April 17, 2025

Project No.: 10853-256

Mr. Brian Burkitt, PE Lower Colorado River Authority Water Quality Division P.O. Box 220 Austin, Texas 78767-0220

Subject: Asphalt Inc., LLC Burnet Quarry Application #2024-5606 U2 3221 FM 3509, Burnet, Texas 78611 Response to Comments Dated April 11, 2025

Mr. Burkitt,

Below, please find the responses to your comments dated April 11, 2025, regarding the Asphalt Inc., LLC Burnet Quarry Application (#2024-5606 U2).

Notice of the Application

-in accordance with Section 6.0(e) of the Highland Lakes Watershed Ordinance.

A parcel map and supportive adjacent property owner information (10853-256) documented was submitted to demonstrate the applicant mailed a notice of the permit application to persons who own property located within 500 feet to the site or within 1,000 feet of the project limits.

1. Provide the first-class mailed receipts proving that each adjacent property owner identified on the parcel map was mailed the permit application notice.

U1- Comment addressed.

2. Please confirm with supportive documentation that a notice of quarry-mine activity was mailed to officials of nearby municipalities, county, and groundwater conservation district.

U1- Comment addressed.

Quarry Mine Operator/Owner

-in accordance with Section 3.0 of the Highland Lakes Watershed Ordinance.

The permit application was submitted listing Asphalt Inc, LLC as the owner. The evidence of ownership documentation demonstrates HVPR4 LLC (grantor) selling the subject property to Burnet Ranch Investments, LLC. Burnet County Appraisal District documents the property (ID No. 47495) owned by Burnet Ranch Investments LLC.

3. The permittee is a landowner or quarry mine operator authorized to undertake development or quarry mine activities pursuant to a permit granted. Please provide legal supportive documentation demonstrating an authorized agent of Burnet Ranch Investments LLC has allowed an authorized agent of Asphalt Inc LLC to be the permittee.

U1- Comment addressed.

Cost Estimates for Erosion/Sediment Control Fiscal Security

- 4. Review the following items in the engineer's cost estimate for erosion and sediment controls document:
 - Compare the cost per unit prices to the LCRA Cost Estimate for ESC Fiscal Security bulletin. Please update the prices accordingly or provide counter cost estimates from local contractors or recent bids to propose a price that is less than what is listed.

U1- Comment partially addressed. LCRA's standard minimum pricing for seeding is \$2.00/ SY (Cost estimate technical bulletin: <u>lcra.org/download/cost-estimates-for-esc-tech-bulletin/?wpdmdl=31259</u>). At

\$2.00/SY, the total revegetation cost for approximately 1,040,440 SY would be \$2,080,880.00. The Cost per Unit pricing proposed for the "Seed Mixture (per acre)" item does not meet LCRA's revegetation minimum pricing. Please revise and update the cost per unit to meet LCRA's minimum pricing and provide an updated cost estimate.

U2- Comment addressed. Proof of current seed pricing was provided.

5. Add a quantity and pricing for a concrete washout to account for the wheel wash area.

U1- Comment addressed.

6. Add a quantity and pricing for the diversion/interception/perimeter berms item to account for the proposed berm areas.

U1- Comment addressed.

7. Add a quantity and pricing for rock berms, check dams, and high service rock berms. Refer to the markups on sheet C.2 for more information.

U1-Comment partially addressed. Based on LCRA's rock berm spacing requirements for varying slopes, the rock berm quantity will need to be updated. Please see markup on sheet 1 referencing the spacing revisions. Are these rock berms temporary or will they remain in place once the initial phase of construction is completed?

U2- Comment partially addressed. I measured 1040 LF of Rock Berms. Please revise and update the quantity within the cost estimate.

Response: The rock berms and check dams shown on the maps in the sheet set are not drawn to scale and are shown larger on the maps for visual purposes. The dimension callouts for the respective rock berms and check dams are accurate and those numbers were used in the cost estimate. Please see note added to Sheet C.1.

8. All proposed work, including the final conditions need to be included within the limits of construction. The total acreage within the limits of construction needs to be the amount of seeding proposed (Seed mixture+ Hydromulching= Acreage within limits of construction).

U1-Comment partially addressed. Pit number 4 is exempt from the revegetation acreage measurement since the pit floor will be actively mined and the drainage will be self-contained within the pit walls.

U2- As stated in the previous comment letter, the quarry pit area (Pit #4=319.1 Acres) will not be included within the revegetation area on the cost estimate. Based on the limits of construction depicted within the final conditions sheet, the overall area needing to be revegetated is approximately 350 acres. This means the total revegetation amount would be more than \$250,000 using the current unit pricing provided within your cost estimate. Please revise the quantity to include the entire area within the limits of construction.

Response: As discussed over the phone, the 57-acres is the total area proposed to be disturbed within this plan. Due to the nature of construction and to be conservative for the purpose of determining the appropriate amount of potential revegetation for the Cost Estimate an additional 50% contingency was added to the 57-acre disturbed area. This was done to calculate the amount of seed mixture needed. Based on previous comments and discussions, the permit limits the permittee to the amount of disturbance shown on the plan and we have also added signage onsite to indicate that additional LCRA is required prior to any disturbance no shown on the plan. Although the LOC encompasses approximately 350 acres there are large areas internal to the outer limit that will not and are not approved to be developed.

Cost Estimates for Erosion/Sediment Control Fiscal Security Additional Comments- U1

9. Changes to the Erosion and Sedimentation Control Plan have been requested. Please revise the cost estimate to include these changes. Once the cost estimate is approved, a letter of credit or other form of financial security acceptable to LCRA must be provided prior to issuance of a permit. A Letter of Credit shall have a minimum expiration of 3 years or shall renew automatically until LCRA determines that the project has achieved final stabilization. A letter of credit template can be found in the Development permit application [hyperlink:

https://www.lcra.org/download/hlwo-developer-application-packet-1-pdf/?wpdmdl=19704].

U2- Comment partially addressed. Changes have been requested to the cost estimate. Refer to comments 7.- U2 and 8.- U2.

Response: See attached response to comment 8.-U2.

Hydrologic Report

-in accordance with Section 5.2(b)(iv)(1)(a) of the Highland Lakes Watershed Ordinance.

1.2 Site Description, Post Development Conditions

10. Revise the section to describe any offsite areas draining to the project site or if those areas will be redirected around the site. Also, see comment below regarding offsite drainage.

The eastern property boundary has multiple drainage lows conveying offsite drainage through the property. The final conditions show berm breaks allowing offsite drainage to enter the main pit. If the drainage is not diverted from the quarry pit and the intent is to impound the offsite drainage, coordination with TCEQ and LCRA may be needed for the proposed impoundment.

U1- Comment partially addressed. If you intend to impound water in the quarry, please provide LCRA with a written determination by TCEQ of whether the impounded water would be state water.

U2- Comment partially addressed. Please revise your response to this comment since a response was submitted on 3/21/2025 and then on 3/27/2025, an updated final conditions plan sheet was submitted to address this comment. Based on the 3/27/2025 drawing, all offsite flows are being diverted around the quarry pit.

Response: See updated Hydrologic Report and Final Conditions Map showing no impoundment of off-site run-on in the main quarry pit. Off-site water is to be diverted around the main pit development through the use of perimeter berms.

11. Revise the section to describe the drainage features located onsite that drain into Peters Creek and reference the soil resource report included in this section.

U1- Comment partially addressed. The buffer zone was denoted as a "Potential Wetland" on sheet 3 of the Quarry and Mine Plans. Please provide a description within the hydrologic report of the drainage features and the stock pond since they appear on the US Fish and Wildlife wetlands mapper.

U2- Comment addressed.

12. Revise the section to include a detailed description of the 40-acre processing plant area including information about the rock crusher (stationary or portable), storage of chemicals used in washing of the aggregates, proposed water well (protection measures), process water storage area, reuse of water (e.g. closed-loop design), and include a description of best management practices designed to control runoff directly impacting this area or if all of it is diverted to on pit.

U1- Comment partially addressed. If applicable, please provide information within the report and on the Quarry plan sheets regarding the following items within the processing plant area:

- The storage of chemicals, the types of chemicals, proposed containment for the chemicals, and measures that will be implemented should any hazardous spills occur.
- The proposed water well, how it will be protected from daily processing activity, and what setbacks will be provided.
- The process water storage areas, a description of how the process water will be used, a description if a closed loop system will be utilized, and how/when/where the process water will be disposed of.
- Description of fuel types that will be located at the pad site and what types of containment will be utilized for the fueling areas. Will there be an SPCC plan for the tanks or any fuel located on this site? Please describe what measures will be taken to prevent stormwater contamination should any spills take place.
- Buildings, pad areas, and parking areas.
- Although the stockpiles drain to the pit, any drainage on these piles still has the potential to leave the processing pad site. Describe what practices will be implemented within the immediate vicinity of the stockpiles to prevent them from discharging sediment. For instance, this can be done with the use of internal berms around stockpiles. Whichever practice is proposed, it needs to be included on the Erosion and Sedimentation control plan as a note.

U2- Comment not addressed. The closed loop process was not described within the hydrologic report. Please revise.

Response: See updated Hydrologic Report for description of the closed loop process.

13. Provide a plan sheet to illustrate the processing plant area details. Include what is described above.

U1- Comment partially addressed. Provide a separate plan sheet for the processing plant area and include the items stated above within the plan sheet.

U2- Comment addressed.

14. Provide a plan sheet to illustrate the schematic of the office area, parking, scale house and proposed onsite sewage facilities (illustrate setbacks).

U1- Comment addressed. If the location of either changes, revisions will need to be submitted to LCRA HLWO.

15. State what the proposed depth for the quarry pit will be.

U1- Comment addressed.

16. Revise section to clarify the proposed Garman Pits (corrected to Gorman Pit) to include purpose of the pits (e.g. initial quarrying area), approximate mining depth, proposed future use of the area, if applicable.

U1- Comment partially addressed. Will walls be installed between the gorman pits to create stepped/terraced drainage from one pit to the other? Please show if applicable. Also, provide

grading contour labels for the gorman pits and provide calculations proving these pits are selfcontaining as stated within the report.

U2- Comment partially addressed. The gorman pit stormwater runoff calculations state a ponding depth of 1.0' feet but the contours are showing a depth of 23 feet. Please revise.

Response: The Gorman Pits will have water in them and conservatively we have assumed that only 1 foot of freeboard is available to retain stormwater runoff at any time. For the Stormwater Perspective these ponds are only 1 foot deep. See Hydrologic Report with notes added to the table indicating that the ponds are 23 feet deep but are assumed to hold water for this calculation.

17. Will the Gorman Pits have a liner installed underneath?

U1- Comment addressed.

18. It is stated that two Gorman pits are proposed but the initial conditions plan sheet (C.2 of C.4) shows 3 pits with a total acreage of 6.99 acres.

U1- Comment partially addressed. The hydrologic report states "approximately 4.6 acres" within the Post- development conditions but the plan sheets are showing 6.9 acres. Please revise.

U2- Comment addressed.

19. Add to the following statement: In an effort to be extremely conservative the site has been evaluated assuming that impervious surface may be placed anywhere onsite. This is a very conservative approach since there is no intent to develop the entire site as impervious surface. Include language that other improvements that are not illustrated on the Final Conditions plan sheet will be submitted to LCRA for permit revision and approval.

U1- Comment partially addressed. What precautions will be taken to prevent development in drainage areas 3A and 2B? If these are to be left undisturbed, they must remain in their natural state. Also, what precautions will be taken to prevent additional development within Drainage areas 1 and 2A once the pits are constructed?

U2- Comment partially addressed. The location of the signage was not provided, please include within your next submittal and include callouts for the sign locations.

Response: See updated sheet set showing the locations of the proposed signage along the maintenance and haul roads, spaced at 500'. See updated sheet set for sign locations and specifications.

20. In accordance with Section 5.2(b)(ii) of the Highland Lakes Watershed Ordinance a quarry pit can be used as a permanent BMP if it is sufficiently sized to contain the runoff of a 10-year (24-hr) storm without discharging during a rain event. At least five of the "pit BMPs" (pits 2B, 2A, 1, 3B & 3A) described in this report are in areas not proposed for quarrying activity. Please clarify the pit BMPs are designed for a 10- year (24-hour) storm event without any discharge. Additional information requested below.

U1- Comment addressed.

21. "Appendix I- Stormwater Runoff Calculations" was not provided in this submittal.

U1- Comment addressed.

1.2 Site Description, Post Development Conditions Additional Comments- U1

22. The hydrologic report on sheet 4 states "each of the six pits" but the quarry plans and

calculations only show three. Please revise this statement within the report.

U2-Comment addressed.

XX Erosion Sedimentation Control

23. Add a section that briefly describes the erosion and sedimentation controls in place during the initial phases of the quarry project. The information should align with plan sheet C.1 and C.2, include details about sedimentation ponds in drainage areas DA-1 and DA-2.

U1- Comment addressed.

24. Describe a timeline when the initial phase will move into a more operational phase and how the BMPs will be updated. Refer to the language included in plan sheet notes. Also, describe the erosion control phasing for the various quarrying phases.

U1- Comment addressed.

25. Describe measures proposed to manage erosion and sedimentation during the operational stages of the quarry project. For example, use of water trucks, wheel wash, berms to direct runoff, etc.

U1- Comment addressed.

XX Onsite Features

26. Reference the wells described in the Hydrogeologic Report and state if the two wells (S-1 & S-3) will be maintained or closed.

U1- Comment partially addressed. Include the proposed well that will be located on the processing plant pad within this description.

U2- Comment addressed.

27. Reference the man-made stock ponds described in the Hydrogeologic Report and state if the stock ponds (S-2, S-4, & S-5) will be maintained onsite or mined through.

U1- Comment addressed.

<u>2 Buffer Zones</u>

28. Please revise section to include any details how the buffer zone will be protected from any heavy equipment, disturbances, and how access to the buffer zone will be prevented.

U1- Comment addressed.

29. The buffer zone was not delineated correctly on the Quarry and Mine plan sheets based on the field visit. The buffer zone boundary is currently shown 50' from the creek centerline, not 75'. Please revise.

U1- Comment partially addressed. Provide a buffer zone delineation to the proposed point of beginning based on the sites existing conditions. Based on LCRA's drainage area delineations for the buffer zone, the point of beginning is located further upstream than what is currently proposed on the quarry plan sheets (approximately 840 feet further upstream). The drainage area that feeds into the proposed point of beginning is roughly 340 acres.

Please revise the drainage area delineation and the limits of the buffer zone. If needed, contact LCRA to schedule a meeting regarding this comment.

U2- Comment addressed.

<u>3 Roadway Treatment</u>

30. Revise section to describe how the natural vegetative filter strip (NVFS) will be protected from vehicles. Revise to account for emergency shoulders, as needed, but please illustrate in the plan sheets.

U1- Comment addressed. FYI, the limits of the NVFS and pit bmps will need to be recorded via an easement once the project is close to being permitted.

U2- Comment addressed.

31. Describe how the NVFS was sized for the haul road and what type of NVFS is proposed.

U1- Comment addressed.

32. Describe if any roads will be proposed around the perimeter of the project site and what treatment will be proposed.

U1- Comment addressed.

33. Describe and illustrate access roads to stormwater pits for maintenance purposes.

U1- Comment addressed.

34. Describe and illustrate any access roads between the property line and the earthen berms.

U1- Comment addressed.

4 Proposed Stormwater Earthen Berms

- 35. Revise section to include language about perimeter buffer.
 - U1- Comment addressed.
- 36. Proof needs to be provided that the diversion berms and swales are sized for the 10-year, 24-hour storm event based on the criteria stated in section 2.2.3 sheet 270 within the HLWO technical manual.
 - U1- Comment addressed.
- 37. Swales are mentioned as a stormwater conveyance feature for the site. Revise the quarry plan sheets showing the proposed grading and locations of these swales.

U1- Comment addressed.

XX Stormwater Basins (Pits)

- 38. Add a section for Stormwater Basins (Pits) and update Stormwater Earthen Berm section as applicable. Provide the following details related to the basins in the narrative and supportive plan sheets.
 - BMP sizing calculations need to be provided showing that these pit BMPs were designed based on the impervious cover assumptions for each drainage area and sized for the 10-year, 24-hour storm event.

U1- Comment addressed.

• Describe how any recharge features (e.g. fractures, cavities) on the floor will be mitigated during construction of these pits.

U1- Comment addressed.

• Describe how the collected stormwater will be managed.

U1- Comment partially addressed. Please describe how stormwater within the basins will be managed. For instance, if the water will be reused or how dewatering activities stated within the BMP maintenance plan-will be incorporated to make sure the storage requirements of the basins are being met after subsequent rainfall events.

Also, please clarify what contaminants will be treated by the BMP quarry pits.

U2- Comment addressed.

• Describe if the basins will incorporate outfalls or spillways and what storm event they're designed for.

U1- Comment partially addressed. The Quarry and Mine Activity Section within the HLWO technical manual (Section 2.4 Buffer zones, sheet 276) requires proper dissipation of high energy flow before entering buffer zones. As stated in the manual, "By-pass flows from storms in excess of the basin design storm must be conveyed in a stable manner through the buffer zone to the receiving water body. This can be accomplished through application of the outfall stabilization [rip-rap apron, scour hole design] and level spreader systems presented in Section I, Chapter 3." Please provide rip-rap aprons sized for the BMP quarry pit discharges. Refer to LCRA's pipe end treatment for riprap apron sizing and dimensioning (<u>PIPE ENDTREATMENT</u>).

U2- Comment addressed.

• Describe if those potential discharges will go through additional water quality best management practices prior to discharging the site.

U1- Comment partially addressed. In the event of a high precipitation storm event causing the pits to overflow, what measures will the permittee take to mitigate sediment laden discharge onsite and offsite once the storm event has passed? Please include these within the BMP maintenance plan.

U2- Comment addressed. This will be managed through LCRA's enforcement actions in conjunction with the state.

• Provide supportive plan sheets with construction details of each individual basin.

U1- Comment partially addressed. Provide an inset for pit 3.

U2- Comment partially addressed. Based off the contour measurements and stage storage calculations for pits 1 through 3, the volumes provided for all 3 pits do not equal the total pond volumes shown within the stormwater runoff calculations sheet of the hydrologic report (sheet 36). For example, I am calculating roughly 1,830,000 CF of storage within Pit 3. The calculation within the hydrologic report shows a total pond volume of 2,600,000 CF. Please revise each stormwater pit design to reflect the total pond volume calculated within the stormwater runoff calculations sheet.

Response: See Hydrologic Report with Updated Stormwater Runoff Calculations that now show the required storage for each pit and the accurate amount of storage provided by each pit. Note: The original calculations show the volumes with vertical pit sidewalls and the plans sheets show a condition where the pond slopes are 3:1. There is no requirement for these slopes to be 3:1 in the ordinance within a quarry pit. Since the 3:1 scenario is the most conservative condition for pond volumes the calculations now reflect the volumes with 3:1 side slopes.

39. Within this section it states that there will be basin walls, but the pits are shown as embankments. Will any of the pits use retaining walls?

U1- Comment addressed.

40. Add sediment depth markers to the basins.

U1- Comment addressed.

XX Dewatering

41. Include a section that describes any dewatering activities in accordance with Section 3.3.14 of the LCRA HLWO technical manual (starts on sheet 149).

U1- Comment partially addressed. Describe how often the BMP pits will be dewatered and what practices will be used to treat the sediment laden discharge. The BMP pits will lose storage capacity during periods of recurring rain events or over time from accumulated stormwater leading to a higher potential for a discharge to take place.

U2- Comment addressed.

XX Quarry Pit (319.1-acre)

42. Include a section that describes the quarry pit ("Pit 4" 319.1-acres) and describe the approximate timeframe for quarrying the area.

U1- Comment addressed.

43. Describe the depth of the pit using the unit of ft below ground surface (bgs) to match well data and elevation.

U1- Comment addressed.

44. Describe how any recharge features (e.g. cavities or fractures) located on the surface of the quarry floor will be mitigated in accordance with Section 5.2(b)(ii) of the Highland Lakes Watershed Ordinance and Section 2.3.2 of the LCRA technical manual.

U1- Comment addressed.

5 Groundwater Monitoring Statement

This request is under review based on supportive information provided and review of hydrogeologic report

45. Describe the approximate separation depth proposed between the quarry pit floor and water

table.

U1- Comment addressed.

46. Please revise the section to state LCRA will be contacted if during quarrying activity groundwater is encountered.

U1- Comment addressed.

47. Has any groundwater monitoring been completed for this site that can establish background

conditions?

U1- Comment addressed.

<u>6 Surface Water Monitoring Statement</u> *This request is under review based on supportive information provided*

48. Add a statement that monitoring information collected to meet TCEQ MSGP permit requirements will be submitted to LCRA in an annual report.

U1- Comment addressed.

Hydrogeologic Report

-in accordance with Section 5.2(b)(iv)(1)(b) of the Highland Lakes Watershed Ordinance.

49. Describe the tributaries to Peters creek located onsite in the Hydrogeologic Report, which is illustrated in the Soil Resource Report Soil Map attached to the Hydrologic Report.

U1- Comment partially addressed. The hydrogeologic report needs to describe the existing onsite drainage and the ridgeline to the east. Also, provide a description of Peter's creek and the drainage features located on site within the hydrogeologic report.

U2- Comment addressed.

50. Describe the buffer setback for the tributary located near the western property boundary.

U1- Comment partially addressed. A description for the buffer zone dedicated for the onsite drainages was not included within this report. Please revise.

U2- Comment addressed.

4.2 Karst Identification

It is stated, *A field investigation was performed at the site by Connor P. Tierney, P.G. on August 29, 2024.*

51. Please describe how the field study was conducted. For example, walking in equally spaced transects across the site etc.

U1- Comment addressed.

52.Please describe if any additional field investigations were completed at the site by Westward

Geologist(s).

U1- Comment addressed.

5.2 DRASTIC Classification

DRASTIC Classification was calculated at 121.

53. Depth to Water Table referenced a well located 0.75 miles NW of the site. This well is not available in the Well & Spring Inventory map. Revise the Depth to Water Table criteria to reference one of the wells illustrated in the Well & Spring Inventory Map.

U1- Comment addressed.

54. Topography (Slope) documents a 4.61 percent slope for the site and noted a rating of 5. The table documents a rating of 9. Revise the table or noted rating in the narrative.

U1- Comment partially addressed. Section 1.2 of the hydrologic report states "Onsite slopes average approximately 3%" please match the descriptions in both reports to reflect the correct sloping and update the slope rating if applicable.

U2- Comment addressed.

7.0 Well & Spring Inventory

55. Update the following statement, if the location of this specific well was confirmed. *Well 164367 is mapped onsite, however the well address is for a location north of FM 3509. No evidence of this well was observed during the field investigation.*

U1- Comment addressed.

8.0 Discussion

Discussion states, given the absence of sensitive karst features at the Site and significant depth to groundwater, quarrying activities likely will not impact groundwater quality. A groundwater monitoring plan is not proposed.

The south and southeast portion of Burnet Quarry is proposed to be the main pit, approximately 319.1acres to have a depth of approximately 80 feet from the surface level. A few wells identified in the vicinity range from 100- 300 feet depth.



Well & Spring Inventory Map

| it en ee spring miteneer | 11100 | | |
|--------------------------|----------|---------|----------|
| WELL | DEPT | WELL | DEPTH |
| | Н | | |
| 350458 | 300 feet | 616377 | 740 feet |
| 357005 | 200 feet | 573594 | 736 feet |
| 41724 | 100 feet | 616376 | 740 feet |
| Observed Well | No data | 5722202 | No data |
| 5722207 | 650 feet | 5722206 | 100 feet |

56. Please provide additional supportive information to support a groundwater monitoring plan is not required with this submittal.

U1- Comment Addressed.

Hydrogeologic Report Additional Comments- U2

57. Comment provided by LCRA on Wednesday March 12, 2025:

"Section 5.2 Depth to Water Table, references State of Texas Well ID No. 357005, located 1,800 feet southwest of the site, and references an onsite well No. 616377. The two sources are used to demonstrate the onsite depth to water table. The result gives a DRASTIC rating of one (1). Can this section include additional references to support the depth to water table resulting in a DRASTIC rating of 1? In addition, please review and confirm the two sources represent the project site accordingly and fall within the same geologic formation."

Westward Engineering Response submitted on Tuesday April 1, 2025:

"The above referenced spring is recorded as State of Texas Well Number 5722202. The available documentation on this spring is dated August 14, 1961 and remarks that it "Dried up in drought". The well nearest the referenced spring is recorded as State of Texas Well Number 5722206 in 1961 was "originally 50' deep. Deepened to 100' because of failure in drought" it was also listed as a "weak well". Given the age of the data, and both references to decline in water availability, these sources were not considered relevant to current site conditions. As indicated in the hydrogeologic report groundwater is anticipated to be absent within the proposed mining depth.

As previously stated, Asphalt Inc. will notify LCRA if groundwater is encountered and will coordinate with LCRA to develop an appropriate monitoring plan if necessary and the Central Texas Groundwater Conservation District (CTGCD) to complete any required permitting."

U2-Comment Addressed. According to the latest Hydrogeologic Report, Section 9, Westward Environmental concludes that groundwater will not be encountered during the quarry and mining operations. Based on the information provided and to limit the number of direct connections to the aquifer, LCRA is not requiring additional wells to be constructed onsite for a Groundwater Protection and Monitoring Plan. If groundwater is encountered, LCRA and the Groundwater Conservation District will work in conjunction with the applicant to establish a Groundwater Protection and Monitoring Plan.

However, in the interim, to establish background conditions for the site, sampling on existing and proposed wells identified in Section 6 will be required quarterly, for the first year.

Response: Noted. Attached please find a Groundwater Background Sampling Plan which proposes collection of four quarterly water samples from three wells.

58. According to the latest Hydrologic Report, Section 9, Westward Environmental completed a review of adjacent well logs and concluded the approximate groundwater table onsite is more than 250 feet below the surface.

A public comment received included a reference to a water well and stock tank located along State Hwy FM3509, less than 100 feet from the site. The commentor assumes the water well is less than 100 feet in depth. Please review and confirm if this well was included in the Well & Spring Inventory Map (Sheet 003) and SDRDB & TWDB Well Data reference sheet.



Approximate location of stock tank highlighted below.



Response: Based on the information provided above by LCRA this well appears to be either State of Texas Well Tracking #623122 or #112847. These wells were drilled to depths of 380 feet and 365 feet respectively, and both were included in the Well & Spring Inventory Map and datasheets previously provided.

59. On April 9, 2025, a public hearing took place for House Bill 3482 with the Texas Natural Resources Committee. This bill was drafted for permit applications proposed for quarry and mine activities within specific parameters of the Highland Lakes watershed. Testimony was provided by witnesses and affected parties. A witness stated faults exist within the proposed quarry site and were not appropriately described in the permit application. Please review and confirm the hydrogeologic report appropriately describes faults or inferred faults within the project limits.

Response: A review of the available published data indicated the presence of a mapped fault on the far northwest corner of the property. A revised Hydrogeologic Report is attached.

Mine & Quarry Plan

-in accordance with Section 5.2(b)(iv)(1)(c) of the Highland Lakes Watershed Ordinance.

60. Please see marked up sheets to address any changes requested for this section or other sections.

- Plan sheet C.1 Erosion & Sedimentation Control Plan
- Plan sheet C.2. Initial Conditions
- Plan sheet C.3 Final Conditions
- Plan sheet C.4 Temporary General Notes

U1- Comment partially addressed. Please see plan sheet markups.

U2-Comment partially addressed. Please see plan sheet markups.

Response: Please see plan sheets for edits and responses to plan sheet comments.

61. Only one sheet was submitted as an erosion control plan. Since the quarry will expand gradually, ESC plan sheets need to be provided for the initial conditions, intermediate conditions, and the final conditions. The appropriate ESC's for each phase will need to be provided.

U1- Comment Addressed.

General Reclamation Guidance Plan

-in accordance with Section 5.2(b)(iv)(1)(e) of the Highland Lakes Watershed Ordinance.

BMP Maintenance Plan

62. Revise the maintenance plan to include the following:

• An introduction paragraph stating the type of BMP's to be maintained

on site. U1- Comment addressed.

• A schedule for maintenance activities.

U1- Comment partially addressed. The maintenance plan only states for inspections to occur a minimum of twice annually. Please propose more frequent intervals to perform inspections. Also, a schedule or specific criteria for the stormwater pit dewatering.

U2- Comment partially addressed. The detailed inspections section states inspections should occur twice annually, not quarterly. Please revise to reflect quarterly detailed inspections.

Response: See updated BMP Maintenance Plan proposing quarterly detailed inspections.

• Provision for access to the tract by LCRA or other designated inspectors.

U1- Comment addressed.

• Name, qualifications, and contact information for the party(ies) responsible for maintaining the BMP's.

U1- Comment addressed. The BMP maintenance plan will need to be signed by both parties before the permit is issued.

63. Provide a detailed description of the various dewatering practices to be used for the pit basins.

U1- Comment partially addressed. Be more descriptive and propose features specifically for dewatering. For instance, how the pits will be dewatered should the sediment depth surpass 3 feet or how the accumulated storm water from various events will be removed. Include what features will potentially be used, where and how the stormwater will be disposed of/used, and finally what specific dewatering practices will be used to prevent sediment laden discharge from leaving the site (example: dewatering bag, faircloth skimmer, etc.).

U2- Comment addressed.

64. Within the detailed inspection section, include the second paragraph from section 5.5.1 within the HLWO technical manual.

U1- Comment addressed.

65. Within the maintenance plan describe how often the settled sediment will be removed from the BMP pits and how the sediment will be disposed of.

U1- Comment partially addressed. It is stated that "All sediment shall be used onsite..." Please clarify how this sediment will be used on site. Our concern is the sediment will be composed of fines and if not used properly, could potentially leave the site.

U2- Comment addressed.

66. Provide an example of an inspection form.

U1- Comment addressed.

67. Include a BMP specific section within the maintenance plan and include the following statement for the proposed VFS, "No portion of the filter area will be greater than a 10% slope. The vegetated density must be greater than 80% with no large bare areas. The filter area should be densely vegetated with a mix of erosion-resistant plant species that effectively bind the soil. Native or adapted Grasses are appropriate because they require less fertilizer and are more drought resistant than exotic plants."

U1- Comment addressed.

68. Before the "Name and Signature of Responsible Party for maintenance of BMP's" section, Include the following paragraphs:

The OWNER or SUBSEQUENT OWNER shall bear all expenses for the operation and maintenance of these permanent Best Management Practices (BMP) including but not limited to all general maintenance activities needed to keep this system in proper operation condition. If this system is abused or not maintained, then it may contribute to malfunction of the storm water system. All designated BMP areas shall remain free of construction, development, and encroachments.

You as the OWNER of this property have a responsibility to provide any SUBSEQUENT OWNER or your real estate agent with a copy of this Best Management Practices (BMP) Maintenance Plan if this facility is sold so that the BMPs can be properly maintained and operated. The same rights, duties, and responsibilities borne by the current OWNER shall be borne by each subsequent OWNER.

An amended copy of this document will be provided to the LCRA within thirty (30) days of any changes in the following information:

Responsible Party for Maintenance: [Insert New Owner

name] Address: [Insert Street Address]

City, State, Zip: [Insert Information]

Telephone Number: [Insert BMP Maintenance Provider Telephone Number]

U1- Comment partially addressed please edit the following to state "PERMITTEE" on sheet 5.



U2- Comment addressed.

BMP Maintenance Plan Additional Comments- U1

- 69. Include a wheel wash section within the BMP maintenance plan and provide specific maintenance criteria for the wheel wash.
 - U2- Comment addressed.
- 70. Include a section for the maintenance of the Gorman Pits regarding dewatering and the removal/ disposal of the sediment within the Gorman Pits.

U2- Comment addressed.

71. See comment #39, Bullet Point #5 -U1.

U2- Comment (#38, bullet point #5-U1) addressed.

Other Local, State, and Federal Regulations (5.2(b)(iii))

-in accordance with Section 5.2(b)(iii) of the Highland Lakes Watershed Ordinance.

- 72. Provide the status for the following permitting/authorization applicable to the proposed quarry project. Please state if an authorization is not applicable and provide a copy of an approval, if issued.
 - EPA National Pollutant Discharge Elimination System (NPDES) permit

U1- Comment Addressed. Please provide a copy of the authorization to LCRA upon approval.

• Mine Safety and Health Administration (MSHA/OSHA) authorization

U1- Comment Addressed. Please provide a copy of the authorization to LCRA upon approval.

• US Army Corp 404

permit U1-Comment

Addressed.

• TCEQ MSGP permit, Air New Source permit, Aggregate Production Operation (APO) registration

U1- Comment Addressed. Please provide LCRA with a copy of the TCEQ MSGP NOI, Issued Standard Air Permit,

• Central Texas Groundwater Conservation District (GCD) well approval

U1- Comment Addressed. Once approved, please provide LCRA a copy of the well approval.

• TxDOT safety certificate

U1- Comment Addressed. Once approved, please provide LCRA a copy of the safety certificate.

WESTWARD will serve as the technical contact for the Applicant on this project. Please ensure that WESTWARD is copied on all correspondence, including the final approval. If you have any questions, or require additional information, please contact our office at 830-249-8284.



List of Attachments:

Updated Plans Sheets C1-C5

Updated BMP Maintenance Plan

Updated Hydrologic Report

Updated Hydrogeologic Plan

ASPHALT INC.

LCRA Highland Lakes Watershed Ordinance Engineer's Report

Burnet Quarry 3221 FM 3509 Burnet, Texas 78611 Burnet County

Submitted to: The Lower Colorado River Authority



Hydrologic Report

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1 INTRODUCTION

1.1 Purpose

The purpose of this plan is to support the development of a construction aggregate processing plant and quarry operation by Asphalt Inc. (Applicant) on an approximately 710-acre site located at 3221 Farm Road 3509, Burnet, Texas 78611 (Site). The primary quarrying area is planned to be approximately 327 acres in total area. The site will also have 3 smaller pit areas totaling approximately 30 acres that will be utilized to handle onsite stormwater runoff. The site will include the following infrastructure: a processing plant, haul roads, a scale and scale house/office and Gorman pits (test pits). The plant pad is approximately 36 acres which includes the proposed stockpiling and materials handling areas. The proposed stormwater permanent BMPs include several quarry pits, final earthen perimeter berms, and natural vegetated filter strips, check dams, and rock berms.

1.2 Site Description

Pre-development Conditions:

The area to be developed has historically been utilized as a residential/agricultural property and has an abandoned house in the southeast corner. The site is mostly vegetated with native Onsite slopes average approximately 4.61%, with existing drainage flowing vegetation. unobstructed generally from the east to west. There are two USGS Blue Lines mapped on the site. Two converge forming a single unnamed tributary to Peters Creek. It is listed on the National Hydrography Dataset as intermittent, meaning it does not exhibit year-round flow. Westward met with representatives of LCRA onsite on September 11, 2024 to observe the tributary and discuss potential buffers. There was no observable bank or ordinary high-water mark. The tributary flows to the west and intersects Peters Creek about one mile downstream of Camp Longhorn. No discharge from the construction onsite will enter the drainage area of the man-made lake at Camp Longhorn. The other Blue Line, flows to the northwest toward the FM3509 frontage, ultimately draining to Spring Creek. The existing drainage flows unobstructed toward the drainage lows as sheet flow across native land except for a few minor ranch roads. There are three small existing stock pond onsite (see Existing Conditions Map). Minimal existing impervious cover exists in the form of residential structures.

Post-development Conditions:

Although the site is not currently planned to be totally developed, to be overly conservative, we have sized BMPs with the assumption that the entire site will be impervious surface minus a 50 foot perimeter buffer, a 200 foot roadway buffer, 2 portions of the site that will not be developed (DA 3A and 2B) and a buffer as required by LCRA for a small portion of the drainage that has a drainage area greater than 320 acres. The planned development acreage of approximately 36 acres will include the processing plant, haul roads, a scale and scale house, and product stockpile areas. The final quarry pit will cover approximately 327 acres in the southeast portion of the site and will be self-contained. The pad area for the processing plant will be graded slightly to assure proper diversion of drainage to the primary quarry pit (pit 4). The plant will consist of a series of conveyors, screens, crushers and washers to segregate the material into appropriate sizes for sale. Three Gorman Pits are proposed for processing of mined material which will be used for water recycling and material capture. The total Gorman Pit area includes approximately 10.3 acres and the pits themselves are approximately 6.9 acres in surface area. The Gorman Pits will be

constructed such that runoff from the associated access and maintenance areas will be fully retained within the pits. Water will be pumped from the Gorman Pits to the Wash plant and the allowed to flow back to the Gorman pits. The Gorman Pits will collect any sediment from the water. Once the water flows through the Gorman Pits it will be returned to the wash plant again completing the closed loop system. Runoff from these pits will be self-contained. The pits will be constructed so that minimal upgradient runoff would enter them and they will be operated with a minimum of 1 foot of freeboard. Since the pits do not accept drainage other than what directly lands on them, the 1 foot of free board is more than sufficient to contain the 10-year, 24-hour rainfall event of 6.5 inches. These pits will be located within the drainage area of water quality pit 2 and any runoff would be captured.

The facility will be located on-site permanently (for more than 180 days) with proposed maximum production rates of 200 tons per hour (TPH) and 528,000 tons per year (TPY). Asphalt Inc., LLC will utilize BACT at the facility. Permanently mounted spray bars shall be installed at the inlet/outlet of all crushers, at all shaker screens, and at all material transfer points and used as necessary to maintain compliance with TCEQ rules and regulations. Dust emissions from in-plant roads and active work areas that are associated with the operation of this facility shall be minimized by watering. All stockpiles shall be sprinkled with water as necessary to minimize dust emissions.

In an effort to be extremely conservative the site has been evaluated assuming that impervious surface may be placed anywhere onsite, other than in drainage areas 3A and 2B which will be left undeveloped. This is a very conservative approach since there is no intent to develop the entire site as impervious surface. The purpose of this approach is to set up a plan that pre-establishes the BMPs for any situation that may arise where the site needs additional impervious surface to adjust to market conditions. Other improvements not illustrated on the final Conditions plan sheet will be submitted to LCRA for permit revision and approval.

There are a total of six drainage areas for the site (DA-1, DA-2A, DA-2B, DA-3A, DA-3B and DA-04) in the final condition. The pit BMPs for drainage areas 1 and 2A will be constructed at the initiation of the project and will also serve as construction BMPs (sedimentation basins). These BMPs may be the only pit BMPs constructed other than the main quarry pit. The additional pit BMP (Pit 3) has been calculated to be available in the future if needed. The runoff from these drainage areas will all be treated by these Quarry Pits, again with the very conservative assumption that the entire drainage area may be used for stockpiles or other miscellaneous impervious surfaces and are considered as such for the sake of this analysis. Each pit was designed using the calculation spreadsheet attached as Appendix I – Stormwater Runoff Calculations – Burnet Quarry. Note that in the table we also included an analysis for pit 2 using the SCS method to evaluate the pit capacity to hold the runoff from the 2 year storm event from the entire predevelopment drainage area. Each pit was designed to accommodate a minimum of one foot of freeboard between the top of the pit walls and the 10-year water surface elevation. Stormwater will be conveyed to each of the three pits by berms and swales with a minimum 0.5% grade. The proposed entry road and scale house area is encompassed in DA-1 (sub-basin of DA-1) and DA-3B. The portion of this 3.67-acre impervious cover area in DA-1 will be treated by pit 1 and the remaining acreage (less than 3 acres) in DA-3B will be treated with a downgradient natural vegetative filter strip.

Small areas of offsite drainage from the east drain into the property (see sheet C.1) in the existing condition. These areas will be allowed to drain around the final pit with minimal ponding. Once the pit is constructed offsite run-on will not enter the main pit.

It is anticipated that the main entrance will be off FM 3509/Hoover Valley Road on the northeast side of the site. The entry road will be treated with natural vegetative filter strips for areas that do not drain to the onsite quarry pits.

2 BUFFER ZONES

Of the 3 USGS blue lines and their associated drainage areas only one drainage area is larger than 320 acres. According to LCRA quarry guidance a buffer shall be stablished on drainage courses with a drainage area greater than 320 acres. The drainage course that flows east to west across the center of the property meets this definition. Therefore, a buffer zone of a minimum width of 25-feet from the top of the channel bank on each side of the drainage is proposed along the western site boundary. The channel bank was established in the field during a pre-submittal site visit with LCRA staff to be conservatively 50 feet on each side of the stream centerline. The total buffer width is therefore 75 feet from the centerline of the stream or 150 feet total.

Access to the buffer is restricted by the proposed earthen berm as shown on the plans.

3 ROADWAY TREATMENT

A 60 foot Natural Vegetative Filter Strips (NVFS) will be utilized to treat runoff from the portions of roadway which exist outside the primary drainage areas. The drainage area for DA-3B is approximately 75 acres and the impervious surface area for this section of road is less than 3 acres. The proposed NVFS, as shown on the Interim Conditions Map is 60 feet wide, which is the maximum recommended width and has a total surface area of approx. 136,026 square feet.

4 PROPOSED STORMWATER EARTHEN BERMS

Although 6 drainage areas have been analyzed and minimum pit areas have been determined, at the initiation of the project only development within DA-1 and DA-2A is proposed which would not otherwise drain to the main quarry pit (DA-4) or the NVFS in DA3B. Stormwater from Drainage Areas DA-1 and DA-2A will be directed to the proposed pits via earthen berms and swales as indicated on Interim Conditions Map. These berms are located along the perimeter setbacks and the swales are at the toe of the berms. Otherwise site drainage will follow the natural contours of the site. Berm heights will be a minimum of 4 feet. Berms at the perimeter of the site will be located outside the 50-foot setback from the property line on the east, west and south sides and 200 feet from the property line on the north. These setbacks are not required by LCRA but act as a perimeter buffer for the site. **Stormwater earthen berms will be constructed at the initiation of the project at the same time as pit 1 and pit 2 are constructed to direct runoff to the pits.**

5 EROSION SEDIMENTATION CONTROL

The first phase of development for this project will be to construct pit BMPs for basins DA1 and DA2. This will include initial clearing and installation of silt fence downgradient of the proposed pit areas. The material mined to create these pits will be used onsite to make the plant pad areas. Once the pit BMPs are in place they will serve as the sedimentation basins for the construction phase of the project where all runoff from the construction areas drains to these pits. Additional BMPs may be utilized onsite as part of the construction, but these BMPS are in excess to those required to ensure runoff from the site is mitigated onsite. Exact locations of any other BMPs may be adjusted in the field based on inspections and coordination with LCRA inspectors.

6 OTHER SITE FEATURES

Wells:

There are 2 wells located on-site as referenced in the hydrogeologic report as S-1 and S-3. It is anticipated that these wells will remain in service until such time as the pit expands near the well location. Prior to mining this area the wells will be plugged and abandoned in accordance with GCD/TCEQ regulations.

Proposed Well/Wells

This site will utilize groundwater, and a well is proposed on the plant pad to provide site water. This well will be sited within the plant footprint to protect it from traffic. The casing will be extended to a minimum of 18 inches above grade to prevent any infiltration from surface runoff. The well will be permitted and constructed in accordance with the CTGCD rules and regulations. Note: Additional wells may be necessary based on the hydrogeologic testing that is required as part of the GCD permitting process. If additional wells become necessary, this data will be shared with LCRA for their records.

Stock Ponds:

There are 3 stock ponds located on-site as referenced in the hydrogeologic report a features S-2, S-4, S-5. S-2 is located within the proposed mining area and will be removed during mining. S-4 and S-5 will remain and may be used for livestock onsite.

7 STORMWATER - WATER QUALITY PITS

Recharge Features:

If potentially sensitive recharge features are encountered during construction, a responsible individual, trained in sensitive recharge feature recognition, will direct work to stop in the immediate vicinity and evaluate the feature's sensitivity. If it is determined to be potentially sensitive, the feature will either be protected by a rock berm composed of clean, open-graded 3-to 5- inch rock, or sealed with concrete. Once the feature is either sealed or protected, operations may continue in the vicinity.

Outfalls:

Collected stormwater will be allowed to infiltrate and evaporate. In the unlikely event of a discharge ach pit will include an emergency overflow weir. These overflow weirs are designed to pass the 100-year rainfall event and are intended to protect the pond berms.

Dewatering:

Although dewatering is not anticipated from the Water Quality Pits, if it became necessary to remove captured stormwater it should be used onsite for dust control allowed to evaporate and infiltrate. In the event that a discharge offsite is necessary, water quality sampling will be performed to ensure the discharge meets the TCEQ/EPA requirements for discharge of mine dewatering. Filter bags will be utilized if necessary to prevent discharge of TSS above any regulatory discharge limitations

8 MAIN QUARRY PIT

The main quarry pit (pit 4) will be the primary mining area for the material to be processed and sold onsite. The quarry pit is planned to be 80 feet below grade to an elevation of approximately

1305-1310 amsl. Material will be removed from the pit via conveyor to the processing plant. It is anticipated that the main pit will take approximately 18-24 months from the start of construction to be fully functional.

9 GROUNDWATER MONITORING STATEMENT

The quarry excavation is anticipated to be approximately 80 feet deep at this site. A review of the adjacent well logs indicates that groundwater surfaces are in excess of 250 feet below the surface. It is not anticipated that groundwater will be encountered as part of this project, therefore the Groundwater Monitoring Plan is not necessary. Should conditions change onsite an groundwater monitoring plan can be prepared at that time. In addition, if groundwater is encountered a permit will become necessary with the local groundwater conservation district and LCRA will be notified. Please see the Hydrogeologic Report for further information.

10 SURFACE WATER MONITORING STATEMENT

Surface water monitoring for this site is proposed to be conducted in accordance with the site's TXR05 Industrial SWPPP as administered by TCEQ. Monitoring information collected to meet TCEQ MSGP permit requirements will be submitted to LCRA in an annual report.

Appendix – I

Existing Conditions





<u>LEGEND</u>





Appendix – II

Proposed Grading & Drainage Patterns









LEGEND

| | PROPERTY LINE |
|-----------|---------------------------|
| XX | EXISTING FENCELINE |
| 900 | EXISTING MAJOR CONTOUR |
| | EXISTING MINOR CONTOUR |
| 950 | PROPOSED MAJOR CONTOUR |
| | PROPOSED MINOR CONTOUR |
| | DRAINAGE AREAS |
| LOC | LIMITS OF CONSTRUCTION |
| SF | SILT FENCE |
| | BERM (TOP & TOE OF SLOPE) |
| <u> </u> | SIGN |
| STK | STOCKPILE |
| \otimes | WATER WELL |
| | ASPHALT AREA |
| | BASE AREA |

NOTES: PROPOSED RETENTION PIT 3 IS NOT NECESSARY AT START OF CONSTRUCTION. VEGETATIVE FILTER STRIP WILL BE SUFFICIENT UNLESS IMPERVIOUS COVER IS ADDED ON DOWN SLOPE OF DEAD OP WITHIN THEIR PERFECTIVE

- SLOPE OF ROAD OR WITHIN THEIR RESPECTIVE DRAINAGE AREAS. • NORTH PROPERTY LINE SETBACK (200' MEASURED FROM EDGE OF PAVEMENT) IS DUE TO TXDOT PIT SAFETY RULE FOR QUARRIES ALONG PUBLIC ROADWAYS.
- •• BERM IS ONLY NECESSARY ALONG EDGE OF "PIT" AT OR WITHIN 200' OF THE ROADWAY. 50' PROPERTY LINE SETBACK DUE TO TEXAS PIT SAFETY RULES FOR SLOPE STABILITY.
 PAD DESIGNED TO DRAIN BACK TO MAIN PIT DEVELOPMENT.
- WHILE IN EARLY DEVELOPMENT PAD WILL DRAIN TO SOUTHEAST CORNER AND FLOW INTO
- RETENTION PIT 2. VEGETATIVE FILTER STRIP TO BE REMOVED AND REPLACED BY RETENTION PIT 3 IF IMPERVIOUS COVER IS ADDED TO DRAINAGE AREA 1B. PERIMETER BERMS PROPOSED AROUND MAIN PIT
- DEVELOPMENT. 25' BUFFER ZONE REQUIRED FROM TOP OF THE CHANNEL BANK WHERE THE LIMITS OF THE 320 ACRE CONTRIBUTING DRAINAGE AREA ENDS. (LCRA HWLO
- CONTRIBUTING DRAINAGE AREA ENDS. (LCRA HWLO 5.2(c)(i))
 BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS ENCROACHMENT INTO A BUFFER ZONE OR DAME TO BUFFER ZONE AREAS WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.
 DUST CONTROL WILL BE PROVIDED PER TCEQ SWP3 AND AIR PERMIT.
- AND AIR PERMIT. THE 60' NVFS IS NOT NECESSARY IN THIS PHASE AS DA-3B IS UTILIZING PIT 3 FOR WATER QUALITY.
 ALL DEVELOPMENT IS LIMITED TO WHAT IS SHOWN ON
- THE FINAL CONDITIONS PLAN SHEET.
 ANY FUTURE DEVELOPMENT NEEDS TO BE SUBMITTED TO LCRA FOR TECHNICAL REVIEW AND PERMIT
- REVISION APPROVAL.
 NO OFFSITE RUN-ON WILL ENTER THE MAIN PIT, MINIMAL PONDING IS EXPECTED.
 SIGNS PREVENTING DEVELOPMENT ARE PROPOSED ON BOTH SIDES OF THE HAUL ROAD AND MAINTENANCE ROADS. SIGNS WILL BE 16"X16", 4' TALL, WHITE SIGN WITH BLUE LETTERING. SIGNS ARE TO BE SPACE EVERY 500'.



Appendix – III

Location & Schematics of BMPs



PROPOSED SEQUENCE OF CONSTRUCTION

THE GENERAL SEQUENCE OF CONSTRUCTION CONSISTS OF ESTABLISHING THE CONSTRUCTION ENTRANCE, CLEARING VEGETATION AND MULCHING IT IN PLACE TO PROVIDE STABILIZATION OF ANY DISTURBED AREAS, INSTALLATION OF TEMPORARY BEST MANAGEMENT PRACTICES (BMPS), AND SIMULTANEOUS GRADING AND FOUNDATION LAYING WHILE PERMANENT BMPS ARE INSTALLED. CONSTRUCTION ACTIVITIES WILL BEGIN IN THE PROPOSED PLANT AREA (A) FIRST, FOLLOWED BY INITIATING THE INITIAL PIT ARFA B

A - THE TEMPORARY BMPS (SILT FENCE, ROCK BERMS, PITS, ETC.) WILL NEED TO BE INSTALLED AND THE BUFFER ZONE STAKING WILL NEED TO BE INSPECTED BY A LCRA INSPECTOR BEFORE ANY WORK COMMENCES. PERMITEE MUST CONTACT LCRA TO SCHEDULE AN INSPECTION OF THE ESC'S AND BUFFERS ZONE STAKING A MINIMUM OF 2 WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. PLANT AREA: WORK WILL BEGIN WITHIN THE IMMEDIATE AREA OF THE PROPOSED PLANT LOCATION AND EXPAND OUTWARD AT NO MORE THAN FIVE ACRES WITHIN ONE DRAINAGE AREA AT A TIME UNTIL PERMANENT BMPS HAVE BEEN CONSTRUCTED SUFFICIENTLY TO ACT AS PITS. SILT FENCE AND ROCK FILTER DAMS MAY BE USED AS TEMPORARY BMPS FOR INITIAL WORK AREAS. TREES AND BRUSH WILL BE CLEARED AND MULCHED IN PLACE PROVIDING STABILIZATION FOR DISTURBED AREAS, TEMPORARY BMPS WILL BE INSTALLED, PONDS 1 AND 2 WILL BE ROUGHED IN AND UTILIZED AS SEDIMENTATION BASINS IN INITIAL PHASE UNTIL COMPLETED, THEN DRILLING AND BLASTING WILL COMMENCE TO BEGIN EXCAVATION OF THE PLANT AREA. TEMPORARY BERMS MAY BE USED TO DIRECT RUNOFF FROM DISTURBED AREAS TO THE PITS DURING CONSTRUCTION AS NEEDED TO ENSURE RUNOFF FROM DISTURBED AREAS DOES NOT LEAVE UNTREATED. CUT AND FILL ACTIVITIES WILL PREPARE THE PLANT PAD AND PROVIDE MATERIALS FOR THE CONSTRUCTION OF THE PROPOSED EARTHEN BERMS AND FINAL PITS. AFTER CONSTRUCTION OF NECESSARY BERMS AND PITS (INCLUDING THEIR OUTFALL STRUCTURES) IS COMPLETED, MINING OF GORMAN PITS WILL BEGIN, AND THE PLANT EQUIPMENT WILL BE BROUGHT IN AND ERECTED. NEXT, EXCAVATION WILL BEGIN FOR THE GORMAN PITS, AND UPON COMPLETION OF THE PLANT AND GORMAN PITS CONSTRUCTION, CRUSHING ACTIVITIES WILL COMMENCE. LATER, EXCAVATION WILL BEGIN IN THE ENTRANCE AREA INCLUDING A TEMPORARY BUILDING PAD.

B - THE TEMPORARY BMPS (SILT FENCE, ROCK BERMS, TEMPORARY SEDIMENTATION BASINS, ETC.) WILL NEED TO BE INSTALLED AND THE BUFFER ZONE STAKING WILL NEED TO BE INSPECTED BY A LCRA INSPECTOR BEFORE ANY WORK COMMENCES. PERMITEE MUST CONTACT LCRA TO SCHEDULE AN INSPECTION OF THE ESC'S AND BUFFERS ZONE STAKING A MINIMUM OF 2 WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. QUARRY PIT WORK WILL BEGIN IN THE PROPOSED INITIAL PIT AREA AFTER THE WORK IN THE PLANT AREA HAS STARTED. CLEARING AND MULCHING WILL TAKE PLACE TO STABILIZE THE CLEARED AREAS, FOLLOWED BY EXCAVATION TO A DEPTH OF AT LEAST 2.5 FEET AT NO MORE THAN TEN ACRES OF DISTURBANCE. ONCE THE INITIAL PIT EXCAVATION IS COMPLETED, MULCH WILL BE REMOVED FROM AREAS UPGRADIENT OF THE INITIAL PIT AREA AND THE PIT EXCAVATION WILL BE EXPANDED. FOR PIT EXPANSION AREAS THAT DO NOT NATURALLY DRAIN TO THE PIT NO MORE HAN FIVE ACRES WILL BE DISTURBED AT A TIME. FOR AREAS THAT NATURALLY DRAIN TO THE PIT THE PERIMETER BERM WILL BE EXPANDED AND ANY RUNOFF WILL BE DISTURBED AT A TIME. FOR AREAS THAT NATURALLY DRAIN TO THE PIT THE PERIMETER BERM WILL BE EXPANDED AND ANY RUNOFF WILL BE DISTURBED AT A TIME. RUNOFF FROM ALL OF SUB-BASIN DA-04, APPROXIMATELY 16.41 ACRES OF DISTURBANCE, WHICH DRAINS TO THE PIT. MATERIALS EXCAVATED WILL BE USED FOR TEMPORARY BERMS SURROUNDING THE INITIAL PIT AREA.

ROAD CROSSINGS

INSTALLATION

PURPOSES.

A VARIETY OF TECHNIQUES MAY BE USED DEPENDING ON LOCAL TOPOGRAPHY AND SOIL DITIONS. THESE INCLUDE FORD CROSSINGS, CULVERT CROSSINGS, DRAGLINE MATS, AND BRIDGES.

GENERAL CONSIDERATIONS

CONSTRUCT TEMPORARY CROSSINGS AT PROPOSED ROADWAY CROSSINGS AND ANY ADDITIONAL CROSSING POINTS. MINIMIZE THE NUMBER OF ADDITIONAL CROSSINGS TO REDUCE IMPACT TO

WHERE A STREAM CROSSING IS REQUIRED, SELECT A CROSSING SITE WITH THESE FEATURES: STRAIGHT AND NARROW CREEK CHANNEL WITH HIGH BANKS; STABLE CREEK BANKS THAT PROVIDE SOLID FOUNDATION FOR A CROSSING. MINIMAL ELEVATION CHANGES (0-10% PREFERRED) ON ROAD/TRAIL LEADING TO CROSSING.

• KEEP HEAVY EQUIPMENT OUT OF CREEK. • CONSTRUCT A SWALE OR BERM ACROSS THE APPROACH TO THE CROSSING ON BOTH SIDES (THE CROSSING OTHER WATER DIVERSION DEVICES (BROAD BASED DIPS. WATER BARS. FTC.) SHOULD BE USED ON LONG APPROACHES T MINIMIZE THE AMOUNT OF WATER FLOWING TO THE CROSSING).

STABILIZE EXPOSED SOIL AROUND THE CROSSING WITH MULCH, TEMPORARY SEEDING AND/OR EROSION CONTROL BLANKETS/MATTING. MAINTENANCE

• KEEP CROSSING SURFACE FREE OF SOIL AND DEBRIS THAT COULD ENTER STREAM. CHECK CROSSING COMPONENTS WEEKLY AND AFTER RAINFALL TO MAINTAIN STRENGTH AND INTEGRITY REMOVE LARGE BRANCHES OR OTHER FLOW OBSTRUCTIONS THAT COULD IMPAIR THE FUNCTION THE CROSSING OR CAUSE A FAILURE OF THE

REMOVAL & RESTORATION

 CLEAN OFF CROSSING SURFACE; KEEP DEBRIS OUT THE CREEK CHANNEL CAREFULLY REMOVE CROSSING MATERIALS MINIMIZING DISTURBANCE TO THE CREEK

PERMANENTLY STABILIZE DISTURBED PORTIONS OF CREEK BANK AND APPROACHES WITH PERENNIAL GRASSES, EROSION CONTROL BLANKETS/MATTING AND/OR RIP RAP LEAVE APPROPRIATE WATER DIVERSION

STRUCTURES IN PLACE ON BOTH SIDES OF CREEK.

CREEK CROSSINGS

CREEK CROSSINGS SHOULD BE MADE PERPENDICULAR TO THE CREEK FLOWLINE

IN-STREAM CONTROLS SHOULD ONLY BE USED AS A SECONDARY BMP. STORMWATER RUNOFF APPROACHING A CREEK CROSSING SHOULD BE DIVERTED TO A SEDIMENT TRAPPING BMP BEFORE IT REACHES THE CREEK IF BASEFLOW IS PRESENT, LCRA PERSONNEL SHOULD BE CONSULTED. AS IT MAY BE NECESSARY TO DIVERT OR PUMP WATER AROUND THE CONSTRUCTION AREA.

EVERY EFFORT SHOULD BE MADE TO KEEP THE ZONE OF IMMEDIATE CONSTRUCTION FREE OF SURFACE AND GROUND WATER FOR CONSTRUCTION IN THE CREEK CHANNEL. A PIPE OF ADEQUATE SIZE TO DIVERT NORMAL STREAM FLOW SHOULD BE PROVIDED AROUND THE CONSTRUCTION AREA. DIVERSION MAY BE BY PUMPING OR GRAVITY FLOW USING TEMPORARY DAMS

WHERE WATER MUST BE PUMPED FROM THE CONSTRUCTION ZONE, DISCHARGES SHOULD BE IN A MANNER THAT WILL NOT CAUSE SCOURING OR EROSION. ALL DISCHARGES SHALL BE ON HE UPSTREAM OR UPSLOPE SIDE OF EMPLACED EROSION CONTROL STRUCTURES. IF DISCHARGES ARE NECESSARY IN EASILY ERODIBLE AREAS, A STABILIZED, ENERGY-DISSIPATING DISCHARGE APRON SHALL BE CONSTRUCTED OF RIPRAP WITH MINIMUM STONE DIAMETER OF 6 INCHES AND MINIMUM DEPTH OF 12 INCHES, SIZE O THE APRON IN LINEAR DIMENSIONS SHALL BE APPROXIMATELY 10 TIMES THE DIAMETER OF THE DISCHARGE PIPE.

NOTES FOR CONSTRUCTION IN CREEKS

SCHEDULE WORK WHEN A MINIMUM OF 30 DAYS OF DRY WEATHER ARE FORECAST. DEWATER OR DIVERT FLOW PRIOR TO COMMENCING WORK WITHIN CREEK CHANNELS. CONTACT LCRA FOR INSPECTION OF DEWATERING/DIVERSION SYSTEM PRIOR TO COMMENCING WORK.

NO LOOSE EXCAVATED MATERIAL SHALL BE LEFT IN THE CREEK AT THE END OF THE WORK DAY. REMOVE ALL LOOSE EXCAVATED MATERIAL TO A SECURE LOCATION OUTSIDE THE CREEK CHANNEL AND SUSPEND FURTHER CONSTRUCTION IN THE CREEK AREA IF RAINFALL THREATENS.

KARST FEATURES NO SENSITIVE KARST FEATURES WERE IDENTIFIED ON SITE.

CEDAR MULCH

CEDAR MULCH CAN BE USED AS AN AID TO CONTROL EROSION ON CRITICAL SITES DURING LAND CLEARING AND PERIODS OF CONSTRUCTION WHEN RE-VEGETATION IS NOT PRACTICAL. THE BEST RESULTS ARE OBTAINED FROM ROUGH, LONG CUT (3 - 6 INCH) MULCHING. THE MOST COMMON USES ARE AS BERMS AT THE BOTTOM OF LONG, STEEP SLOPES AND AS A BLANKET IN CHANNELS WHERE DESIGNED FLOW DOES NOT EXCEED 3.5 FEET PER SECOND: ON INTERCEPTOR SWALES AND DIVERSION DIKES WHEN DESIGN FLOW EXCEEDS 6 FEET PER SECOND; AND ON LONG SLOPES WHERE RILL EROSION HAZARD IS HIGH AND PLANTING IS LIKELY TO BE SLOW TO ESTABLISH ADEQUATE PROTECTIVE COVER. MATERIALS:

CEDAR MULCH IS EASILY OBTAINED AS A BY-PRODUCT OF LAND CLEARING OPERATIONS. IT CAN ALSO BE A COST SAVING ITEM BECAUSE IT IS A RECYCLED MATERIAL AND DOES NOT HAVE TO BE REMOVED FROM THE SITE. INSPECTION AND MAINTENANCE GUIDELINES:

 CEDAR MULCH SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY EROSION. EROSION FROM STORMS OR OTHER DAMAGE SHOULD BE REPAIRED AS SOON AS PRACTICAL BY APPLYING NEW LAYERS OF MULCH. DEWATERING/DIVERSION PLAN

CREEK CROSSING CONSTRUCTION: THE CONTRACTOR MUST OBTAIN LCRA APPROVAL

<u>SLOPES</u>

OF THE DEWATERING/DIVERSION PLAN BEFORE BEGINNING WORK ON THE PROPOSED ACCESS ROAD CROSSING. EXTENDED DETENTION BASINS:

A 40-HOUR MINIMUM DELAY MUST BE OBSERVED BEFORE DEWATERING FROM EXTENDED DETENTION BASINS CAN TAKE PLACE. DISCHARGE MUST BE DONE IN A MANNER THAT DOES NOT CAUSE EROSION.

DURING CONSTRUCTION IF SLOPES ARE GREATER THAN 3:1. COORDINATE WITH PROJECT ENGINEER AND LCRA INSPECTOR FOR APPROPRIATE STABILIZATION OR VERIFICATION THAT OUT IN ROCK IS STABLE ENOUGH AND DOES NOT REQUIRE ADDITIONAL STABILIZATION.

<u>SILT FENCE</u>

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE. A SCHEMATIC ILLUSTRATION OF A SILT FENCE IS SHOWN IN FIGURE 3-20.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORNE SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW. SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY

USE J-HOOKS TO TRAP AND POND RUNOFF FLOWING ALONG UPHILL SIDE OF SILT FENCE AS SHOWN IN FIGURE 3-21 LCRA HIGHLAND LAKES WATERSHED ORDINANCE WATER QUALITY MANAGEMENT TECHNICAL MANUAL. THIS WILL FILTER OR SETTLE OUTFLOWS AND PREVENT RUNOFF FROM ESCAPING AROUND THE SIDES OF THE FENCE.

• SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4 OZ/YD, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30. • FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR YBAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT2, AND BRINDELL HARDNESS EXCEEDING 140

• WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM. INSTALLATION:

• STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1 – FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET. • LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. UTILIZE J-HOOKS AS NECESSARY AS SHOWN IN FIGURE 3-21 . THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE. • THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT

BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE. • THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

• SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET. • SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS: • FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE. • FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE) • FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES)

• FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE) INSPECTION AND MAINTENANCE GUIDELINES: · INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL IN EXCESS OF 0.5 INCH OR MORE.

• REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.

SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

 REPLACE ANY TORN FABRIC.
 REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS. • WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF

SILT FENCE SPACING ON SLOPING

| | SITES | | | | | |
|-------------|------------------|-------------------|---------|-------------|--|--|
| | SLOPE ANGLE | SILTY SOILS CLAYS | | SANDY SOILS | | |
| | VERY STEEP (1:1) | 50 FT. | 75 FT. | 100 FT. | | |
| STEEP (2:1) | | 75 FT. | 100 FT. | 125 FT. | | |
| | MODERATE (4:1) | 100 FT. | 125 FT. | 150 FT. | | |
| | SLIGHT (10:1) | 125 FT. | 150 FT. | 200 FT. | | |

HYDROMULCH

SEED: PROVIDE SEED FROM THE PREVIOUS SEASON'S CROP MEETING THE REQUIREMENTS OF THE TEXAS SEED LAW, INCLUDING THE TESTING AND LABELING FOR PURE LIVE SEED (PLS = PURITY X GERMINATION). USE WITHIN 12 MO. FROM THE DATE OF THE ANALYSIS. WHEN BUFFALOGRASS IS SPECIFIED, USE SEED THAT IS TREATED WITH KNO3 (POTASSIUM NITRATE) TO OVERCOME DORMANCY. USE TABLE 1 TO DETERMINE THE APPROPRIATE SEED MIXTURE AND APPLICATION RATES. FOR TEMPORARY COLD SEASON PLANTING, CONSULT TABLES 3 & 4 IN SECTION 3.2.2 OF THE ESC PLAN. IMMEDIATELY AFTER PLANTING THE SEED OR SEED MIXTURE, APPLY CELLULOSE FIBER MULCH UNIFORMLY OVER THE SEEDED AREA AT THE FOLLOWING RATES: SANDY SOILS WITH SLOPES OF 3:1 OR LESS 2500 LB. PER ACRE.
SANDY SOILS WITH SLOPES GREATER THAN 3:1 3000 LB. PER ACRE.
CLAY SOILS WITH SLOPES OF 3:1 OR LESS 2000 LB. PER ACRE. CLAY SOILS WITH SLOPES GREATER THAN 3:1 2300 LB. PER ACRE. CELLULOSE FIBER MULCH RATES ARE BASED ON DRY WEIGHT OF MULCH PER ACRE. MIX CELLULOSE FIBER MULCH AND WATER TO MAKE A SLURRY AND APPLY UNIFORMLY OVER THE SEEDED AREA USING SUITABLE EQUIPMENT. USE A

STRAW OR HAY MULCH OPERATIONS. REVEGETATION IS CONSIDERED AS 80% COVERAGE WITH NO LARGE BARE AREAS

THE FINAL RESTORATION OF THE SITE WILL INCLUDE REMOVAL OF BUILDINGS AND STRUCTURES SUCH AS THE SCALE, OFFICE, PROCESSING PLANT, AND THEIR ASSOCIATED FOUNDATION MATERIALS, WHERE PRACTICABLE. THE SITE WILL BE REVEGETATED, AS APPROPRIATE. MULCH CREATED AND STORED FROM INITIAL CLEARING ACTIVITIES CAN BE SPREAD ACROSS THE DISTURBED AREAS TO PROVIDE STABILIZATION. ROADWAYS WILL REMAIN IN PLACE THROUGHOUT THE SITE TO ALLOW ACCESS FOR MONITORING

<u>BUFFER ZONES</u>

BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS - ENCROACHMENT INTO A BUFFER ZONE OR DAMAGE TO BUFFER ZONES ARES WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.

SEDIMENT RUNOFF PREVENTION

HIGH POINTS ALONG EACH CREEK CROSSING APPROACH WILL BE MAINTAINED IN ORDER TO PREVENT SEDIMENT LADEN RUNOFF FROM FLOWING INTO THE CREEK VIA THE CREEK CROSSING

<u>BMP TYPE</u>

WHEN SILT FENCE INSTALLATION ISN'T PRACTICABLE, MULCH FROM INITIAL CLEARING ACTIVITIES WILL BE UTILIZED TO STABILIZE ROCKY AREAS PRIOR TO SURFACE DISTURBANCE.

CONTRACTOR MAY OPT TO USE MULCH SOCKS/LOGS IN LIEU OF SILT FENCING BASED ON SURFACE CONDITIONS.

MULCH BERMS

ENDS.

MULCH BERMS MADE FROM MULCH PRODUCED ON SITE DURING INITIAL SITE CLEARING WILL BE USED FOR STABILIZATION IN FLAT AREAS OR PGRADIENT OF SILT FENCE UPON APPROVAL BY LCRA INSPECTOR.

PERMANENT ROCK BERMS AND LEVEL SPREADERS PERMANENT ROCK BERMS AND LEVEL SPREADERS CONSTRUCTED PER THE "ROCK BERM" LIP OPTION IN FIGURE 3-7 OF THE LCRA TECHNICAL MANUAL MUST USE METALLIC-COATED OR PVC-COATED STEEL WITH A MINIMUM WIRE SIZE OF 14 GAUGE (0.080 INCH OR 2.0 MM DIAMETER). PRIOR TO CONSTRUCTION OF LEVEL SPREADERS, THE LEVEL SPREADERS MUST BE STAKED IN THI FIELD AND INSPECTED BY LCRA. THE OWNER OR HIS AUTHORIZED REPRESENTATIVE IS RESPONSIBLE

FOR CONTACTING LCRA FOR AN INSPECTION. IT IS RECOMMENDED THAT THE DESIGN ENGINEER BE PRESENT AT THE INSPECTION. LEVEL SPREADERS MUST BE TURNED UP GRADIENT AT THE ENDS AS NECESSARY TO PREVENT FLOW FROM SPILLING AROUND THE

THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION). THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE LCRA WATER QUALITY

MANAGEMENT TECHNICAL MANUAL AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. 3. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND LCRA WATERSHED MANAGEMENT INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION INSPECTOR, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE.

4. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE LCRA WATERSHED MANAGEMENT PROGRAM. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE LCRA WATERSHED MANAGEMENT INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.

THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER RAINFALL EVENTS IN EXCESS OF 0.5" TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS, SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.

6. PRIOR TO FINAL ACCEPTANCE BY THE LCRA, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES. 7. PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW. A MINIMUM OF FOUR

INCHES OF TOPSOIL SHALL BE PLACED ON ALL DISTURBED AREAS (EXCEPT ROCK OUTCROP). SALVAGED TOPSOIL FROM THE SITE SHOULD BE USED WHENEVER POSSIBLE. IMPORTED TOPSOIL SHALL BE WEED FREE WITH A. A MINIMUM 20% ORGANIC CONTENT. TOPSOIL PLACED ON SLOPES EXCEEDING 5 HORIZONTAL TO 1 VERTICAL SHALL HAVE A RELATIVELY HIGH RESISTIVITY TO EROSION.

B. THE SEEDING FOR PERMANENT EROSION CONTROL SHALL BE APPLIED OVER AREAS DISTURBED BY CONSTRUCTION AS FOLLOWS (SELECT ONE OF THE THREE SEED COMBINATIONS LISTED BELOW):



Oct 1-Mar Permanent Cool/Warm Bermuda (Cynodon dactylon)(unbulled) 70.0 Season *Cereal Rye (Secale cereale)

TAKE CARE TO DISTRIBUTE SEED EVENLY, BY SOWING FINE AND LARGE SEEDS SEPARATELY OR BY USING A FINE SEED BOX. WHEN BROADCASTING SEEDING, THE APPLICATION RATE SHOULD BE DOUBLED AND THE AREA ROLLED TO ENSURE A GOOD SEED/SOIL CONTACT

*FROM SEPTEMBER 15 TO MARCH 1, OATS (21 LB/ACRE) AND WINTER WHEAT (30 LB/ACRE) MAY BE SUBSTITUTED FOR RYE. MULCH TYPE USED SHALL BE HAY, STRAW OR MULCH APPLIED AT A RATE OF 3500 LB/ACRE (HAY), 4500 LB/ACRE OR 2500 LB/ACRE (HYDRAULIC MULCH). TACKIFIER, IF USED SHALL BE BIODEGRADABLE

C. THE PLANTED AREA SHALL BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN-DAY INTERVALS DURING THE FIRST TWO MONTHS. RAINFALL OCCURRENCES OF 1/2 INCH OR MORE SHALL POSTPONE THE WATERING SCHEDULE FOR ONE WEEK. D. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 11/2 INCHES HIGH WITH 70% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST. CRITICAL AREAS INCLUDING CREEK CROSSINGS, SLOPES. STORMWATER DISCHARGE POINTS MUST BE COMPLETELY STABILIZED. PERMANENT WATER QUALITY BMPS MUST ATTAIN 80% COVERAGE.

8. DEVELOPER INFORMATION: OWNER _ PHONE #___

ADDRESS_____ OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:

__PHONE #___ PERSON OR FIRM RESPONSIBLE FOR EROSION/SEDIMENTATION CONTROL MAINTENANCE:

___PHONE #____

PERSON OR FIRM RESPONSIBLE FOR TREE/NATURAL AREA PROTECTION MAINTENANCE: __PHONE #____

9. THE CONTRACTOR SHALL NOT DISPOSE OF SURPLUS EXCAVATED MATERIAL FROM THE SITE WITHOUT NOTIFYING THE LCRA WATERSHED MANAGEMENT INSPECTOR AT LEAST 48 HOURS PRIOR WITH THE LOCATION AND A COPY OF THE PERMIT ISSUED TO RECEIVE THE MATERIAL. NOTES FOR CONSTRUCTION IN CREEKS:

SCHEDULE WORK WHEN A MINIMUM OF _(INCLUDE A SUFFICIENT TIME PERIOD TO COMPLETE THE WORK)_DAYS OF DRY WEATHER ARE FORECAST. DEWATER OR DIVERT FLOW PRIOR TO COMMENCING WORK WITHIN CREEK CHANNELS. CONTACT LCRA FOR INSPECTION OF DEWATERING/DIVERSION SYSTEM PRIOR TO COMMENCING WORK.

NO LOOSE EXCAVATED MATERIAL SHALL BE LEFT IN THE CREEK AT THE END OF THE WORK DAY. REMOVE ALL LOOSE EXCAVATED MATERIAL TO A SECURE LOCATION OUTSIDE THE CREEK CHANNEL AND SUSPEND FURTHER CONSTRUCTION IN THE CREEK AREA IF RAINFALL THREATENS.

ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW. TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.) ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

• THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS. • CLEAN, OPEN GRADED 3- TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5- TO 8-INCH DIAMETER ROCKS MAY BE USED.

• LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS. • BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

• PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM (FIGURE 3-23), TO A HEIGHT NOT LESS • WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE

SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON. • BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE • THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL. COMMON TROUBLE POINTS.

• INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM) • BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE)

INSPECTION AND MAINTENANCE GUIDELINES: • INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE. • REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION. • REPAIR ANY LOOSE WIRE SHEATHING. • THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

• THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC. • THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED



TACKING AGENT APPLIED IN ACCORDANCE WITH THE MANUFACTURER'SRECOMMENDATIONS OR A CRIMPING METHOD ON ALL

FULLY-DEVELOPED CONDITIONS:

I. THE VELOCITY OF FLOW ACROSS THE FILTER STRIP MUST NOT EXCEED 1 FT/SEC. L = 501 YEAR DEV

L = 1001 YEAR DE

LCRA TECHNICAL MANUAL SECTION 4.3.7 (5-8) FOR NVFS:

(5) UPPER BOUNDARY REQUIREMENTS: THE FILTER STRIP MUST RUN ALONG THE ENTIRE EDGE OF É CONTRIBUTING AREA, NO COLLECTION OR ROUTING ALLOWED EXCEPT FOLLOWING A WATER QUALITY BASIN WITH FLOW ATTENUATION OR DISCHARGE FROM A LEVEL SPREADER TO THE FILTER STRIP. THE SOIL ALONG THE UPPER BOUNDARY MUST BE REINFORCED WITH PROTECTIVE MATTING OR AN INFILTRATION TRENCH (PREFERRED) MAY BE USED. REFER TO FIGURE 4.14.

VELOCITY RESTRICTIONS: VEGETATIVE FILTER STRIPS ARE SUSCEPTIBLE TO EROSION AND THE FORMATION OF RILLS; THEREFORE, MAY REQUIRE THE USE OF A FLOW SPREADER OR AN INFILTRATION TRENCH TO SPREAD FLOWS AND DISSIPATE FROSIVE VELOCITIES. THE RUNOFF FROM THE CONTRIBUTING AREA ENTERING THE UPPER BOUNDARY OF THE FILTER STRIP SHALL BE IN SHEET FLOW CONDITIONS. SHEET FLOW CONDITIONS MUST MEET 1 FOLLOWING CONSTRAINTS DURING THE PEAK FLOW OF A 1-YR, 3-HR STORM EVENT UNDER

II. THE AVERAGE DEPTH OF FLOW ACROSS THE FILTER STRIP MUST NOT EXCEED 0.2 FEET FOR A VEGETATIVE FILTER STRIP USED IN COMBINATION WITH A WATER QUALITY BASIN.

L = MINIMUM WIDTH OF A FLOW SPREADER (FT) PERPENDICULAR TO FLOWQ(1 YEAR DEV) = PEAK FLOW RATE FROM THE 1-YR, 3-HR STORM EVENT (SEE APP. 2.4)III. THE AVERAGE DEPTH OF FLOW ACROSS THE FILTER STRIP MUST NOT EXCEED 0.1 FEET FOR A VEGETATIVE FILTER STRIP USED AS A STAND ALONE BMP.

L = MINIMUM WIDTH OF A FLOW SPREADER (FT) PERPENDICULAR TO FLOWQ1 YEAR DEV = PEAK FLOW RATE FROM THE 1-YR, 3-HR STORM EVENT (SEE APP. 2.4) (7) SURFACE CHARACTERISTICS: THE FILTER AREA MUST BE FREE OF GULLIES, RILLS AND FLOW CONCENTRATIONS AND HAVE 70% VEGETATIVE COVER.

(8) SOIL REQUIREMENTS: THE SOIL MUST AVERAGE 4-INCHES IN DEPTH. ROCK CROP AREAS MAY BE PRESENT BUT MUST BE DEDUCTED FROM THE TOTAL FILTER STRIP AREA AND MUST NOT AFFECT THE FUNCTION OF THE VEGETATIVE FILTER STRIP.

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| | | | | Environmental. Engineering. Natural Resources. | P.O. Box 2205 Boerne, Texas 78006 | (830) 249—8284 Fax: (830) 249—0221 TRPF RFG NO·F—4534 | TBPG REG. NO.: 50112 |
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N/A

ISSUE DATE: 4/16/2025













Figure 3-26 Diagram of a Rock Check Dam

Appendix – IV

Soils Map



United States Department of Agriculture

NATURAL NATURAL

Resources Conservation Service A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Blanco and Burnet Counties, Texas



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



| | MAP L | EGEND | | MAP INFORMATION |
|------------|------------------------|-----------|-----------------------|---|
| Area of In | terest (AOI) | 300 | Spoil Area | The soil surveys that comprise your AOI were mapped at |
| | Area of Interest (AOI) | ٥ | Stony Spot | 1:31,700. |
| Soils | Coll Mars Link Dahmana | 0 | Very Stony Spot | Warning: Soil Map may not be valid at this scale. |
| | | Ŷ | Wet Spot | |
| ~ | | Δ | Other | Enlargement of maps beyond the scale of mapping can cause |
| | Soil Map Unit Points | | Special Line Features | line placement. The maps do not show the small areas of |
| Special | Point Features | Water Fea | tures | contrasting soils that could have been shown at a more detailed scale |
| 9 | Borrow Dit | \sim | Streams and Canals | |
| X | Borrow Pit | Transport | ation | Please rely on the bar scale on each map sheet for map |
| × | Clay Spot | +++ | Rails | measurements. |
| \diamond | Closed Depression | ~ | Interstate Highways | Source of Man: Natural Resources Conservation Service |
| X | Gravel Pit | ~ | US Routes | Web Soil Survey URL: |
| | Gravelly Spot | ~ | Major Roads | Coordinate System: Web Mercator (EPSG:3857) |
| 0 | Landfill | ~ | Local Roads | Maps from the Web Soil Survey are based on the Web Mercato |
| ٨. | Lava Flow | Backgrou | nd | projection, which preserves direction and shape but distorts |
| عليه | Marsh or swamp | - Sec. | Aerial Photography | distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more |
| ~ | Mine or Quarry | | | accurate calculations of distance or area are required. |
| 0 | Miscellaneous Water | | | This product is generated from the LISDA-NRCS certified data |
| õ | Perennial Water | | | of the version date(s) listed below. |
| Š | Rock Outcrop | | | Coll Current Areas - Disease and Durrent Counties, Tours |
| Ť | Saline Spot | | | Soli Survey Area Data: Version 20, Sep 5, 2023 |
| T | Sandy Spot | | | |
| °° | Saverely Freded Spot | | | Soil map units are labeled (as space allows) for map scales 1:50,000 or larger. |
| ÷ | | | | |
| \$ | | | | Date(s) aerial images were photographed: Dec 15, 2019—De |
| Þ | Slide or Slip | | | 10,2019 |
| ø | Sodic Spot | | | The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident. |

Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|-----------------------------|--|--------------|----------------|
| 10 | Eckert-Rock outcrop complex, 2 to 20 percent slopes | 21.5 | 3.0% |
| 17 | Hensley gravelly loam, 1 to 8 percent slopes | 470.5 | 66.2% |
| 38 | Purves clay, 1 to 8 percent slopes | 218.6 | 30.8% |
| Totals for Area of Interest | | 710.5 | 100.0% |

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Blanco and Burnet Counties, Texas

10—Eckert-Rock outcrop complex, 2 to 20 percent slopes

Map Unit Setting

National map unit symbol: 2ynhn Elevation: 700 to 1,770 feet Mean annual precipitation: 30 to 35 inches Mean annual air temperature: 65 to 68 degrees F Frost-free period: 220 to 260 days Farmland classification: Not prime farmland

Map Unit Composition

Eckert and similar soils: 50 percent *Rock outcrop:* 25 percent *Minor components:* 25 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Eckert

Setting

Landform: Ridges Landform position (two-dimensional): Shoulder, backslope, footslope Landform position (three-dimensional): Side slope, base slope Down-slope shape: Convex Across-slope shape: Convex Parent material: Residuum weathered from limestone

Typical profile

A - 0 to 7 inches: very cobbly loam *R - 7 to 40 inches:* bedrock

Properties and qualities

Slope: 2 to 20 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 4 to 14 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 0.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7s Hydrologic Soil Group: D Ecological site: R081BY354TX - Very Shallow 23-31 PZ Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Ridges Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Side slope, base slope Down-slope shape: Convex Across-slope shape: Convex Parent material: Residuum weathered from limestone

Typical profile

R - 0 to 80 inches: bedrock

Properties and qualities

Slope: 2 to 20 percent
Depth to restrictive feature: 0 to 2 inches to lithic bedrock
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydrologic Soil Group: D Hydric soil rating: No

Minor Components

Harper

Percent of map unit: 13 percent Landform: Ridges Landform position (two-dimensional): Shoulder, backslope, footslope Landform position (three-dimensional): Side slope, base slope Down-slope shape: Convex Across-slope shape: Convex Ecological site: R081CY360TX - Low Stony Hill 29-35 PZ Hydric soil rating: No

Tarpley

Percent of map unit: 12 percent Landform: Ridges Landform position (two-dimensional): Shoulder, backslope, footslope Landform position (three-dimensional): Side slope, base slope Down-slope shape: Convex Across-slope shape: Convex Ecological site: R081CY361TX - Redland 29-35 PZ Hydric soil rating: No

17—Hensley gravelly loam, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2ysnl Elevation: 650 to 1,600 feet Mean annual precipitation: 30 to 35 inches Mean annual air temperature: 65 to 68 degrees F Frost-free period: 220 to 260 days Farmland classification: Not prime farmland

Map Unit Composition

Hensley and similar soils: 75 percent Minor components: 25 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hensley

Setting

Landform: Ridges Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Interfluve Down-slope shape: Convex Across-slope shape: Linear Parent material: Residuum weathered from limestone

Typical profile

A - 0 to 5 inches: gravelly loam

Bt - 5 to 18 inches: clay

R - 18 to 60 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): 4s Land capability classification (nonirrigated): 4s Hydrologic Soil Group: D Ecological site: R081CY361TX - Redland 29-35 PZ Hydric soil rating: No

Minor Components

Anhalt

Percent of map unit: 10 percent Landform: Ridges Landform position (two-dimensional): Footslope Landform position (three-dimensional): Interfluve Down-slope shape: Linear Across-slope shape: Linear Ecological site: R081CY358TX - Deep Redland 29-35 PZ Hydric soil rating: No

Pedernales

Percent of map unit: 8 percent Landform: Ridges Landform position (two-dimensional): Footslope Landform position (three-dimensional): Interfluve Down-slope shape: Linear Across-slope shape: Linear Ecological site: R082AY378TX - Tight Sandy Loam 25-32 PZ Hydric soil rating: No

Hensley, stony

Percent of map unit: 4 percent Landform: Ridges Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Interfluve Down-slope shape: Convex Across-slope shape: Linear Ecological site: R081CY361TX - Redland 29-35 PZ Hydric soil rating: No

Tarpley

Percent of map unit: 3 percent Landform: Ridges Landform position (two-dimensional): Summit, shoulder Landform position (three-dimensional): Interfluve Down-slope shape: Convex Across-slope shape: Linear Ecological site: R081CY361TX - Redland 29-35 PZ Hydric soil rating: No

38—Purves clay, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: dk3b Elevation: 670 to 1,870 feet Mean annual precipitation: 31 to 35 inches Mean annual air temperature: 65 to 67 degrees F *Frost-free period:* 220 to 260 days *Farmland classification:* Not prime farmland

Map Unit Composition

Purves and similar soils: 70 percent *Minor components:* 30 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Purves

Setting

Landform: Ridges Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Interfluve, side slope Down-slope shape: Convex Across-slope shape: Linear Parent material: Clayey residuum weathered from limestone

Typical profile

A - 0 to 9 inches: clay Bk - 9 to 16 inches: cobbly clay R - 16 to 40 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 45 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: D Ecological site: R081CY574TX - Shallow 29-35 PZ Hydric soil rating: No

Minor Components

Doss

Percent of map unit: 15 percent Landform: Ridges Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Interfluve, side slope Down-slope shape: Convex Across-slope shape: Linear Ecological site: R081CY574TX - Shallow 29-35 PZ Hydric soil rating: No

Brackett

Percent of map unit: 8 percent Landform: Ridges Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Interfluve, side slope Down-slope shape: Convex Across-slope shape: Linear Ecological site: R081CY355TX - Adobe 29-35 PZ Hydric soil rating: No

Tarpley

Percent of map unit: 4 percent Landform: Ridges Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Interfluve, side slope Down-slope shape: Convex Across-slope shape: Linear Ecological site: R081CY361TX - Redland 29-35 PZ Hydric soil rating: No

Rock outcrop

Percent of map unit: 3 percent Landform: Ridges Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Interfluve, side slope Down-slope shape: Convex Across-slope shape: Linear Hydric soil rating: No

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$\label{eq:Appendix} \mathbf{Appendix} - \mathbf{V}$

Stormwater Runoff Calculations

Stormwater Runoff Calculations - Burnet Quarry

| DA-1: | | |] | | | | | | |
|---------------------|--------------------------|----------------|--------------------|----------------|----------------|----------------------|-------------------------------------|-----------------------------------|---------------------------------------|
| Drainage Area (ac) | 10yr-24hr Event (in) | Runoff (ac-ft) | Drainage Area (sf) | Pond Area (sf) | Pond Area (ac) | Pond Depth Req. (ft) | Total Pond Depth Provided (ft) | Total Pond Volume Provided (cf)** | Pond Volume Required (cf) |
| 100.32 | 6.5 | 54.34 | 4,369,939.20 | 195,658.40 | 4.49 | 12.10 | 18.0 |) 2611765.7 | 2367050.4 |
| | _ | | | | | | | - | |
| DA-2A: | | | | | -0 | | | | |
| Drainage Area (ac) | 10yr-24hr Event (in) | Runoff (ac-ft) | Drainage Area (sf) | Pond Area (sf) | Pond Area (ac) | Pond Depth Req. (ft) | Total Pond Depth Provided (ft) | Total Pond Volume Provided (cf)** | Pond Volume Required (cf) |
| 65.94 | 6.5 | 35.72 | 2,872,346.40 | 191361.89 | 9 4.39 | 8.13 | 27.0 |) 2865073.4 | 1555854.3 |
| r | 1 | 1 | - | | | | | | |
| DA-3B: | | | | | | - | . | | · · · · · · · · · · · · · · · · · · · |
| Drainage Area (ac) | 10yr-24hr Event (in) | Runoff (ac-ft) | Drainage Area (sf) | Pond Area (sf) | Pond Area (ac) | Pond Depth Req. (ft) | Total Pond Depth Provided (ft) | Total Pond Volume Provided (cf)** | Pond Volume Required (cf) |
| 75.03 | 6.5 | 40.64 | 3,268,306.80 | 144710.71 | L 3.32 | 2 12.23 | 18.0 | 1818571.3 | 1770332.9 |
| | - | | | | | | | | |
| Interim Conditions: | | Т | 7 | | | | | | |
| DA-2 (2-yr)*: | | | | | | | | | |
| Drainage Area (ac) | 2yr-24hr Event (in) | Runoff (ac-ft) | Drainage Area (sf) | Pond Area (st) | Pond Area (ac) | Pond Depth Req. (ft) | Total Pond Depth Provided (ft) | Total Pond Volume Provided (cf)** | Pond Volume Required (cf) |
| 338.43 | 1.89 | 9 53.30 | 14,741,967.24 | 191361.89 | 4.35 | 12.13 | 27.0 | 2865073.4 | 2321859.8 |
| | *calculated this number | | | | | | | ** | |
| | using equation 20.44 and | | | | | | | stage starses from the surfaces | |
| | a CN value of 82 using | | | | | | | stage storage from the surfaces | |
| | NRCS method | | | | | | | | |
| Gorman Pits: | | |] | | | | | | |
| Drainage Area (ac) | 10yr-24hr Event (in) | Runoff (ac-ft) | Drainage Area (sf) | Pond Area (sf) | Pond Area (ac) | Pond Depth Req. (ft) | Total Pond Depth Provided (ft) | 7 | |
| 10.32 | 6.5 | 5 5.59 | 449,539.20 | 300564.00 | 6.90 | 0.81 | . 1.0 | | |
| | | | | | | | Note: This is the depth available f | or stormwater storage | |

Actual Pits are 23 feet deep but are assumed to be full for this calculation

Appendix – VI

ESC Cost Estimate

Engineer's Cost Estimate for Erosion/Sediment Controls

| Pay Item | Units | Cost per Unit | Estimate | per Pay Item |
|--|------------------|------------------------|----------|--------------|
| Stabilized Construction Entrance | 1.0 | \$1500.00 | \$ | 1,500.00 |
| Diversion/interceptor/perimeter dike | 3934.9 | \$4 per linear ft. | \$ | 15,739.52 |
| ¹ Erosion Control Blankets (sq. yds) | 9,571.00 | \$1.34 | \$ | 12,825.14 |
| ¹ Erosion Control Blanket Installation | 2 people, 2 days | See below ¹ | \$ | 1,200.00 |
| Silt Fence (L Ft.) | 10,115.01 | \$3.00 | \$ | 30,345.03 |
| Reinforced Rock Berms (Linear Ft) | 620 | \$30.00 | \$ | 18,600.00 |
| ² Seed Mixture (per acre) | 85.50 | \$723.20 | \$ | 61,833.60 |
| ² Seed Application (labor + equip rental) | 5 days | See below ² | \$ | 2,500.00 |
| ³ Water Truck Rental (daily rate) | 9 days | \$700.00 | \$ | 6,300.00 |
| ³ Water Application (labor) | 9 days | \$200.00 | \$ | 1,800.00 |
| Concrete washout | 1 | \$1000.00 | \$ | 1,000.00 |
| | | Subtotal: | \$ | 153,643.29 |
| | | 10% Contingency: | \$ | 15,364.33 |
| | | ТО | \$ | 169,007.62 |

¹Erosion Control Blanket quantity is based on application for stabilization of the plant pad slopes, and an extra 500 square yard contingency has been added to cover any other slopes that exceed 3H:1V. Installation cost assumes two people working eight hour days for two days at \$25.00/hour. An additional \$400 was added for contingency/equipment costs.

²Seed and Application assumes the following:

• 57-acre seed application area within the proposed limits of construction using appropriate species at the application rates listed in Table 1 or other appropriate mixture listed in Tables 3-3 and/or 3-4 in the LCRA Technical Manual;

• Prices of seed may vary and are based on currently available seed. Current price estimates used in Table 1 below are based on Turner Seed Company's 2025 Spring Price List (attached);

- Approximately \$1,500.00 estimated equipment rental for one week; and
- One person working 8 hours/day for one week at \$25/hour.

• 50% contingency has been added to the total acreage of proposed disturbed area within the limits of construction as a precaution that more than the 57 acres is disturbed in the initial conditions.

³Water Application assumes the following:

- Rental of a water truck at approximately \$700/day (daily rate);
- Water from the well on-site will be utilized;
- One person working an 8-hour day at \$25.00/hour;

• Seeding occurs in early spring and watering occurs every two weeks for the first three months, followed by once monthly until the vegetation is established, approximately six months total.

Table 1. Example of Year-Round Permanent, Native Seed Mix

| Species | Pounds per | Price per | Subtotal ner acre |
|--|------------|-----------|-------------------|
| | acre | pound | Subtotal per aere |
| Sideoats grama (Bouteloua curtipendula) | 2.0 | \$30.00 | \$60.00 |
| Buffalograss (Bouteloua dactyloides) | 1.4 | \$30.00 | \$42.00 |
| Canadian wildrye (Elymus canadensis) | 1.4 | \$10.00 | \$14.00 |
| Green sprangletop (Leptochloa dubia) | 2.6 | \$16.00 | \$41.60 |
| Mexican hat (Ratibida columnifera) | 1.0 | \$20.00 | \$20.00 |
| Little bluestem (Schizachyrium scoparium) | 1.8 | \$12.00 | \$21.60 |
| Purple threeawn (Aristida purpurea) | 1.4 | \$16.00 | \$22.40 |
| Silver bluestem (Bothrichloa laguroides) | 6.0 | \$80.00 | \$480.00 |
| Indiangrass, Cheyenne (Sorghastrum nutans) | 1.8 | \$12.00 | \$21.60 |

Total Estimated Cost/Acre = \$723.20

Total Estimated Cost (assumes 57 acres) = \$ 41,222.40

From the Water Quality Management Technical Manual:

| Dates | Climate | Species (lb/ac) | |
|------------------|-----------------------|----------------------------------|------|
| Sept 1 to Nov 30 | Temporary Cool Season | Oats (Avena sativa) | 21.0 |
| | | Wheat (Red, Winter) | 30.0 |
| | | (Triticum aestivum) | |
| | | Total | 51.0 |
| Oct 1 to Mar 30 | Temporary Cool Season | Cereal Rye (Secale cereale) | 70.0 |
| May 15 to Aug 31 | Temporary Warm Season | Foxtail Millet (Setaria italica) | 30.0 |

Table 3-3 Temporary Seeding for Burnet, Travis, and Llano Counties

Table 3-4 Permanent Seeding for Burnet, Travis, and Llano Counties

| Dates | Climate | Species (lb/ac) | |
|-----------------|-------------------------|---|-------|
| Year Round | Permanent Cool/Warm | Purple three-awn (Aristida purpurea) | 1.4 |
| | Season (Native Species) | Sideoats grama (Bouteloua curtipendula) | 2.0 |
| | 11 II II II II | Silver bluestem (Bothriochloa laguroides) | 6.0 |
| | | Buffalograss (Buchloe dactyloides) | 1.4 |
| | | Canadian wildrye (Elymus Canadensis) | 1.4 |
| | | Engelmann's daisy (Engelmannia pinnatifida) | 0.6 |
| | | Green sprangletop (Leptochloa dubia) | 2.6 |
| | | Mexican hat (Ratibida columnifera) | 1.0 |
| | | Little bluestem (Schizachyrium scoparium) | 1.8 |
| | | Indiangrass (Sorghastrum nutans) | 1.8 |
| | | Texas Wintergrass (Nassella leucotricha) | 15.0 |
| | | Total | 35.0 |
| Mar 30 to Oct 1 | Permanent Warm Season | Bermuda (Cynodon dactylon)(hulled) | 45.0 |
| Oct 1 to Mar 30 | Permanent Cool/Warm | Bermuda (Cynodon dactylon) (unhulled) | 70.0 |
| | Season | Cereal Rye (Secale cereale) | 90.0 |
| | | Total | 160.0 |

CURT GARRETT CAMPBE Ί, 106851

Curt Campbell, PE - TX License. No. 144228 Registered Professional Engineer

Signature of Registered Professional Engineer_ Date: 4/17/2025

Date:

Westward Environmental, Inc. - Texas Firm Registration # F- 4524



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2025 GRASS SEEDS

| Bluestems | | Price | Unit |
|---------------------|--------------------|---------|------|
| Big Bluestem | Kaw | \$12.00 | PLS |
| Broomsedge Bluestem | Native | OUT | PLS |
| Bushy Bluestem | Native | OUT | PLS |
| Cane Bluestem | Native | OUT | PLS |
| Little Bluestem | Aldous | \$13.00 | PLS |
| Little Bluestem | Cimarron | \$14.00 | PLS |
| Little Bluestem | Coastal Plains | \$66.00 | PLS |
| Little Bluestem | Native | \$12.00 | PLS |
| Little Bluestem | OK Select | \$18.00 | PLS |
| Old World Bluestem | T-587 | \$33.00 | PLS |
| Old World Bluestem | WW-B Dahl | \$33.00 | PLS |
| Old World Bluestem | WW-Spar | ASK | PLS |
| Sand Bluestem | Native | \$20.00 | PLS |
| Silver Bluestem | Santiago Germplasm | \$80.00 | PLS |
| Splitbeard Bluestem | Native | \$60.00 | PLS |

| Cool Season Grasses | | Price | Unit |
|---------------------|--------------|----------|---------|
| Annual Ryegrass | Beef Builder | \$42.50 | 50# Bag |
| Annual Ryegrass | Gulf | \$40.00 | 50# Bag |
| Canada Wildrye | Lavaca | \$22.00 | PLS |
| Canada Wildrye | Native | \$10.00 | PLS |
| Creeping Red Fescue | Boreal | \$2.00 | LB |
| Indian Ricegrass | Native | \$30.00 | PLS |
| Little Barley | Cibolo | \$21.00 | PLS |
| Perennial Ryegrass | Pure Sport | \$100.00 | 50# Bag |
| Tall Fescue | Camelot | \$100.00 | 50# Bag |
| Tall Fescue | Kentucky 31 | \$75.00 | 50# Bag |
| Tall Fescue | Sungold GLX | \$100.00 | 50# Bag |
| Tall Wheatgrass | Jose | \$4.00 | PLS |
| Virginia Wildrye | Native | \$9.00 | PLS |
| Western Wheatgrass | Native | \$12.00 | PLS |

| Grama Grasses | | Price | Unit |
|----------------|----------|---------|------|
| Blue Grama | Alma | \$20.00 | PLS |
| Blue Grama | Native | \$19.00 | PLS |
| Buffalograss | Texoka | \$28.00 | PLS |
| Buffalograss | Timeless | \$30.00 | PLS |
| Sideoats Grama | El Reno | \$25.00 | PLS |
| Sideoats Grama | Haskell | \$30.00 | PLS |

| Indiangrass | | Price | Unit |
|-------------|----------|---------|------|
| Indiangrass | Cheyenne | \$12.00 | PLS |
| Indiangrass | Lometa | OUT | PLS |

| Lovegrass | | Price | Unit |
|-------------------|--------------------|---------|------|
| Lehman Lovegrass | Variety Not Stated | OUT | PLS |
| Sand Lovegrass | Bend | \$24.00 | PLS |
| Teff Lovegrass | Variety Not Stated | \$3.00 | LB |
| Weeping Lovegrass | Ermello | \$15.00 | PLS |
| Wilman Lovegrass | Variety Not Stated | \$16.00 | PLS |

| Miscellaneous Grasses | | Price | Unit |
|-----------------------|------------------------|----------|------|
| Alkali Sacaton | Native | \$25.00 | PLS |
| Arizona Cottontop | Native | OUT | PLS |
| Bahiagrass | Pensacola | \$5.00 | LB |
| Buffelgrass | Common | ASK | PLS |
| Common Barnyard Grass | Echinochloa crus-galli | \$6.00 | LB |
| Crabgrass | Red River | \$6.00 | PLS |
| Curly Mesquite | Native | OUT | PLS |
| Eastern Gamagrass | Native | OUT | PLS |
| Galleta | Viva | \$47.00 | PLS |
| Green Sprangletop | Van Horn | \$7.00 | PLS |
| Hooded Windmillgrass | Burnett Germplasm | \$85.00 | PLS |
| Inland Sea Oats | Native | \$120.00 | PLS |
| Johnsongrass | Variety Not Stated | OUT | LB |
| Plains Bristlegrass | Native | \$16.00 | PLS |
| Purple Threeawn | Native | \$16.00 | PLS |
| Purpletop | Native | \$40.00 | PLS |
| Rough Barnyard Grass | (Echinochloa muricata) | \$15.00 | LB |
| Sand Dropseed | Native | \$10.00 | PLS |
| Sand Dropseed | Taylor Germplasm | ASK | PLS |
| Sorghum Almum | Variety Not Stated | ASK | PLS |
| White Tridens | Guadalupe Germplasm | \$100.00 | PLS |

| Panicums | | Price | Unit |
|---------------|--------------|---------|------|
| Kleingrass | Selection 75 | \$13.00 | PLS |
| Switchgrass | Alamo | \$14.00 | PLS |
| Switchgrass | Blackwell | \$11.00 | PLS |
| Texas Panicum | Native | OUT | PLS |

| Pasture Bermudagra | Price | Unit | |
|--------------------|---------------------------------|---------|----|
| Bermudagrass | Common (Hulled) | \$9.00 | LB |
| Bermudagrass | Common (Unhulled) | \$6.00 | LB |
| Bermudagrass | Giant | ASK | LB |
| Buckaroo Blend | Chilly Verde, Giant & Jacob | \$12.00 | LB |
| Texas Tough Blend | Giant, Forage Max & Majestic | ASK | LB |

| Turf Grasses | | Price | Unit |
|--------------------|--------------------|----------|---------|
| Bermudagrass | Blackjack (Coated) | \$7.50 | LB |
| Bermudagrass | Common (Hulled) | \$9.00 | LB |
| Bermudagrass | Common (Unhulled) | \$6.00 | LB |
| Bermudagrass | Maya (Coated) | \$7.50 | LB |
| Bermudagrass | Sahara 2 | ASK | LB |
| Buffalograss | Timeless | \$30.00 | LB |
| Perennial Ryegrass | Pure Sport | \$100.00 | 50# Bag |
| Tall Fescue | Camelot | \$100.00 | 50# Bag |
| Tall Fescue | Sungold GLX | \$100.00 | 50# Bag |
| Turner Turf | Buffalograss 70% | \$24.00 | |
| | Blue Grama 30% | _ ⊅∠4.00 | |
| Turner Turf 3 | Buffalograss 70% | | |
| | Blue Grama 28% | \$26.00 | LB |
| | Curly Mesquite 2% | | |

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2025 WILDLIFE & FORB SEEDS

| Clovers | | Price | Unit |
|-----------------------------|--------------------|--------|------|
| Alyce Clover | Variety Not Stated | \$3.50 | LB |
| Arrowleaf Clover | Zulu 2 | \$2.50 | LB |
| Balansa Clover | Fixation | \$2.25 | LB |
| Ball Clover | Variety Not Stated | OUT | LB |
| Berseem Clover | Frosty | \$3.50 | LB |
| Crimson Clover (Coated) | Kentucky Pride | \$2.00 | LB |
| Crimson Clover (Raw) | Kentucky Pride | \$2.25 | LB |
| Persian Clover | eNhance | \$2.50 | LB |
| Red Clover | Dynamite | ASK | LB |
| Red Clover | Kenland | \$5.00 | LB |
| Spineless Burr Medic Clover | Cavalier | \$5.00 | LB |
| White Clover | Dutch | \$6.00 | LB |
| White Sweet Clover | Hubam | \$3.50 | LB |
| White Sweet Clover | Silver River | \$3.50 | LB |
| Yellow Blossom Sweet Clover | Variety Not Stated | \$3.25 | LB |

| Forb Mix | | |
|---------------------------------|---------|-------|
| Illinois Bundleflower (Sabine) | | |
| Sweet Clover (Silver River) | | 10.0% |
| Blackeyed Susan | | 9.0% |
| Clasping Coneflower | | 9.0% |
| Indian Blanket | | 9.0% |
| Lanceleaf Coreopsis | | 9.0% |
| Partridge Pea | | |
| Plains Coreopsis | | |
| Purple Prairie Clover | | |
| White Prairie Clover | | 5.0% |
| Awnless Bushsunflower (Plateau) | | |
| Common Annual Sunflower | | |
| Maximilian Sunflower (Aztec) | | |
| Purple Coneflower | | |
| Cost Per Acre \$84.00 | | |
| Cost Per PLS Lb. | \$12.00 | 100% |
| PLS Pounds Per Acre | 7.00 | |

| Legumes | | Price | Unit |
|-------------------------------|------------------------|---------|------|
| Aeschynomene | (American Joint Vetch) | \$5.50 | LB |
| Alfalfa | Ladak | \$4.75 | LB |
| Alfalfa (Coated & Inoculated) | L-602 | \$5.00 | LB |
| Alfalfa (Raw & Inoculated) | L-602 | \$6.00 | LB |
| Cowpea | Ace | \$1.50 | LB |
| Cowpea | Blackeye | \$2.00 | LB |
| Cowpea | Iron & Clay | \$1.00 | LB |
| Cowpea | Red Ripper | \$1.00 | LB |
| Hairy Vetch | Variety Not Stated | \$2.00 | LB |
| Illinois Bundleflower | Native | \$6.00 | PLS |
| Lab Lab | Variety Not Stated | \$2.50 | LB |
| Mungbean | Variety Not Stated | \$2.00 | LB |
| Partridge Pea | Native | \$16.00 | PLS |
| Purple Prairie Clover | Native | \$18.00 | PLS |
| Soybean | Laredo | \$1.50 | LB |
| Sunn Hemp | Variety Not Stated | \$2.00 | LB |
| White Prairie Clover | Native | \$40.00 | PLS |

| Lespedeza | | Price | Unit |
|---------------------|--------------------|---------|------|
| Korean Lespedeza | Variety Not Stated | \$3.50 | LB |
| Sericea Lespedeza | Variety Not Stated | \$4.50 | LB |
| Roundhead Lespedeza | Native | \$95.00 | PLS |

| Millets | | Price | Unit |
|---------------------|--------------------|---------|---------|
| Browntop Millet | Variety Not Stated | \$50.00 | 50# Bag |
| Foxtail Millet | German R | \$50.00 | 50# Bag |
| Foxtail Millet | Scotty Fox | \$75.00 | 50# Bag |
| Hybrid Pearl Millet | Variety Not Stated | \$90.00 | 50# Bag |
| Japanese Millet | Variety Not Stated | \$50.00 | 50# Bag |
| Proso Millet | Dove | \$75.00 | 50# Bag |

| Other Forbs | | Price | Unit |
|------------------------|--------------------|---------|---------|
| Buckwheat | Variety Not Stated | \$50.00 | 50# Bag |
| Chicory | Variety Not Stated | \$4.50 | LB |
| Chufas | Variety Not Stated | \$1.75 | LB |
| Daikon Radish | Driller | \$2.00 | LB |
| Engelmann Daisy | Eldorado | OUT | PLS |
| Fourwing Saltbush | Native | \$13.50 | PLS |
| Okra | Clemson Spineless | \$1.50 | LB |
| Pennsylvania Smartweed | Variety Not Stated | \$22.00 | LB |
| Winter Rape | Variety Not Stated | \$38.00 | 50# Bag |
| Sesame | Variety Not Stated | \$3.75 | LB |
| Turnips | Purpletop | \$2.00 | LB |

| Other Grasses | | Price | Unit |
|----------------------|-----------------------|---------|---------|
| Hybrid Grain Sorghum | W-844-E | \$2.50 | LB |
| Rice | Variety Not Stated | \$23.00 | 50# Bag |
| Sorghum | Egyptian Wheat | \$2.00 | LB |
| Sorghum | Early Sumac (Red Top) | \$40.00 | 50# Bag |
| Sorghum | Hegari | \$35.00 | 50# Bag |
| Sorghum Almum | Variety Not Stated | \$2.50 | LB |

| Sunflowers | | Price | Unit |
|----------------------------------|--------------------|---------|---------|
| Awnless Bushsunflower | Plateau | \$45.00 | PLS |
| Hybrid Oil Sunflower | SF CP Sportsman | \$3.50 | LB |
| Maximilian Sunflower | Native | \$22.00 | PLS |
| Native Sunflower (Common Annual) | Native | \$10.00 | PLS |
| Peredovick Sunflower | Variety Not Stated | \$50.00 | 50# Bag |

| Seeders-Fertilizers-Etc. | | | |
|--------------------------|------------------------------|---------|--|
| 20-10-5 Fertilizer | 50 Lb. Sack | \$23.00 | |
| 33-0-0 Fertilizer | 50 Lb. Sack | \$23.00 | |
| 6-3-0 Fertilizer | 50 Lb. Sack | \$12.00 | |
| Broadcast Seeder | Hand | \$38.00 | |
| Broadcast Seeder | PTO | ASK | |
| Inoculant | Clover & Alfalfa | \$8.00 | |
| Inoculant | Cowpea - Sunn Hemp - Peanuts | \$8.00 | |
| Inoculant | Pea - Vetch - Lentils | \$8.00 | |

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2025 GRASS & OTHER SEED MIXES

| Bluestem Mix Non Sandy | | |
|-------------------------|---------|--------|
| Little Bluestem | | 45.0% |
| Indiangrass | | 25.0% |
| Switchgrass (Blackwell) | | 25.0% |
| Big Bluestem | | 5.0% |
| Cost Per Acre | \$46.80 | |
| Cost Per PLS Lb. | \$12.00 | 100.0% |
| PLS Pounds Per Acre | 3.90 | |

| Bluestem Mix Sandy | | |
|--------------------------|---------|--------|
| Little Bluestem | | 45.0% |
| Switchgrass (Blackwell) | | 20.0% |
| Indiangrass | | 15.0% |
| Sideoats Grama (Haskell) | | 10.0% |
| Big Bluestem | | 10.0% |
| Cost Per Acre | \$52.00 | |
| Cost Per PLS Lb. | \$13.00 | 100.0% |
| PLS Pounds Per Acre | 4.00 | |

| Hardland Grass Seed Mix | | | |
|----------------------------|---------|--------|--|
| Kleingrass (Selection 75) | | 25.0% | |
| Willman Lovegrass | | 25.0% | |
| WW-B Dahl Bluestem | | | |
| Sideoats Grama | | 20.0% | |
| Green Sprangletop (Van Hor | n) | 10.0% | |
| Cost Per Acre | \$47.50 | | |
| Cost Per PLS Lb. | \$19.00 | 100.0% | |
| PLS Pounds Per Acre | 2.50 | | |

| Pipeline Mix | | |
|---|---------|--------|
| Kleingrass (Selection 75) | | 15.0% |
| Wilman Lovegrass | | 15.0% |
| Green Sprangletop (Van Hor | n) | 10.0% |
| Sideoats Grama | | 10.0% |
| Tall Wheatgrass | | 10.0% |
| Annual Ryegrass | | 7.0% |
| Foxtail Millet | | |
| Hooded Windmillgrass (Burnet Germplasm) | | 5.0% |
| Silver Bluestem | | 5.0% |
| Teff Lovegrass | | 5.0% |
| WW-Spar Bluestem | | 5.0% |
| Canadian Wildrye | | 3.0% |
| Virginia Wildrye | | |
| Cost Per Acre | \$70.00 | |
| Cost Per PLS Lb. | \$7.00 | 100.0% |
| PLS Pounds Per Acre | 10.00 | |

| SOL Mix | | |
|----------------------|---------|--------|
| Blue Grama | | 50.0% |
| Hooded Windmillgrass | | 14.0% |
| Sand Dropseed | | 12.0% |
| Sideoats Grama | | 12.0% |
| Buffalograss | | 11.0% |
| Curly Mesquite | | 1.0% |
| Cost Per Acre | \$70.00 | |
| Cost Per PLS Lb. | \$28.00 | 100.0% |
| PLS Pounds Per Acre | 2.50 | |

| Sandyland Grass Seed Mix | | | |
|--------------------------|---------|--------|--|
| Wilman Lovegrass | | 25.0% | |
| Plains Bristlegrass | | 15.0% | |
| Switchgrass (Blackwell) | | 15.0% | |
| Green Sprangletop | | 10.0% | |
| Indiangrass | | 10.0% | |
| Little Bluestem | | 10.0% | |
| Sideoats Grama (Haskell) | | 10.0% | |
| Big Bluestem | | 5.0% | |
| Cost Per Acre | \$47.85 | | |
| Cost Per PLS Lb. | \$14.50 | 100.0% | |
| PLS Pounds Per Acre | 3.30 | | |

| Tank Dam Mix | | |
|---|--|--------|
| Annual Ryegrass | | 35.0% |
| Bermudagrass | | 10.0% |
| Tall Fescue | | 10.0% |
| Foxtail Millet (German) | | 8.0% |
| Teff Lovegrass | | 6.0% |
| Crabgrass | | 5.0% |
| Kleingrass (Selection 75) | | 5.0% |
| Sideoats Grama | | 5.0% |
| Wilman Lovegrass | | 5.0% |
| WW-Spar Bluestem | | 5.0% |
| Blue Grama | | 3.0% |
| Hooded Windmillgrass (Burnet Germplasm) | | 2.0% |
| Silver Bluestem (Santiago Germplasm) | | 1.0% |
| Cost Per Acre \$75.00 | | |
| Cost Per Lb. \$7.50 | | 100.0% |
| Pounds Per Acre 10.00 | | |

| Texas Native Multi-Site Mix | | | |
|---------------------------------|---------|--------|--|
| Little Bluestem | | 10.0% | |
| Illinois Bundleflower | | 10.0% | |
| Blue Grama | | 9.0% | |
| Indiangrass | | 9.0% | |
| Switchgrass (Blackwell) | | 9.0% | |
| Indian Blanket | | 4.5% | |
| Big Bluestem | | 3.0% | |
| Canada Wildrye | | 3.0% | |
| Green Sprangletop (Van Hor | n) | 3.0% | |
| Hooded Windmillgrass | | 3.0% | |
| Plains Bristlegrass | | 3.0% | |
| Sand Dropseed | | 3.0% | |
| Sideoats Grama | | 3.0% | |
| Silver Bluestem | | | |
| Virginia Wildrye | | | |
| Western Wheatgrass | | | |
| Awnless Bushsunflower (Plateau) | | 2.5% | |
| Blackeyed Susan | | 2.5% | |
| Plains Coreopsis | | 2.5% | |
| Purple Prairie Clover | | 2.0% | |
| White Prairie Clover | | 2.0% | |
| Partridge Pea | | 2.0% | |
| Buffalograss (Texoka) | | 1.0% | |
| Inland Sea Oats | | 1.0% | |
| Maximilian Sunflower (Aztec) | | | |
| Purpletop | | 1.0% | |
| Sand Lovegrass | | 1.0% | |
| Cost Per Acre | \$77.00 | | |
| Cost Per PLS Lb. | \$14.00 | 100.0% | |
| PLS Pounds Per Acre | 5.50 | | |

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2025 WILDLIFE SEED MIXES & FOOD PLOTS

| Native Perennial Wildlife M | lix | |
|---------------------------------|-----|-------|
| Switchgrass (Blackwell) | | 14.0% |
| Little Bluestem | | 12.0% |
| Plains Bristlegrass | | 12.0% |
| Sideoats Grama | | 12.0% |
| Green Sprangletop (Van Hor | n) | 10.0% |
| Illinois Bundleflower (Sabine |) | 10.0% |
| Sweet Clover (Silver River) | | |
| Purple Prairie Clover | | |
| Indiangrass (Cheyenne) | | |
| Awnless Bushsunflower (Plateau) | | |
| Partridge Peas | | |
| Maximillian Sunflower (Aztec) | | |
| Cost Per Acre \$61.60 | | |
| Cost Per PLS Lb. \$11.00 | | |
| PLS Pounds Per Acre 5.60 | | |

| Pollinator Mix | | | |
|---------------------------------|------|---------|--------|
| Illinois Bundleflower (Sabine) | | | 12.0% |
| Sweet Clover (Silver River) | | | 12.0% |
| Green Sprangletop (Van Horn) | | | 10.0% |
| Blackeyed Susan | | | 7.0% |
| Indian Blanket | | | 7.0% |
| Plains Coreopsis | | | 7.0% |
| Awnless Bushsunflower (Plateau) | | | 5.0% |
| Blue Grama | | | 5.0% |
| Clasping Coneflower | | | 5.0% |
| Gayfeather | | | 5.0% |
| Hooded Windmillgrass | | | 5.0% |
| Partridge Peas | | | 5.0% |
| Purple Prairie Clover | | | 5.0% |
| Sideoats Grama | | | 5.0% |
| Maximilian Sunflower (Aztec) | | | 3.0% |
| White Prairie Clover | | | 2.0% |
| Cost Per Acre | | \$72.80 | |
| Cost Per PLS Lb. | | \$13.00 | 100.0% |
| PLS Pounds Per Acre | 5.60 | | |

| Spring Quail & Turkey Mix | | |
|---------------------------|---------|--------|
| Browntop Millet | | 15.0% |
| Buckwheat | | 15.0% |
| Foxtail Millet (German R) | | 15.0% |
| Hybrid Grain Sorghum | | 15.0% |
| Cowpea (Ace) | | 10.0% |
| Proso Millet (Dove) | | 10.0% |
| Hybrid Oil Sunflower | | 5.0% |
| Hybrid Pearl Millet | | 5.0% |
| Okra | | 5.0% |
| Soybean | | 5.0% |
| Cost Per Acre | \$30.00 | |
| Cost Per Lb. | \$1.50 | 100.0% |
| Pounds Per Acre 2 | 0.00 | |

| Spring Deer Mix | |
|------------------------------|-----------|
| Cowpeas (Ace) | 25.0% |
| Cowpeas (Iron & Clay) | 10.0% |
| Cowpeas (Red Ripper) | 10.0% |
| Lab Lab | 10.0% |
| Okra (Spineless) | 10.0% |
| Soybeans | 10.0% |
| Sunn Hemp | 10.0% |
| Buckwheat | 5.0% |
| Chicory | 5.0% |
| Cowpea (California Blackeye) | 5.0% |
| Cost Per Acre \$35. | .00 |
| Cost Per Lb. \$1. | 75 100.0% |
| Pounds Per Acre 20.00 | |

| Spring Dove Mix | | |
|----------------------------|---------|--------|
| Browntop Millet | | 25.0% |
| Foxtail Millet (German R) | | 25.0% |
| Hybrid Black Oil Sunflower | | 20.0% |
| Hybrid Grain Sorghum | | 20.0% |
| Sesame | | 10.0% |
| Cost Per Acre | \$40.00 | |
| Cost Per Lb. | \$2.00 | 100.0% |
| Pounds Per Acre | 20.00 | |

| Texas Perennial Wildlife Mix | | |
|---------------------------------|---------|--------|
| Kleingrass (Selection 75) | | 15.0% |
| Sweet Clover (Silver River) | | 15.0% |
| Wilman Lovegrass | | 15.0% |
| Plains Bristlegrass | | 12.0% |
| Switchgrass (Blackwell) | | 12.0% |
| Green Sprangletop (Van Horn) | | 10.0% |
| Illinois Bundleflower (Sabine) | | 10.0% |
| Purple Prairie Clover | | 5.0% |
| Partridge Peas | | 4.0% |
| Awnless Bushsunflower (Plateau) | | 1.0% |
| Maximillian Sunflower (Aztec) | | 1.0% |
| Cost Per Acre | \$42.00 | |
| Cost Per PLS Lb. | \$8.00 | 100.0% |
| PLS Pounds Per Acre | 5.25 | |

| Waterfowl Mix | | | |
|----------------------|-------|---------|--------|
| Japanese Millet | | | 25.0% |
| Browntop Millet | | | 20.0% |
| Rice | | | 20.0% |
| Buckwheat | | | 15.0% |
| Hybrid Grain Sorghum | | | 10.0% |
| Barnyard Grass | | | 5.0% |
| Smartweed | | | 5.0% |
| Cost Per Acre | | \$45.00 | |
| Cost Per Lb. | | \$2.25 | 100.0% |
| Pounds Per Acre | 20.00 | | |

PRICES ARE SUBJECT TO CHANGE DUE TO AVAILABILITY

MIXES ONLY

2025 SPRING WILDFLOWER MIXES - \$30 PER POUND PRICES ARE SUBJECT TO CHANGE DUE TO AVAILABILITY

Texas Native Wildflower Mix

| Common Name | % By Weight | Season | Bloom Period | Longevity | Bloom Color |
|------------------------|-------------|--------|---------------------|-----------|-----------------|
| Black-Eyed Susan | 10% | Warm | May - November | ABP | Yellow |
| Clasping Coneflower | 10% | Warm | May - June | Annual | Yellow/Dark Red |
| Common Milkweed | 1% | Warm | May - August | Perennial | Pink |
| Drummond Phlox | 1% | Cool | February - June | Annual | Red |
| Gayfeather | 8% | Warm | August - December | Perennial | Purple |
| Greenthread | 1% | Cool | February - December | AP | Yellow/Dark Red |
| Indian Blanket | 25% | Warm | February - December | Annual | Red/Yellow |
| Lemon Mint | 5% | Warm | April - October | Annual | Purple |
| Mealy Blue Sage | 1% | Warm | April - November | Perennial | Purple/Blue |
| Mexican Hat | 1% | Warm | March - November | Perennial | Yellow/Dark Red |
| Missouri Primrose | 1% | Warm | April - August | Perennial | Yellow |
| Plains Coreopsis | 10% | Warm | April - June | Annual | Yellow/Dark Red |
| Prairie Coneflower | 1% | Warm | March - November | Perennial | Yellow |
| Purple Coneflower | 6% | Warm | May - June | Perennial | Purple |
| Purple Prairie Clover | 9% | Warm | June - July | Perennial | Purple |
| Scarlet Sage | 1% | Warm | March - December | Perennial | Red |
| Showy Evening Primrose | 5% | Cool | February - July | Perennial | Pink |
| Showy Milkweed | 1% | Warm | May - June | Perennial | Pink |
| White Prairie Clover | 1% | Warm | June - August | Perennial | White |
| White Yarrow | 1% | Cool | April - June | Perennial | White |
| Wild Bergamot | 1% | Warm | June - September | Perennial | Pink |

Starburst Wildflower Mix

| Common Name | % By Weight | Season | Bloom Period | Longevity | Bloom Color |
|------------------------|-------------|--------|----------------------|-----------|-----------------|
| Bachelor's Button | 5% | Cool | March - May | Annual | Blue |
| Bird's Foot Trefoil | 4% | Warm | June - August | Perennial | Yellow |
| Black-Eyed Susan | 5% | Warm | May - November | ABP | Yellow |
| Blue Flax | 4% | Warm | May - June | Perennial | Light Blue |
| California Poppy | 12% | Cool | February - September | Annual | Orange |
| Clasping Coneflower | 4% | Warm | May - June | Annual | Yellow/Dark Red |
| Common Milkweed | 1% | Warm | May - August | Perennial | Pink |
| Corn Poppy | 5% | Cool | March - July | Annual | Red |
| Cosmos | 10% | Warm | May - November | Annual | Red/Pink |
| Drummond Phlox | 1% | Cool | February - June | Annual | Red |
| False Sunflower | 1% | Warm | June - September | Perennial | Yellow |
| Gayfeather | 4% | Warm | August - December | Perennial | Purple |
| Golden Mane Tickseed | 1% | Warm | June - July | Annual | Yellow/Dark Red |
| Grayhead Coneflower | 1% | Warm | May - September | Perennial | Yellow |
| Greenthread | 1% | Cool | February - December | A/P | Yellow |
| Indian Blanket | 4% | Warm | February - December | Annual | Red/Yellow |
| Lanceleaf Coreopsis | 8% | Warm | May - August | Perennial | Yellow |
| Lemon Mint | 5% | Warm | April - October | Annual | Purple |
| Mealy Blue Sage | 1% | Warm | April - November | Perennial | Purple/Blue |
| Mexican Hat | 1% | Warm | March - November | Perennial | Yellow/Dark Red |
| Missouri Primrose | 1% | Warm | March - November | Perennial | Yellow |
| Moss Verbena | 1% | Warm | March - July | ABP | Purple |
| Pale Purple Coneflower | 1% | Warm | May - June | Perennial | Purple |
| Plains Coreopsis | 5% | Warm | April - June | Annual | Yellow/Dark Red |
| Prairie Coneflower | 1% | Warm | March - November | Perennial | Yellow |
| Purple Coneflower | 1% | Warm | May - June | Perennial | Purple |
| Purple Prairie Clover | 1% | Warm | June - July | Perennial | Purple |
| Scarlet Flax | 1% | Warm | May - July | Annual | Red |
| Scarlet Sage | 1% | Warm | March - December | Perennial | Red |
| Showy Evening Primrose | 5% | Cool | February - July | Perennial | Pink |
| Showy Milkweed | 1% | Warm | May - June | Perennial | Pink |
| White Prairie Clover | 1% | Warm | June - August | Perennial | White |
| White Yarrow | 1% | Cool | April - June | Perennial | White |
| Wild Bergamot | 1% | Warm | June - September | Perennial | Pink |

SEEDING RATE PER ACRE = 8 TO 10 LBS. **PER ONE THOUSAND SQUARE FEET = 1/5 TO 1/2 LB.** ALWAYS SOW ON FRESHLY DISTURBED SOIL. SEVEN TIMES THE DIAMETER OF ANY SEED IS MAXIMUM DEPTH TO PLANT THE SEED!

| 2025 WILDFLOWERS | | | | | | | | |
|--------------------------|----------------|---------------|------------------|--------------------|-----------|--------|----------------|-----------------|
| Common Name | Genus | Species | Planting Rate | Price Per Pound | Longevity | Season | Bloom Period | Bloom Color |
| American Basketflower | Centaurea | americana | 10 | \$80.00 | Annual | Warm | May - June | Purple |
| Bachelor's Button | Centaurea | cyanus | 4 | \$10.00 | Annual | Cool | March - May | Blue |
| Bird's Foot Trefoil | Lotus | corniculatus | 8 - 10 | \$7.50 | Perennial | Warm | June - August | Yellow |
| Black-Eyed Susan | Rudbeckia | hirta | 1 - 2 | \$15.00 | ABP | Warm | May - Oct | Yellow |
| Blanketflower | Gaillardia | aristata | 5 | \$25.00 | Perennial | Warm | July - Sept | Red/Yellow |
| Blue Flax | Linum | lewisii | 8 | \$20.00 | Perennial | Warm | May - June | Light Blue |
| Butterfly Milkweed | Asclepias | tuberosa | 10 | \$250.00 | Perennial | Warm | April - Sept | Orange |
| California Poppy | Eschscholzia | californica | 8 | \$26.00 | Annual | Cool | Feb - Sept | Orange |
| Clasping Coneflower | Dracopis | amplexicaulis | 2 - 3 | \$18.00 | Annual | Warm | May - June | Yellow/Dark Red |
| Common Milkweed | Asclepias | syriaca | 8 | \$110.00 | Perennial | Warm | May - August | Pink |
| Corn Poppy | Papaver | rhoeas | 2 | \$25.00 | Annual | Cool | March - July | Red |
| Cosmos | Cosmos | bipinnatus | 15 | \$16.00 | Annual | Warm | May - Nov | Red/Pink |
| Cutleaf Evening Primrose | Oenothera | laciniata | 1 | \$22.00 | Annual | Cool | May - Sept | Yellow |
| Drummond Phlox | Phlox | drummondii | 8 | \$50.00 | Annual | Cool | Feb - June | Red |
| False Sunflower | Heliopsis | helianthoides | 9 | \$22.00 | Perennial | Warm | June - Sept | Yellow |
| Gayfeather | Liatris | spicata | 5 | \$60.00 | Perennial | Warm | August - Dec | Purple |
| Golden Mane Tickseed | Coreopsis | basalis | 3 | | Annual | Warm | June - July | Yellow/Dark Red |
| Grayhead Coneflower | Ratibida | pinnata | 3 | \$65.00 | Perennial | Warm | May - Sept | Yellow |
| Greenthread | Thelesperma | filifolium | 6 | \$50.00 | A/P | Cool | Feb - Dec | Yellow/Dark Red |
| Hoary Vervain | Verbena | stricta | 3 | OUT | Perennial | Warm | May - Sept | Purple |
| Indian Blanket | Gaillardia | pulchella | 7 - 8 | \$22.00 | Perennial | Warm | Feb - Dec | Red/Yellow |
| Lanceleafed Coreopsis | Coreopsis | lanceolata | 5 | \$16.00 | Perennial | Warm | May - August | Yellow |
| Lemon Mint | Monarda | citriodora | 3 | \$40.00 | Annual | Warm | April - Oct | Purple |
| Mealy Blue Sage | Salvia | farinacea | 8 | \$75.00 | Perennial | Warm | April - Nov | Purple/Blue |
| Mexican Hat | Ratibida | columnifera | 2 | \$20.00 | Perennial | Warm | March - Nov | Yellow/Dark Red |
| Missouri Primrose | Oenothera | macrocarpa | 10 | \$40.00 | Perennial | Warm | April - August | Yellow |
| Moss Verbena | Verbena | tenuisecta | 6 | \$50.00 | A/P | Warm | March - July | Purple |
| Pale Purple Coneflower | Echinacea | pallida | 12 | \$22.00 | Perennial | Warm | May - August | Purple |
| Plains Coreopsis | Coreopsis | tinctoria | 1 - 2 | \$12.00 | Annual | Warm | April - June | Yellow/Dark Red |
| Prairie Coneflower | Ratibida | columnifera | 2 | \$20.00 | Perennial | Warm | March - Nov | Yellow |
| Purple Coneflower | Echinacea | purpurea | 12 | \$28.00 | Perennial | Warm | May - June | Purple |
| Scarlet Flax | Linum | rubrum | 8 | \$35.00 | Annual | Warm | May - July | Red |
| Scarlet Sage | Salvia | coccinea | 5 | \$40.00 | Perennial | Warm | March - Dec | Red |
| Showy Evening Primrose | Oenothera | speciosa | 1 | \$50.00 | Perennial | Cool | Feb - July | Pink |
| Showy Milkweed | Asclepias | speciosa | 8 | \$150.00 | Perennial | Warm | May - June | Pink |
| Tahoka Daisy | Machaeranthera | tanacetifolia | 5 | \$140.00 | Annual | Cool | May - Oct | Purple |
| White Yarrow | Achillea | millefolium | 1 | \$30.00 | Perennial | Cool | April - June | White |
| Wild Bergamot | Monarda | fistulosa | 1 | \$80.00 | Perennial | Warm | June - Sept | Pink |
| Zinnia | Zinnia | elegans | 9 | \$20.00 | Annual | Warm | May - Nov | Multiple |

SPECIES NATIVE TO TEXAS

"Has anyone by fussing before the mirror ever gotten taller by so much as an inch? If fussing can't even do that, why fuss at all? Walk into the fields and look at the wildflowers. They don't fuss with their appearance. But have you ever seen color and design quite like it? The ten best dressed men and women in the courntry look shabby alongside them. If God gives such attention to the wildflowers, most of them never even seen, don't you think he'll attend to you, take pride in you, do his best for you? **From "The Message" by Eugene H. Peterson, Luke 12:25-28**

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Return Service Requested

P.O. Box 791 Breckenridge, Texas 76424



PRSRT STD U.S. POSTAGE P A I D AMC

Appendix – VII

Buffer Drainage Area Map



Appendix – VII

Plant Detail Map



Appendix – VII

Erosion Matting Specification

Curlex[®] Blankets

Excelsior Erosion Control Blankets

American Excelsior Company is the inventor of biodegradable erosion control blankets. Developed in the early 60's, Curlex excelsior blankets are specifically designed to actually promote ideal growing conditions for grass seed, while simultaneously protecting topsoil from wind and water erosion. Curlex excelsior blankets have long passed the test of time. By design, Curlex blankets have a built-in swell factor - wet curled excelsior fibers sightly expand in thickness and interlock to form a strong, fiber matrix. This allows the fibers to provide intimate contact with local terrain. Water flow is trained to follow the curled fiber matrix. The roughness of the curled excelsior matrix slows the velocity to a point where gravity takes over, which allows moisture to slowly seep into the topsoil to promote ideal growing conditions.

MATERIAL CHARACTERISTICS

Curlex blankets consist of unique softly barbed, interlocking, curled, Aspen excelsior fibers. They are weed seed free. Curlex blankets are available with a variety of environmentally sensitive and/or stronger netting types to match job site requirements. We offer a green color-coded plastic netting for applications requiring UV resistance strength and longevity. Our photodegradable QuickMow[™] netting is recommended for urban, golf course, and certain roadside projects. It is color-coded white to identify it as a rapid break-down, polypropylene netting designed for use in areas to be mowed. Also available is our FibreNet[™] - 100% biodegradable netting - for use in critical environmentally sensitive areas.

Most straight-line fiber blankets draw the line at 270 g/m² (.50 lb/yd²), but not Curlex. At just under 400 g/m² (.75 lb/yd²) Curlex blankets bring 50% more erosion control fibers to your job site. Curlex blankets are available in natural Aspen or QuickGRASS[®] (green). Combine that with a roll that's wider than conventional blankets and you have today's most effective and efficient, multi-purpose degradable erosion control blanket. Curlex excelsior blankets are available individually wrapped or in master packs to allow for mechanical unloading and stacking.

PERFORMANCE CAPABILITIES

| Product | Slo |
|-----------|-----|
| Curlex I | 2H |
| Curlex II | 15 |

Slopes 2H:1V & flatter 1.5H:1V & flatter

 Shear Stress Rating

 84 Pa (1.75 lb/ft²)

 108 Pa (2.25 lb/ft²)

TYPICAL APPLICATIONS

- Highway embankments, ditch bottoms and slopes, bridges, approaches and medians
- · Residential, commercial, & industrial developments
- Urban drainage, stream banks, and waterways
- · Golf course fairways, roughs, waterways, & drop structures
- Landfill caps, side slopes, and let down structures
- Pipeline right-of-ways

American Excelsior Company Earth Science Division Arlington, Texas (800) 777-SOIL • www.curlex.com













Curlex[®] Blankets

Excelsior Erosion Control Blankets

SUGGESTED SPECIFICATIONS

Curlex Single Net (Curlex I)

A specific cut of Great Lakes Aspen curled wood excelsior with 80% six-inch fibers or greater fiber length. It shall be of consistent thickness, with fibers evenly distributed throughout the entire area of the blanket. The top of each blanket shall be covered with photodegradable or biodegradable able netting. Material shall not contain any weed seed or chemical additives.

Specifications

Recommended Use:Slopes to 2:1, Channel to 7 ft/s, shear stress to 1.75 lb/ft ²Roll Sizes:4' x 112.5' (50 yd²), 8' x 112.5' (100 yd²), 16' x 112.5' (200 yd²)Standard Weight*:.73 lb/yd²Netting Options:Green, QuickMow White (90 day), FibreNetColor:Natural Aspen or QuickGRASS Green

Curlex Double Net (Curlex II)

A specific cut of Great Lakes Aspen curled wood excelsior with 80% six-inch fibers or greater fiber length. It shall be of consistent thickness, with fibers evenly distributed throughout the entire area of the blanket. The top and bottom of each blanket shall be covered with photodegradable or biodegradable netting. Material shall not contain any weed seed or chemical additives.

Specifications

| Recommended Use: | Slopes to 1.5:1, Channels to 9 ft/s, shear stress to 2.25 lb/ft |
|-------------------|--|
| Roll Sizes: | 4' x 112.5' (50 yd ²), 8' x 112.5' (100 yd ²), 16' x 112.5' (200 yd ²) |
| Standard Weight*: | .73 lb/yd ² |
| Netting Options: | Green, QuickMow White (90 day), FibreNet |
| Color: | Natural Aspen or QuickGRASS Green |



*Weight is based on a dry fiber weight basis at time of manufacture. Baseline moisture content of Great Lakes Aspen Excelsior is 22%.

Installation

Before installing Curlex blankets, the seedbed shall be inspected by the Owner's Representative to ensure it has been properly compacted and fine graded to remove any existing rills. It shall be free of obstructions, such as tree roots, projections such as stones, and other foreign objects. Grass seed shall match soil conditions to allow for maximum germination, dense vegetation, and a structural root system. Contractor shall proceed when satisfactory conditions are present. After the area has been properly shaped, seeded, fertilized, and compacted, locate the start of the roll, making sure the roll is facing toward the area to be covered, and then roll out the blanket. Blankets shall be rolled out flat, even, and smooth without stretching the material then anchored to the subgrade.

Slopes: It is recommended that the blankets be installed in the same direction as the water flow; however, on short slopes it may be more practical to install horizontally across the width of the application. If more than one width is required, simply abut the edges together and secure the blankets with a common row of biodegradable staples, steel staples, or stakes. Overlapping of Curlex excelsior blankets is not required or recommended. An exception is waterway slopes.

Channels: Curlex blankets shall be centered to offset a seam in the middle of the waterway. They shall be installed in the same direction as the water flow. The adjoining blankets shall be installed away from the center of channel and concentrated water flow. They shall be secured by a common row of staples. It is usually not necessary to overlap Curlex blankets; however, a 2" shingle type installation shall be used in waterway slopes applications. Curlex blanket installation should continue up the side slopes 3' above the anticipated high water elevation. Flanks exposed to runoff, or sheet flow, must be protected by a check slot or trenched. Curlex blankets shall be trenched at the start of the channel and anchored using a staggered staple pattern at end of roll overlaps and end of roll terminations.

Disclaimer: Curlex is a system for erosion control and re-vegetation on slopes and channels. American Excelsior Company (AEC) believes that the information contained herein to be reliable and accurate for use in erosion control and re-vegetation applications. However, since physical conditions vary from job site to job site and even within a given job site, AEC makes no performance guarantees and assumes no obligation or liability for the reliability or accuracy of information contained herein for the results, safety, or suitability of using Curlex, or for damages occurring in connection with the installation of any erosion control product whether or not made by AEC or its affiliates, except as separately and specifically made in writing by AEC. These specifications are subject to change without notice.



If you would like to receive more information or consult with one of our Customer Care Center Specialists, please call us toll free at (888-352-9582) PDF download specifications available in the Technical Support Library at <u>www.curlex.com</u>

Groundwater Background Sampling Plan

Asphalt Inc. will conduct groundwater sampling of the following wells to establish background water quality conditions. Samples will be taken from three wells described below. Samples may be collected by capturing flow, bailing, or pumping. Field parameters (temperature, pH, electrical conductivity) will be measured prior to sample collection. Four quarterly samples will be collected and averaged to establish background conditions. Sampling of existing wells will begin in the quarter when the permit is issued. Quarterly sampling of the proposed well will begin in the quarter when the new well is completed. All sample results will be provided to LCRA.

Monitoring wells

- Benchmark Well 1 (BW 1): An existing domestic well located in the southeast corner of the Site (State of Texas Well Tracking #616377). The well is located at approximately 30.425729°, -98.182638°.
- Benchmark Well 2 (BW 2): An existing residential well, also located in the southeast corner of the Site. The well is located within the fenced area of the residence and there does not appear to be a record of this well in the Texas Water Development Boards database. The well is located at approximately 30.430417°, -98.183168°.
- Benchmark Well 3 (BW 3): A proposed test/industrial well be installed in the vicinity of the proposed processing plant centrally located on the Site. Pending approval from the Central Texas Groundwater Conservation District, this well will be located at approximately 30.723954°, -98.318085°.

Sample analysis

- Water Level
- Total dissolved solids (TDS)
- Specific conductance
- Temperature
- pH

- Total Coliform and E. Coli
- Nitrate-nitrogen
- Total Suspended Solids (TSS)
- Volatile Organic Chemicals (VOC)
- Total Organic Carbon (TOC)
BMP Maintenance Plan

Types of BMPs to be Maintained on this site:

- Natural Vegetative Filter Strips
- Water Quality Pits
- Silt Fence
- Check Dams

LCRA Access:

LCRA inspectors or their designees may enter the site for the purpose of inspecting site BMPs.

General Guidelines

The ability and the commitment to maintain stormwater BMPs are necessary for the proper operation of these facilities. Maintainability and facility access are particularly important issues for a BMP installed below grade.

Accessibility

According to many maintenance personnel, the biggest problem they encounter is not the amount or frequency of maintenance they must perform, but the difficulties they have in simply reaching the location of the required maintenance work. In order for proper maintenance to be performed, the various components of the stormwater system and, indeed, the facility itself, must be accessible to both maintenance personnel and their equipment and materials.

Legal barriers such as lack of access rights or inadequate maintenance easements can stop the best maintenance efforts before they can even get started. This is especially pertinent to project reviewers, who normally have the authority to require such legal aspects of the project.

Durability

The use of strong, durable, and non-corroding materials, components, and fasteners can greatly expedite facility maintenance efforts. These include strong, lightweight metals such as aluminum for trash racks, orifice and weir plates, and access hatches; reinforced concrete for outlet structures and inlet headwalls; hardy, disease resistant vegetation for bottoms, side slopes, and perimeters; and durable rock for gabions and riprap linings.

BMP Maintenance Requirements

Detailed Inspections

Detailed BMP inspections should occur at least quarterly. At least one of these inspections should be during or immediately following a runoff producing event. Detailed inspections should be

performed by an engineer or other stormwater treatment professional. Any deficiencies identified during an inspection should be repaired as soon as practical.

Maintenance operations may be required as a result of deficiencies identified during a site inspection. However, general site maintenance, as described below should be performed on a regular basis, regardless of the timing of more detailed inspections. Site maintenance should be performed as required to maintain site aesthetics, vegetation, BMP access, and debris removal. At a minimum, site maintenance should be performed twice annually.

General Site Maintenance

General site maintenance, as described below, should be performed on a regular basis, regardless of the timing of more detailed inspections. Site maintenance should be performed as required to maintain site aesthetics, vegetation, BMP access, and debris removal. At a minimum, site maintenance should be performed twice annually.

- (1) Identify, replant, and restore eroded areas. Add a level spreader, energy dissipation, or other repairs as required to ensure that erosion is not repeated.
- (2) Identify areas that do not have acceptable vegetated covers (80% or higher for most BMPs). Reseed, add soil, and irrigate as required to ensure that coverage requirements are met.
- (3) Mow sites twice annually and as required to keep grass height under 18 inches. Additional mowing may be performed for site aesthetics. Export clippings from site to prevent release of nutrients from decaying plant matter. Remove any woody growth, especially from embankments, berms, and swales. For swales, grass should not be regularly mowed below four inches.
- (4) Use non-chemical methods for maintaining health of vegetation. Pesticides, herbicides, or fertilizers should only be used as a last option, and then as minimally as possible. Fertilizer should rarely be required because runoff will typically contain sufficient nutrient loads.
- (5) Irrigation may be required in order to maintain acceptable levels of vegetated coverage, especially for engineered vegetated strips.
- (6) Never deposit grass clippings, brush, or other debris in BMPs or buffers.
- (7) Prevent over-compaction of BMP components that rely partially or wholly on infiltration (vegetation strips, bio-retention, and other basins). Mowing and other maintenance should be performed with hand equipment or a light-weight lawn tractor.
- (8) Remove any built-up sediment and debris, especially along uphill edges, berms, swales, and level spreaders; and around BMP inlets and outlets.
- (9) Identify any other problems. A detailed inspection may be required.

Natural Vegetative filter Strips

No portion of the filter area will be greater than a 10% slope. The vegetated density must be greater than 80% with no large bare areas. The filter area should be densely vegetated with a mix of

erosion-resistant plant species that effectively bind the soil. Native or adapted Grasses are appropriate because they require less fertilizer and are more drought resistant than exotic plants."

Water Quality Pits

Maintenance Schedule

Each of the pit BMPs onsite provides greater than 3 feet of freeboard. Sediment shall be removed from the pits once 3 feet of sediment is accumulated. All sediment shall be used onsite or disposed of in accordance with applicable regulations.

Pit Dewatering

All dewatering associated with the mining pit will conform to standards and instructions from the TXR05 stormwater plan and Central Texas Groundwater Conservations District Quarry Permit associated with this site.

Sediment Disposal

Stormwater pollutants include a variety of substances that are deposited on pervious and impervious surfaces and then transported by the next rainfall. Consequently, a variety of contaminants that may be classified as hazardous or toxic may enter stormwater management systems. These contaminants include heavy metals, petroleum hydrocarbons, pesticides, and a variety of organic chemicals. Consequently, several federal and state laws and regulations may apply to the disposal of sediments which accumulate in stormwater systems. Maintenance of BMPs frequently requires disposal of accumulated sediment and other material. In high concentrations, these materials may be classified as special wastes when disposed of in municipal landfills.

Sitl Fence

Inspect all fencing weekly, and after any rainfall in excess of 0.5 inch or more.

- Remove sediment when buildup reaches 6 inches.
- Replace any torn fabric.
- Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.
- When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

BMP Maintenance Permit

Once a project containing permanent BMPs is completed, the project owner must complete a BMP Maintenance Permit Application per Appendix 1.7.1 of the HLWO Technical Manual following the submittal requirements in Appendix 1.7. Also, the party responsible for BMP maintenance

should use the checklists found in Appendix 1.7.2 and 1.7.3 to guide their inspections and maintenance activities.

Check Dams

Inspect check dams weekly and after each rain event (of 0.5 inch or more) to locate and repair any damage.

- Remove accumulated sediment when it reaches one half of the original height of the check dam. Dispose of sediment in a manner that will not cause additional siltation.
- When construction is complete, properly dispose of any sediment buildup and restore the prior location of the check dam.

Dewatering

Although dewatering is not anticipated from the Water Quality Pits, if it became necessary to remove captured stormwater it should be used onsite for dust control allowed to evaporate and infiltrate. In the event that a discharge offsite is necessary, water quality sampling will be performed to ensure the discharge meets the TCEQ/EPA requirements for discharge of mine dewatering. Filter bags will be utilized if necessary to prevent discharge of TSS above any regulatory discharge limitations.

Gorman Pits

The Gorman Pits are part of a closed loop system. Water from the pits will be recirculated to the wash plant and any sediment removed and not stockpiled for use or sale offsite will be placed in the main quarry pit.

Wheel Wash

A wheel wash will be used for trucks leaving the facility. Water from the wheel wash will be recirculated and any sediment removed and not stockpiled for use or sale offsite will be placed in the main quarry pit. Maintenance shall be in accordance with the manufacturer's recommended procedures.

Signage

Signs are proposed along both sides of the entry haul road and the maintenance roads. The purpose of the signs are to prevent development in specific areas of the site past the proposed haul and maintenance roads. The signs will be spaced every 500 feet. They are proposed to be 16"x16" and approximately 4 feet tall. The signs will state "Any land disturbance beyond this point requires LCRA Approval" in blue letters on a white sign.

BMP Maintenance Plan

I, _____, have read and understand the BMP Maintenance Plan contained in this Development Permit Application.

I understand the specific Permanent Best Management Practices and associated inspection and maintenance schedules which are outlined in this plan. Asphalt Inc., LLC, will implement these inspections and perform maintenance as required to meet the intent of the plan.

The PERMITTEE or SUBSEQUENT PERMITTEE shall bear all expenses for the operation and maintenance of these permanent Best Management Practices (BMP) including but not limited to all general maintenance activities needed to keep this system in proper operation condition. If this system is abused or not maintained, then it may contribute to malfunction of the storm water system. All designated BMP areas shall remain free of construction, development, and encroachments.

You as the PERMITTEE of this property have a responsibility to provide any SUBSEQUENT PERMITTEE or your real estate agent with a copy of this Best Management Practices (BMP) Maintenance Plan if this facility is sold so that the BMPs can be properly maintained and operated. The same rights, duties, and responsibilities borne by the current PERMITTEE shall be borne by each subsequent PERMITTEE.

An amended copy of this document will be provided to the LCRA within thirty (30) days of any changes in the following information:

Responsible Party for Maintenance:

Address: _____

| City, State, Zip: | |
|-------------------|--|
| City, State, Zip: | |

Telephone Number: _____

(Signature Page Immediately Follows)

Name and signature of responsible party for maintenance of BMPs

| Print Name: | | Title: | | |
|-----------------------------------|--------------------------|--------------------|-----------|--|
| | Asphalt Inc., LLC | | | |
| Signature | | Date: | | |
| Asphalt Inc., I 11675 Jollyvil | LC le Road, Suite 150 | | | |
| Austin, TX 78 | 759 | | | |
| Name and sig | nature of Engineer | TT CAMPBELL 851 | | |
| Signature | | Date: | 4/17/2025 | |
| Westward Env | vironmental, Inc. | | | |
| 4 Shooting Clu | ıb Rd. | | | |
| Boerne, TX 78 | 3006 | | | |
| Phone: 830-24 | 9-8284 | | | |
| Fax: 830-24 | 9-0221 | | | |

ASPHALT INC.

LCRA Quarry/Mine Permit Hydrogeologic Report

Burnet Quarry 3221 FM 3509 Burnet, Texas 78611 Burnet County

Submitted to: The Lower Colorado River Authority



1.0 PURPOSE

Westward Environmental, Inc. (WESTWARD) has been retained by Asphalt Inc., LLC (Client) to prepare a Hydrogeologic Report (Report) for their Burnet Quarry (Site) in Burnet County, Texas. This report was prepared as a required attachment to a Lower Colorado River Authority (LCRA) Highland Lakes Watershed Ordinance (HLO) Quarry/Mine Permit Application.

2.0 REGULATORY GUIDANCE

Lower Colorado River Authority Highland Lakes Watershed Ordinance

This report was prepared in accordance with the LCRA HLO, effective February 1, 2006 and amended January 1, 2022.

3.0 PROJECT LOCATION

The Site is approximately 710 acres located south of FM 3509 and 3.6 miles southwest of the W State HWY 29 intersection in Burnet County, Texas. The Site entrance is located on the south side of FM 3509, at approximately 30.7327366, -98.313530.

4.0 METHODOLOGY

The following sections describe the methods, references, and standards utilized by **WESTWARD** geologists

4.1 Aquifer Characteristics & DRASTIC Classification

Aquifer identification was accomplished through reference of mapped aquifer outcrops and subcrops available through the Texas Water Development Board's (TWDB) Water Data Interactive Groundwater Data Viewer (Viewer), State of Texas Well Reports available through the Texas Department of Licensing and Regulation (TDLR), and regional groundwater information provided through the Central Texas Groundwater Conservation District (CTGCD) website.

DRASTIC Classification was performed in accordance with United Stated Environmental Protection Agency (EPA) document *DRASTIC: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings* (EPA/600/2-87/035). Data utilized in the DRASTIC characterization was collected in the field, and from multiple sources including the TWDB, the U.S. Department of Agriculture (USDA) National Resource Conservation Service (NRCS) Web Soil Survey, the Texas Speleological Survey (TSS), and the U.S. Geological Survey (USGS) National Geospatial Program.

4.2 Karst Identification

WESTWARD geologists conducted a review of Google Earth aerial imagery, multispectral imagery available through the Texas Natural Resources Information System (TNRIS), the University of Texas Bureau of Economic Geology Geologic Atlas of Texas (GAT) Llano Sheet, applicable USGS Topographic quadrangle(s), the TWDB Water Data Interactive Groundwater Data Viewer (WDIGDV), and the USDA NRCS Web Soil Survey prior to the field investigation. The purpose of this desktop review was to identify published karst and potentially sensitive recharge features suspected to be on site, and to target high priority areas for further evaluation during the field study.

A field study was performed at the Site by Connor P. Tierney, P.G. (#15607) on August 29, 2024. The field study consisted of a pedestrian survey. The focus of the pedestrian survey was to confirm either the presence or absence of potentially sensitive recharge features identified during the desktop review, and to visually inspect the high priority areas for potentially sensitive recharge features.

4.3 Well & Spring Inventory

The Well & Spring Inventory was performed with ESRI ArcGIS software and publicly available shapefile data downloaded from the TWDB and the USGS National Water Information System: Mapper.

5.0 AQUIFER CHARACERISTICS & DRASTIC CLASSIFICATION

A desktop review was utilized for aquifer identification and DRASTIC classification. The accuracy of the desktop review was limited by the accessibility, scale, and age of the data available.

5.1 The Ellenburger-San Saba Aquifer

The Ellenburger–San Saba Aquifer is a minor aquifer that is found in parts of 15 counties in the Llano Uplift area of Central Texas. It consists of the Tanyard, Gorman, and Honeycut formations of the Ellenburger Group and the San Saba Limestone Member of the Wilberns Formation. The aquifer contains a sequence of limestone and dolomite that crop out in a circular pattern around the Llano Uplift and dip radially into the subsurface away from the center of the uplift to depths of approximately 3,000 feet. Regional block faulting has significantly compartmentalized the aquifer. The maximum thickness of the aquifer is about 2,700 feet. Water is held in fractures, cavities, and solution channels and is commonly under confined conditions. The aquifer is highly permeable in places, as indicated by wells that yield as much as 1,000 gallons per minute and springs that issue from the aquifer, maintaining the base flow of streams in the area (TWDB, 2024a).



Generalized Cross Section

Adapted from unpublished corss section by P. Taybor, 1993, used by Standen and Ruggiero, 2007

Water produced from the aquifer is inherently hard and usually has less than 1,000 milligrams per liter of total dissolved solids. Fresh to slightly saline water extends downdip

to depths of approximately 3,000 feet. Elevated concentrations of radium and radon also occur in the aquifer (TWDB, 2024a).

Most of the groundwater is used for municipal purposes, and the remainder for irrigation and livestock. A large portion of water flowing from San Saba Springs, which is the water supply for the city of San Saba, is thought to be from the Ellenburger–San Saba and Marble Falls aquifers (TWDB, 2024a).

5.2 DRASTIC Classification

Based on the information below, a DRASTIC Index of 121 was calculated for the Site.

Depth to Water Table

State of Texas Well ID 357005 is located ~ 1,800 feet southwest of the Site. This well was completed to a depth of 200 feet on January 29, 2014, and did not encounter groundwater. The surface of the well is ~ 60 feet below the lowest point on the Site. As a conservative estimate, a depth to groundwater of 250 feet was used.

The total depth of the producing well (#616377) onsite was completed to 740 ft. bgs. The water level was not measured in this well. However, at the time the well was completed, the water level was measured at 340 ft. bgs. A DRASTIC rating of 1 was utilized.

Net Recharge

Based on an Aquifer Assessment performed by the Groundwater Technical Assistance (GTA) Section of the TWDB, net recharge is approximated as 2% of annual precipitation. The GTA reports 2.5 feet (30 inches) of precipitation annually for Burnet County (Bradley, 2009). Therefore, net recharge equated to 0.6 inches per year which corelates with a DRASTIC rating of 1.

Aquifer Media

The Ellenburger Group contains the most extensive karst development in the region (Stafford, 2018). The typical rating of 10 for Karst Limestone was utilized for the aquifer media rating.

Soil Media

Thickness Soil Name Group *Description* Soil Classification (Inches) Sand: 42% Eckrant-Rock Outcrop Silt: 37% D 4" – 14" Sand 2 to 20 Percent Slopes Clay: 21% Plasticity Index: 14% Sand: 30% Hensley Gravelly Silt: 31% Loam, 1 to 8 Percent D 10"-20" Clay Clay: 39% Slopes Plasticity Index: 27% Sand: 26% Silt: 28% Purves Clay, 1 to 8 D 8"-20"Clay Percent Slopes Clay: 46% Plasticity Index: 32%

Published Soil Unit Descriptions (USDA NRCS Web Soil Survey)

According to Seed et al., there is an approximate relationship between the Plasticity Index (PI) and the Inherent Swelling Capacity (ISC) of a unit. Based on the published PI values, these soil units likely possess high to very high ISCs (Seed, 1962) and would be classified as Shrinking and/or Aggregated Clays. However, based on observations of site soil conditions during the field investigation, the soil profile appeared to be less than ten inches thick across a majority of the site. Therefore, site soil media is classified as Thin or Absent which corelates to a DRASTIC rating of 10.

Topography (Slope)

Site topography is generally characterized by topographic highs to the east and south. Natural drainage is generally to the west/northwest via either unnamed tributaries to Peters Creek or Spring Creek. There is one tributary to Peters Creek on the Site. It is listed on the National Hydrography Dataset as intermittent, meaning it does not exhibit year-round flow. Westward met with representatives of LCRA onsite on September 11, 2024 to observe the tributary and discuss potential buffers. The was no observable bank or ordinary high-water mark. The tributary flows to the west and intersects Peters Creek about one mile downstream of Camp Longhorn. A small portion of the unnamed tributary to Peters Creek appears to have a drainage area of sufficient size to warrant a buffer zone. Please reference the Hydrologic Report and associated plan sheets for additional detail.

An average value of 4.61 percent slope was calculated for the Site using the USGS 3DEP Elevation 2.5-meter resolution dataset and Global Mapper software. This value correlates with a DRASTIC rating of 9.

Impact of Vadose Zone

The vadose zone is comprised of units similar to the Aquifer Media. The typical rating of 10 for Karst Limestone was utilized.

Hydraulic Conductivity of the Aquifer

Reported Hydraulic Conductivity values for the Ellenburger-San Saba aquifer range from 0.3 - 132.6 feet per day, with a geometric mean of 4.9 feet per day (TWDB, 2016). This value was converted to 36.6 gallons/day/square foot which correlates with a DRASTIC rating of 1.

| Total | | | |
|--------------|-------------------|---------------|--------------|
| DRASTIC | Multiplier | Rating | <u>Total</u> |
| Depth | 5 | 1 | 5 |
| Recharge | 4 | 1 | 4 |
| Aquifer | 3 | 10 | 30 |
| Soil | 2 | 10 | 20 |
| Topography | 1 | 9 | 9 |
| Impact | 5 | 10 | 50 |
| Conductivity | 3 | 1 | 3 |
| | | DRASTIC Index | 121 |

6.0 KARST IDENTIFICAITON

The field investigation was performed to verify the presence or absence of published data identified during the desktop review and to identify, assess and record any features not previously observed at the site. During the desktop review, several areas were targeted for field investigation. These target areas constituted the primary focus of the field investigation. Other areas of the Site were observed during field reconnaissance and all karst features encountered were recorded. The results of both the desktop review and the field investigation are provided below.

6.1 Desktop Review

A desktop review of publicly available data revealed two water wells, well #164367 and well #616377, and one published fault mapped at the Site. The desktop review did not reveal potential karst features.

6.2 Field Investigation

A field investigation was conducted on August 29, 2024, to observe surface geology, structure, and potential recharge features.

Surface Geology

Observation of visible bedrock outcrops suggests the geology of the Site is consistent with the mapped surface geology.

Structure

A published fault is mapped in the northwest corner of the property. This location generally aligns with an abrupt vegetation change. Though not confirmed, this suggests that the fault is present.

Karst Features

There were no karst features observed during the field investigation.

Non-karst & Manmade Features

Five (5) non-karst features were observed and recorded during the field investigation. Of these, two are (2) water wells and three (3) are man-made stock ponds. None of these features are categorized as sensitive.

6.3 Feature Descriptions

The feature descriptions below were compiled from a combination of field observations and State of Texas Well Reports accessed via the TWDB Viewer. Copies of the state well reports and select photographs are included in **Attachment C**. Feature sensitivity rating is based on the document "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones" published by the TCEQ.

S-1 (MB)

Feature S-1 is a water well (Tracking #616377) which is categorized as a Manmade Feature in Bedrock. The well was completed to a total depth of 740 ft. bgs with a diameter of 9.875 in. from the surface to the base. The well was completed with a 5 in. diameter PVC casing extending 36 in. above ground level. The well is capped, however there is a 0.25 in. hole in the PVC cap. A 6' x 6' x 6'' concrete pad was completed at ground level around the well. The well log made no mention of voids or other open spaces. At the time of completion in August 2022, the static water level was recorded at 360 ft. bgs (TWDB, 2024b). The catchment area is less than 1.6 acres, and the probability of rapid infiltration is low.

S-2 (CD)

Feature S-2 is a man-made stock pond, which is categorized as a Non-Karst Closed Depression. This feature measures 180 ft. long, 70 ft. wide, and 4 ft. deep. The feature was not holding water at the time of the field investigation. However, some vegetation and mud were observed at the bottom of the feature, indicating the previous presence of water. The catchment area is less than 1.6 acres, and the probability of rapid infiltration is low.

S-3 (MB)

Feature S-3 is a water well, near the on-site residence, which is categorized as a Manmade Feature in Bedrock. The well was completed to an unknown total depth. The well was completed with a 5 in. diameter PVC casing extending 24 in. above ground level. The well is completed with a metal cove. A water level was not measured at the time of the field investigation. The catchment area is less than 1.6 acres, and the probability of rapid infiltration is low.

S-4 (CD)

Feature S-4 is a man-made stock pond, which is categorized as a Non-Karst Closed Depression. This feature measures 400 ft. long, 150 ft. wide, and 8 ft. deep. The feature was holding water at the time of the field investigation. The catchment area is greater than 1.6 acres, and the probability of rapid infiltration is low.

Not Sensitive

Not Sensitive

Not Sensitive

Not Sensitive

S-5 (CD)

Not Sensitive

Not Sensitive

Feature S-5 is a man-made stock pond, which is categorized as a Non-Karst Closed Depression. This Feature was 150 ft. long, 90 ft. wide, and 5 ft. deep. The feature was not holding water at the time of the field investigation. However, some vegetation and mud were observed at the bottom of the feature, indicating the previous presence of water. The catchment area is less than 1.6 acres, and the probability of rapid infiltration is low.

S-6 (F)

Feature S-6 is a published fault, mapped in the northwest corner of the site. The fault generally aligns with an abrupt change in vegetation from more to less densely wooded. Other direct evidence of the fault was not observed. Though not confirmed, this suggests that the fault is present. The catchment area is greater than 1.6 acres. Absent observed surface expressions, the probability of rapid infiltration is low.

7.0 WELL & SPRING INVENTORY

The Well & Spring Inventory was performed using ESRI ArcGIS software and publicly available data sources. Two water well databases were utilized, the TWDB database, and the Texas Submitted Drillers Report (SDR) database. Both were accessed and downloaded via the TWDB website through the Groundwater Data page (TWDB. 2024c). Water wells located within one mile of the Site were extracted and categorized according to their corresponding origin database. A total of 52 wells were identified within one mile of the site. A Well & Spring Inventory Map and summary table is included in **Appendix C**. The breakdown of recorded well uses are summarized in the table below.

| Domestic | 44 |
|----------------------|----|
| Irrigation or Stock | 2 |
| Monitor or Test | 1 |
| Spring | 1 |
| Unknown/Not Provided | 2 |
| Public Supply | 1 |
| Recreation | 1 |
| Total | 52 |

Recorded Well Use Summary Table

Well 164367 is mapped onsite, however the well address is for a location north of FM 3509. No evidence of this well was observed during the field investigation.

Spring data was accessed and downloaded via the USGS National Water Information System: Mapper (USGS, 2024). Other than the spring reference above, no additional springs were mapped within one mile of the site.

8.0 Discussion

State of Texas Well ID 357005 is located ~ 1,800 feet southwest of the site. This well was completed to a depth of 200 feet on January 29, 2014, and did not encounter groundwater. The surface of the well is ~ 60 feet below the lowest point on the site. As a conservative estimate, a depth to groundwater of 250 feet was assumed.

Burnet Quarry – Hydrogeologic Report Asphalt Inc., LLC.

Given the absence of sensitive karst features at the Site and significant depth to groundwater, quarrying activities likely will not impact groundwater quality. A groundwater monitoring plan is not proposed.

9.0 References

| (Bradley, 2009) | Bradley, R. G., Texas Water Development Board – Groundwater Technical Assistance Section: GTA Aquifer Assessment 08-03mag. http://www.twdb.texas.gov/groundwater/docs/AA/AA08-03_MAG.pdf |
|------------------|--|
| (EPA, 1987) | Environmental Protection Agency, DRASTIC: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings. EPA/600/2-87/035. |
| (Seed, 1962) | Seed, H.B., Woodward, R.J., and Lundgren, R. (1962), Prediction of swelling potential for compacted clays, Journal of Soil Mechanics and Foundation Division ASCE, Vol. 88 (SM3), pp. 53–87. |
| (Stafford, 2018) | Stafford, K. W. and Veni, G., 2018. <i>Hypogene Karst of Texas:</i> TSS Monograph 3: Karst of the Paleozoic Aquifer System: Llano Region, Texas Pg 99-110. |
| (TWDB, 2016) | Texas Water Development Board. November 4, 2016. Minor Aquifers of the Llano Uplift Region of Texas (Marble Falls, Ellenburger-San Saba, and Hickkory) <u>http://www.twdb.texas.gov/groundwater/models/gam/llano/Llano_Uplift_Numerical_Model_Report_Final.pdf</u> |
| (TWDB, 2024a) | Texas Water Development Board. Ellenburger-San Saba Aquifer - Summary. Accessed: August 30, 2024 <u>https://www.twdb.texas.gov/groundwater/aquifer/minors/ellenburger-san-saba.asp</u> |
| (TWDB, 2024b) | Texas Water Development Board. Water Data for Texas: State Well Number 41724 Accessed: August 30, 2024 https://www3.twdb.texas.gov/apps/waterdatainteractive//GetReports.aspx?Num=41724&Type =SDR-Well |
| (TWDB, 2024c) | Texas Water Development Board. Groundwater Data webpage. Accessed: August 30, 2024 <u>http://www.twdb.texas.gov/groundwater/data/index.asp</u> |
| (USGS, 2024) | U.S. Geological Survey. National Water Information System: Mapper. Springs Accessed: September 2024 https://maps.waterdata.usgs.gov/mapper/?state=tx |

Attachment A

Karst Identification Table

| FEATURE IDENTIFICATION TABLE | | | | | | | PRC | JECT NA | ME: | Bu | rnet Q | uarry | | | | | | | | |
|------------------------------|------------------|--------------------|-----------------|--------|-----------|------|-------------------------|----------------------|----------------------|--------|--------------------|--------------------|---------|-------------------------------|------------------|--------------|----------|-----------------|------------------|------------|
| | LOCATIO | N | | | | | FEATURE CHARACTERISTICS | | | | | EVALUATION | | | PHYSICAL SETTING | | | | | |
| 1A | 1B * | 1C* | 2A | 2B | 3 | | 4 | | 5 | 5A | 6 | 7 | 8A | 8B | 9 | | 10 | 1 | 1 | 12 |
| FEATURE ID | LATITUDE | LONGITUDE | FEATURE TYPE | POINTS | FORMATION | DIME | NSIONS (F | EET) | TREND (DEGREES) | DOM | DENSITY (NO/FT) | APERTURE (FEET) | INFILL | RELATIVE INFILTRATION RATE | TOTAL | SEN | BITIVITY | CATCHME (ACF | ENT AREA RES) | TOPOGRAPHY |
| | | | | | | х | Υ | Z | | 10 | | | | | | <40 | >40 | <1.6 | <u>>1.6</u> | |
| S-1 | 30.425729 | -98.182638 | MB | 30 | Cs | 0.41 | 0.5 | 740 | None | | | | Х | 5 | 35 | Х | | Х | | Hillside |
| S-2 | 30.430349 | -98.182732 | CD | 5 | Cs | 180 | 70 | 4 | N/A | | | | V, F | 5 | 10 | Х | | Х | | Hillside |
| S-3 | 30.430417 | -98.183168 | MB | 30 | Cs | 0.41 | 0.5 | unknown | None | | | | Х | 5 | 35 | Х | | Х | | Hillside |
| S-4 | 30.431832 | -98.190706 | CD | 5 | Cs | 400 | 150 | 8 | N/A | | | | Х | 5 | 10 | Х | | | Х | Hillside |
| S-5 | 30.434524 | -98.191187 | CD | 5 | Cs | 150 | 90 | 5 | N/A | | | | V, F | 5 | 10 | Х | | Х | | Hillside |
| S-6 | 30.433114 | -98.192292 | F | 20 | Cs/Cpw | 2,5 | 00 | unknown | 15 | Х | | | V | 5 | 35 | Х | | | Х | Hillside |
| | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | |
| * DATUM | : NAD 83 | | | | | | | | | | | | | | | | | | | |
| 2A TYPE | | TYPE | | | 2B POINTS | | | | | | 8A IN | FILLING | | | | | | | | |
| С | Cave | | | | 30 | | Ν | None, exposed | bedrock | | | | | | | | | | | |
| SC | Solution cavity | | | | 20 | | С | Coarse - cobble | es, breakdown, sa | ınd, g | ravel | | | | | | | | | |
| SF | Solution-enlarge | d fracture(s) | | | 20 | | 0 | Loose or soft m | ud or soil, organio | cs, le | aves, sti | icks, dark (| colors | | | | | | | |
| F | Fault | | | | 20 | | F | Fines, compact | ed clay-rich sedim | nent, | soil prof | ile, gray or | red col | ors | | | | | | |
| 0 | Other natural be | drock features | | | 5 | | V | Vegetation. Giv | e details in narrati | ive d | escriptio | n | | | | | | | | |
| MB | Manmade featur | e in bedrock | | | 30 | | FS | Flowstone, cem | ents, cave depos | its | | | | | | | | | | |
| SW | Swallow hole | | | | 30 | | X Other materials | | | | | | | | | | | | | |
| SH Sinkhole 20 | | | | | | | | | | | | | | | | | | | | |
| CD | Non-karst closed | depression | | | 5 | | | | 12 1 | OPC | GRAPH | łY | | | 1 | | | | _ | |
| z | Zone, clustered | or aligned feature | es | | 30 | | Cliff, H | Hilltop, Hillside, D | Drainage, Floodpla | ain, S | treambe | ed | | | | ي ا | TEO | DF TA | 11 | |
| | | - | | | | - | | | · · · | | | | | | - | چ ت ے | h | | (A) | h . |

Feature scoring based on:

Instructions for Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones (TCEQ-0585 (Rev. 10-01-04)).



Burnet Quarry – Hydrogeologic Report Asphalt Inc., LLC. Project No. 10853-256 Revised April 2025

Attachment B

Site Geologic Map Site Soils Map



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| | 2 | | DRAWN BY: | CPT/JG | | BURNET, BURNET COUNTY, TEXAS | | | GEOLOGY | Environmental. Engineering. Natural Resources. | | |
| | | | CHECKED BY: | JJS | | | | | | P.O. Box 2205, Boerne, Texas 78006 | | |
| Q. | | | SCALE: 1" = 1,000' | REV. | DESCRIPTION | BY | DATE | CENSED CENSED | (830) 249-8284 Fax: (830) 249-0221 | | | |
| 003 | | | JOB NO.: | 10853-256 | | | | | 4/16/2025 | TBPE REG. NO.: F-4524 TBPG REG. NO.: 50112 | | |
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| | | CHECKED BY: | JJS | | | | | 12654 | P.O. Box 2205, Boerne, Texas 78006 |
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| | F 003 | JOB NO.: | 10853-256 | | | | | 4/16/2025 | TBPE REG. NO.: F-4524 TBPG REG. NO.: 50112 |
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Burnet Quarry – Hydrogeologic Report Asphalt Inc., LLC.

Project No. 10853-256 Revised April 2025

Attachment C

Karst Survey Select Photographs State of Texas Well Reports

Karst Survey: Select Photographs

Feature S-1



S-1: Water Well (Capped)





S-2: Stock Pond



S-2: Dry Bottom with Mud

Feature S-3



S-3: Water Well



S-3: Water Well with Cover

Burnet Quarry – Hydrogeologic Report Asphalt Inc., LLC.

Feature S-4



S-4: Stock Pond

S-4: Water in Stock Pond



S-5: Stock Pond



S-5: Stock Pond with Dry Bottom

Feature S-5

| | | | EPORI for Ir | acking #616 | 377 |
|---------------------------|--------------------------|--------------------------|--------------------------------------|---------------------------------------|---------------|
| Owner: H | VPR4, LLC | | Owner Well # | : Well #4 & C | TGCD#8840 |
| Address: 1 | 3240 Pond Springs | Rd | Grid #: | 57-22-2 | |
| A Well Location: 3 | ustin , IX 78729 | | Latitude: | 30° 42' 57 | .4" N |
| B | urnet, TX 78611 | | Longitude: | 098°18'27 | .1" W |
| Well County: B | urnet | | Elevation: | 1425 ft. abo | ve sea level |
| Number of Wells D | Drilled: 4 | | | | |
| Type of Work: No. | ew Well | | Proposed Us | e: Domestic | |
| Drilling Start Date: | 8/12/2022 Drill Diameter | ing End Date: 8/1 | 6/2022 Top Depth (ft.) | Bottom Depth | (ft.) |
| Borehole: | 9.875 | 5 | 0 | 740 | |
| Drilling Method: | Air Rotary | | | | |
| Borehole Completion | on: Filter Packed | | | | |
| | Top Depth (ft.) | Bottom Depth (ft.) | Filter Ma | terial | Size |
| Filter Pack Intervals | ^{::} 360 | 740 | Grav | el | 3/8 (pea) |
| Annular Seal Data: | No Data | | | | |
| Seal Method | : Poured | | Distance to Pro | perty Line (ft.): 50 |)+ |
| Sealed By | : Driller | | Distance to Septic concentrated cont | Field or other amination (ft.): 15 | 50+ |
| | | | Distance to Se | eptic Tank (ft.): 15 | i0+ |
| | | | Method | of Verification: Ge | oogle Maps |
| Surface Completior | Surface Sleeve | e Installed | Sur | face Completion | by Driller |
| Water Level: | 340 ft. below | and surface on 20 | 022-08-16 Measu | rement Method: | Logging Sonde |
| Dealars | Rubber at 10 | ft. | | | |
| Packers: | | | | | |
| Packers: Type of Pump: | Unknown | | | | |

| | | Strata Depth (ft.) | Water Type | | | | | | | |
|----------------|---|--------------------------------|--|----------------------------|-------|--|--|--|--|--|
| Water Quality: | | 460 - 560 | Fresh | | | | | | | |
| | | | Chemical Analysis | Made: No | | | | | | |
| | | Did the driller | knowingly penetrate any strata contained injurious constitu | which uents?: No | | | | | | |
| | Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal. | | | | | | | | | |
| | Company Information: | Underground Wat | er Resources, LLC | | | | | | | |
| | | PO Box 429 Devine, TX 78016 | | | | | | | | |
| | Driller Name: | Michael A Mello | Li | icense Number: | 59591 | | | | | |
| | Apprentice Name: | Wesley S Bolin | A | pprentice Number: | 60504 | | | | | |
| | Comments: | No Data | | | | | | | | |
| | | | | | | | | | | |

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

| Top (ft.) | Bottom (ft.) | Description |
|-----------|--------------|--------------------------|
| 0 | 3 | Top Soil |
| 3 | 44 | White Rock |
| 44 | 64 | Brown Rock |
| 64 | 124 | Grey Rock |
| 124 | 164 | Grey Rock / Clay |
| 164 | 320 | Grey / White Rock |
| 320 | 340 | Red Rock |
| 340 | 380 | Green / Red / White Rock |
| 380 | 400 | Black Rock |
| 400 | 520 | Green / White Rock |
| 520 | 540 | Red / Grey Rock |
| 540 | 600 | Grey /White /Tan Rock |
| 600 | 700 | Red / Grey Rock |
| 700 | 740 | Dark Green / Grey Rock |

Casing: BLANK PIPE & WELL SCREEN DATA

| Dla (in.) | Туре | Material | Sch./Gage | Top (ft.) | Bottom (ft.) |
|--------------|--------|----------------------|-----------------|-----------|-----------------|
| 5 | Blank | New Plastic (PVC) | SDR 17 | 0 | 460 |
| 5 | Screen | New Plastic (PVC) | SDR 17 0.035 | 460 | 640 |
| 5 | Blank | New Plastic (PVC) | SDR 17 | 640 | 740 |

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation P.O. Box 12157 Austin, TX 78711 (512) 334-5540

| | STATE OF TEXAS WELL RE | EPORT for Trac | king #357005 |
|----------------|--|----------------|----------------|
| Owner: | Robert Manning | Owner Well #: | 2 |
| Address: | 1000 Indian Springs Rd Burnet, TX_78611 | Grid #: | 57-22-2 |
| Well Location: | 1000 Indian Springs Rd | Latitude: | 30° 42' 43" N |
| | Burnet, TX 78611 | Longitude: | 098° 19' 53" W |
| Well County: | Burnet | Elevation: | No Data |
| | | | |
| Type of Work: | New Well | Proposed Use: | Domestic |

Drilling Start Date: 1/29/2014 Drilling End Date: 1/29/2014

| | Diameter (in.) | Top Depth (ft.) | Bottom Depth (ft.) |
|----------------------|----------------|-------------------------------------|--|
| Borehole: | 8 | 0 | 20 |
| | 6.25 | 20 | 200 |
| Drilling Method: | Air Hammer | | |
| Borehole Completion: | N/A | | |
| | | | |
| Annular Seal Data: | No Data | | |
| Seal Method: No | ot Applicable | Distance to Pr | operty Line (ft.): No Data |
| Sealed By: Dr | iller | Distance to Sept concentrated co | ic Field or other ntamination (ft.): No Data |
| | | Distance to | Septic Tank (ft.): No Data |
| | | Metho | d of Verification: No Data |
| Surface Completion: | Unknown | | |
| Water Level: | No Data | | |
| Packers: | N/A | | |
| Type of Pump: | No Data | | |
| Well Tests: | Unknown | Yield: 0 GPM | |

_

| | Strata Depth (ft.) | Water Type | |
|----------------------------|---|--|--|
| Water Quality: | N/A | San Saba | |
| | | Chemical Analysis Made: | No |
| | Did the driller I | knowingly penetrate any strata which contained injurious constituents?: | Νο |
| Certification Data: | The driller certified the driller's direct supervis correct. The driller un the report(s) being re | at the driller drilled this well (or the well sion) and that each and all of the state nderstood that failure to complete the re turned for completion and resubmittal. | was drilled under the ments herein are true and equired items will result in |
| Company Information: | APEX Drilling Inc. | | |
| | P O Box 867 Marble Falls, TX 7 | 8611 | |
| Driller Name: | Andrew Jackson J | ohnson License N | lumber: 54989 |
| Comments: | No Data | | |
| Lit DESCRIPTION & COLOF | hology: R OF FORMATION MA | C ATERIAL BLANK PIPE & Y | Casing: WELL SCREEN DATA |
| From (ft) To (ft) Desc | ription | Dia. (in.) New/Used Type | Setting From/To (ft.) |
| 000-001 Gravel | | N/A | |
| 001-003 Black Dirt | | | |
| 003-007 Broken Green L | imestone | | |

007-145 Gray Green Limestone w / Clay

145-151 Red Limestone

151-200 Gray Green Tan Limestone

DRY

Backfilled 2 Cement Plug

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation P.O. Box 12157 Austin, TX 78711 (512) 334-5540 Burnet Quarry – Hydrogeologic Report Asphalt Inc., LLC. Project No. 10853-256 Revised April 2025

Attachment D

Well & Spring Inventory: Map Well & Spring Inventory: Summary Table





| | SHEET | IMAGE: ESRI WOI | RLD IMAGERY | WE | LL & SPRING INVENTO | RY | MAP | STATE OF TELES | |
|-----|--------------------------|-----------------|-------------|------|------------------------------|----|------|-------------------|--|
| | O ^{NO} . | ISSUE DATE: | 04/16/2025 |] | BURNET QUARRY | | | JOHN J. SACKRIDER | WEST WARD |
| | 0 | DRAWN BY: | CPT/JG | | BURNET, BURNET COUNTY, TEXAS | | | GEOLOGY 12654 | Environmental. Engineering. Natural Resources. |
| | | CHECKED BY: | JJS | | | | | TO ENGED ST | P.O. Box 2205, Boerne, Texas 78006 |
| Q | | SCALE: 1" = | 2,000' | REV. | DESCRIPTION | BY | DATE | Thomas & GEOSCIE | (830) 249-8284 Fax: (830) 249-0221 |
| 003 | | JOB NO.: | 10853-256 | | | | | 4/16/2025 | 1BPE REG. NO.: F-4524 TBPG REG. NO.: 50112 |

SDRDB & TWDB WELL DATA - WATER WELLS WITHIN 1 MILE OF BURNET QUARRY

| WELL ID # | WELL TYPE | PROPOSED USE | <u>LATITUDE</u> | LONGITUDE | <u>DEPTH</u> | INJURIOUS WATER | <u>PLUGGING</u> <u>REPORT</u> |
|---------------|-----------------------|---------------|-----------------|-------------|--------------|--------------------|----------------------------------|
| 2424 | New Well | Domestic | 30.733055 | -98.323889 | 500 | no | No Data |
| 41724 | New Well | Domestic | 30.712778 | -98.315556 | 100 | no | No Data |
| 42289 | New Well | Domestic | 30.742222 | -98.308612 | 558 | no | No Data |
| 107366 | New Well | Domestic | 30.741945 | -98.303612 | 480 | no | No Data |
| 112847 | New Well | Domestic | 30.73000 | -98.321111 | 365 | no | No Data |
| 161574 | New Well | Test Well | 30.727222 | -98.336667 | 205 | no | No Data |
| 164367 | New Well | Domestic | 30.726111 | -98.323611 | 365 | no | No Data |
| 221074 | New Well | Domestic | 30.723889 | -98.336111 | 400 | No Data | No Data |
| 221076 | New Well | Domestic | 30.724444 | -98.339167 | 220 | No Data | No Data |
| 228488 | New Well | Domestic | 30.737222 | -98.311389 | 525 | no | No Data |
| 229427 | New Well | Domestic | 30.725555 | -98.337500 | 160 | no | No Data |
| 233302 | New Well | Domestic | 30.740278 | -98.298889 | 220 | no | No Data |
| 243623 | New Well | Domestic | 30.735556 | -98.298611 | 500 | no | No Data |
| 280615 | New Well | Domestic | 30.738334 | -98.320833 | 600 | no | No Data |
| 318859 | New Well | Domestic | 30.741945 | -98.300278 | 160 | no | No Data |
| 350458 | New Well | Domestic | 30.71250 | -98.331389 | 300 | no | No Data |
| 357005 | New Well | Domestic | 30.711945 | -98.331389 | 200 | no | No Data |
| 378657 | New Well | Domestic | 30 723333 | -98 329722 | 300 | no | No Data |
| 379674 | New Well | Domestic | 30 73000 | -98 333055 | 400 | no | No Data |
| 380484 | New Well | Domestic | 30 729722 | -98 336667 | 340 | no | No Data |
| 380500 | New Well | Domestic | 30 729167 | -98 335000 | 500 | no | No Data |
| 38/010 | New Well | Domestic | 30 733334 | -98 32/722 | 340 | No Data | No Data |
| 38/013 | New Well | Domestic | 30 731944 | -98 326389 | 440 | no | No Data |
| 122087 | New Well | Domestic | 30 725833 | -98.326667 | 440 | no | No Data |
| 423987 | | Domestic | 30.723833 | -98.320007 | 420 | no | No Data |
| 420233 | New Well | Domostic | 20 720722 | -90.001007 | 440 600 | no | No Data |
| 402274 | | Domestic | 20 7/1220 | -98.308030 | 140 | no | No Data |
| 404029 | New Well | Domestic | 20 7/1111 | -90.302222 | 140 | no | No Data |
| 520221 | | Domestic | 20 720222 | -98.302222 | 170 | no | No Data |
| 536551 | | Linknown | 20 721044 | -90.300007 | 490 | no | No Data |
| 572502 | Now/Woll | Domostio | 20 721090 | -90.319722 | 706 | no | No Data |
| 573592 | | Domestic | 20 71 4467 | -96.306095 | 720 | 110 | No Data |
| 570562 | | Domestic | 20 7216 | -96.300644 | 150 | 110 | No Data |
| 570564 | | Domestic | 20 72255 | -90.320917 | 150 | no | No Data |
| 579564 | | Domestic | 30.73255 | -96.320063 | 200 | 110 | No Data |
| 579505 | | Domestic | 20 715044 | -90.323003 | 740 | 110 | No Data |
| 616276 | | Domestic | 20 71 4472 | -96.307526 | 740 | 110 | No Data |
| 621641 | | Domestic | 30.714472 | -98.307194 | 740 | 110 | No Data |
| 621641 | New Well | Domestic | 30.733762 | -98.327091 | 440 570 | 110 | No Data |
| 6221752 | | Domestic | 30.73000 | -96.29776 | 200 | 110 | No Data |
| 623122 | New Well | Domestic | 30.730430 | -98.319979 | 380 | 110 | No Data |
| 5700100 | New Well | Domestic | 30.731765 | -90.327211 | 102 | 110 No Doto | No Data |
| 5722102 | Withdrawal of Water | | 30.713012 | -98.340278 | 105 | No Data | No Data |
| 5722103 | Withdrawal of Water | Public Supply | 30.715833 | -98.340000 | 160 | No Data | No Data |
| 5722106 | Withdrawal of Water | No Dala | 30.728611 | -98.334722 | 450 | No Data | No Dala |
| 5722201 | withdrawal of water | Domestic | 30.73250 | -98.316944 | 350 | No Data | No Data |
| 5722202 | Spring | Unused | 30./12//8 | -98.310001 | 0 | No Data | No Data |
| 5722203 | Withdrawal of Water | SLOCK | 30.734167 | -98.310834 | 240 | No Data | No Dala |
| 5722204 | with drawsh = f Mater | Domestic | 30./3/222 | -98.308612 | 65 | No Data | No Data |
| 5/22205 | withdrawal of Water | STOCK | 30./36111 | -98.312223 | 300 | No Data | No Data |
| 5/22206 | with drawal of water | Domestic | 30./11945 | -98.310834 | 100 | No Data | No Data |
| 5/2220/ | withdrawal of Water | Domestic | 30.709445 | -98.309445 | 650 | NO Data | NO Data |
| Ubserved Well | No Data | Domestic | 30./17828 | -98.3088197 | NO Data | No Data | NO Data |









LEGEND

| | PROPERTY LINE |
|-----------|---------------------------|
| XX | EXISTING FENCELINE |
| 900 | EXISTING MAJOR CONTOUR |
| | EXISTING MINOR CONTOUR |
| | PROPOSED MAJOR CONTOUR |
| | PROPOSED MINOR CONTOUR |
| | DRAINAGE AREAS |
| LOC | LIMITS OF CONSTRUCTION |
| SF | SILT FENCE |
| | BERM (TOP & TOE OF SLOPE) |
| STK | STOCKPILE |
| \otimes | WATER WELL |
| | ASPHALT AREA |
| | BASE AREA |

NOTES: PROPOSED RETENTION PIT 3 IS NOT NECESSARY AT START OF CONSTRUCTION. VEGETATIVE FILTER STRIP WILL BE SUFFICIENT UNLESS IMPERVIOUS COVER IS ADDED ON DOWN SLOPE OF DOAD OB WITHIN THEIR DESPECTIVE

- SLOPE OF ROAD OR WITHIN THEIR RESPECTIVE DRAINAGE AREAS. • NORTH PROPERTY LINE SETBACK (200' MEASURED FROM EDGE OF PAVEMENT) IS DUE TO TXDOT PIT SAFETY RULE FOR QUARRIES ALONG PUBLIC
- ROADWAYS. •• BERM IS ONLY NECESSARY ALONG EDGE OF "PIT" AT OR WITHIN 200' OF THE ROADWAY. 50' PROPERTY LINE SETBACK DUE TO TEXAS PIT SAFETY RULES FOR SLOPE STABILITY.
 PAD DESIGNED TO DRAIN BACK TO MAIN PIT DEVELOPMENT.
- WHILE IN EARLY DEVELOPMENT PAD WILL DRAIN TO SOUTHEAST CORNER AND FLOW INTO
- RETENTION PIT 2. VEGETATIVE FILTER STRIP TO BE REMOVED AND REPLACED BY RETENTION PIT 3 IF IMPERVIOUS COVER IS ADDED TO DRAINAGE AREA 1B. PERIMETER BERMS PROPOSED AROUND MAIN PIT
- DEVELOPMENT. 25' BUFFER ZONE REQUIRED FROM TOP OF THE CHANNEL BANK WHERE THE LIMITS OF THE 320 ACRE CONTRIBUTING DRAINAGE AREA ENDS. (LCRA HWLO
- CONTRIBUTING DRAINAGE AREA ENDS. (LERA HWLO 5.2(c)(i))
 BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS ENCROACHMENT INTO A BUFFER ZONE OR DAME TO BUFFER ZONE AREAS WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.
 DUST CONTROL WILL BE PROVIDED PER TCEQ SWP3 AND AIR PERMIT.
- AND AIR PERMIT. THE 60' NVFS IS NOT NECESSARY IN THIS PHASE AS DA-3B IS UTILIZING PIT 3 FOR WATER QUALITY.
 ALL DEVELOPMENT IS LIMITED TO WHAT IS SHOWN ON
- THE FINAL CONDITIONS PLAN SHEET.
 ANY FUTURE DEVELOPMENT NEEDS TO BE SUBMITTED TO LCRA FOR TECHNICAL REVIEW AND PERMIT REVISION APPROVAL.
- NO OFFSITE RUN-ON WILL ENTER THE MAIN PIT, MINIMAL PONDING IS EXPECTED.



____ I

PROPOSED SEQUENCE OF CONSTRUCTION

THE GENERAL SEQUENCE OF CONSTRUCTION CONSISTS OF ESTABLISHING THE CONSTRUCTION ENTRANCE, CLEARING VEGETATION AND MULCHING IT IN PLACE TO PROVIDE STABILIZATION OF ANY DISTURBED AREAS, INSTALLATION OF TEMPORARY BEST MANAGEMENT PRACTICES (BMPS), AND SIMULTANEOUS GRADING AND FOUNDATION LAYING WHILE PERMANENT BMPS ARE INSTALLED. CONSTRUCTION ACTIVITIES WILL BEGIN IN THE PROPOSED PLANT AREA (A) FIRST, FOLLOWED BY INITIATING THE INITIAL PIT ARFA B

A - THE TEMPORARY BMPS (SILT FENCE, ROCK BERMS, PITS, ETC.) WILL NEED TO BE INSTALLED AND THE BUFFER ZONE STAKING WILL NEED TO BE INSPECTED BY A LCRA INSPECTOR BEFORE ANY WORK COMMENCES. PERMITEE MUST CONTACT LCRA TO SCHEDULE AN INSPECTION OF THE ESC'S AND BUFFERS ZONE STAKING A MINIMUM OF 2 WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. PLANT AREA: WORK WILL BEGIN WITHIN THE IMMEDIATE AREA OF THE PROPOSED PLANT LOCATION AND EXPAND OUTWARD AT NO MORE THAN FIVE ACRES WITHIN ONE DRAINAGE AREA AT A TIME UNTIL PERMANENT BMPS HAVE BEEN CONSTRUCTED SUFFICIENTLY TO ACT AS PITS. SILT FENCE AND ROCK FILTER DAMS MAY BE USED AS TEMPORARY BMPS FOR INITIAL WORK AREAS. TREES AND BRUSH WILL BE CLEARED AND MULCHED IN PLACE PROVIDING STABILIZATION FOR DISTURBED AREAS, TEMPORARY BMPS WILL BE INSTALLED, PONDS 1 AND 2 WILL BE ROUGHED IN AND UTILIZED AS SEDIMENTATION BASINS IN INITIAL PHASE UNTIL COMPLETED, THEN DRILLING AND BLASTING WILL COMMENCE TO BEGIN EXCAVATION OF THE PLANT AREA. TEMPORARY BERMS MAY BE USED TO DIRECT RUNOFF FROM DISTURBED AREAS TO THE PITS DURING CONSTRUCTION AS NEEDED TO ENSURE RUNOFF FROM DISTURBED AREAS DOES NOT LEAVE UNTREATED. CUT AND FILL ACTIVITIES WILL PREPARE THE PLANT PAD AND PROVIDE MATERIALS FOR THE CONSTRUCTION OF THE PROPOSED EARTHEN BERMS AND FINAL PITS. AFTER CONSTRUCTION OF NECESSARY BERMS AND PITS (INCLUDING THEIR OUTFALL STRUCTURES) IS COMPLETED, MINING OF GORMAN PITS WILL BEGIN, AND THE PLANT EQUIPMENT WILL BE BROUGHT IN AND ERECTED. NEXT, EXCAVATION WILL BEGIN FOR THE GORMAN PITS, AND UPON COMPLETION OF THE PLANT AND GORMAN PITS CONSTRUCTION, CRUSHING ACTIVITIES WILL COMMENCE. LATER, EXCAVATION WILL BEGIN IN THE ENTRANCE AREA INCLUDING A TEMPORARY BUILDING PAD.

B - THE TEMPORARY BMPS (SILT FENCE, ROCK BERMS, TEMPORARY SEDIMENTATION BASINS, ETC.) WILL NEED TO BE INSTALLED AND THE BUFFER ZONE STAKING WILL NEED TO BE INSPECTED BY A LCRA INSPECTOR BEFORE ANY WORK COMMENCES. PERMITEE MUST CONTACT LCRA TO SCHEDULE AN INSPECTION OF THE ESC'S AND BUFFERS ZONE STAKING A MINIMUM OF 2 WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. QUARRY PIT WORK WILL BEGIN IN THE PROPOSED INITIAL PIT AREA AFTER THE WORK IN THE PLANT AREA HAS STARTED. CLEARING AND MULCHING WILL TAKE PLACE TO STABILIZE THE CLEARED AREAS, FOLLOWED BY EXCAVATION TO A DEPTH OF AT LEAST 2.5 FEET AT NO MORE THAN TEN ACRES OF DISTURBANCE. ONCE THE INITIAL PIT EXCAVATION IS COMPLETED, MULCH WILL BE REMOVED FROM AREAS UPGRADIENT OF THE INITIAL PIT AREA AND THE PIT EXCAVATION WILL BE EXPANDED. FOR PIT EXPANSION AREAS THAT DO NOT NATURALLY DRAIN TO THE PIT NO MORE HAN FIVE ACRES WILL BE DISTURBED AT A TIME. FOR AREAS THAT NATURALLY DRAIN TO THE PIT THE PERIMETER BERM WILL BE EXPANDED AND ANY RUNOFF WILL BE DISTURBED AT A TIME. FOR AREAS THAT NATURALLY DRAIN TO THE PIT THE PERIMETER BERM WILL BE EXPANDED AND ANY RUNOFF WILL BE DISTURBED AT A TIME. RUNOFF FROM ALL OF SUB-BASIN DA-04, APPROXIMATELY 16.41 ACRES OF DISTURBANCE, WHICH DRAINS TO THE PIT. MATERIALS EXCAVATED WILL BE USED FOR TEMPORARY BERMS SURROUNDING THE INITIAL PIT AREA.

ROAD CROSSINGS

INSTALLATION

PURPOSES.

A VARIETY OF TECHNIQUES MAY BE USED DEPENDING ON LOCAL TOPOGRAPHY AND SOIL DITIONS. THESE INCLUDE FORD CROSSINGS, CULVERT CROSSINGS, DRAGLINE MATS, AND BRIDGES.

GENERAL CONSIDERATIONS

CONSTRUCT TEMPORARY CROSSINGS AT PROPOSED ROADWAY CROSSINGS AND ANY ADDITIONAL CROSSING POINTS. MINIMIZE THE NUMBER OF ADDITIONAL CROSSINGS TO REDUCE IMPACT TO

WHERE A STREAM CROSSING IS REQUIRED, SELECT A CROSSING SITE WITH THESE FEATURES: STRAIGHT AND NARROW CREEK CHANNEL WITH HIGH BANKS; STABLE CREEK BANKS THAT PROVIDE SOLID FOUNDATION FOR A CROSSING. MINIMAL ELEVATION CHANGES (0-10% PREFERRED) ON ROAD/TRAIL LEADING TO CROSSING.

• KEEP HEAVY EQUIPMENT OUT OF CREEK. • CONSTRUCT A SWALE OR BERM ACROSS THE APPROACH TO THE CROSSING ON BOTH SIDES (THE CROSSING OTHER WATER DIVERSION DEVICES (BROAD BASED DIPS. WATER BARS. FTC.) SHOULD BE USED ON LONG APPROACHES T MINIMIZE THE AMOUNT OF WATER FLOWING TO THE CROSSING).

STABILIZE EXPOSED SOIL AROUND THE CROSSING WITH MULCH, TEMPORARY SEEDING AND/OR EROSION CONTROL BLANKETS/MATTING. MAINTENANCE

• KEEP CROSSING SURFACE FREE OF SOIL AND DEBRIS THAT COULD ENTER STREAM. CHECK CROSSING COMPONENTS WEEKLY AND AFTER RAINFALL TO MAINTAIN STRENGTH AND INTEGRITY REMOVE LARGE BRANCHES OR OTHER FLOW OBSTRUCTIONS THAT COULD IMPAIR THE FUNCTION THE CROSSING OR CAUSE A FAILURE OF THE

REMOVAL & RESTORATION

 CLEAN OFF CROSSING SURFACE; KEEP DEBRIS OUT THE CREEK CHANNEL CAREFULLY REMOVE CROSSING MATERIALS MINIMIZING DISTURBANCE TO THE CREEK

PERMANENTLY STABILIZE DISTURBED PORTIONS OF CREEK BANK AND APPROACHES WITH PERENNIAL GRASSES, EROSION CONTROL BLANKETS/MATTING AND/OR RIP RAP LEAVE APPROPRIATE WATER DIVERSION

STRUCTURES IN PLACE ON BOTH SIDES OF CREEK.

CREEK CROSSINGS

CREEK CROSSINGS SHOULD BE MADE PERPENDICULAR TO THE CREEK FLOWLINE

IN-STREAM CONTROLS SHOULD ONLY BE USED AS A SECONDARY BMP. STORMWATER RUNOFF APPROACHING A CREEK CROSSING SHOULD BE DIVERTED TO A SEDIMENT TRAPPING BMP BEFORE IT REACHES THE CREEK IF BASEFLOW IS PRESENT, LCRA PERSONNEL SHOULD BE CONSULTED. AS IT MAY BE NECESSARY TO DIVERT OR PUMP WATER AROUND THE CONSTRUCTION AREA.

EVERY EFFORT SHOULD BE MADE TO KEEP THE ZONE OF IMMEDIATE CONSTRUCTION FREE OF SURFACE AND GROUND WATER FOR CONSTRUCTION IN THE CREEK CHANNEL. A PIPE OF ADEQUATE SIZE TO DIVERT NORMAL STREAM FLOW SHOULD BE PROVIDED AROUND THE CONSTRUCTION AREA. DIVERSION MAY BE BY PUMPING OR GRAVITY FLOW USING TEMPORARY DAMS

WHERE WATER MUST BE PUMPED FROM THE CONSTRUCTION ZONE, DISCHARGES SHOULD BE IN A MANNER THAT WILL NOT CAUSE SCOURING OR EROSION. ALL DISCHARGES SHALL BE ON HE UPSTREAM OR UPSLOPE SIDE OF EMPLACED EROSION CONTROL STRUCTURES. IF DISCHARGES ARE NECESSARY IN EASILY ERODIBLE AREAS, A STABILIZED, ENERGY-DISSIPATING DISCHARGE APRON SHALL BE CONSTRUCTED OF RIPRAF WITH MINIMUM STONE DIAMETER OF 6 INCHES AND MINIMUM DEPTH OF 12 INCHES, SIZE O THE APRON IN LINEAR DIMENSIONS SHALL BE APPROXIMATELY 10 TIMES THE DIAMETER OF THE DISCHARGE PIPE.

NOTES FOR CONSTRUCTION IN CREEKS

SCHEDULE WORK WHEN A MINIMUM OF 30 DAYS OF DRY WEATHER ARE FORECAST. DEWATER OR DIVERT FLOW PRIOR TO COMMENCING WORK WITHIN CREEK CHANNELS. CONTACT LCRA FOR INSPECTION OF DEWATERING/DIVERSION SYSTEM PRIOR TO COMMENCING WORK.

NO LOOSE EXCAVATED MATERIAL SHALL BE LEFT IN THE CREEK AT THE END OF THE WORK DAY. REMOVE ALL LOOSE EXCAVATED MATERIAL TO A SECURE LOCATION OUTSIDE THE CREEK CHANNEL AND SUSPEND FURTHER CONSTRUCTION IN THE CREEK AREA IF RAINFALL THREATENS.

KARST FEATURES NO SENSITIVE KARST FEATURES WERE IDENTIFIED ON SITE.

CEDAR MULCH

CEDAR MULCH CAN BE USED AS AN AID TO CONTROL EROSION ON CRITICAL SITES DURING LAND CLEARING AND PERIODS OF CONSTRUCTION WHEN RE-VEGETATION IS NOT PRACTICAL. THE BEST RESULTS ARE OBTAINED FROM ROUGH, LONG CUT (3 - 6 INCH) MULCHING. THE MOST COMMON USES ARE AS BERMS AT THE BOTTOM OF LONG, STEEP SLOPES AND AS A BLANKET IN CHANNELS WHERE DESIGNED FLOW DOES NOT EXCEED 3.5 FEET PER SECOND: ON INTERCEPTOR SWALES AND DIVERSION DIKES WHEN DESIGN FLOW EXCEEDS 6 FEET PER SECOND; AND ON LONG SLOPES WHERE RILL EROSION HAZARD IS HIGH AND PLANTING IS LIKELY TO BE SLOW TO ESTABLISH ADEQUATE PROTECTIVE COVER. MATERIALS:

CEDAR MULCH IS EASILY OBTAINED AS A BY-PRODUCT OF LAND CLEARING OPERATIONS. IT CAN ALSO BE A COST SAVING ITEM BECAUSE IT IS A RECYCLED MATERIAL AND DOES NOT HAVE TO BE REMOVED FROM THE SITE. INSPECTION AND MAINTENANCE GUIDELINES:

 CEDAR MULCH SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY EROSION. EROSION FROM STORMS OR OTHER DAMAGE SHOULD BE REPAIRED AS SOON AS PRACTICAL BY APPLYING NEW LAYERS OF MULCH. DEWATERING/DIVERSION PLAN

CREEK CROSSING CONSTRUCTION: THE CONTRACTOR MUST OBTAIN LCRA APPROVAL

<u>SLOPES</u>

OF THE DEWATERING/DIVERSION PLAN BEFORE BEGINNING WORK ON THE PROPOSED ACCESS ROAD CROSSING. EXTENDED DETENTION BASINS:

A 40-HOUR MINIMUM DELAY MUST BE OBSERVED BEFORE DEWATERING FROM EXTENDED DETENTION BASINS CAN TAKE PLACE. DISCHARGE MUST BE DONE IN A MANNER THAT DOES NOT CAUSE EROSION.

DURING CONSTRUCTION IF SLOPES ARE GREATER THAN 3:1. COORDINATE WITH PROJECT ENGINEER AND LCRA INSPECTOR FOR APPROPRIATE STABILIZATION OR VERIFICATION THAT OUT IN ROCK IS STABLE ENOUGH AND DOES NOT REQUIRE ADDITIONAL STABILIZATION.

<u>SILT FENCE</u>

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE. A SCHEMATIC ILLUSTRATION OF A SILT FENCE IS SHOWN IN FIGURE 3-20.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORNE SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW. SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY

USE J-HOOKS TO TRAP AND POND RUNOFF FLOWING ALONG UPHILL SIDE OF SILT FENCE AS SHOWN IN FIGURE 3-21 LCRA HIGHLAND LAKES WATERSHED ORDINANCE WATER QUALITY MANAGEMENT TECHNICAL MANUAL. THIS WILL FILTER OR SETTLE OUTFLOWS AND PREVENT RUNOFF FROM ESCAPING AROUND THE SIDES OF THE FENCE.

• SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4 OZ/YD, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30. • FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR YBAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT2, AND BRINDELL HARDNESS EXCEEDING 140

• WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM. INSTALLATION:

• STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1 – FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET. • LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. UTILIZE J-HOOKS AS NECESSARY AS SHOWN IN FIGURE 3-21 . THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE. • THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT

BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE. • THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

• SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET. • SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS: • FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE. • FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE) • FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES)

• FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE) INSPECTION AND MAINTENANCE GUIDELINES: · INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL IN EXCESS OF 0.5 INCH OR MORE.

• REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.

SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

 REPLACE ANY TORN FABRIC.
 REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS. • WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF

SILT FENCE SPACING ON SLOPING

| | SIT | ES | |
|------------------|-------------|---------|-------------|
| SLOPE ANGLE | SILTY SOILS | CLAYS | SANDY SOILS |
| VERY STEEP (1:1) | 50 FT. | 75 FT. | 100 FT. |
| STEEP (2:1) | 75 FT. | 100 FT. | 125 FT. |
| MODERATE (4:1) | 100 FT. | 125 FT. | 150 FT. |
| SLIGHT (10:1) | 125 FT. | 150 FT. | 200 FT. |

HYDROMULCH

SEED: PROVIDE SEED FROM THE PREVIOUS SEASON'S CROP MEETING THE REQUIREMENTS OF THE TEXAS SEED LAW, INCLUDING THE TESTING AND LABELING FOR PURE LIVE SEED (PLS = PURITY X GERMINATION). USE WITHIN 12 MO. FROM THE DATE OF THE ANALYSIS. WHEN BUFFALOGRASS IS SPECIFIED, USE SEED THAT IS TREATED WITH KNO3 (POTASSIUM NITRATE) TO OVERCOME DORMANCY. USE TABLE 1 TO DETERMINE THE APPROPRIATE SEED MIXTURE AND APPLICATION RATES. FOR TEMPORARY COLD SEASON PLANTING, CONSULT TABLES 3 & 4 IN SECTION 3.2.2 OF THE ESC PLAN. IMMEDIATELY AFTER PLANTING THE SEED OR SEED MIXTURE, APPLY CELLULOSE FIBER MULCH UNIFORMLY OVER THE SEEDED AREA AT THE FOLLOWING RATES: SANDY SOILS WITH SLOPES OF 3:1 OR LESS 2500 LB. PER ACRE.
SANDY SOILS WITH SLOPES GREATER THAN 3:1 3000 LB. PER ACRE.
CLAY SOILS WITH SLOPES OF 3:1 OR LESS 2000 LB. PER ACRE. CLAY SOILS WITH SLOPES GREATER THAN 3:1 2300 LB. PER ACRE. CELLULOSE FIBER MULCH RATES ARE BASED ON DRY WEIGHT OF MULCH PER ACRE MIX CELLULOSE FIBER MULCH AND WATER TO MAKE A SLURRY AND APPLY UNIFORMLY OVER THE SEEDED AREA USING SUITABLE EQUIPMENT. USE A

THE FINAL RESTORATION OF THE SITE WILL INCLUDE REMOVAL OF BUILDINGS AND STRUCTURES SUCH AS THE SCALE, OFFICE, PROCESSING PLANT, AND THEIR ASSOCIATED FOUNDATION MATERIALS, WHERE PRACTICABLE. THE SITE WILL BE REVEGETATED, AS APPROPRIATE. MULCH CREATED AND STORED FROM INITIAL CLEARING ACTIVITIES CAN BE SPREAD ACROSS THE DISTURBED AREAS TO PROVIDE STABILIZATION. ROADWAYS WILL REMAIN IN PLACE THROUGHOUT THE SITE TO ALLOW ACCESS FOR MONITORING

<u>BUFFER ZONES</u>

BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS - ENCROACHMENT INTO A BUFFER ZONE OR DAMAGE TO BUFFER ZONES ARES WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.

SEDIMENT RUNOFF PREVENTION

HIGH POINTS ALONG EACH CREEK CROSSING APPROACH WILL BE MAINTAINED IN ORDER TO PREVENT SEDIMENT LADEN RUNOFF FROM FLOWING INTO THE CREEK VIA THE CREEK CROSSING

<u>BMP TYPE</u>

WHEN SILT FENCE INSTALLATION ISN'T PRACTICABLE, MULCH FROM INITIAL CLEARING ACTIVITIES WILL BE UTILIZED TO STABILIZE ROCKY AREAS PRIOR TO SURFACE DISTURBANCE.

CONTRACTOR MAY OPT TO USE MULCH SOCKS/LOGS IN LIEU OF SILT FENCING BASED ON SURFACE CONDITIONS.

MULCH BERMS

ENDS.

MULCH BERMS MADE FROM MULCH PRODUCED ON SITE DURING INITIAL SITE CLEARING WILL BE USED FOR STABILIZATION IN FLAT AREAS OR PGRADIENT OF SILT FENCE UPON APPROVAL BY LCRA INSPECTOR.

PERMANENT ROCK BERMS AND LEVEL SPREADERS PERMANENT ROCK BERMS AND LEVEL SPREADERS CONSTRUCTED PER THE "ROCK BERM" LIP OPTION IN FIGURE 3-7 OF THE LCRA TECHNICAL MANUAL MUST USE METALLIC-COATED OR PVC-COATED STEEL WITH A MINIMUM WIRE SIZE OF 14 GAUGE (0.080 INCH OR 2.0 MM DIAMETER). PRIOR TO CONSTRUCTION OF LEVEL SPREADERS, THE LEVEL SPREADERS MUST BE STAKED IN THI FIELD AND INSPECTED BY LCRA. THE OWNER OR HIS AUTHORIZED REPRESENTATIVE IS RESPONSIBLE

FOR CONTACTING LCRA FOR AN INSPECTION. IT IS RECOMMENDED THAT THE DESIGN ENGINEER BE PRESENT AT THE INSPECTION. LEVEL SPREADERS MUST BE TURNED UP GRADIENT AT THE ENDS AS NECESSARY TO PREVENT FLOW FROM SPILLING AROUND THE

THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION). THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE LCRA WATER QUALITY

MANAGEMENT TECHNICAL MANUAL AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. 3. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND LCRA WATERSHED MANAGEMENT INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION INSPECTOR, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE.

4. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE LCRA WATERSHED MANAGEMENT PROGRAM. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE LCRA WATERSHED MANAGEMENT INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.

THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER RAINFALL EVENTS IN EXCESS OF 0.5" TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS, SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.

6. PRIOR TO FINAL ACCEPTANCE BY THE LCRA, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES. 7. PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW. A MINIMUM OF FOUR

INCHES OF TOPSOIL SHALL BE PLACED ON ALL DISTURBED AREAS (EXCEPT ROCK OUTCROP). SALVAGED TOPSOIL FROM THE SITE SHOULD BE USED WHENEVER POSSIBLE. IMPORTED TOPSOIL SHALL BE WEED FREE WITH A. A MINIMUM 20% ORGANIC CONTENT. TOPSOIL PLACED ON SLOPES EXCEEDING 5 HORIZONTAL TO 1 VERTICAL SHALL HAVE A RELATIVELY HIGH RESISTIVITY TO EROSION.

B. THE SEEDING FOR PERMANENT EROSION CONTROL SHALL BE APPLIED OVER AREAS DISTURBED BY CONSTRUCTION AS FOLLOWS (SELECT ONE OF THE THREE SEED COMBINATIONS LISTED BELOW):



Oct 1-Mar Permanent Cool/Warm Bermuda (Cynodon dactylon)(unbulled) 70.0 Season *Cereal Rye (Secale cereale)

TAKE CARE TO DISTRIBUTE SEED EVENLY, BY SOWING FINE AND LARGE SEEDS SEPARATELY OR BY USING A FINE SEED BOX. WHEN BROADCASTING SEEDING, THE APPLICATION RATE SHOULD BE DOUBLED AND THE AREA ROLLED TO ENSURE A GOOD SEED/SOIL CONTACT

*FROM SEPTEMBER 15 TO MARCH 1, OATS (21 LB/ACRE) AND WINTER WHEAT (30 LB/ACRE) MAY BE SUBSTITUTED FOR RYE. MULCH TYPE USED SHALL BE HAY, STRAW OR MULCH APPLIED AT A RATE OF 3500 LB/ACRE (HAY), 4500 LB/ACRE OR 2500 LB/ACRE (HYDRAULIC MULCH). TACKIFIER, IF USED SHALL BE BIODEGRADABLE

C. THE PLANTED AREA SHALL BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN-DAY INTERVALS DURING THE FIRST TWO MONTHS. RAINFALL OCCURRENCES OF 1/2 INCH OR MORE SHALL POSTPONE THE WATERING SCHEDULE FOR ONE WEEK. D. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 11/2 INCHES HIGH WITH 70% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST. CRITICAL AREAS INCLUDING CREEK CROSSINGS, SLOPES. STORMWATER DISCHARGE POINTS MUST BE COMPLETELY STABILIZED. PERMANENT WATER QUALITY BMPS MUST ATTAIN 80% COVERAGE.

8. DEVELOPER INFORMATION: OWNER _ PHONE #___

ADDRESS_____ OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:

__PHONE #___ PERSON OR FIRM RESPONSIBLE FOR EROSION/SEDIMENTATION CONTROL MAINTENANCE:

___PHONE #____

PERSON OR FIRM RESPONSIBLE FOR TREE/NATURAL AREA PROTECTION MAINTENANCE:

__PHONE #____ 9. THE CONTRACTOR SHALL NOT DISPOSE OF SURPLUS EXCAVATED MATERIAL FROM THE SITE WITHOUT NOTIFYING THE LCRA WATERSHED MANAGEMENT INSPECTOR AT LEAST 48 HOURS PRIOR WITH THE LOCATION AND A COPY OF THE PERMIT ISSUED TO RECEIVE THE MATERIAL. NOTES FOR CONSTRUCTION IN CREEKS:

SCHEDULE WORK WHEN A MINIMUM OF _(INCLUDE A SUFFICIENT TIME PERIOD TO COMPLETE THE WORK)_DAYS OF DRY WEATHER ARE FORECAST. DEWATER OR DIVERT FLOW PRIOR TO COMMENCING WORK WITHIN CREEK CHANNELS. CONTACT LCRA FOR INSPECTION OF DEWATERING/DIVERSION SYSTEM PRIOR TO COMMENCING WORK.

NO LOOSE EXCAVATED MATERIAL SHALL BE LEFT IN THE CREEK AT THE END OF THE WORK DAY. REMOVE ALL LOOSE EXCAVATED MATERIAL TO A SECURE LOCATION OUTSIDE THE CREEK CHANNEL AND SUSPEND FURTHER CONSTRUCTION IN THE CREEK AREA IF RAINFALL THREATENS.

ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW. TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.) ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

• THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS. • CLEAN, OPEN GRADED 3- TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5- TO 8-INCH DIAMETER ROCKS MAY BE USED.

• LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS. • BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

• PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM (FIGURE 3-23), TO A HEIGHT NOT LESS • WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE

SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON. • BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE • THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL. COMMON TROUBLE POINTS.

• INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM) • BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE)

INSPECTION AND MAINTENANCE GUIDELINES: • INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE. • REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION. • REPAIR ANY LOOSE WIRE SHEATHING. • THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

• THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC. • THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED



TACKING AGENT APPLIED IN ACCORDANCE WITH THE MANUFACTURER'SRECOMMENDATIONS OR A CRIMPING METHOD ON ALL STRAW OR HAY MULCH OPERATIONS. REVEGETATION IS CONSIDERED AS 80% COVERAGE WITH NO LARGE BARE AREAS

LCRA TECHNICAL MANUAL SECTION 4.3.7 (5-8) FOR NVFS:

L = 501 YEAR DEV

L = 1001 YEAR DE

(5) UPPER BOUNDARY REQUIREMENTS: THE FILTER STRIP MUST RUN ALONG THE ENTIRE EDGE OF É CONTRIBUTING AREA, NO COLLECTION OR ROUTING ALLOWED EXCEPT FOLLOWING A WATER QUALITY BASIN WITH FLOW ATTENUATION OR DISCHARGE FROM A LEVEL SPREADER TO THE FILTER STRIP. THE SOIL ALONG THE UPPER BOUNDARY MUST BE REINFORCED WITH PROTECTIVE MATTING OR AN INFILTRATION TRENCH (PREFERRED) MAY BE USED. REFER TO FIGURE 4.14.

VELOCITY RESTRICTIONS: VEGETATIVE FILTER STRIPS ARE SUSCEPTIBLE TO EROSION AND THE FORMATION OF RILLS; THEREFORE, MAY REQUIRE THE USE OF A FLOW SPREADER OR AN INFILTRATION TRENCH TO SPREAD FLOWS AND DISSIPATE FROSIVE VELOCITIES. THE RUNOFF FROM THE CONTRIBUTING AREA ENTERING THE UPPER BOUNDARY OF THE FILTER STRIP SHALL BE IN SHEET FLOW CONDITIONS. SHEET FLOW CONDITIONS MUST MEET 1 FOLLOWING CONSTRAINTS DURING THE PEAK FLOW OF A 1-YR, 3-HR STORM EVENT UNDER FULLY-DEVELOPED CONDITIONS:

I. THE VELOCITY OF FLOW ACROSS THE FILTER STRIP MUST NOT EXCEED 1 FT/SEC. II. THE AVERAGE DEPTH OF FLOW ACROSS THE FILTER STRIP MUST NOT EXCEED 0.2 FEET FOR A VEGETATIVE FILTER STRIP USED IN COMBINATION WITH A WATER QUALITY BASIN.

L = MINIMUM WIDTH OF A FLOW SPREADER (FT) PERPENDICULAR TO FLOWQ(1 YEAR DEV) = PEAK FLOW RATE FROM THE 1-YR, 3-HR STORM EVENT (SEE APP. 2.4)III. THE AVERAGE DEPTH OF FLOW ACROSS THE FILTER STRIP MUST NOT EXCEED 0.1 FEET FOR A VEGETATIVE FILTER STRIP USED AS A STAND ALONE BMP.

L = MINIMUM WIDTH OF A FLOW SPREADER (FT) PERPENDICULAR TO FLOWQ1 YEAR DEV = PEAK FLOW RATE FROM THE 1-YR, 3-HR STORM EVENT (SEE APP. 2.4) (7) SURFACE CHARACTERISTICS: THE FILTER AREA MUST BE FREE OF GULLIES, RILLS AND FLOW CONCENTRATIONS AND HAVE 70% VEGETATIVE COVER.

(8) SOIL REQUIREMENTS: THE SOIL MUST AVERAGE 4-INCHES IN DEPTH. ROCK CROP AREAS MAY BE PRESENT BUT MUST BE DEDUCTED FROM THE TOTAL FILTER STRIP AREA AND MUST NOT AFFECT THE FUNCTION OF THE VEGETATIVE FILTER STRIP.

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| | ETAILS QUARRY 78611 | TES & DETAILS Burnet Quarry INC. RNET, TX 78611 | RAL NOTES & DETAILS TING – BURNET QUARRY ASPHALT, INC. 509, BURNET, TX 78611 | IP GENERAL NOTES & DETAILS Ra Permitting – Burnet Quarry Asphalt, Inc. 221 FM 3509, BURNET, TX 78611 | CURT | GARRETT 1068 | CAMPBEL 51 51 ENG 3/21/202 | Curt G. Campbell, P.I. License No. 106851 |

N/A

ISSUE DATE: 3/21/2025



Figure 3-26 Diagram of a Rock Check Dam

NOTE: ROAD SECTION IS PRELIMINARY TO BE DETERMINED BY PENDING FINAL GEOTECH CL CROWN 10' SHOULDER 12' 12' 5" ASPHALT ((2) 2-1/2" LIFTS) - NATURAI VEGETATIVE FILTER 2.0% 2.0% <u>....ST</u>RIP - GEOGRIE -10" FLEXIBLE BASE COURSE ∠_6" BASE PLACED AT APPROX. 1 FOOT BELOW EXISTING GROUND EXISTING GRADE

1. FLEXIBLE BASE SHOULD MEET TXDOT SPECIFICATION ITEM 247 GRADE 1-2, TYPE A. FLEXIBLE BASE SHOULD BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MATERIAL'S MAXIMUM MODIFIED PROCTOR DENSITY (ASTM D 1557) AT A MOISTURE CONTENT OF ±2 PERCENTAGE POINTS OF OPTIMUM MOISTURE. 2. RE-COMPACTED SUBGRADE SHOULD BE SCARIFIED TO A DEPTH OF SIX INCHES AND COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF THE MATERIAL'S MAXIMUM MODIFIED PROCTOR DRY DENSITY (ASTM D 1557) AND WITHIN A RANGE OF ± 2 PERCENTAGE POINTS OF THE MATERIAL'S OPTIMUM MOISTURE CONTENT. 3. GEOGRID SHOULD CONSIST OF TENSAR TX7 AND BE PLACED AT THE BOTTOM OF THE FLEXIBLE BASE MATERIAL

TYPICAL DRIVEWAY SECTION

COMPACTED EARTHEN BERM

• ADD ADDITIONAL STONE AS REQUIRED.

STABILIZED CONSTRUCTION EXIT SHOULD EXTEND FULL WIDTH OF ROAD.

INSTALLATION: COMPRISED OF SOIL AND OVERBURDEN MATTER EITHER GENERATED ONSITE OR DELIVERED FROM OFFSITE. COMPACT WITH HEAVY EQUIPMENT IN 12" (MAX) LIFTS.

MAINTENANCE (TEMPORARY): INSPECT BERMS ONCE A MONTH UNTIL SUFFICIENTLY VEGETATED. REPLACE AS NECESSARY.

IMAGE: N/A ISSUE DATE: 3/21/2025 DRAWN BY: JPW CHECKED BY: CGC SCALE: 1" = AS NOTED JOB NO.: 10853-256 SHEET NO .: **C.5** OF C.5 3 60 TE OF TE CURT GARRETT CAMPBELL 106851 3/21/2025 CONT $\overline{}$ $\overline{}$ \bigcirc S \bigcirc AIL \sim \times \mathbf{H} Ľ. \sum_{Z} URN [Š _____ S NOTE \square \triangleleft \Box \bigcirc () \Box \triangleleft NERAL \mathbb{N} \geq $\overline{}$ \bigcirc \bigcirc (5 \mathbb{N} Δ BM










IMAGE:

LEGEND

| | PROPERTY LINE |
|-----------|---------------------------|
| XX | EXISTING FENCELINE |
| 900 | EXISTING MAJOR CONTOUR |
| | EXISTING MINOR CONTOUR |
| 950 | PROPOSED MAJOR CONTOUR |
| | PROPOSED MINOR CONTOUR |
| | DRAINAGE AREAS |
| LOC | LIMITS OF CONSTRUCTION |
| SF | SILT FENCE |
| | BERM (TOP & TOE OF SLOPE) |
| <u> </u> | SIGN |
| STK | STOCKPILE |
| \otimes | WATER WELL |
| | ASPHALT AREA |
| | BASE AREA |

NOTES: PROPOSED RETENTION PIT 3 IS NOT NECESSARY AT START OF CONSTRUCTION. VEGETATIVE FILTER STRIP WILL BE SUFFICIENT UNLESS IMPERVIOUS COVER IS ADDED ON DOWN SLOPE OF DEAD OP WITHIN THEIR PERFECTIVE

- SLOPE OF ROAD OR WITHIN THEIR RESPECTIVE DRAINAGE AREAS. • NORTH PROPERTY LINE SETBACK (200' MEASURED FROM EDGE OF PAVEMENT) IS DUE TO TXDOT PIT SAFETY RULE FOR QUARRIES ALONG PUBLIC
- ROADWAYS. •• BERM IS ONLY NECESSARY ALONG EDGE OF "PIT" AT OR WITHIN 200' OF THE ROADWAY. 50' PROPERTY LINE SETBACK DUE TO TEXAS PIT SAFETY RULES FOR SLOPE STABILITY.
 PAD DESIGNED TO DRAIN BACK TO MAIN PIT DEVELOPMENT.
- WHILE IN EARLY DEVELOPMENT PAD WILL DRAIN
 TO SOUTHEAST CORNER AND FLOW INTO
- RETENTION PIT 2. VEGETATIVE FILTER STRIP TO BE REMOVED AND REPLACED BY RETENTION PIT 3 IF IMPERVIOUS COVER IS ADDED TO DRAINAGE AREA 1B. PERIMETER BERMS PROPOSED AROUND MAIN PIT
- DEVELOPMENT. 25' BUFFER ZONE REQUIRED FROM TOP OF THE CHANNEL BANK WHERE THE LIMITS OF THE 320 ACRE CONTRIBUTING DRAINAGE AREA ENDS. (LCRA HWLO
- CONTRIBUTING DRAINAGE AREA ENDS. (LCRA HWLO 5.2(c)(i))
 BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS ENCROACHMENT INTO A BUFFER ZONE OR DAME TO BUFFER ZONE AREAS WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.
 DUST CONTROL WILL BE PROVIDED PER TCEQ SWP3 AND AIR PERMIT.
- AND AIR PERMIT. THE 60' NVFS IS NOT NECESSARY IN THIS PHASE AS DA-3B IS UTILIZING PIT 3 FOR WATER QUALITY.
 ALL DEVELOPMENT IS LIMITED TO WHAT IS SHOWN ON
- THE FINAL CONDITIONS PLAN SHEET.
 ANY FUTURE DEVELOPMENT NEEDS TO BE SUBMITTED TO LCRA FOR TECHNICAL REVIEW AND PERMIT REVISION APPROVAL.
- REVISION APPROVAL.
 NO OFFSITE RUN-ON WILL ENTER THE MAIN PIT, MINIMAL PONDING IS EXPECTED.
 SIGNS PREVENTING DEVELOPMENT ARE PROPOSED ON BOTH SIDES OF THE HAUL ROAD AND MAINTENANCE ROADS. SIGNS WILL BE 16"X16", 4' TALL, WHITE SIGN WITH BLUE LETTERING. SIGNS ARE TO BE SPACE EVERY 500'.



PROPOSED SEQUENCE OF CONSTRUCTION

THE GENERAL SEQUENCE OF CONSTRUCTION CONSISTS OF ESTABLISHING THE CONSTRUCTION ENTRANCE, CLEARING VEGETATION AND MULCHING IT IN PLACE TO PROVIDE STABILIZATION OF ANY DISTURBED AREAS, INSTALLATION OF TEMPORARY BEST MANAGEMENT PRACTICES (BMPS), AND SIMULTANEOUS GRADING AND FOUNDATION LAYING WHILE PERMANENT BMPS ARE INSTALLED. CONSTRUCTION ACTIVITIES WILL BEGIN IN THE PROPOSED PLANT AREA (A) FIRST, FOLLOWED BY INITIATING THE INITIAL PIT ARFA B

A - THE TEMPORARY BMPS (SILT FENCE, ROCK BERMS, PITS, ETC.) WILL NEED TO BE INSTALLED AND THE BUFFER ZONE STAKING WILL NEED TO BE INSPECTED BY A LCRA INSPECTOR BEFORE ANY WORK COMMENCES. PERMITEE MUST CONTACT LCRA TO SCHEDULE AN INSPECTION OF THE ESC'S AND BUFFERS ZONE STAKING A MINIMUM OF 2 WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. PLANT AREA: WORK WILL BEGIN WITHIN THE IMMEDIATE AREA OF THE PROPOSED PLANT LOCATION AND EXPAND OUTWARD AT NO MORE THAN FIVE ACRES WITHIN ONE DRAINAGE AREA AT A TIME UNTIL PERMANENT BMPS HAVE BEEN CONSTRUCTED SUFFICIENTLY TO ACT AS PITS. SILT FENCE AND ROCK FILTER DAMS MAY BE USED AS TEMPORARY BMPS FOR INITIAL WORK AREAS. TREES AND BRUSH WILL BE CLEARED AND MULCHED IN PLACE PROVIDING STABILIZATION FOR DISTURBED AREAS, TEMPORARY BMPS WILL BE INSTALLED, PONDS 1 AND 2 WILL BE ROUGHED IN AND UTILIZED AS SEDIMENTATION BASINS IN INITIAL PHASE UNTIL COMPLETED, THEN DRILLING AND BLASTING WILL COMMENCE TO BEGIN EXCAVATION OF THE PLANT AREA. TEMPORARY BERMS MAY BE USED TO DIRECT RUNOFF FROM DISTURBED AREAS TO THE PITS DURING CONSTRUCTION AS NEEDED TO ENSURE RUNOFF FROM DISTURBED AREAS DOES NOT LEAVE UNTREATED. CUT AND FILL ACTIVITIES WILL PREPARE THE PLANT PAD AND PROVIDE MATERIALS FOR THE CONSTRUCTION OF THE PROPOSED EARTHEN BERMS AND FINAL PITS. AFTER CONSTRUCTION OF NECESSARY BERMS AND PITS (INCLUDING THEIR OUTFALL STRUCTURES) IS COMPLETED, MINING OF GORMAN PITS WILL BEGIN, AND THE PLANT EQUIPMENT WILL BE BROUGHT IN AND ERECTED. NEXT, EXCAVATION WILL BEGIN FOR THE GORMAN PITS, AND UPON COMPLETION OF THE PLANT AND GORMAN PITS CONSTRUCTION, CRUSHING ACTIVITIES WILL COMMENCE. LATER, EXCAVATION WILL BEGIN IN THE ENTRANCE AREA INCLUDING A TEMPORARY BUILDING PAD.

B - THE TEMPORARY BMPS (SILT FENCE, ROCK BERMS, TEMPORARY SEDIMENTATION BASINS, ETC.) WILL NEED TO BE INSTALLED AND THE BUFFER ZONE STAKING WILL NEED TO BE INSPECTED BY A LCRA INSPECTOR BEFORE ANY WORK COMMENCES. PERMITEE MUST CONTACT LCRA TO SCHEDULE AN INSPECTION OF THE ESC'S AND BUFFERS ZONE STAKING A MINIMUM OF 2 WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. QUARRY PIT WORK WILL BEGIN IN THE PROPOSED INITIAL PIT AREA AFTER THE WORK IN THE PLANT AREA HAS STARTED. CLEARING AND MULCHING WILL TAKE PLACE TO STABILIZE THE CLEARED AREAS, FOLLOWED BY EXCAVATION TO A DEPTH OF AT LEAST 2.5 FEET AT NO MORE THAN TEN ACRES OF DISTURBANCE. ONCE THE INITIAL PIT EXCAVATION IS COMPLETED, MULCH WILL BE REMOVED FROM AREAS UPGRADIENT OF THE INITIAL PIT AREA AND THE PIT EXCAVATION WILL BE EXPANDED. FOR PIT EXPANSION AREAS THAT DO NOT NATURALLY DRAIN TO THE PIT NO MORE HAN FIVE ACRES WILL BE DISTURBED AT A TIME. FOR AREAS THAT NATURALLY DRAIN TO THE PIT THE PERIMETER BERM WILL BE EXPANDED AND ANY RUNOFF WILL BE DISTURBED AT A TIME. FOR AREAS THAT NATURALLY DRAIN TO THE PIT THE PERIMETER BERM WILL BE EXPANDED AND ANY RUNOFF WILL BE DISTURBED AT A TIME. RUNOFF FROM ALL OF SUB-BASIN DA-04, APPROXIMATELY 16.41 ACRES OF DISTURBANCE, WHICH DRAINS TO THE PIT. MATERIALS EXCAVATED WILL BE USED FOR TEMPORARY BERMS SURROUNDING THE INITIAL PIT AREA.

ROAD CROSSINGS

INSTALLATION

PURPOSES.

A VARIETY OF TECHNIQUES MAY BE USED DEPENDING ON LOCAL TOPOGRAPHY AND SOIL DITIONS. THESE INCLUDE FORD CROSSINGS, CULVERT CROSSINGS, DRAGLINE MATS, AND BRIDGES.

GENERAL CONSIDERATIONS

CONSTRUCT TEMPORARY CROSSINGS AT PROPOSED ROADWAY CROSSINGS AND ANY ADDITIONAL CROSSING POINTS. MINIMIZE THE NUMBER OF ADDITIONAL CROSSINGS TO REDUCE IMPACT TO

WHERE A STREAM CROSSING IS REQUIRED, SELECT A CROSSING SITE WITH THESE FEATURES: STRAIGHT AND NARROW CREEK CHANNEL WITH HIGH BANKS; STABLE CREEK BANKS THAT PROVIDE SOLID FOUNDATION FOR A CROSSING. MINIMAL ELEVATION CHANGES (0-10% PREFERRED) ON ROAD/TRAIL LEADING TO CROSSING.

• KEEP HEAVY EQUIPMENT OUT OF CREEK. • CONSTRUCT A SWALE OR BERM ACROSS THE APPROACH TO THE CROSSING ON BOTH SIDES (THE CROSSING OTHER WATER DIVERSION DEVICES (BROAD BASED DIPS. WATER BARS. FTC.) SHOULD BE USED ON LONG APPROACHES T MINIMIZE THE AMOUNT OF WATER FLOWING TO THE CROSSING).

STABILIZE EXPOSED SOIL AROUND THE CROSSING WITH MULCH, TEMPORARY SEEDING AND/OR EROSION CONTROL BLANKETS/MATTING. MAINTENANCE

• KEEP CROSSING SURFACE FREE OF SOIL AND DEBRIS THAT COULD ENTER STREAM. CHECK CROSSING COMPONENTS WEEKLY AND AFTER RAINFALL TO MAINTAIN STRENGTH AND INTEGRITY REMOVE LARGE BRANCHES OR OTHER FLOW OBSTRUCTIONS THAT COULD IMPAIR THE FUNCTION THE CROSSING OR CAUSE A FAILURE OF THE

REMOVAL & RESTORATION

 CLEAN OFF CROSSING SURFACE; KEEP DEBRIS OUT THE CREEK CHANNEL CAREFULLY REMOVE CROSSING MATERIALS MINIMIZING DISTURBANCE TO THE CREEK

PERMANENTLY STABILIZE DISTURBED PORTIONS OF CREEK BANK AND APPROACHES WITH PERENNIAL GRASSES, EROSION CONTROL BLANKETS/MATTING AND/OR RIP RAP LEAVE APPROPRIATE WATER DIVERSION

STRUCTURES IN PLACE ON BOTH SIDES OF CREEK.

CREEK CROSSINGS

CREEK CROSSINGS SHOULD BE MADE PERPENDICULAR TO THE CREEK FLOWLINE

IN-STREAM CONTROLS SHOULD ONLY BE USED AS A SECONDARY BMP. STORMWATER RUNOFF APPROACHING A CREEK CROSSING SHOULD BE DIVERTED TO A SEDIMENT TRAPPING BMP BEFORE IT REACHES THE CREEK IF BASEFLOW IS PRESENT, LCRA PERSONNEL SHOULD BE CONSULTED, AS IT MAY BE NECESSARY TO DIVERT OR PUMP WATER AROUND THE CONSTRUCTION AREA.

EVERY EFFORT SHOULD BE MADE TO KEEP THE ZONE OF IMMEDIATE CONSTRUCTION FREE OF SURFACE AND GROUND WATER FOR CONSTRUCTION IN THE CREEK CHANNEL. A PIPE OF ADEQUATE SIZE TO DIVERT NORMAL STREAM FLOW SHOULD BE PROVIDED AROUND THE CONSTRUCTION AREA. DIVERSION MAY BE BY PUMPING OR GRAVITY FLOW USING TEMPORARY DAMS

WHERE WATER MUST BE PUMPED FROM THE CONSTRUCTION ZONE, DISCHARGES SHOULD BE IN A MANNER THAT WILL NOT CAUSE SCOURING OR EROSION. ALL DISCHARGES SHALL BE ON HE UPSTREAM OR UPSLOPE SIDE OF EMPLACED EROSION CONTROL STRUCTURES. IF DISCHARGES ARE NECESSARY IN EASILY ERODIBLE AREAS, A STABILIZED, ENERGY-DISSIPATING DISCHARGE APRON SHALL BE CONSTRUCTED OF RIPRAF WITH MINIMUM STONE DIAMETER OF 6 INCHES AND MINIMUM DEPTH OF 12 INCHES, SIZE O THE APRON IN LINEAR DIMENSIONS SHALL BE APPROXIMATELY 10 TIMES THE DIAMETER OF THE DISCHARGE PIPE.

NOTES FOR CONSTRUCTION IN CREEKS

SCHEDULE WORK WHEN A MINIMUM OF 30 DAYS OF DRY WEATHER ARE FORECAST. DEWATER OR DIVERT FLOW PRIOR TO COMMENCING WORK WITHIN CREEK CHANNELS. CONTACT LCRA FOR INSPECTION OF DEWATERING/DIVERSION SYSTEM PRIOR TO COMMENCING WORK.

NO LOOSE EXCAVATED MATERIAL SHALL BE LEFT IN THE CREEK AT THE END OF THE WORK DAY. REMOVE ALL LOOSE EXCAVATED MATERIAL TO A SECURE LOCATION OUTSIDE THE CREEK CHANNEL AND SUSPEND FURTHER CONSTRUCTION IN THE CREEK AREA IF RAINFALL THREATENS.

KARST FEATURES NO SENSITIVE KARST FEATURES WERE IDENTIFIED ON SITE.

CEDAR MULCH

CEDAR MULCH CAN BE USED AS AN AID TO CONTROL EROSION ON CRITICAL SITES DURING LAND CLEARING AND PERIODS OF CONSTRUCTION WHEN RE-VEGETATION IS NOT PRACTICAL. THE BEST RESULTS ARE OBTAINED FROM ROUGH, LONG CUT (3 - 6 INCH) MULCHING. THE MOST COMMON USES ARE AS BERMS AT THE BOTTOM OF LONG, STEEP SLOPES AND AS A BLANKET IN CHANNELS WHERE DESIGNED FLOW DOES NOT EXCEED 3.5 FEET PER SECOND: ON INTERCEPTOR SWALES AND DIVERSION DIKES WHEN DESIGN FLOW EXCEEDS 6 FEET PER SECOND; AND ON LONG SLOPES WHERE RILL EROSION HAZARD IS HIGH AND PLANTING IS LIKELY TO BE SLOW TO ESTABLISH ADEQUATE PROTECTIVE COVER. MATERIALS:

CEDAR MULCH IS EASILY OBTAINED AS A BY-PRODUCT OF LAND CLEARING OPERATIONS. IT CAN ALSO BE A COST SAVING ITEM BECAUSE IT IS A RECYCLED MATERIAL AND DOES NOT HAVE TO BE REMOVED FROM THE SITE. INSPECTION AND MAINTENANCE GUIDELINES:

 CEDAR MULCH SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY EROSION. EROSION FROM STORMS OR OTHER DAMAGE SHOULD BE REPAIRED AS SOON AS PRACTICAL BY APPLYING NEW LAYERS OF MULCH. DEWATERING/DIVERSION PLAN

CREEK CROSSING CONSTRUCTION: THE CONTRACTOR MUST OBTAIN LCRA APPROVAL

<u>SLOPES</u>

OF THE DEWATERING/DIVERSION PLAN BEFORE BEGINNING WORK ON THE PROPOSED ACCESS ROAD CROSSING. EXTENDED DETENTION BASINS:

A 40-HOUR MINIMUM DELAY MUST BE OBSERVED BEFORE DEWATERING FROM EXTENDED DETENTION BASINS CAN TAKE PLACE. DISCHARGE MUST BE DONE IN A MANNER THAT DOES NOT CAUSE EROSION.

DURING CONSTRUCTION IF SLOPES ARE GREATER THAN 3:1. COORDINATE WITH PROJECT ENGINEER AND LCRA INSPECTOR FOR APPROPRIATE STABILIZATION OR VERIFICATION THAT OUT IN ROCK IS STABLE ENOUGH AND DOES NOT REQUIRE ADDITIONAL STABILIZATION.

<u>SILT FENCE</u>

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE. A SCHEMATIC ILLUSTRATION OF A SILT FENCE IS SHOWN IN FIGURE 3-20.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORNE SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW. SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY

USE J-HOOKS TO TRAP AND POND RUNOFF FLOWING ALONG UPHILL SIDE OF SILT FENCE AS SHOWN IN FIGURE 3-21 LCRA HIGHLAND LAKES WATERSHED ORDINANCE WATER QUALITY MANAGEMENT TECHNICAL MANUAL. THIS WILL FILTER OR SETTLE OUTFLOWS AND PREVENT RUNOFF FROM ESCAPING AROUND THE SIDES OF THE FENCE.

• SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4 OZ/YD, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30. • FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR YBAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT2, AND BRINDELL HARDNESS EXCEEDING 140

• WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM. INSTALLATION:

• STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1 – FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET. • LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. UTILIZE J-HOOKS AS NECESSARY AS SHOWN IN FIGURE 3-21 . THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE. • THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT

BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE. • THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

• SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET. • SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS: • FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE. • FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE) • FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES)

• FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE) INSPECTION AND MAINTENANCE GUIDELINES: · INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL IN EXCESS OF 0.5 INCH OR MORE.

• REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.

SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

 REPLACE ANY TORN FABRIC.
 REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS. • WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF

SILT FENCE SPACING ON SLOPING

| SITES | | | | | |
|------------------|-------------|---------|-------------|--|--|
| SLOPE ANGLE | SILTY SOILS | CLAYS | SANDY SOILS | | |
| VERY STEEP (1:1) | 50 FT. | 75 FT. | 100 FT. | | |
| STEEP (2:1) | 75 FT. | 100 FT. | 125 FT. | | |
| MODERATE (4:1) | 100 FT. | 125 FT. | 150 FT. | | |
| SLIGHT (10:1) | 125 FT. | 150 FT. | 200 FT. | | |

HYDROMULCH

SEED: PROVIDE SEED FROM THE PREVIOUS SEASON'S CROP MEETING THE REQUIREMENTS OF THE TEXAS SEED LAW, INCLUDING THE TESTING AND LABELING FOR PURE LIVE SEED (PLS = PURITY X GERMINATION). USE WITHIN 12 MO. FROM THE DATE OF THE ANALYSIS. WHEN BUFFALOGRASS IS SPECIFIED, USE SEED THAT IS TREATED WITH KNO3 (POTASSIUM NITRATE) TO OVERCOME DORMANCY. USE TABLE 1 TO DETERMINE THE APPROPRIATE SEED MIXTURE AND APPLICATION RATES. FOR TEMPORARY COLD SEASON PLANTING, CONSULT TABLES 3 & 4 IN SECTION 3.2.2 OF THE ESC PLAN. IMMEDIATELY AFTER PLANTING THE SEED OR SEED MIXTURE, APPLY CELLULOSE FIBER MULCH UNIFORMLY OVER THE SEEDED AREA AT THE FOLLOWING RATES: SANDY SOILS WITH SLOPES OF 3:1 OR LESS 2500 LB. PER ACRE.
SANDY SOILS WITH SLOPES GREATER THAN 3:1 3000 LB. PER ACRE.
CLAY SOILS WITH SLOPES OF 3:1 OR LESS 2000 LB. PER ACRE. CLAY SOILS WITH SLOPES GREATER THAN 3:1 2300 LB. PER ACRE. CELLULOSE FIBER MULCH RATES ARE BASED ON DRY WEIGHT OF MULCH PER ACRE. MIX CELLULOSE FIBER MULCH AND WATER TO MAKE A SLURRY AND APPLY UNIFORMLY OVER THE SEEDED AREA USING SUITABLE EQUIPMENT. USE A

STRAW OR HAY MULCH OPERATIONS. REVEGETATION IS CONSIDERED AS 80% COVERAGE WITH NO LARGE BARE AREAS

THE FINAL RESTORATION OF THE SITE WILL INCLUDE REMOVAL OF BUILDINGS AND STRUCTURES SUCH AS THE SCALE, OFFICE, PROCESSING PLANT, AND THEIR ASSOCIATED FOUNDATION MATERIALS, WHERE PRACTICABLE. THE SITE WILL BE REVEGETATED, AS APPROPRIATE. MULCH CREATED AND STORED FROM INITIAL CLEARING ACTIVITIES CAN BE SPREAD ACROSS THE DISTURBED AREAS TO PROVIDE STABILIZATION. ROADWAYS WILL REMAIN IN PLACE THROUGHOUT THE SITE TO ALLOW ACCESS FOR MONITORING

<u>BUFFER ZONES</u>

BUFFER ZONES SHALL REMAIN UNDISTURBED OTHER THAN THE IMPROVEMENTS SHOWN ON THESE PLANS - ENCROACHMENT INTO A BUFFER ZONE OR DAMAGE TO BUFFER ZONES ARES WILL BE CONSIDERED A PRIORITY VIOLATION AND WILL RESULT IN A STOP WORK ORDER AND POSSIBLE FINES.

SEDIMENT RUNOFF PREVENTION

HIGH POINTS ALONG EACH CREEK CROSSING APPROACH WILL BE MAINTAINED IN ORDER TO PREVENT SEDIMENT LADEN RUNOFF FROM FLOWING INTO THE CREEK VIA THE CREEK CROSSING

<u>BMP TYPE</u>

WHEN SILT FENCE INSTALLATION ISN'T PRACTICABLE, MULCH FROM INITIAL CLEARING ACTIVITIES WILL BE UTILIZED TO STABILIZE ROCKY AREAS PRIOR TO SURFACE DISTURBANCE.

CONTRACTOR MAY OPT TO USE MULCH SOCKS/LOGS IN LIEU OF SILT FENCING BASED ON SURFACE CONDITIONS.

MULCH BERMS

ENDS.

MULCH BERMS MADE FROM MULCH PRODUCED ON SITE DURING INITIAL SITE CLEARING WILL BE USED FOR STABILIZATION IN FLAT AREAS OR PGRADIENT OF SILT FENCE UPON APPROVAL BY LCRA INSPECTOR.

PERMANENT ROCK BERMS AND LEVEL SPREADERS PERMANENT ROCK BERMS AND LEVEL SPREADERS CONSTRUCTED PER THE "ROCK BERM" LIP OPTION IN FIGURE 3-7 OF THE LCRA TECHNICAL MANUAL MUST USE METALLIC-COATED OR PVC-COATED STEEL WITH A MINIMUM WIRE SIZE OF 14 GAUGE (0.080 INCH OR 2.0 MM DIAMETER). PRIOR TO CONSTRUCTION OF LEVEL SPREADERS, THE LEVEL SPREADERS MUST BE STAKED IN THI FIELD AND INSPECTED BY LCRA. THE OWNER OR HIS AUTHORIZED REPRESENTATIVE IS RESPONSIBLE

FOR CONTACTING LCRA FOR AN INSPECTION. IT IS RECOMMENDED THAT THE DESIGN ENGINEER BE PRESENT AT THE INSPECTION. LEVEL SPREADERS MUST BE TURNED UP GRADIENT AT THE ENDS AS NECESSARY TO PREVENT FLOW FROM SPILLING AROUND THE

THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION). THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE LCRA WATER QUALITY

MANAGEMENT TECHNICAL MANUAL AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. 3. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND LCRA WATERSHED MANAGEMENT INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION INSPECTOR, AT LEAST THREE DAYS PRIOR TO THE MEETING DATE.

4. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE LCRA WATERSHED MANAGEMENT PROGRAM. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE LCRA WATERSHED MANAGEMENT INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.

THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER RAINFALL EVENTS IN EXCESS OF 0.5" TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS, SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.

6. PRIOR TO FINAL ACCEPTANCE BY THE LCRA, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES. 7. PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW. A MINIMUM OF FOUR

INCHES OF TOPSOIL SHALL BE PLACED ON ALL DISTURBED AREAS (EXCEPT ROCK OUTCROP). SALVAGED TOPSOIL FROM THE SITE SHOULD BE USED WHENEVER POSSIBLE. IMPORTED TOPSOIL SHALL BE WEED FREE WITH A. A MINIMUM 20% ORGANIC CONTENT. TOPSOIL PLACED ON SLOPES EXCEEDING 5 HORIZONTAL TO 1 VERTICAL SHALL HAVE A RELATIVELY HIGH RESISTIVITY TO EROSION.

B. THE SEEDING FOR PERMANENT EROSION CONTROL SHALL BE APPLIED OVER AREAS DISTURBED BY CONSTRUCTION AS FOLLOWS (SELECT ONE OF THE THREE SEED COMBINATIONS LISTED BELOW):



Oct 1-Mar Permanent Cool/Warm Bermuda (Cynodon dactylon)(unbulled) 70.0 Season *Cereal Rye (Secale cereale)

TAKE CARE TO DISTRIBUTE SEED EVENLY, BY SOWING FINE AND LARGE SEEDS SEPARATELY OR BY USING A FINE SEED BOX. WHEN BROADCASTING SEEDING, THE APPLICATION RATE SHOULD BE DOUBLED AND THE AREA ROLLED TO ENSURE A GOOD SEED/SOIL CONTACT

*FROM SEPTEMBER 15 TO MARCH 1, OATS (21 LB/ACRE) AND WINTER WHEAT (30 LB/ACRE) MAY BE SUBSTITUTED FOR RYE. MULCH TYPE USED SHALL BE HAY, STRAW OR MULCH APPLIED AT A RATE OF 3500 LB/ACRE (HAY), 4500 LB/ACRE OR 2500 LB/ACRE (HYDRAULIC MULCH). TACKIFIER, IF USED SHALL BE BIODEGRADABLE

C. THE PLANTED AREA SHALL BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN-DAY INTERVALS DURING THE FIRST TWO MONTHS. RAINFALL OCCURRENCES OF 1/2 INCH OR MORE SHALL POSTPONE THE WATERING SCHEDULE FOR ONE WEEK. D. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 11/2 INCHES HIGH WITH 70% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST. CRITICAL AREAS INCLUDING CREEK CROSSINGS, SLOPES. STORMWATER DISCHARGE POINTS MUST BE COMPLETELY STABILIZED. PERMANENT WATER QUALITY BMPS MUST ATTAIN 80% COVERAGE.

8. DEVELOPER INFORMATION: OWNER _ PHONE #___

ADDRESS_____ OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:

__PHONE #___ PERSON OR FIRM RESPONSIBLE FOR EROSION/SEDIMENTATION CONTROL MAINTENANCE:

___PHONE #____

PERSON OR FIRM RESPONSIBLE FOR TREE/NATURAL AREA PROTECTION MAINTENANCE: __PHONE #____

9. THE CONTRACTOR SHALL NOT DISPOSE OF SURPLUS EXCAVATED MATERIAL FROM THE SITE WITHOUT NOTIFYING THE LCRA WATERSHED MANAGEMENT INSPECTOR AT LEAST 48 HOURS PRIOR WITH THE LOCATION AND A COPY OF THE PERMIT ISSUED TO RECEIVE THE MATERIAL. NOTES FOR CONSTRUCTION IN CREEKS:

SCHEDULE WORK WHEN A MINIMUM OF _(INCLUDE A SUFFICIENT TIME PERIOD TO COMPLETE THE WORK)_DAYS OF DRY WEATHER ARE FORECAST. DEWATER OR DIVERT FLOW PRIOR TO COMMENCING WORK WITHIN CREEK CHANNELS. CONTACT LCRA FOR INSPECTION OF DEWATERING/DIVERSION SYSTEM PRIOR TO COMMENCING WORK.

NO LOOSE EXCAVATED MATERIAL SHALL BE LEFT IN THE CREEK AT THE END OF THE WORK DAY. REMOVE ALL LOOSE EXCAVATED MATERIAL TO A SECURE LOCATION OUTSIDE THE CREEK CHANNEL AND SUSPEND FURTHER CONSTRUCTION IN THE CREEK AREA IF RAINFALL THREATENS.

ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW. TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.) ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

• THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS. • CLEAN, OPEN GRADED 3- TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5- TO 8-INCH DIAMETER ROCKS MAY BE USED.

• LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS. • BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

• PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM (FIGURE 3-23), TO A HEIGHT NOT LESS • WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE

SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON. • BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE • THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL. COMMON TROUBLE POINTS.

• INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM) • BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE)

INSPECTION AND MAINTENANCE GUIDELINES: • INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE. • REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION. • REPAIR ANY LOOSE WIRE SHEATHING. • THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

• THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC. • THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED



TACKING AGENT APPLIED IN ACCORDANCE WITH THE MANUFACTURER'SRECOMMENDATIONS OR A CRIMPING METHOD ON ALL

FULLY-DEVELOPED CONDITIONS:

I. THE VELOCITY OF FLOW ACROSS THE FILTER STRIP MUST NOT EXCEED 1 FT/SEC. L = 501 YEAR DEV

L = 1001 YEAR DE

LCRA TECHNICAL MANUAL SECTION 4.3.7 (5-8) FOR NVFS:

(5) UPPER BOUNDARY REQUIREMENTS: THE FILTER STRIP MUST RUN ALONG THE ENTIRE EDGE OF É CONTRIBUTING AREA, NO COLLECTION OR ROUTING ALLOWED EXCEPT FOLLOWING A WATER QUALITY BASIN WITH FLOW ATTENUATION OR DISCHARGE FROM A LEVEL SPREADER TO THE FILTER STRIP. THE SOIL ALONG THE UPPER BOUNDARY MUST BE REINFORCED WITH PROTECTIVE MATTING OR AN INFILTRATION TRENCH (PREFERRED) MAY BE USED. REFER TO FIGURE 4.14.

VELOCITY RESTRICTIONS: VEGETATIVE FILTER STRIPS ARE SUSCEPTIBLE TO EROSION AND THE FORMATION OF RILLS; THEREFORE, MAY REQUIRE THE USE OF A FLOW SPREADER OR AN INFILTRATION TRENCH TO SPREAD FLOWS AND DISSIPATE FROSIVE VELOCITIES. THE RUNOFF FROM THE CONTRIBUTING AREA ENTERING THE UPPER BOUNDARY OF THE FILTER STRIP SHALL BE IN SHEET FLOW CONDITIONS. SHEET FLOW CONDITIONS MUST MEET 1 FOLLOWING CONSTRAINTS DURING THE PEAK FLOW OF A 1-YR, 3-HR STORM EVENT UNDER

II. THE AVERAGE DEPTH OF FLOW ACROSS THE FILTER STRIP MUST NOT EXCEED 0.2 FEET FOR A VEGETATIVE FILTER STRIP USED IN COMBINATION WITH A WATER QUALITY BASIN.

L = MINIMUM WIDTH OF A FLOW SPREADER (FT) PERPENDICULAR TO FLOWQ(1 YEAR DEV) = PEAK FLOW RATE FROM THE 1-YR, 3-HR STORM EVENT (SEE APP. 2.4)III. THE AVERAGE DEPTH OF FLOW ACROSS THE FILTER STRIP MUST NOT EXCEED 0.1 FEET FOR A VEGETATIVE FILTER STRIP USED AS A STAND ALONE BMP.

L = MINIMUM WIDTH OF A FLOW SPREADER (FT) PERPENDICULAR TO FLOWQ1 YEAR DEV = PEAK FLOW RATE FROM THE 1-YR, 3-HR STORM EVENT (SEE APP. 2.4) (7) SURFACE CHARACTERISTICS: THE FILTER AREA MUST BE FREE OF GULLIES, RILLS AND FLOW CONCENTRATIONS AND HAVE 70% VEGETATIVE COVER.

(8) SOIL REQUIREMENTS: THE SOIL MUST AVERAGE 4-INCHES IN DEPTH. ROCK CROP AREAS MAY BE PRESENT BUT MUST BE DEDUCTED FROM THE TOTAL FILTER STRIP AREA AND MUST NOT AFFECT THE FUNCTION OF THE VEGETATIVE FILTER STRIP.

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ISSUE DATE: 4/16/2025





Figure 3-35 Schematic Diagrams of Concrete Washout Areas







Figure 3-26 Diagram of a Rock Check Dam