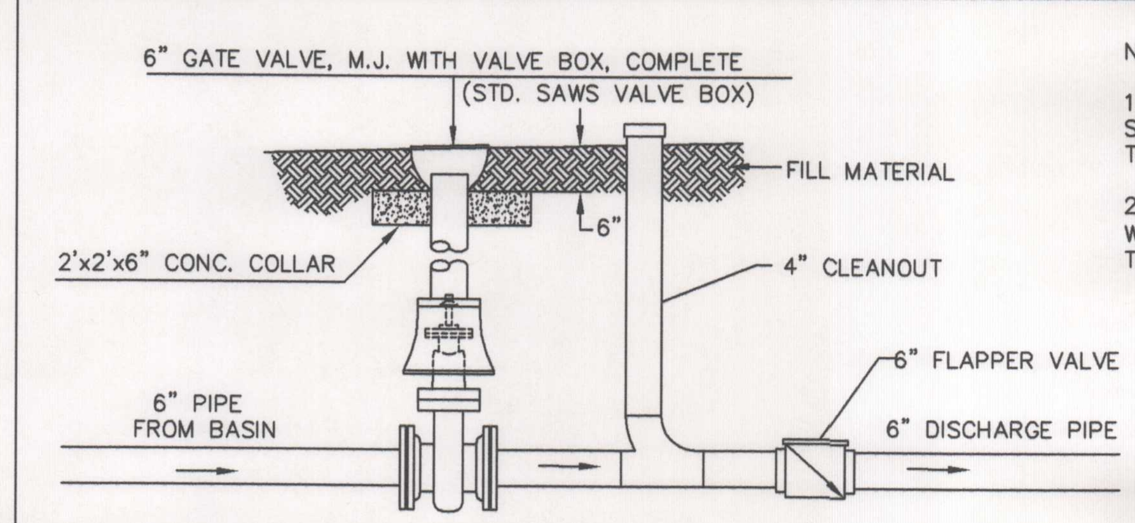
4" PERFORATED PIPE

NOT TO SCALE



PIPE DISCHARGE AT LINER DETAIL

NOT TO SCALE



6" GATE & FLAPPER VALVE DETAIL

NOT TO SCALE

NOTE:

1. VALVE WILL BE SET PARTIALLY CLOSED SO AS TO PROVIDE A MINIMUM DRAWDOWN TIME OF 24 HOURS.

2. CONTRACTOR SHALL PROVIDE OWNER WITH VALVE OPERATING KEY/ROD PRIOR TO PROJECT COMPLETION.

BASIN DESIGN DATA	
BASINS WATERSHED AREA	3.01 AC
RUN OFF DEPTH	1.70 INCH
REQUIRED CAPTURE VOLUME	14,516 CF
REQUIRED SAND AREA	1,452 SF
BASIN "A"	
DEPTH (AVG.)	2.95 FT*
CAPTURE VOLUME	7,449 CF*
SAND AREA	1,484 SF
BASIN "B"	
DEPTH (AVG.)	2.28 FT*
CAPTURE VOLUME	7,553 CF*
SAND AREA	2,044 SF
TOTAL (BASIN "A" & "B")	
CAPTURE VOLUME	15,002 CF
SAND AREA	3,528 SF
OVERFLOW WEIR ELEVATION	970.28

*EXCLUDES 0.5 FOOT FREEBOARD

BMP SIZING CALCULATION		
County =	Comal	
Total project area included in plan * =	3.38	acres
Predevelopment impervious area within the limits of the plan * =	0.02	acres
Total post-development impervious area within the limits of the plan* =	2.77	acres
Total post-development impervious cover fraction * =	82%	
P =	33.00	inches
LM TOTAL PROJECT =	2,466	lbs.
TSS Reduction for Sand Filters =	89%	
Number of drainage basins / outfalls areas leaving the plan area =	1	

RG-348 Page 3-33 Equation 3.7: LR =(BMP efficiency) x P x (AI x 34.6 + AP x 0.54)		
AC = Total On-Site drainage area in the BMP catchment area		
AI = Impervious area proposed in the BMP catchment area		
AP = Pervious area remaining in the BMP catchment area		
LR = TSS Load removed from this catchment area by the proposed BMP		
AC =	3.01	acres
AI =	2.68	acres
AP =	0.33	acres
LR =	2731	lbs
Desired LM THIS BASIN =	2466	lbs.
F =	0.90	
Rainfall Depth =	1.70	inches
Post Development Runoff Coefficient =	0.65	
On-site Water Quality Volume =	12097	cubic feet
Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	2419	
Total Capture Volume (required water quality volume(s) x 1.20) =	14516	cubic feet

Filter Area for Sand Filters		
Water Quality Volume for Sedimentation Basin =	14516	cubic feet
Minimum Filter Basin Area (Includes additional 20% for Single Chamber Sand Filter Basin) =	1452	square feet

THE SEPARATION LAYER BETWEEN THE SAND FILTER AND GRAVEL LAYERS SHALL BE A DRAINAGE MATTING CONSISTING OF NON-WOVEN FILTER FABRIC MEETING THE FOLLOWING SPECIFICATIONS (UNLESS OTHERWISE APPROVED BY THE ENGINEER BEFOREHAND, IN WRITING):

FILTER FABRIC SPECIFICATIONS

PROPERTY	TEST METHOD	SPECIFICATION
WEIGHT (OZ/SY)	ASTM D 3776	4.0
GRAB STRENGTH (LBS.)	ASTM D 4632	90
ELONGATIONS (%)	ASTM D 4632	55
PUNCTURE (LBS)	ASTM D 3787	60
AOS (SIEVE #)	ASTM D 4751	70–80
FLOW RATE (GPM/SF)	ASTM D 4491	120

FABRIC OVERLAP SHALL BE A MINIMUM OF 24".
ALL OVERLAPS SHALL BE WIRE TIED AT A MAXIMUM OF 36" INTERVALS

NOTE:
SAND FILTER MATERIAL SHALL BE COMPARABLE TO THAT OF TXDOT Mn SAND GRADING 1 (421-FINE).

ROCK FOR GRAVEL LAYER SHALL BE 3/4" TO 1" DIAMETER CRUSHED ROCK.

GEOMEMBRANE POLY LINER

- ULTRAVIOLET RESISTANT
- THICKNESS = 30 MILS MINIMUM, RECOMMENDED 40 MILS.
- JOINTS SHALL BE WATER TIGHT AT SEAMS.
- WATERTIGHT SEAL BETWEEN POLY LINER AND TRANSITION SURFACES.
- BEDDING MATERIAL SHALL BE SUITABLY COMPACTED MATERIAL IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- PROTECTIVE GEOTEXTILE FABRIC TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

CLAY LINER

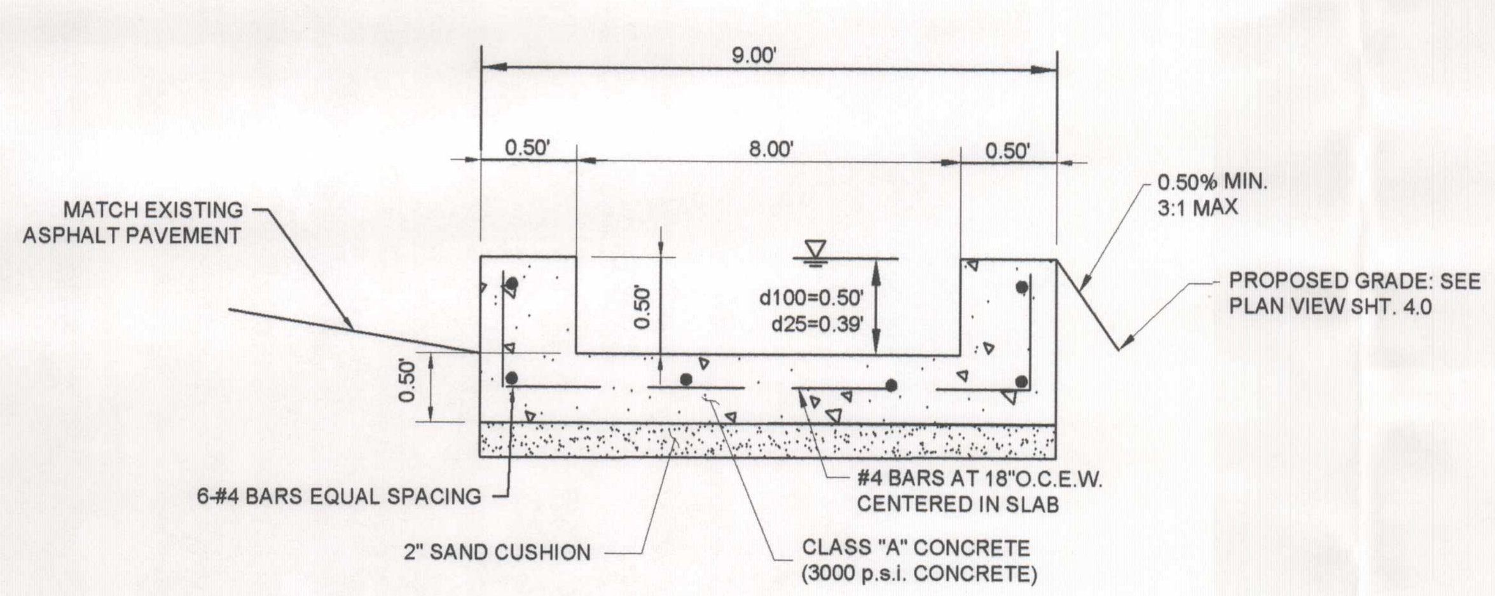
1. THE CLAY LINER SHALL HAVE A MINIMUM THICKNESS OF TWELVE (12) INCHES.

CONC. CHANNEL "A" CALCULATIONS

n = 0.013 (concrete)
S = 0.65%

Q25 = 14.40 cfs
d25 = 0.39'
V25 = 4.63 fps

Q100 = 21.40 cfs
d100 = 0.50'
V25 = 5.38 fps



SECTION "C-C"

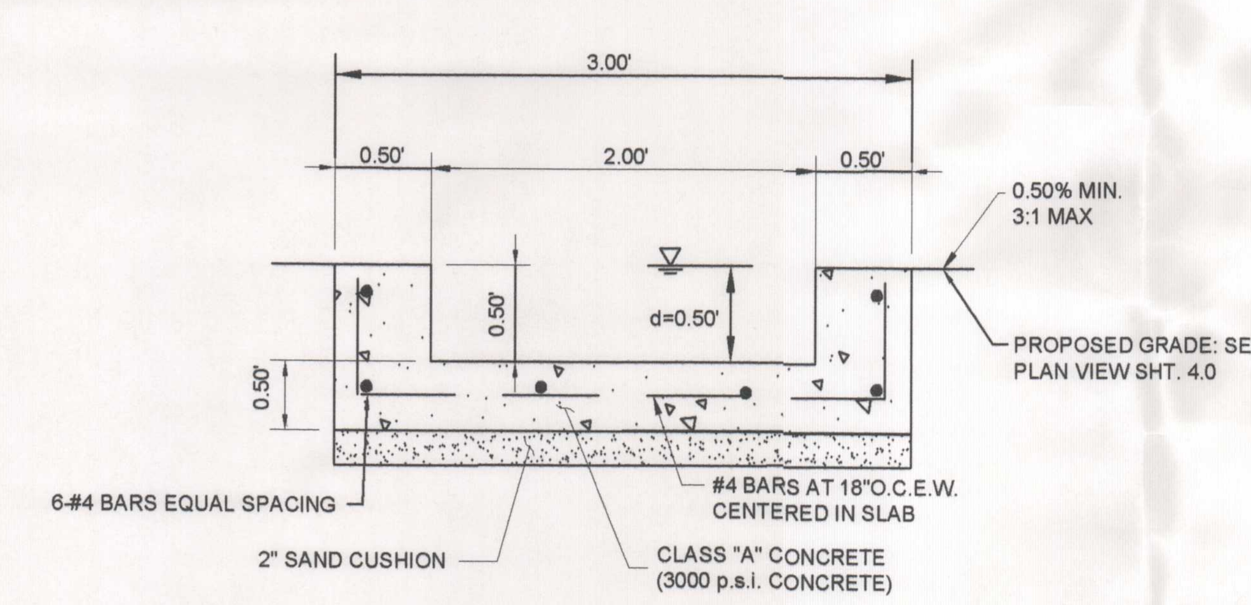
CHANNEL "A"

NOT TO SCALE

CONC. CHANNEL "A" CALCULATIONS

n = 0.013 (concrete)
S = 2.11 % (inlet cross flow & channel outfall)

BASIN INFLOW & OUTFLOW
Q = 7.98 cfs
d = 0.50'
V = 7.98 fps



SECTION "D-D"

CHANNEL "B"

NOT TO SCALE

NOTES TO CONTRACTOR

NOTE:

1. CONTRACTOR IS ADVISED THAT TCEQ DOES NOT ALLOW CHANGES TO PERMANENT POLLUTION ABATEMENT MEASURES WITHOUT THEIR PRIOR APPROVAL.

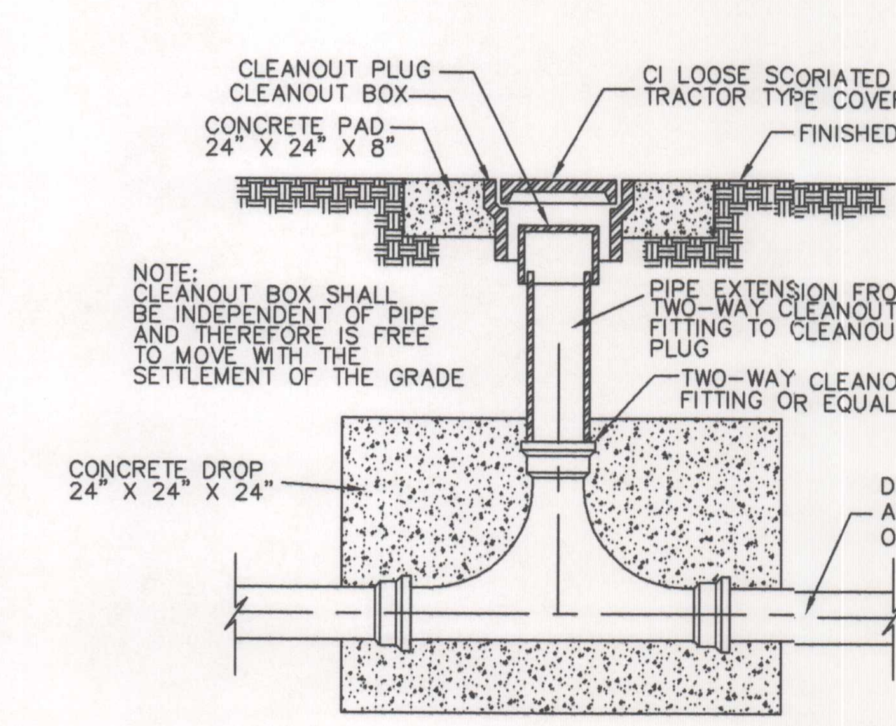
2. CONTRACTOR SHALL NOTIFY CERTIFYING ENGINEER WHEN BASIN CONSTRUCTION HAS PROGRESSED TO EACH OF THE FOLLOWING MILESTONES:

   a. CONCRETE FORMS FOR CURBING AND CHANNELS HAVE BEEN INSTALLED AND BASIN GRADING HAS BEEN COMPLETED. ENGINEER WILL INSPECT AND VERIFY GRADES PRIOR TO ADDITIONAL WORK BEING PERFORMED.
   b. BASIN LINER AND PVC DRAIN PIPE HAS BEEN LAID BUT NOT BACKFILLED. ENGINEER SHALL VERIFY PIPE INVERTS & GRADES.
   c. GRAVEL AND FILTER FABRIC HAS BEEN PLACED. ENGINEER SHALL INSPECT AND VERIFY GRADES.
   d. SAND HAS BEEN PLACED. ENGINEER SHALL INSPECT AND VERIFY GRADES.
   e. PUMP STATION IS COMPLETE. ENGINEER SHALL INSPECT AND VERIFY PROPER FUNCTION.
   f. CONSTRUCTION COMPLETE, INCLUDING ALL RIP-RAP OR SOD/SEED/ROCK PLACEMENT ON SIDE SLOPES (WHERE APPLICABLE).

3. WORK SHALL NOT CONTINUE ON THE BASIN UNTIL THE ENGINEER HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION AT EACH STAGE. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 24 HOURS ADVANCE NOTICE PRIOR TO TIME THE BASIN WILL BE AT THE REQUIRED STAGE. ENGINEER WILL OBTAIN AS-BUILT ELEVATIONS OF THE WORK COMPLETED AT EACH STAGE. WORK NOT CONSTRUCTED AT THE PROPER ELEVATION WILL BE REQUIRED TO BE RE-INSTALLED AT CONTRACTOR'S EXPENSE. ENGINEER WILL RELY ON THIS DATA TO PROVIDE FINAL AS-BUILT CERTIFICATION AS REQUIRED BY THE TCEQ.

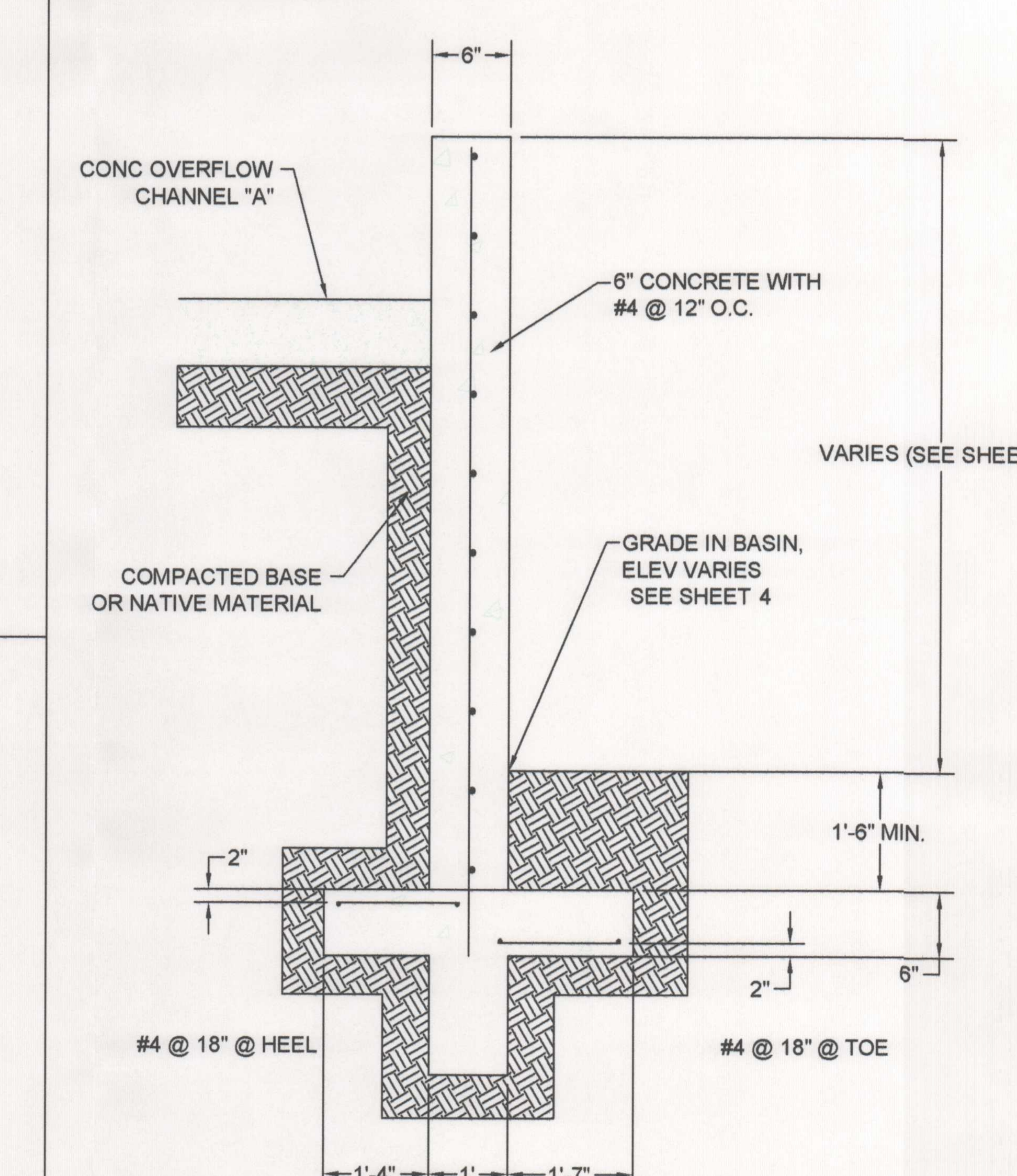
4. BEFORE FINAL ACCEPTANCE OF CONSTRUCTION BY THE OWNER, THE CONTRACTOR WILL REMOVE ALL TRASH, DEBRIS, AND ACCUMULATED SILT FROM THE BASINS AND REESTABLISH THEM TO THE PROPER OPERATING CONDITION.

5. THE MINIMUM DRAIN TIME FOR A FULL BASIN IS 24 HOURS, PER TCEQ SPECS. THE CONTRACTOR SHALL RESTRICT THE FLOW THROUGH ADJUSTING OF THE GATE VALVE ON THE DISCHARGE PIPE, SO AS TO PROVIDE THE MINIMUM 24 HOUR DRAW DOWN TIME.



CLEANOUT DETAIL

(DUAL DIRECTION)
NOT TO SCALE



RETAINING WALL DETAIL

NOT TO SCALE

R E V I S I O N S	NO.	DATE	COMMENTS

DYE DEVELOPMENT, INC.
TBPE: F-9539 -- TBPE: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9758

STOR-HAUS SELF STORAGE

DETAILS

WPAP MODIFICATION

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

Z:\0 Current Projects\DD Projects\Stor Haus Self Storage\Site Dvpt Plans\5.0 Stor Haus Details.dwg

DRAWN BY: DWD
CHECKED BY: DWD
DATE: 05/06/13
PROJECT NO: STOR-HAUS

SHEET

5.0

Dye Development, Inc.

Real Estate Development •Engineers • Surveyors • Planners
TBPE: Texas Registered Firm F-9539
TBPLS: Texas Registered Firm #10092200

November 5, 2013

Mr. Michael Isley, P.E.
TCEQ – San Antonio Regional Office
Edwards Program
14250 Judson Road
San Antonio, TX 78233

Re: Review Comments Submittal
Modification to a WPAP
TCEQ File #: 2845.03
Stor Haus Self Storage

Dear Mr. Isley:

Please accept this letter and attachments as our response to your 8/30/13 review letter and review comments made at our 8/29/13 meeting. The following addresses each review comment. The revisions are documented on the plans as Revision #2 in the revision block.

8/30/13 Review Letter

1. Revised as requested. The Geologist decided to re-sign the full package. Two originals are attached. 2 ORIGS - DLQ
2. There are not two different specifications for geotextile fabric on the plans, although our labeling gave that impression. We have clearly differentiated between the geotextile fabric that is to be used with the geomembrane liner versus the permeable filter fabric to be used between the sand and gravel layers (Sheet 5.0). These are the same specs that were approved by the TCEQ for the existing WPAP plans (by Ford Engineering) that are being herein modified.
3. It was agreed in our meeting that the plans did provide this information, so this item has been disregarded.
4. We have revised the plans to clarify our design and satisfy your review comment. If a clay liner is used, the permeable filter fabric will be anchored via a concrete turndown all around the basins, which will be located where the sand and gravel layers meet. If the geomembrane liner is used, all three fabrics will be anchored via a concrete turndown all around the basins, which will be located where the surface of the sand is located. In addition, the geomembrane liner and geotextile fabric will be anchored via a key located at the top of the basins, above the water surfaces. These revisions have been added to sheets 4.0 and 5.0.
5. Revised as requested, on Sheet 5.0 of the plans.
6. Revised as requested (see #4 above) on Sheets 4.0 and 5.0 of the plans.

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17174 Irongate Rail • San Antonio • Texas 78247
Phone (210) 685-9193

8/29/13 Meeting Review Comments

1. Added the geotextile fabric overlap to the table as requested (Sheet 5.0).
2. The clay impermeable liner has been added to the Pipe Discharge at Liner Detail (Sheet 5.0), as requested.
3. Raised cleanouts 6" above sand as requested (Sheet 4.0, Revision #2).

We have attached one original and five copies of each revised page/sheet as requested. We have addressed your review comments and respectfully request that you approve our Modification request.

Thank you for your help during this process. Please let me know if you have any questions or desire further information.

Sincerely,

David W. Dye III 11/5/13

David W. Dye III P.E., R.P.L.S.
President

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TCEQ

Protecting Texas by Reducing and Preventing Pollution

FAX TRANSMITTAL

DATE: 08/30/2013 NUMBER OF PAGES (including this cover sheet) 2

TO: NAME **David Dye, P.E.**

ORGANIZATION **Dye Development, Inc.**

FAX Number **210-598-9758**

TO: NAME **Dr. Paul Richter**

ORGANIZATION **Richter-Land, LLC**

FAX NUMBER **210-479-9879**

FROM: TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NAME **Michael Isley, P.E.** MI

Division/Region **San Antonio Regional Office – Edwards Program**

Telephone Number **210-403-4057**

FAX Number **210-545-4329**

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Stor-Haus Self Storage; Located approximately 315 feet northwest of the intersection of FM 2722 and Lone Oak Road, New Braunfels, Texas
TYPE OF PLAN: Application for Approval of a Modification to a Water Pollution Prevention Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer Protection Program
Edwards Aquifer Protection Program (EAPP) File No. 2845.03

Dear Mr. Dye:

We are in the process of technically reviewing the WPAP Modification application you submitted on the above-referenced project. Before we can proceed with our review, the following comments relating to the application must be addressed.

WPAP Modification Application

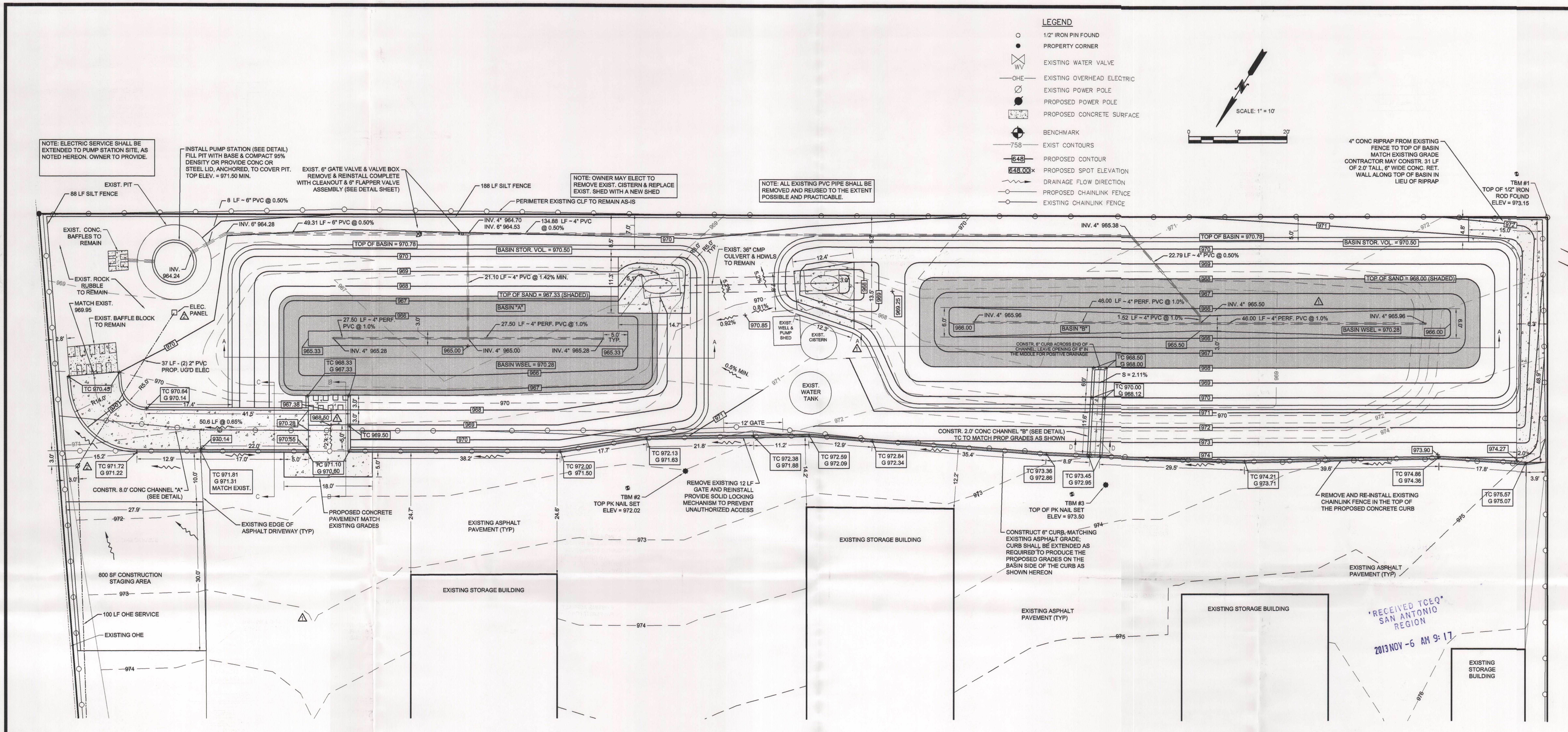
1. For the revised page as part of a sealed Geological Assessment, please either have the Geologist seal and sign the revised page or insert revised page in the original Geological Assessment and seal the revised Geological Assessment in whichever manner is consistent with the State rules for a Professional Geologist.
2. Two different sets of specifications are provided for geotextile fabric. Please use the set that comes from the RG-348 errata available on the public TCEQ

website.

3. Please check your values for total water quality volume and sand filter size (areal extent). It is recommended that the calculation worksheet available on the public TCEQ website be used and the print out be provided along with any revised design.
4. The concrete rip-rap isn't extended across the perimeter of the basins for attachment of the geomembrane liner.
5. The appropriate clay liner specifications will need to be incorporated into the drawings for the clay. The revised table for standards was provided on June 16, 2013 with the first notice of deficiency.
6. Clay will need to be placed underneath the soil in the cross-section detail. The liner and clay will need to be keyed to prevent short circuiting of the impermeable layers.

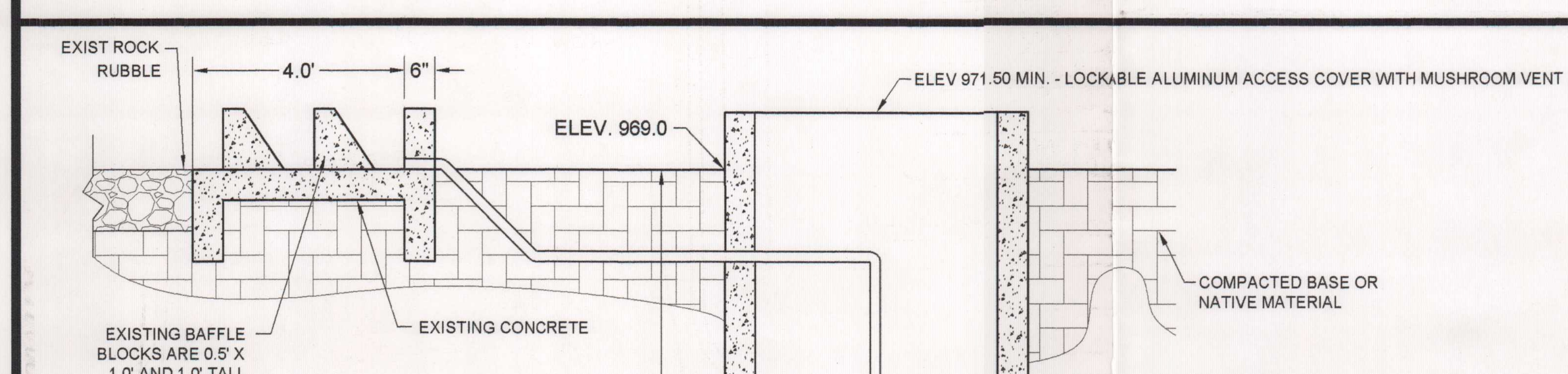
We ask that you submit one original and five copies of the amended materials to supplement the WPAP Modification application to this office by no later than 14 days from the date of this letter. We only need the individual pages/drawings that were changed, not complete, new application packages. If the response to this notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, additional comments may be generated.

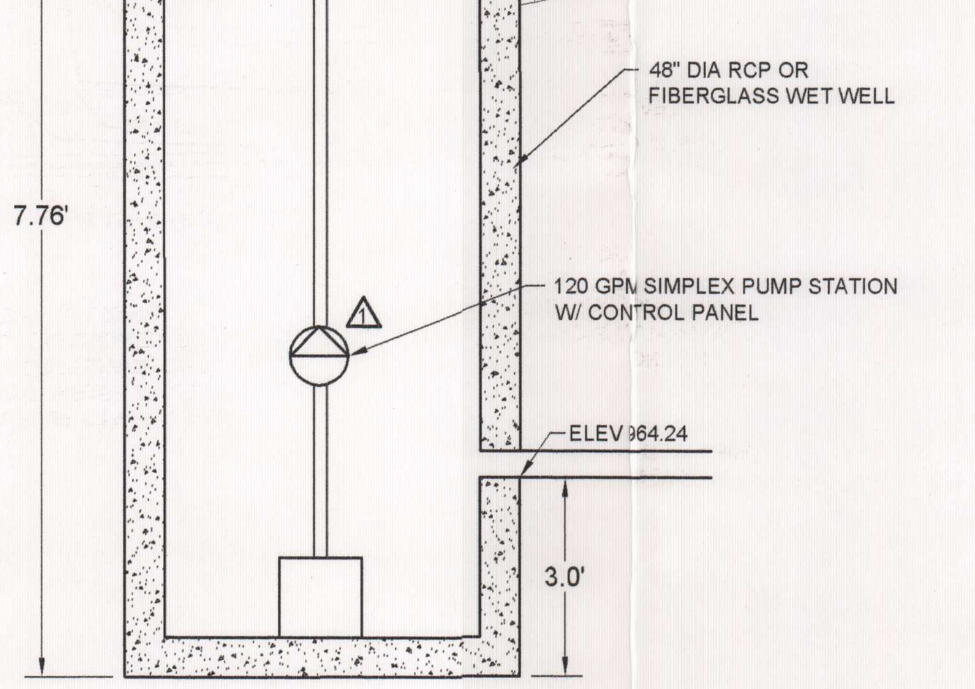
If you have any questions or require additional information, please contact Michael Isley, P.E. of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4057. **END**


LEGEND
1/2" IRON PIN FOUND
PROPERTY CORNER
EXISTING WATER VALVE
EXISTING OVERHEAD ELECTRIC
EXISTING POWER POLE
PROPOSED POWER POLE
PROPOSED CONCRETE SURFACE
BENCHMARK
EXIST CONTOURS
PROPOSED CONTOUR
PROPOSED SPOT ELEVATION
DRAINAGE FLOW DIRECTION
PROPOSED CHAINLINK FENCE
EXISTING CHAINLINK FENCE
SCALE: 1" = 10'
NOTE: ELECTRIC SERVICE SHALL BE EXTENDED TO PUMP STATION SITE, AS NOTED HEREON. OWNER TO PROVIDE.
INSTALL PUMP STATION (SEE DETAIL) FILL PIT WITH BASE & COMPACT 95% DENSITY OR PROVIDE CONC OR STEEL LID, ANCHORED, TO COVER PIT. TOP ELEV. = 971.50 MIN.
EXIST. 6" GATE VALVE & VALVE BOX REMOVE & REINSTALL COMPLETE WITH CLEANOUT & 6" FLAPPER VALVE ASSEMBLY (SEE DETAIL SHEET)
188 LF SILT FENCE
NOTE: OWNER MAY ELECT TO REMOVE EXIST. CISTERN & REPLACE EXIST. SHED WITH A NEW SHED
NOTE: ALL EXISTING PVC PIPE SHALL BE REMOVED AND REUSED TO THE EXTENT POSSIBLE AND PRACTICABLE.
PERIMETER EXISTING CLF TO REMAIN AS-IS
4" CONC RIPRAP FROM EXISTING FENCE TO TOP OF BASIN MATCH EXISTING GRADE CONTRACTOR MAY CONSTR. 31 LF OF 2.0' TALL, 6" WIDE CONC. RET. WALL ALONG TOP OF BASIN IN LIEU OF RIPRAP
TBM #1 TOP OF 1/2" IRON ROD FOUND ELEV = 973.15
EXIST. PIT
88 LF SILT FENCE
8 LF ~ 6" PVC @ 0.50%
INV. 6" 964.28
49.31 LF ~ 6" PVC @ 0.50%
INV. 4" 964.70
INV. 6" 964.53
134.88 LF ~ 4" PVC @ 0.50%
INV. 4" 965.38
EXIST. CONC. BAFFLES TO REMAIN
INV. 964.24
EXIST. ROCK RUBBLE TO REMAIN
MATCH EXIST. 969.95
EXIST. BAFFLE BLOCK TO REMAIN
ELEC. PANEL
TOP OF BASIN = 970.78
BASIN STOR. VOL. = 970.50
21.10 LF ~ 4" PVC @ 1.42% MIN.
TOP OF SAND = 967.33 (SHADED)
BASIN "A"
27.50 LF ~ 4" PERF. PVC @ 1.0%
INV. 4" 965.28
INV. 4" 965.00
BASIN WSEL = 970.28
EXIST. 36" CMP CULVERT & HDWLS TO REMAIN
EXIST. WELL & PUMP SHED
EXIST. CISTERN
EXIST. WATER TANK
22.79 LF ~ 4" PVC @ 0.50%
TOP OF SAND = 968.00 (SHADED)
46.00 LF ~ 4" PERF. PVC @ 1.0%
INV. 4" 965.50
1.52 LF ~ 4" PVC @ 1.0%
INV. 4" 965.96
BASIN "B"
BASIN WSEL = 970.28
CONSTR. 6" CURB ACROSS END OF CHANNEL. LEAVE OPENING OF 6" IN THE MIDDLE FOR POSITIVE DRAINAGE
S = 2.11%
37 LF ~ (2) 2" PVC PROP. UG'D ELEC
50.6 LF @ 0.65%
12' GATE
CONSTR. 2.0' CONC CHANNEL "B" (SEE DETAIL) TC TO MATCH PROP GRADES AS SHOWN
CONSTR. 8.0' CONC CHANNEL "A" (SEE DETAIL)
MATCH EXIST.
PROPOSED CONCRETE PAVEMENT MATCH EXISTING GRADES
EXISTING EDGE OF ASPHALT DRIVEWAY (TYP)
TBM #2 TOP PK NAIL SET ELEV = 972.02
REMOVE EXISTING 12 LF GATE AND REINSTALL PROVIDE SOLID LOCKING MECHANISM TO PREVENT UNAUTHORIZED ACCESS
TBM #3 TOP OF PK NAIL SET ELEV = 973.50
REMOVE AND RE-INSTALL EXISTING CHAINLINK FENCE IN THE TOP OF THE PROPOSED CONCRETE CURB
CONSTRUCT 6" CURB, MATCHING EXISTING ASPHALT GRADE; CURB SHALL BE EXTENDED AS REQUIRED TO PRODUCE THE PROPOSED GRADES ON THE BASIN SIDE OF THE CURB AS SHOWN HEREON
EXISTING ASPHALT PAVEMENT (TYP)
EXISTING STORAGE BUILDING
800 SF CONSTRUCTION STAGING AREA
100 LF OHE SERVICE
EXISTING OHE
"RECEIVED TCEQ" SAN ANTONIO REGION
2013 NOV -6 AM 9:17

PLAN VIEW OF BASINS

SCALE 1"=10'



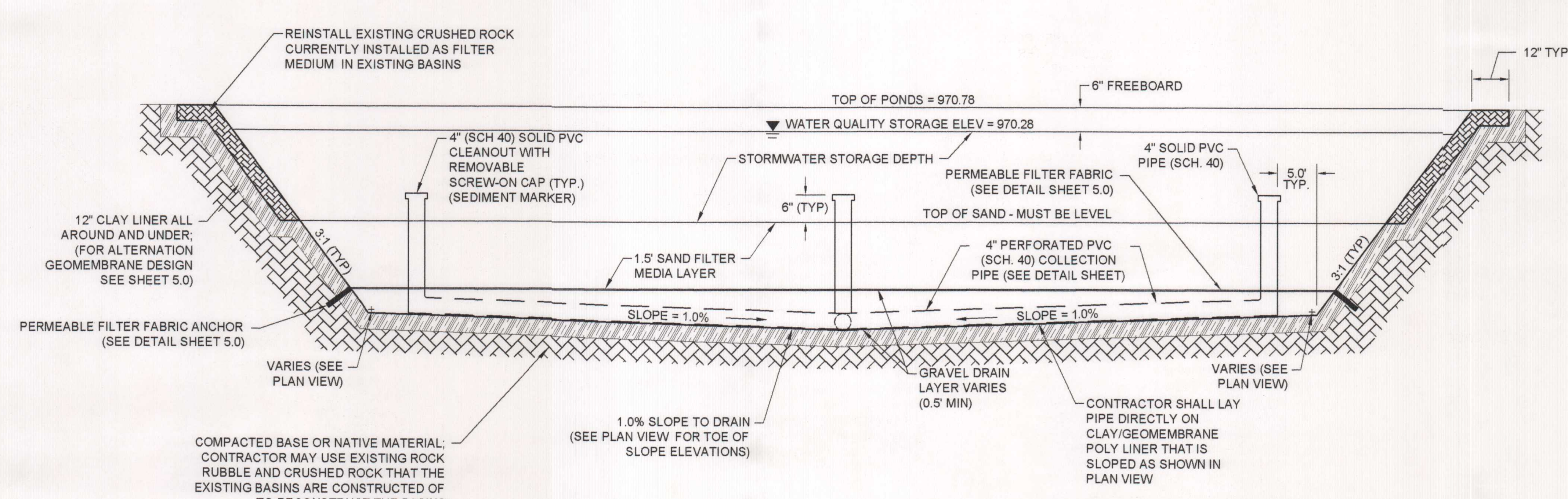


NOTES:

1. A SIGN IS TO BE PLACED BESIDE THE PROPOSED WET WELL AND ON THE BMP'S ACCESS GATE DISPLAYING THE NAME AND PHONE NUMBER OF THE PARTY RESPONSIBLE FOR ITS OPERATION.
2. THE WET WELL REQUIRES A HIGH WATER ALARM WITH RED LIGHT SIGNALIZATION EXTENDING GREATER THAN 5 FT ABOVE GROUND. AN EMERGENCY SHUT OFF SWITCH IS ALSO REQUIRED.
3. THE ALARM SHALL SIGNAL WHEN THE PUMP IS NOT OPERATIONAL OR NEEDS MAINTENANCE. △1
4. UPON COMPLETING CONSTRUCTION OF THE STORMWATER QUALITY BASIN THE CONTRACTOR SHALL STABILIZE THE SURROUNDING DISTURBED AREA.
5. STAGING AREA REQUIREMENT (800 SQ. FT.) IS SATISFIED BY UTILIZING AREA ADJACENT TO THE BASIN AS DESIGNATED IN THE PLAN VIEW (THIS SHEET).

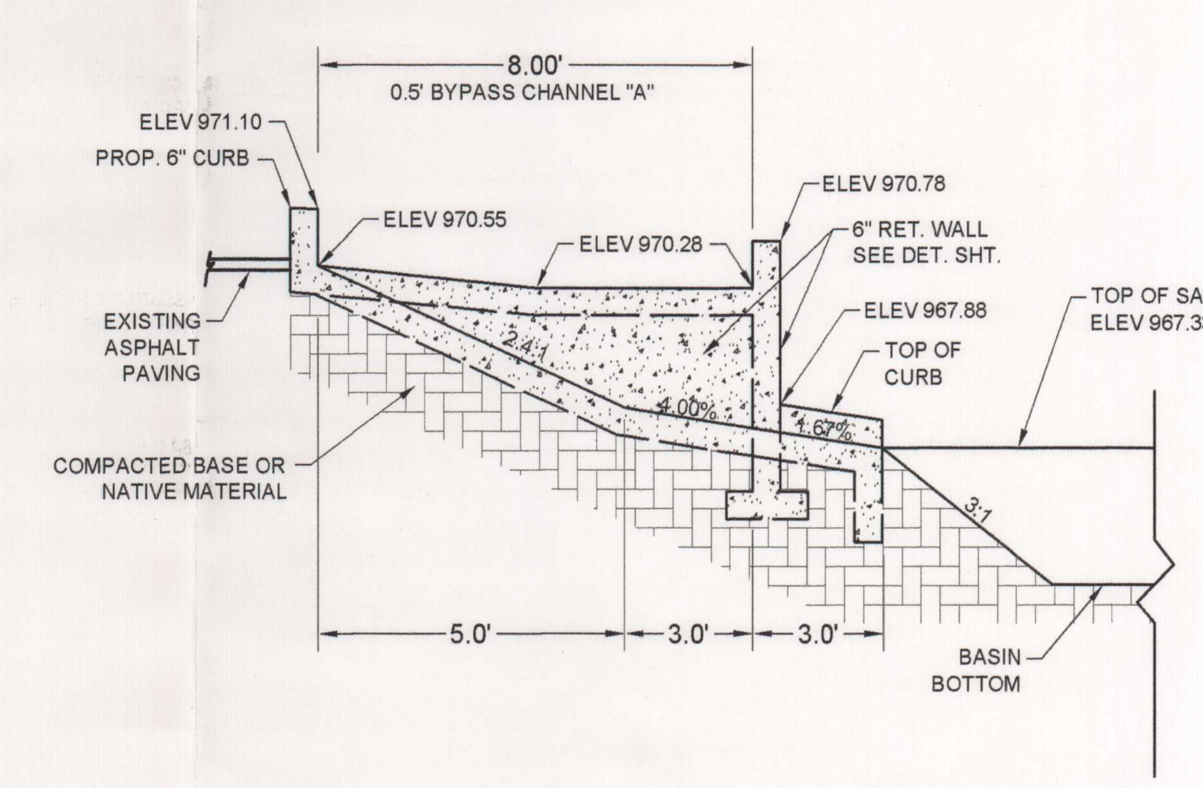
NOTES:

1. A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN EACH SEDIMENTATION BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EQUALS 6" AND SEDIMENT REMOVAL IS REQUIRED.
2. SAND PROPERTIES – THE SAND GRAIN SIZE DISTRIBUTION SHOULD BE COMPARABLE TO THAT OF TXDOT Mn SAND GRADING 1 (421-FINE).
3. ALL DISTURBED GROUND SURFACES SHALL BE COVERED WITH TOP SOIL AND SOD OR COVERED WITH THE EXISTING ROCK RUBBLE AND CRUSHED STONE THAT THE BASINS ARE CURRENTLY CONSTRUCTED WITH.
4. ALL RIPRAP SHALL BE 6" CONCRETE WITH 6" x 6" WWM.
5. THE EXISTING CRUSHED ROCK FILTER MEDIUM SHALL NOT BE USED IN LIEU OF SAND, BUT CAN BE USED AS BACKFILL AND AS A SURFACE TREATMENT.
6. GRAVEL DRAIN SHALL CONSIST OF 3/4" TO 1" CRUSHED ROCK


REINSTALL EXISTING CRUSHED ROCK CURRENTLY INSTALLED AS FILTER MEDIUM IN EXISTING BASINS
12" TYP
TOP OF PONDS = 970.78
6" FREEBOARD
WATER QUALITY STORAGE ELEV = 970.28
4" (SCH 40) SOLID PVC CLEANOUT WITH REMOVABLE SCREW-ON CAP (TYP.) (SEDIMENT MARKER)
STORMWATER STORAGE DEPTH
PERMEABLE FILTER FABRIC (SEE DETAIL SHEET 5.0)
4" SOLID PVC PIPE (SCH. 40)
5.0' TYP.
6" (TYP)
TOP OF SAND - MUST BE LEVEL
12" CLAY LINER ALL AROUND AND UNDER; (FOR ALTERNATION GEOMEMBRANE DESIGN SEE SHEET 5.0)
1.5' SAND FILTER MEDIA LAYER
4" PERFORATED PVC (SCH. 40) COLLECTION PIPE (SEE DETAIL SHEET)
3:1 (TYP)
SLOPE = 1.0%
PERMEABLE FILTER FABRIC ANCHOR (SEE DETAIL SHEET 5.0)
VARIES (SEE PLAN VIEW)
GRAVEL DRAIN LAYER VARIES (0.5' MIN)
CONTRACTOR SHALL LAY PIPE DIRECTLY ON CLAY/GEOMEMBRANE POLY LINER THAT IS SLOPED AS SHOWN IN PLAN VIEW
1.0% SLOPE TO DRAIN (SEE PLAN VIEW FOR TOE OF SLOPE ELEVATIONS)
COMPACTED BASE OR NATIVE MATERIAL; CONTRACTOR MAY USE EXISTING ROCK RUBBLE AND CRUSHED ROCK THAT THE EXISTING BASINS ARE CONSTRUCTED OF TO RECONSTRUCT THE BASINS

SECTION A - A

NTS - TYPICAL BOTH BASINS



SECTION B - B

NTS

R E V I S I O N S NO.	DATE	COMMENTS
1	08-15-13	BAFFLES; SAND HATCH; BASIN SECTION; RISER PIPES; PUMP SYMBOL; ALARM;
2	11-05-13	TCEQ 8/30/13 REVIEW COMMENTS; ELEC SERV

STATE OF TEXAS — DAVID W. DYE, III, P.E. — 84257 — LICENSED PROFESSIONAL ENGINEER — 11/5/13

DYE DEVELOPMENT, INC.
TBPE: F-9539 — TBPE: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9758

STOR-HAUS SELF STORAGE

BASIN DESIGN

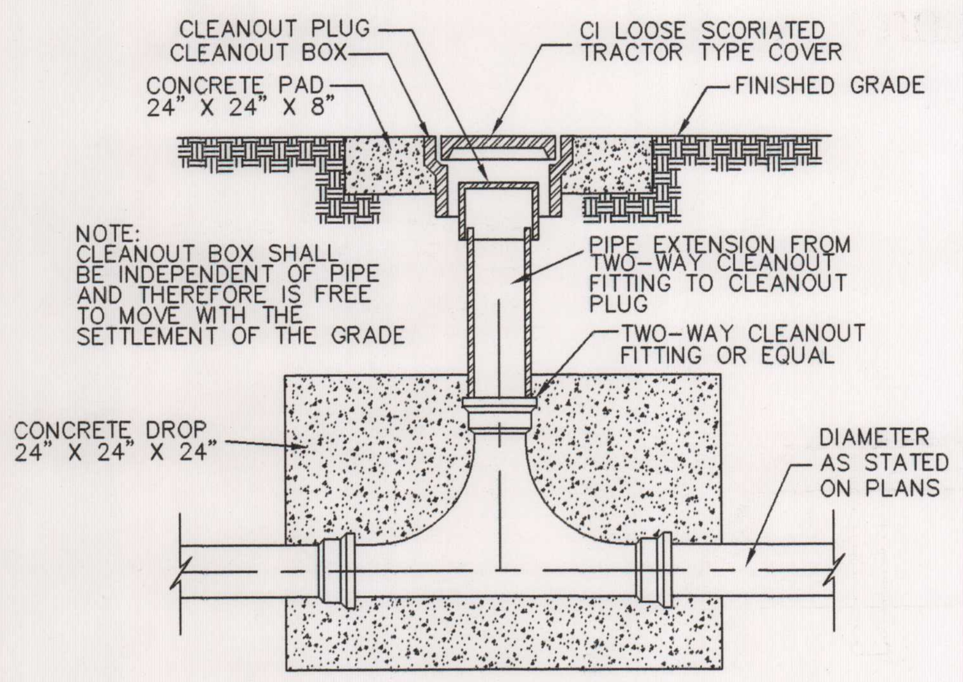
WPAP MODIFICATION

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

C:\Users\David3\Documents\Backups\102913 DD Server Data Misc\Stor Haus Self Storage\revised files at DE transfer to server\4.0 Stor Haus Basin Design.dwg

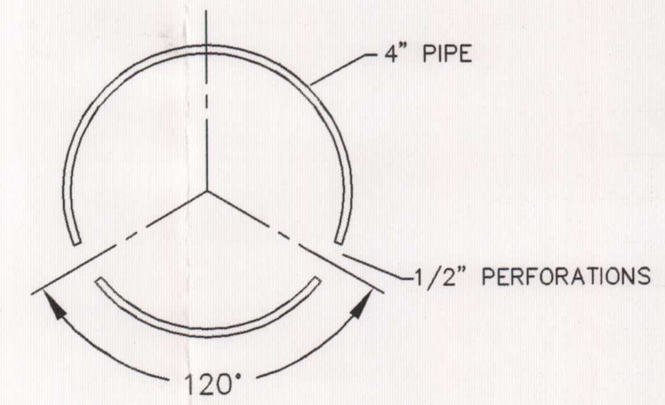
DRAWN BY: DWD
CHECKED BY: DWD
DATE: 05/22/13
PROJECT NO: STOR-HAUS

SHEET 4.0



CLEANOUT DETAIL

(DUAL DIRECTION)
NOT TO SCALE



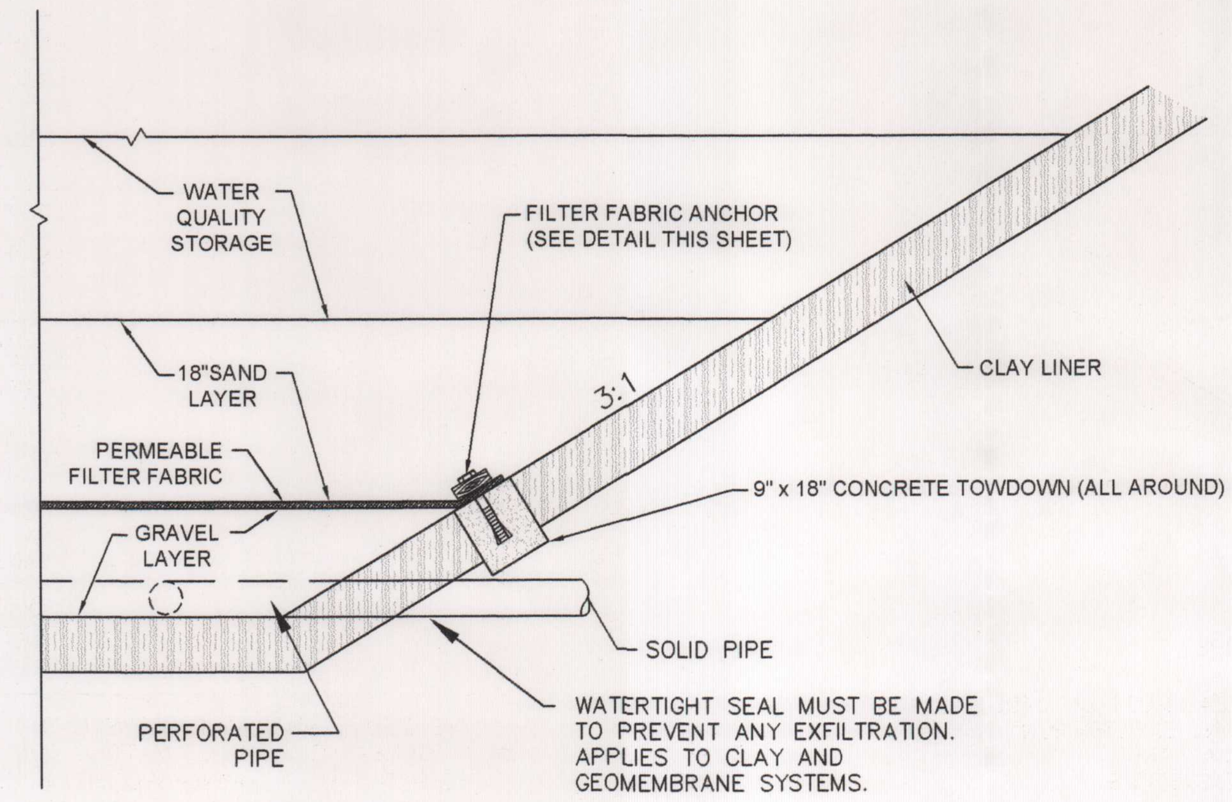
NOTE:

1. MINIMUM DIAMETER = 4"; SCHEDULE 40 PVC. (SEE PLAN VIEW)
2. THE MAXIMUM SPACING BETWEEN ROWS OF PERFORATIONS SHOULD NOT EXCEED 6".
3. SET PERFORATIONS DOWN.
4. PERFORATIONS SHOULD BE LESS THAN A 1/2" DIAMETER.
5. PIPES SHOULD LIE FLAT ON CONCRETE BOTTOM WHICH HAS BEEN GRADED TO DRAIN AS SHOWN ON PLAN VIEW.
6. ALL CLEANOUTS SHALL BE SOLID PIPE WITH A CLEANOUT AT THE END OF EACH LINE.
7. ALL PIPES WITHIN GRAVEL LAYER SHALL BE PERFORATED.

4" PERFORATED PIPE

NOT TO SCALE

NOTE: CONTRACTOR TO COORDINATE THIS CONSTRUCTION WITH THE LINER MANUFACTURER TO MINIMIZE LEAKAGE OF WATER BEING TREATED IN THE BASINS (FOR ALTERNATE GEOMEMBRANE DESIGN).

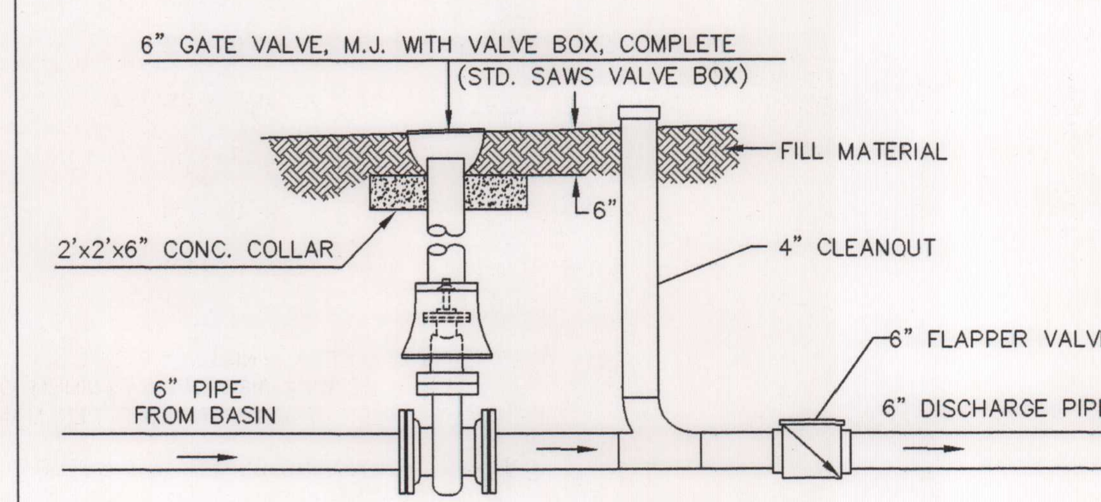


PIPE DISCHARGE AT LINER DETAIL & EXISTING 36" CMP

NOT TO SCALE

NOTES TO CONTRACTOR

1. CONTRACTOR IS ADVISED THAT TCEQ DOES NOT ALLOW CHANGES TO PERMANENT POLLUTION ABATEMENT MEASURES WITHOUT THEIR PRIOR APPROVAL.
2. CONTRACTOR SHALL NOTIFY CERTIFYING ENGINEER WHEN BASIN CONSTRUCTION HAS PROGRESSED TO EACH OF THE FOLLOWING MILESTONES:
   a. CONCRETE FORMS FOR CURBING AND CHANNELS HAVE BEEN INSTALLED AND BASIN GRADING HAS BEEN COMPLETED. ENGINEER WILL INSPECT AND VERIFY GRADES PRIOR TO ADDITIONAL WORK BEING PERFORMED.
   b. BASIN LINER AND PVC DRAIN PIPE HAS BEEN LAID BUT NOT BACKFILLED. ENGINEER SHALL VERIFY PIPE INVERTS & GRADES.
   c. GRAVEL AND FILTER FABRIC HAS BEEN PLACED. ENGINEER SHALL INSPECT AND VERIFY GRADES.
   d. SAND HAS BEEN PLACED. ENGINEER SHALL INSPECT AND VERIFY GRADES.
   e. PUMP STATION IS COMPLETE. ENGINEER SHALL INSPECT AND VERIFY PROPER FUNCTION.
   f. CONSTRUCTION COMPLETE, INCLUDING ALL RIP-RAP OR SOD/SEED/ROCK PLACEMENT ON SIDE SLOPES (WHERE APPLICABLE).
3. WORK SHALL NOT CONTINUE ON THE BASIN UNTIL THE ENGINEER HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION AT EACH STAGE. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 24 HOURS ADVANCE NOTICE PRIOR TO TIME THE BASIN WILL BE AT THE REQUIRED STAGE. ENGINEER WILL OBTAIN AS-BUILT ELEVATIONS OF THE WORK COMPLETED AT EACH STAGE. WORK NOT CONSTRUCTED AT THE PROPER ELEVATION WILL BE REQUIRED TO BE RE-INSTALLED AT CONTRACTOR'S EXPENSE. ENGINEER WILL RELY ON THIS DATA TO PROVIDE FINAL AS-BUILT CERTIFICATION AS REQUIRED BY THE TCEQ.
4. BEFORE FINAL ACCEPTANCE OF CONSTRUCTION BY THE OWNER, THE CONTRACTOR WILL REMOVE ALL TRASH, DEBRIS, AND ACCUMULATED SILT FROM THE BASINS AND REESTABLISH THEM TO THE PROPER OPERATING CONDITION.
5. THE MINIMUM DRAIN TIME FOR A FULL BASIN IS 24 HOURS, PER TCEQ SPECS. THE CONTRACTOR SHALL RESTRICT THE FLOW THROUGH ADJUSTING OF THE GATE VALVE ON THE DISCHARGE PIPE, SO AS TO PROVIDE THE MINIMUM 24 HOUR DRAW DOWN TIME.



6" GATE & FLAPPER VALVE DETAIL

NOT TO SCALE

NOTE:

1. VALVE WILL BE SET PARTIALLY CLOSED SO AS TO PROVIDE A MINIMUM DRAWDOWN TIME OF 24 HOURS.
2. CONTRACTOR SHALL PROVIDE OWNER WITH VALVE OPERATING KEY/ROD PRIOR TO PROJECT COMPLETION.

BASIN DESIGN DATA	
BASINS WATERSHED AREA	3.01 AC
RUN OFF DEPTH	1.70 INCH
REQUIRED CAPTURE VOLUME	14,516 CF
REQUIRED SAND AREA	1,452 SF
BASIN "A"	
DEPTH (AVG.)	2.95 FT*
CAPTURE VOLUME	7,449 CF*
SAND AREA	1,484 SF
BASIN "B"	
DEPTH (AVG.)	2.28 FT*
CAPTURE VOLUME	7,553 CF*
SAND AREA	2,044 SF
TOTAL (BASIN "A" & "B")	
CAPTURE VOLUME	15,002 CF
SAND AREA	3,528 SF
OVERFLOW WEIR ELEVATION	970.28

*EXCLUDES 0.5 FOOT FREEBOARD

THE SEPARATION LAYER BETWEEN THE SAND FILTER AND GRAVEL LAYERS SHALL BE A PERMEABLE DRAINAGE MATTING CONSISTING OF NON-WOVEN FILTER FABRIC MEETING THE FOLLOWING SPECIFICATIONS (UNLESS OTHERWISE APPROVED BY THE ENGINEER BEFOREHAND, IN WRITING):

△2 SAND/GRAVEL PERMEABLE FILTER FABRIC SPECIFICATIONS

PROPERTY	TEST METHOD	SPECIFICATION
WEIGHT (OZ/SY)	ASTM D 3776	4.0
GRAB STRENGTH (LBS.)	ASTM D 4632	90
ELONGATIONS (%)	ASTM D 4632	55
PUNCTURE (LBS)	ASTM D 3787	60
AOS (SIEVE #)	ASTM D 4751	70–80
FLOW RATE (GPM/SF)	ASTM D 4491	120

1. FABRIC OVERLAP SHALL BE A MINIMUM OF 24".
2. ALL OVERLAPS SHALL BE WIRE TIED AT A MAXIMUM OF 36" INTERVALS.
3. PERMEABLE FILTER FABRIC TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
4. SEE FABRIC FILTER ANCHORING DETAIL THIS SHEET.

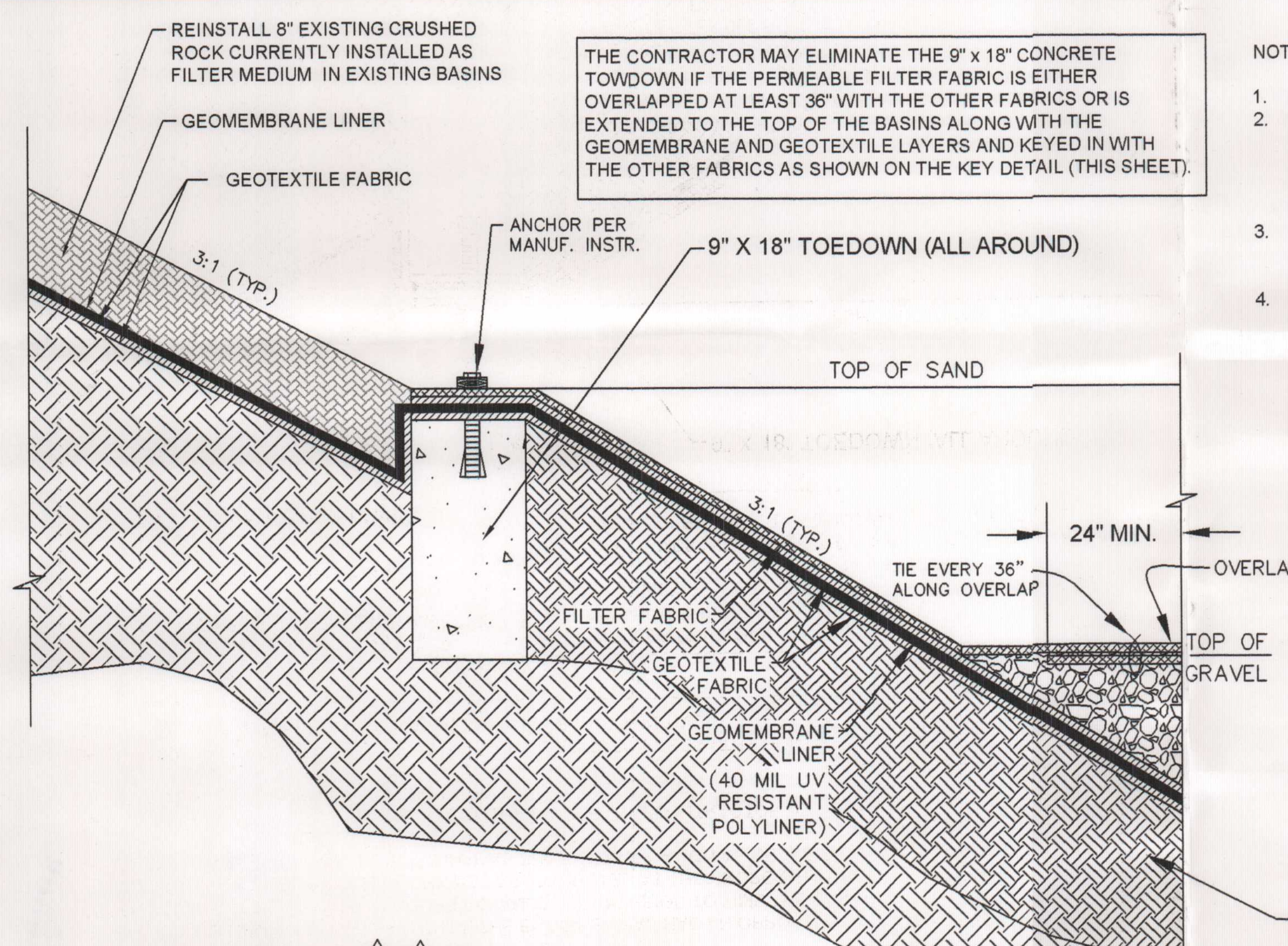
SAND AND GRAVEL LAYER NOTES:

1. SAND FILTER MATERIAL SHALL BE COMPARABLE TO THAT OF TXDOT Mn SAND GRADING 1 (421-FINE).
2. ROCK FOR GRAVEL LAYER SHALL BE 3/4" TO 1" DIAMETER CRUSHED ROCK.

BMP SIZING CALCULATION		
County =	Comal	
Total project area included in plan * =	3.38	acres
Predevelopment impervious area within the limits of the plan * =	0.02	acres
Total post-development impervious area within the limits of the plan* =	2.77	acres
Total post-development impervious cover fraction * =	82%	
P =	33.00	inches
LM TOTAL PROJECT =	2,466	lbs.
TSS Reduction for Sand Filters =	89%	
Number of drainage basins / outfalls areas leaving the plan area =	1	

RG-348 Page 3-33 Equation 3.7: LR =(BMP efficiency) x P x (AI x 34.6 + AP x 0.54)		
AC = Total On-Site drainage area in the BMP catchment area		
AI = Impervious area proposed in the BMP catchment area		
AP = Pervious area remaining in the BMP catchment area		
LR = TSS Load removed from this catchment area by the proposed BMP		
AC =	3.01	acres
AI =	2.68	acres
AP =	0.33	acres
LR =	2731	lbs
Desired LM THIS BASIN =	2466	lbs.
F =	0.90	
Rainfall Depth =	1.70	inches
Post Development Runoff Coefficient =	0.65	
On-site Water Quality Volume =	12097	cubic feet
Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	2419	
Total Capture Volume (required water quality volume(s) x 1.20) =	14516	cubic feet

Filter Area for Sand Filters		
Water Quality Volume for Sedimentation Basin =	14516	cubic feet
Minimum Filter Basin Area (Includes additional 20% for Single Chamber Sand Filter Basin) =	1452	square feet



THE CONTRACTOR MAY ELIMINATE THE 9" x 18" CONCRETE TOWDOWN IF THE PERMEABLE FILTER FABRIC IS EITHER OVERLAPPED AT LEAST 36" WITH THE OTHER FABRICS OR IS EXTENDED TO THE TOP OF THE BASINS ALONG WITH THE GEOMEMBRANE AND GEOTEXTILE LAYERS AND KEYED IN WITH THE OTHER FABRICS AS SHOWN ON THE KEY DETAIL (THIS SHEET).

△ △ ALTERNATIVE FILTER FABRIC & LINER OVERLAP & ANCHORING DETAIL

NOT TO SCALE

NOTE:

1. CONTRACTOR TO PLACE ANCHOR BOLTS AT 5'-0" O.C.
2. IN ORDER TO SECURE FILTER FABRIC TO CONCRETE TOEDOWN WITH GEOMEMBRANE/GEOTEXTILE LAYERS, IT IS RECOMMENDED THAT THE CONTRACTOR INSTALL A LENGTH OF FILTER FABRIC WITH THE OTHER LAYERS SUCH THAT SUBSEQUENT LAYERS CAN BE OVERLAPPED AND TIED TO THE EXPOSED FILTER FABRIC. THIS WILL PROVIDE FOR EASIER MAINTENANCE IN THE FUTURE WITHOUT DESTROYING CONCRETE OR WATER TIGHT LINER.
3. THE GEOMEMBRANE LINER SHALL HAVE A MINIMUM THICKNESS OF 40 MILS AND BE ULTRAVIOLET RESISTANT. THE GEOTEXTILE FABRIC (FOR PROTECTION OF GEOMEMBRANE) SHOULD BE NON-WOVEN GEOTEXTILE FABRIC AND MEET THE SPECIFICATIONS BELOW.
4. CONTRACTOR SHALL PREVENT ANY TEARING OR PUNCTURE TO THE POLY LINER DURING CONSTRUCTION. ENTIRE LINER MUST BE WATER TIGHT.

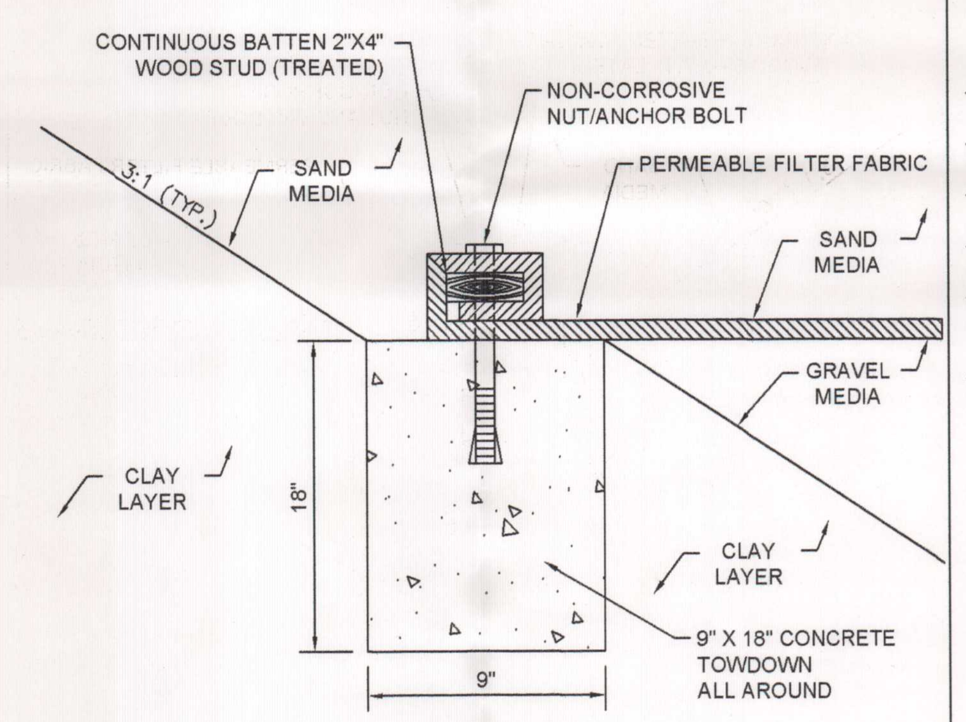
Geotextile Fabric Specifications (COA, 2004)

Property	Test Method	Unit	Specification (min)
Unit Weight	ASTM D-5261	oz/yd2	8
Filtration Rate	ASTM D-4491	cm/sec	0.20
Puncture Strength	ASTM D-4833	lb.	125
Mullen Burst Strength	ASTM D-3786	psi	400
Tensile Strength	ASTM D-4632	lb.	200
Equiv. Opening Size	US Standard Sieve	No.	80
Overlap	Manuf. Recommend	inch	36

INSTALLATION METHODS FOR GEOMEMBRANE LINERS VARY ACCORDING TO THE SITE REQUIREMENTS. SEE DETAIL FOR TYPICAL INSTALLATION METHOD.

6"–12" BEDDING MATERIAL UNDER LINER MUST BE SUITABLE MATERIAL (NOT SAND) AND COMPACTED TO A DENSITY OF 95%. CONTRACTOR SHALL REFER TO MANUFACTURERS SPECIFICATIONS FOR GEOMEMBRANE BEDDING MATERIAL. BEDDING MUST BE COMPACTED & SLOPED AT 1% (MIN.) TO DRAIN AS SHOWN IN PLAN VIEW PRIOR TO PLACEMENT OF LINERS

THE CONTRACTOR MAY ELIMINATE THE 9" x 18" CONCRETE TOWDOWN IF THE PERMEABLE FILTER FABRIC IS EXTENDED TO THE TOP OF THE BASINS AND KEYED IN AS SHOWN ON THE KEY DETAIL (THIS SHEET).



NOTE:
CONTRACTOR TO PLACE ANCHOR BOLTS AT 5'-0" O.C.

△ PERMEABLE FILTER FABRIC ANCHORING DETAIL

NOT TO SCALE

GEOMEMBRANE POLY LINER

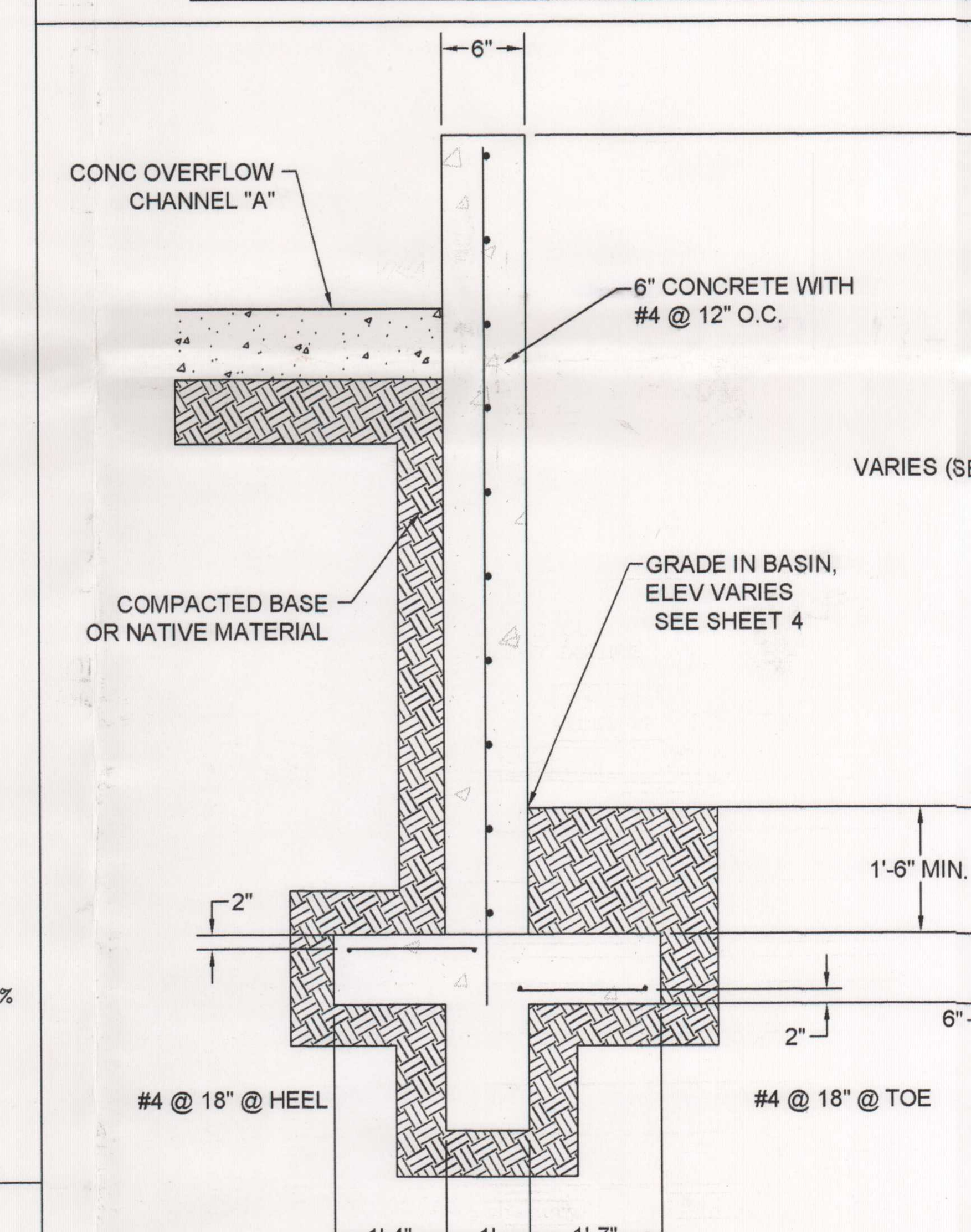
- ULTRAVIOLET RESISTANT
- THICKNESS = 40 MILS MINIMUM
- JOINTS SHALL BE WATER TIGHT AT SEAMS.
- WATERTIGHT SEAL BETWEEN POLY LINER AND TRANSITION SURFACES.
- BEDDING MATERIAL SHALL BE SUITABLY COMPACTED MATERIAL IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- PROTECTIVE GEOTEXTILE FABRIC TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

△2 CLAY LINER SPECIFICATIONS

TABLE 3

PROPERTY	STANDARD TEST METHOD	SPECIFICATION
HYDRAULIC CONDUCTIVITY	ASTM D5084	NOT HIGHER THAN 1.0×10^{-6} cm/sec
PLASTICITY INDEX OF CLAY	ASTM D4318	NOT LESS THAN 15
LIQUID LIMIT OF CLAY	ASTM D4318	NOT LESS THAN 30
CLAY PARTICLES PASSING	ASTM D422	NOT LESS THAN 30
SOIL COMPACTION	ASTM D698	NOT LESS THAN 95% OF STANDARD PROCTOR DENSITY

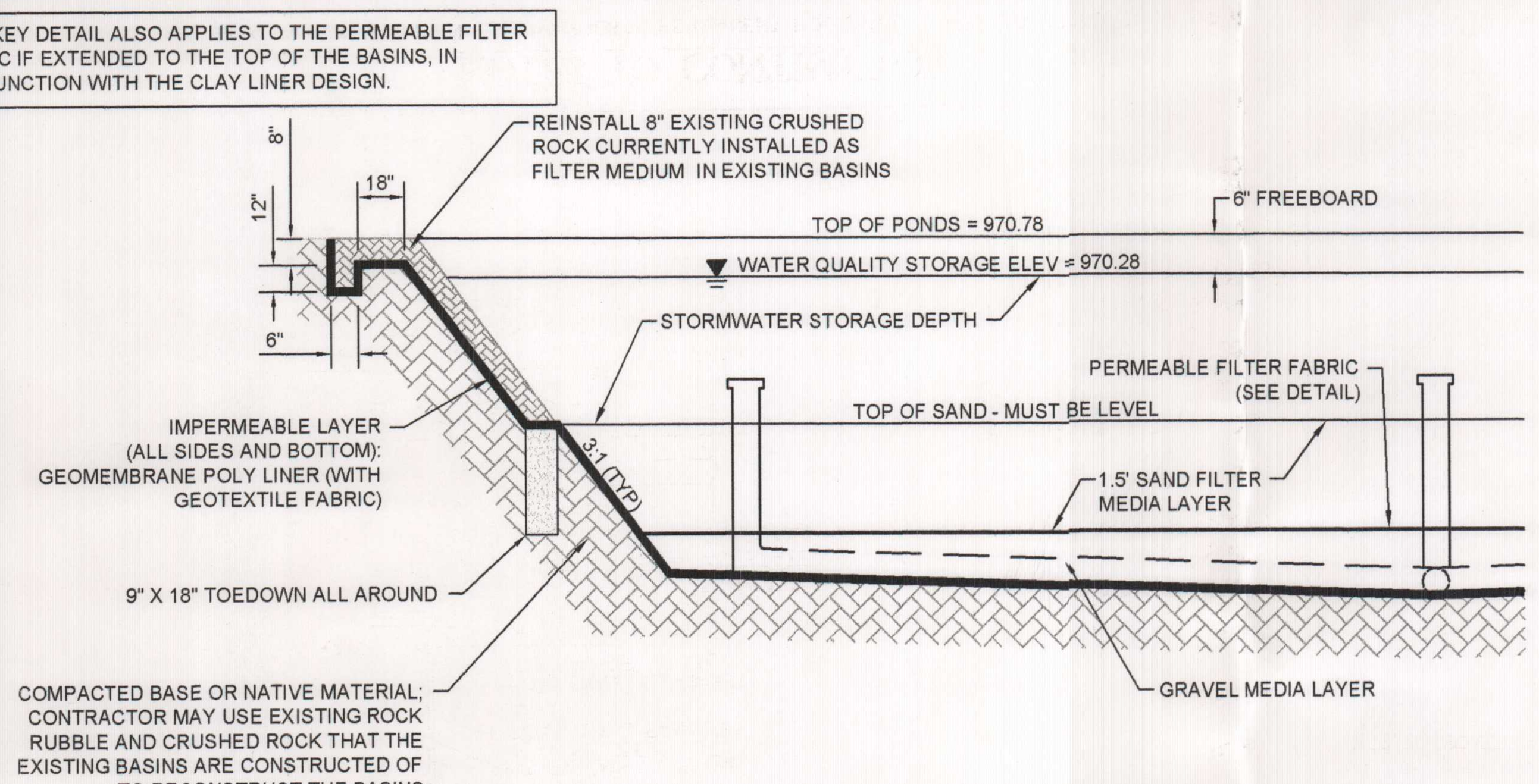
1. LINERS SHALL BE AT LEAST 12 INCHES THICK.
2. ALL STANDARD TEST METHODS SHOULD BE CURRENTLY ACTIVE.
3. CURRENTLY ACTIVE TxDOT AND U.S ARMY CORPS OF ENGINEERS STANDARD TEST METHODS ARE ALSO ACCEPTABLE.



RETAINING WALL DETAIL

NOT TO SCALE

THIS KEY DETAIL ALSO APPLIES TO THE PERMEABLE FILTER FABRIC IF EXTENDED TO THE TOP OF THE BASINS, IN CONJUNCTION WITH THE CLAY LINER DESIGN.



△ ALTERNATIVE IMPERMEABLE LINER INSTALL ON EARTHEN SLOPE & KEY DETAIL

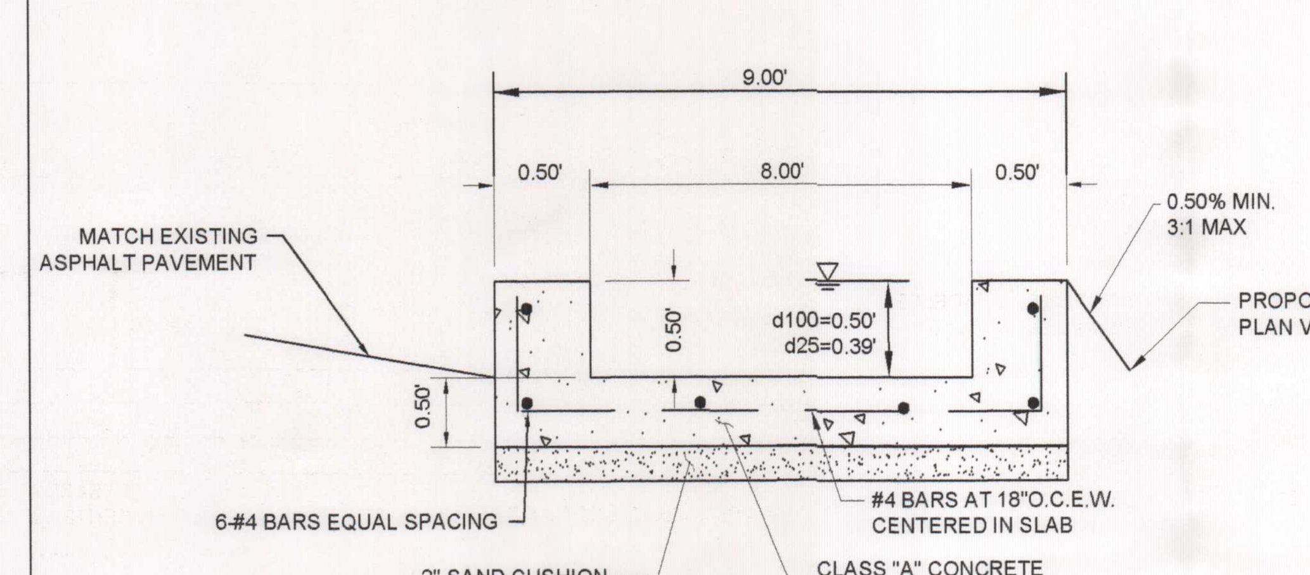
NOT TO SCALE

CONC. CHANNEL "A" CALCULATIONS

n = 0.013 (concrete)
S = 0.65%

Q25 = 14.40 cfs
d25 = 0.39'
V25 = 4.63 fps

Q100 = 21.40 cfs
d100 = 0.50'
V25 = 5.38 fps

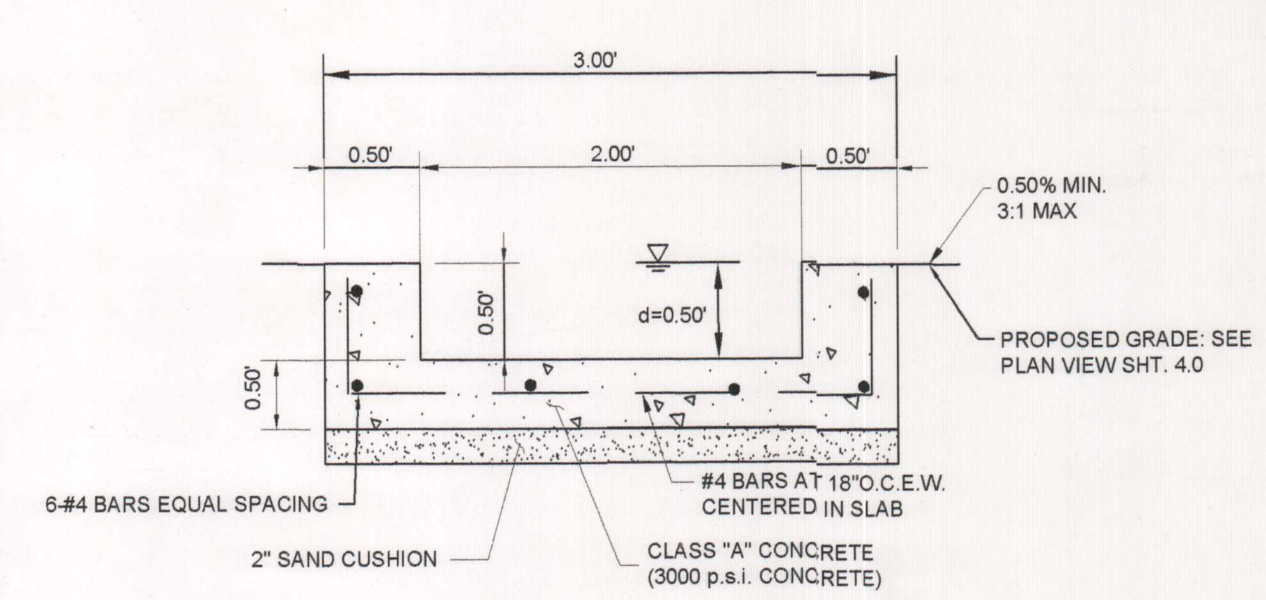


SECTION "C-C"
CHANNEL "A"
NOT TO SCALE

CONC. CHANNEL "A" CALCULATIONS

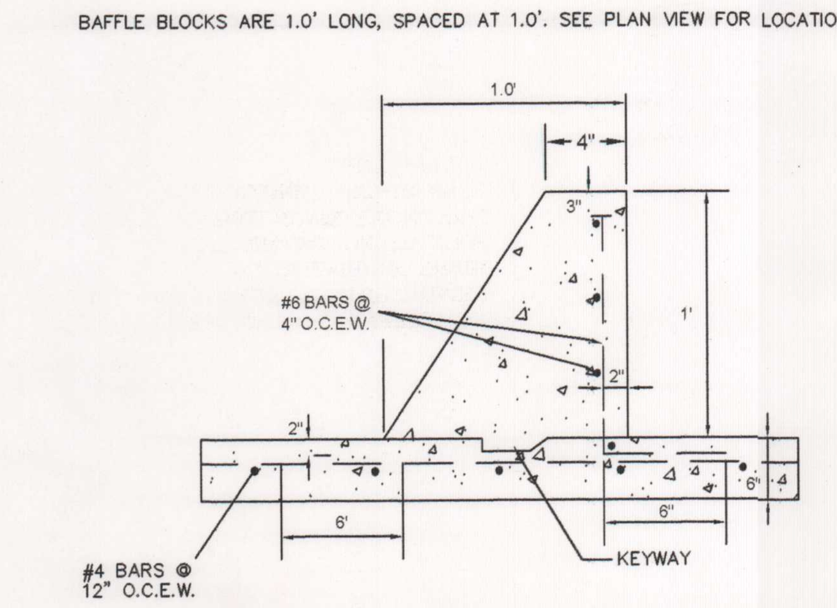
n = 0.013 (concrete)
S = 2.11 % (inlet cross flow & channel outfall)

BASIN INFLOW & OUTFLOW
Q = 7.98 cfs
d = 0.50'
V = 7.98 fps



SECTION "D-D"
CHANNEL "B"
NOT TO SCALE

BAFFLE BLOCKS ARE 1.0' LONG, SPACED AT 1.0'. SEE PLAN VIEW FOR LOCATIONS.



△ BAFFLE BLOCK DETAIL

NOT TO SCALE

NO.	DATE	COMMENTS
1	08-15-13	FILTER FABRIC & CLAY SPECS, SEALING NOTE, FILTER FABRIC ANCHOR DETAILS, BAFFLE BLOCK DETAIL
2	11-05-13	TCEQ 8/30/13 REVIEW COMMENTS

REVISIONS

11/5/13

DYE DEVELOPMENT, INC.
TBPE: F-9539 — TBPLS: #10092200
17174 IRONGATE RAIL
SAN ANTONIO, TEXAS 78247
TEL. (210) 685-9193
FAX (210) 598-9758

STOR-HAUS SELF STORAGE
DETAILS
WPAP MODIFICATION
1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

DRAWN BY: DWD
CHECKED BY: DWD
DATE: 11/05/13
PROJECT NO: STOR-HAUS

SHEET 5.0

File

Geologic Assessment
For Regulated Activities
on The Edwards Aquifer Recharge/transition Zones
and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

REGULATED ENTITY NAME: **Store Haus**

TYPE OF PROJECT: X WPAP __ AST __ SCS __ UST

LOCATION OF PROJECT: X Recharge Zone __ Transition Zone __ Contributing Zone within the Transition Zone

PROJECT INFORMATION

1. X Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE**.

2. Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (*Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A*, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Soil Units, Infiltration Characteristics & Thickness		
Soil Name	Group*	Thickness (feet)
Rumple - Comfort Association	**C -D**	**1**

** Soil Group Definitions (Abbreviated)*

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate infiltration rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

3. X A **STRATIGRAPHIC COLUMN** is attached at the end of this form that shows formations, members, and thicknesses. The outcropping unit should be at the top of the stratigraphic column.

4. X A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.

5. X Appropriate **SITE GEOLOGIC MAP(S)** are attached:

The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1" : 400'

Applicant's Site Plan Scale	1" = **20** '
Site Geologic Map Scale	1" = **20** '
Site Soils Map Scale (if more than 1 soil type)	1" = _____ '

6. Method of collecting positional data:
   - X Global Positioning System (GPS) technology.
   - __ Other method(s).

7. X The project site is shown and labeled on the Site Geologic Map.

8. X Surface geologic units are shown and labeled on the Site Geologic Map.

9. X Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
__ Geologic or manmade features were not discovered on the project site during the field investigation.

10. X The Recharge Zone boundary is shown and labeled, if appropriate.

11. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.):

X There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
__ The wells are not in use and have been properly abandoned.
__ The wells are not in use and will be properly abandoned.
X The wells are in use and comply with 16 TAC Chapter 76.
__ There are no wells or test holes of any kind known to exist on the project site.

ADMINISTRATIVE INFORMATION

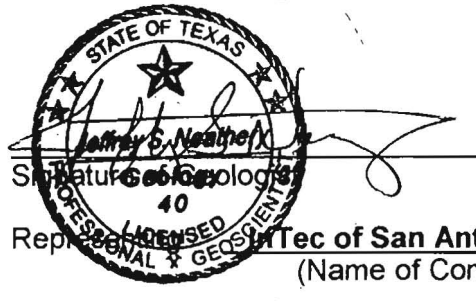
12. X Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

Date(s) Geologic Assessment was performed: **May 2, 2013**
Date(s)

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Jeffrey S. Neathery, P.G. **(210) 710-6406**
Print Name of Geologist Telephone

Fax



Signature of Geologist **May 3, 2013**
Date

Representing: **Tec of San Antonio**
(Name of Company)

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Store Haus

LOCATION							FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *			1C*			2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE			LONGITUDE			FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	MOD	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
	D	M	S	D	M	S				X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	29	45	45.31	98	12	37.18	MB	30	Kep	12	5	?					X	0	30	30		X		hillside
S-2	29	45	46.31	98	12	36.00	MB	30	Kep	1	1	?					X	0	30	30		X		hillside
S-3	29	45	45.52	98	12	35.67	MB	30	Kep	150	40	8					N	15	45		45		X	hillside
S-4	29	45	46.70	98	12	36.39	MB	30	Kep	90	40	6					N	15	45		45		X	hillside
S-5	29	45	47.22	98	12	36.64	MB	30	Kep	6	6	3					N	15	45		45		X	hillside

* DATUM: NAD83

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials

12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understand, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

STATE OF TEXAS
Jeffrey S. Neathery
Geology
40
LICENSED
PROFESSIONAL GEOSCIENTIST

Date: May 2, 2013

Sheet 1 of 1

TCEQ-0585-Table (Rev. 10-01-04)

Site Specific Soils

The site lies on a side of a gently sloping hill. This site is completely developed. There are no native soils exposed.

According to the U.S. Soil Conservation Service, the soils beneath the SITE are classified as Rumple-Comfort association, undulating.

This Rumple-Comfort association consists of shallow and moderately deep soils on uplands in the Edwards Plateau. Rumple soils make up about 60 percent of the association. Comfort soils make up about 20 percent. The remainder consists mostly of Tarpley soils. These soils are well drained. Surface runoff is medium. Permeability is moderately slow in Rumple soils and slow in Comfort soils. Water erosion is a moderate hazard.

Stratigraphic Column

Group	Formation	Member	Thickness (ft)
Del Rio Clay			40-50
Edwards Limestone	Georgetown		20-40
	Person	Cyclic and Marine	80-100
		Leached and Collapsed	60-90
		Regional Dense	20-24
	Kainer	Grainstone	50-60
		Kirschberg Evaporite	50-70
		Dolomitic	110-150
		Basal Nodular	40-60
Glen Rose Limestone	Upper Glen Rose		350-500

(From U.S.G.S., 1996)

Site Specific Geology

According to the official Recharge Zone maps, the site lies within the Edwards Aquifer Recharge Zone. According to the literature (USGS, 1996), the majority of the site lies on the Leached and Collapsed Member of the Person formation.

The site lies on a side of a gently sloping hill. The site is developed. It is covered with asphalt and crushed granite. No rock outcrops are visible. There are two storm water retention ponds at the downstream side of the site.

According to the literature, there is a large fault north of the site and south of the site. Since no rock outcrops were visible, there was no evidence of the fault observed in the field.

The site does not lie within the 100-year floodplain.

Feature Comments

S-1 This feature is a septic tank.

S-2 This feature is a water well. It is currently being used to supply water to the site.

S-3 This feature is a retention pond.

S-4 This feature is a retention pond.

S-5 This feature is a pump sump for the retention pond. It appears that this feature was never fully constructed.

References

Bureau of Economic Geology (1982) *Geologic Atlas of Texas, San Antonio Sheet*

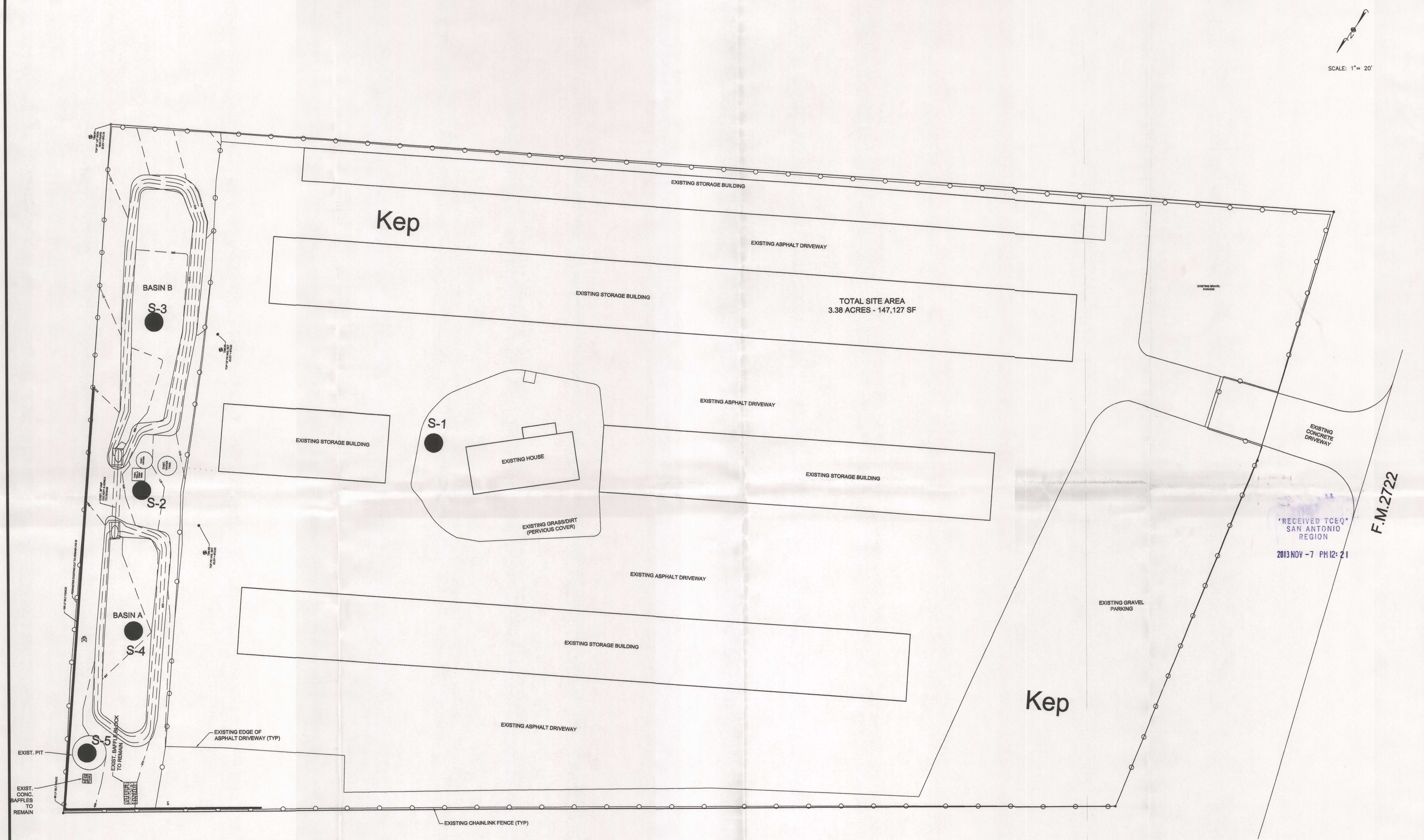
Soil Conservation Service (1991), *Soil Survey of Comal County Texas*, US Department of Agriculture

Texas Administrative Code (1999), *Official Edwards Aquifer Recharge Zone Map*, 30 TAC, Chapter 313, Subchapter A, San Antonio Region, Sattler Quadrangle

Texas Natural Resource Conservation Commission (2004), *Instructions to Geologists,* TCEQ-0585 Instructions

U.S. Geological Survey (1992), *Sattler, Texas* 7.5-Minute Series (Topographic)

U.S. Geological Survey (1996), *Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Outcrop, Bexar County, Texas*, Water Resources Investigations Report 95-4030


SCALE: 1"= 20'
Kep
EXISTING STORAGE BUILDING
EXISTING ASPHALT DRIVEWAY
EXISTING STORAGE BUILDING
TOTAL SITE AREA
3.38 ACRES - 147,127 SF
EXISTING GRAVEL PARKING
BASIN B
S-3
EXISTING ASPHALT DRIVEWAY
EXISTING STORAGE BUILDING
S-1
EXISTING HOUSE
EXISTING STORAGE BUILDING
EXISTING CONCRETE DRIVEWAY
S-2
EXISTING GRASS/DIRT
(PERVIOUS COVER)
"RECEIVED TCEQ"
SAN ANTONIO
REGION
2013 NOV -7 PM 12:21
F.M.2722
EXISTING ASPHALT DRIVEWAY
EXISTING GRAVEL PARKING
BASIN A
S-4
EXISTING STORAGE BUILDING
Kep
EXISTING ASPHALT DRIVEWAY
EXISTING EDGE OF ASPHALT DRIVEWAY (TYP)
S-5
EXIST. BAFFLE BLOCK TO REMAIN
EXIST. PIT
EXIST. CONC. BAFFLES TO REMAIN
EXISTING CHAINLINK FENCE (TYP)

REVISIONS		
NO.	DATE	COMMENTS

InTEC OF SAN ANTONIO, LP
12028 RADIUM DRIVE
SAN ANTONIO, TEXAS 78216
TEL (210) 525-9033

STOR-HAUS SELF STORAGE

SITE GEOLOGIC MAP

1936 FM 2722, CITY OF NEW BRAUNFELS, COMAL COUNTY, TEXAS 78136

DRAWN BY: JN
CHECKED BY: JN
DATE: 09-02-13
PROJECT NO: STOR-HAUS

SHEET
G1.0