

**SECTION 01010  
SUMMARY OF WORK**

**PART 1 – GENERAL**

**1.1 THE REQUIREMENT**

- A. The WORK to be performed under this Contract shall consist of furnishing all plant, tools, equipment, materials, supplies, and manufactured articles and furnishing all labor, transportation, and services, including fuel, power, water, and essential communications, and performing all WORK, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The WORK shall be complete, and all WORK, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete, safe and proper construction of the WORK in good faith shall be provided by the CONTRACTOR as though originally so indicated, at no increase in cost to the OWNER.

**1.2 WORK COVERED BY CONTRACT DOCUMENTS**

- A. The Project consists of the construction of the "South Valley Water Reclamation Facility – 2017 Biofilter Bark Addition", complete and operational including:
1. Furnish, screen and process, and place Douglas Fir bark in two biofilters
  2. Collect fine material from the onsite screening process and place it in the wedge zone around the perimeter of each biofilter.
  3. Preserve and protect the existing HDPE liners, media, and sprinkler systems to the existing biofilters.

**1.3 CONTRACT METHOD**

- A. The WORK hereunder will be constructed under a single lump sum contract.

**1.4 WORK BY OTHERS**

- A. Where two or more contracts are being performed at one time on the same Site or adjacent land in such a manner that work under one contract may interfere with work under another, the OWNER will determine the sequence and order of the WORK in either or both contracts. When the Site of one contract is the necessary or convenient means of access for performance of work under another, the OWNER may grant privilege of access or other reasonable privilege to the CONTRACTOR so desiring, to the extent, amount, and in manner and at time that the OWNER may determine. No OWNER determination of method

or time or sequence or order of the work or access privilege shall be the basis for a claim for delay or damage except under provisions of the General Conditions for temporary suspensions of the work. The CONTRACTOR shall conduct its operations so as to cause a minimum of interference with the work of such other contractors, and shall cooperate fully with such contractors to allow continued safe access to their respective portions of the Site, as required to perform work under their respective contracts.

#### 1.5 WORK SEQUENCE AND SCHEDULING CONSTRAINTS

- A. WORK sequence and scheduling constraints are described in Section 01030 – Special Project Constraints and Section 13270 – Biofilter Odor Control System.
- B. Notice to Proceed will be issued in late June 2017. The CONTRACTOR shall achieve substantial completion of the entire project by October 31, 2017. Final completion shall be no more than 60 days hence. Contract interim milestone dates are described in Section 01030.
- C. The CONTRACTOR shall notify the OWNER 2 weeks in advance of when they desire to begin work on the biofilters, including receiving unscreened bark material.
- D. The biofilters will remain in service during the work by the CONTRACTOR. CONTRACTOR shall coordinate with OWNER the operation of the biofilter sprinkler systems.

#### 1.6 CONTRACTOR USE OF PROJECT SITE

- A. The CONTRACTOR's use of the project Site shall be limited to its construction operations, including on-site storage of materials and on-site fabrication facilities. The CONTRACTOR may stage his work on the gravel pad north of the Utility Water Filter Building and the gravel pad south of the Dump Station. Equipment, such as cranes, fork lifts, loaders, conveyors, etc. shall be stored within the staging area at night and when not in use.

#### 1.7 OWNER USE OF THE PROJECT SITE

- A. The OWNER may utilize all or part of the existing facilities during the entire period of construction for the conduct of the OWNER's normal operations. The CONTRACTOR shall cooperate and coordinate with the OWNER to facilitate the OWNER's operations and to minimize interference with the CONTRACTOR's operations at the same time. In any event, the OWNER shall be allowed safe access to the Site during the period of construction.

#### 1.8 PARTIAL UTILIZATION OF THE WORK BY OWNER

- A. The OWNER will take partial utilization of the WORK upon completion of the following:
  - 1. The Headworks biofilter after its bark has been placed.
  - 2. The Solids Disposal biofilter after its bark has been placed.

#### 1.9 OUTAGE PLAN AND REQUESTS

- A. Outage Plans are discussed in Section 1030 – Special Project Constraints

## 1.5 PROJECT MEETINGS

### A. Preconstruction Conference

1. Prior to the commencement of WORK at the Site, a preconstruction conference will be held at a mutually agreed time and place. The CONTRACTOR'S Project Manager, its Superintendent, its Safety Representative, and its Subcontractors shall attend the conference as the CONTRACTOR deems appropriate. Other attendees will be:
  - a. ENGINEER;
  - b. Representatives of OWNER;
  - c. Governmental representatives as appropriate;
  - d. Others as requested by CONTRACTOR, OWNER, or ENGINEER.
2. The CONTRACTOR shall bring the preconstruction conference submittals in accordance with Section 01300 – Contractor Submittals.
3. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The complete agenda will be furnished to the CONTRACTOR prior to the meeting date. However, CONTRACTOR should be prepared to discuss all of the items listed below.
  - a. Status of CONTRACTOR's insurance and bonds.
  - b. CONTRACTOR's tentative schedules.
  - c. Transmittal, review, and distribution of CONTRACTOR's submittals.
  - d. Processing applications for payment.
  - e. Maintaining record documents.
  - f. Critical WORK sequencing.
  - g. Field decisions and Change Orders.
  - h. Use of project site, office and storage areas, security, housekeeping, and OWNER's needs.
  - i. Major equipment deliveries and priorities.
  - j. CONTRACTOR's assignments for safety and first aid.
  - k. Contract authority and channels of communication.
  - l. Utilities required for construction.
  - m. CONTRACTOR's preliminary schedule.
  - n. Establishment of emergency contacts.
4. The OWNER will preside at the preconstruction conference and will arrange for keeping and distributing the minutes to all persons in attendance.
5. The CONTRACTOR and its Subcontractors should plan on the conference taking no less than one half working day.

### B. Progress Meetings

1. The CONTRACTOR shall schedule and hold regular on-site progress meetings at times requested by OWNER or as required by progress of the WORK. The CONTRACTOR, OWNER and all Subcontractors active on the Site must attend each meeting. CONTRACTOR may at its discretion request attendance by representatives of its suppliers, manufacturers, and other subcontractors.

2. The OWNER will preside at the progress meetings and will arrange for keeping and distributing the minutes. The purpose of the meetings will be to review the progress of the WORK, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop. During each meeting, the CONTRACTOR shall present any issues which may impact its progress with a view to resolving these issues expeditiously.

1.11 SURVEY CONTROL AND REQUIREMENTS (not applicable)

1.12 BUILDING PERMIT (not applicable)

1.13 DEFINITIONS APPLICABLE TO TECHNICAL SPECIFICATIONS

A. The following words shall have the defined meaning in the Technical Portions of the WORK:

Indicated	is a word used to direct the CONTRACTOR to information contained on the Drawings or in the Specifications. Terms such as "shown," "noted," "scheduled," and "specified" also may be used to assist in locating information, but no limitation of location is implied or intended.
Furnish	means to supply and deliver to the site, to unload and unpack ready for assembly, installation, testing, and startup.
Install	defines operations at the site including assembly, erection, placing, anchoring, applying, shaping to dimension, finishing, curing, protecting, and cleaning, ready for the OWNER's use.
Provide	is defined as furnish and install, test, adjust, program, and demonstrate proper operation if required by the specification, ready for the intended use.
Installer	a person or firm engaged by the CONTRACTOR or its subcontract or any subcontractor for the performance of installation, erection, or application work at the site. Installers must be expert in the operations they are engaged to perform.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

-END OF SECTION-

**SECTION 01030  
SPECIAL PROJECT CONSTRAINTS**

**PART 1 – WORK INVOLVED WITH EXISTING PLANT**

**1.1 GENERAL**

- A. The WORK shall be executed while the existing wastewater treatment plant is in operation. Operation of the existing plant shall not be jeopardized nor shall the efficiency of wastewater treatment be reduced as a result of the execution of the WORK.
- B. Critical events in the sequence of construction are described in this Section and shall be utilized by the CONTRACTOR as a guideline. The construction constraints presented are intended to describe the sequence of critical events necessary to minimize disruption to the ongoing treatment plant processes. It shall be understood and agreed by the CONTRACTOR that the critical events described are not all inclusive and that additional items of work not described may be required to minimize disruption and ensure compliance.
- C. Portions of this work, specifically the Headworks biofilter bark addition, will be conducted underneath Rocky Mountain Power high voltage transmission lines. All appropriate safety restrictions and best practices shall be incorporated by the CONTRACTOR into the work. CONTRACTOR shall confirm the voltage of the transmission lines as required and shall ensure that all construction activities do not encroach upon boundary restrictions and limitations.

**1.2 The construction constraints described herein shall be incorporated into the CONTRACTOR's schedule as described in Section 01311 – Scheduling and Reporting.**

- A. Operational functions or shutdown of portions of the existing plant required to facilitate CONTRACTOR's operation will be done by the plant personnel only.
- B. The plant operation and maintenance personnel will cooperate in every way that is practical in order to facilitate CONTRACTOR's operation.
- C. If it is necessary for the proper operation or maintenance of portions of the plant, the OWNER may require the CONTRACTOR to reschedule an approved shutdown. The CONTRACTOR shall then reschedule his operations so there shall be no conflict with necessary operations or maintenance of the plant.

**1.3 COMPLIANCE WITH UPDES PERMIT (NOT USED)**

**1.4 OUTAGE PLANS**

- A. Modifications to existing facilities, the construction of new facilities, and the connection of new to existing facilities may require a temporary outage of treatment processes or facilities. In these cases, the CONTRACTOR's WORK shall be coordinated with the operation of the plant in advance. In addition to the Construction Schedule under Section 01300 – Contractor Submittals, the CONTRACTOR shall submit a Scheduled Outage Request (SOR) and a detailed outage plan and time schedule for each construction activity which will require a tank, pipeline, electrical circuit (other than lighting), control circuit, equipment, or other facilities to be removed from service.

- B. The SOR and outage plans shall be submitted to the OR for the OWNER's review and acceptance a minimum of two weeks in advance of the time that such outages are required. The outage plans shall be coordinated with the construction schedule specified in Section 01300 – CONTRACTOR Submittals and shall meet the restrictions and conditions specified in this section. The detailed plan shall describe the CONTRACTOR's method for preventing bypassing of other treatment units; the length of time required to complete said operation; any necessary temporary power, controls, instrumentation or alarms required to maintain control, monitoring and alarms for the treatment plant processes; and the manpower, plant and equipment which the CONTRACTOR shall provide in order to ensure proper operation of associated treatment units. In addition, the outage plan shall describe the Contractor's contingency plan that shall be initiated in the event that his temporary facilities fail or it becomes apparent that the time constraints described in the approved OUTAGE PLAN cannot be met. The contingency plan shall conform to all specified outage requirements. All costs for preparing and implementing both the outage and contingency plans shall be borne by the CONTRACTOR.
- C. The CONTRACTOR shall not begin an alteration until specific written permission has been granted by the OR in each case.
- D. The OR will coordinate the CONTRACTOR's planned procedure with the treatment facility personnel. The OR has the authority to modify any proposed shutdown procedures if said work would adversely impact the plant operations.
- E. The OWNER shall be notified in writing at least two weeks in advance of the required outage if the schedule for performing the WORK has changed or if revisions to the outage plan are required.
- F. The CONTRACTOR shall provide written confirmation of the shutdown date and time two working days prior to the actual shutdown.
- G. Any temporary facilities and night, weekend, or holiday WORK and overtime payments required during process interruptions shall be included in the bid price for the WORK.

## 1.5 SCHEDULE CONSTRAINTS

- A. General: It is the CONTRACTOR's responsibility to coordinate and plan the construction activities to integrate each schedule constraint into performance of the overall WORK.

## 1.6 CONSTRUCTION SEQUENCING

- A. Headworks & Solids Disposal Biofilters: Continued use of the biofilter will occur throughout the construction of the WORK. The following sequence describes the limits of that use and the restrictions imposed upon the CONTRACTOR during execution of the WORK.
  - 1. Organic media:
    - a. The CONTRACTOR shall not place heavy equipment on the existing organic media to protect it from breaking down or being compacted.
    - b. The CONTRACTOR shall keep all personnel, tools, and equipment off of the organic media of all Beds currently in use or planned to be used by the OWNER.

- c. CONTRACTOR shall comply with the requirements of Section 13270 – Biofilter Odor Control System, Paragraph 1.5 - Quality Assurance & Part 3 – Execution as the WORK proceeds.

#### 1.7 LIQUIDATED DAMAGES AND INCENTIVES

- A. OWNER and CONTRACTOR recognize that time is of the essence for this Agreement and that the OWNER will suffer financial loss if the WORK is not completed by October 31, 2017, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of requiring any such proof, the OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty), the CONTRACTOR shall pay the OWNER \$250.00 for each calendar day thereafter, until the WORK is substantially complete.

#### 1.8 SAFETY PLAN

- A. At the Preconstruction Conference, the CONTRACTOR shall submit a Safety, Health and Environmental Action Plan (SHEAP). SVWRF will review the SHEAP to ensure its compatibility with the safety policies of SVWRF. The CONTRACTOR shall address the topics provided on the SVWRF-SHEAP outline (outline is included in appendix to specifications).
- B. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all health safety and environmental issues for his or her employees, including all aspects of on-site construction, operation and activities associated with the contract.
- C. The CONTRACTOR shall provide the following insurance and safety data, for each of the past three years including the current year to date. See form entitled “Job Related Accident Reports” (form is included in appendix to specification)
- D. The CONTRACTOR shall provide a list of employees including employees of subcontractors that will be coming to the SVWRF. Include names, positions and length of service. CONTRACTOR agrees to provide valid photo identifications of all employees and employees of subcontractors that will be coming to the SVWRF and further agrees to allowing SVWRF to copy said photo IDs for security and safety use at SVWRF.

#### 1.9 GENERAL REQUIREMENTS FOR ALL WORK

- A. During all rehabilitation, modification and demolition work, safe working conditions for the OWNER’s and CONTRACTOR’s personnel shall be maintained at all times. The foregoing includes, but is not limited to, proper trench excavation, the provision of temporary equipment guards, supports, warning signs, walkways, covers over openings, hand-railing and protection of electrical equipment and power supply. All temporary facilities shall be constructed in accordance with applicable codes and regulations so that they operate safely and properly. Vavles to be temporarily shut off during the WORK shall be tagged as such and shall be wired shut with a crimped lead seal and padlocked. Electrical and mechanical equipment shall be similarly shut down.

### **PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**-END OF SECTION-**



**SECTION 01300  
CONTRACTOR SUBMITTALS**

**PART 1 – GENERAL**

**1.1 GENERAL**

- A. CONTRACTOR "Submittals" may be Shop Drawings, schedules, surveys, reports, samples, plans, lists, drawings, documents, findings, programs, manuals, data, or any other item or information required by the Contract Documents to be submitted or offered by the CONTRACTOR in accomplishing the Work.
- B. Wherever Submittals are required hereunder, all such documents shall be furnished to the OWNER.
- C. The CONTRACTOR shall be responsible for the accuracy, completeness, and coordination of all Submittals. The CONTRACTOR shall not delegate this responsibility in whole or in part to any Subcontractor. Submittals may be prepared by the CONTRACTOR, Subcontractor, or Supplier, but the CONTRACTOR shall ascertain that each Submittal meets the requirements of the Contract and the Project. The CONTRACTOR shall ensure that there is no conflict with other Submittals and shall notify the ENGINEER in each case where its Submittal may affect the work of another Contractor or the OWNER. The CONTRACTOR shall ensure coordination of Submittals of related crafts and Subcontractors.

**1.2 PRECONSTRUCTION CONFERENCE SUBMITTALS**

- A. At the preconstruction conference referred to in Section 01010 - Summary of Work, submit the following items for review:
  - 1. A project overview bar chart in accordance with Section 01311 – Scheduling and Reporting.
  - 2. The names and qualifications of Designated Safety Representative and Designated Competent Persons.
  - 3. At the Preconstruction Conference, the Contractor shall submit a Safety, Health and Environmental Action Plan (SHEAP). SVWRF will review the SHEAP to ensure its compatibility with the safety policies of SVWRF.

**1.3 SHOP DRAWINGS**

- A. Wherever called for in the Contract Documents furnish to the OWNER for review, 7 copies of each Shop Drawing Submittal. The term "Shop Drawings" as used herein shall be understood to include detail design calculations, shop drawings, fabrication, and installation drawings, erection drawings, lists, graphs, catalog sheets, data sheets, and similar items. Whenever the CONTRACTOR is required to submit design calculations as part of a Submittal, such calculations shall bear the signature and seal of a professional engineer registered in the appropriate branch in Utah unless otherwise directed.

- B. All Shop Drawing Submittals shall be accompanied by a Submittal transmittal form acceptable to the OWNER. Any Submittal not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for resubmittal.
- C. Except as may otherwise be indicated herein, the ENGINEER will return each Submittal to the CONTRACTOR, with its comments noted thereon, within 28 calendar days following their receipt by the ENGINEER. For resubmittal of Submittals, the ENGINEER will be allowed the same review period as for the original Submittal. It is considered reasonable that the CONTRACTOR shall make a complete and acceptable Submittal to the ENGINEER by the second submission of a Submittal item. The OWNER reserves the right to withhold monies due to the CONTRACTOR to cover additional costs of any review beyond the second Submittal.
- D. Fabrication of an item shall commence only after the ENGINEER has reviewed the pertinent Submittals and the ENGINEER has returned copies to the CONTRACTOR marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED". Corrections indicated on Submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis for changes to the Contract requirements.
- E. The OWNER's review of Shop Drawing Submittals shall not relieve the CONTRACTOR of the entire responsibility for the correctness of details and dimensions and for compliance with the Contract Documents. The CONTRACTOR shall assume all responsibility and risk for any misfits due to any errors in Submittals. The CONTRACTOR shall be responsible for the dimensions and the design of adequate connections and details.
- F. No changes in the Contract times will be considered for schedule delays resulting from non-compliant Submittals.

#### 1.4 CONTRACTOR'S SCHEDULE

- A. The CONTRACTOR's construction schedules and reports shall be prepared and submitted to the ENGINEER in accordance with the provisions of Section 01311 – Scheduling and Reporting.

#### 1.5 DAILY FORCE REPORT

- A. The CONTRACTOR and each Subcontractor shall submit to the OWNER, or designee, a daily force report. Deliver report not later than 9:00 A.M. of the work day following the report date and include the following:
  - 1. Day of week, date, CONTRACTOR name and Report number.
  - 2. Summary of work in process (segregated by CONTRACTOR and Subcontractor).
  - 3. Details of work accomplished including quantities of work installed.
  - 4. Summary of equipment working and where working.
  - 5. Summary of manpower by work element and Subcontractor.

6. Receipt of major equipment or materials.
7. All required testing performed and, if available, documented results.

#### 1.6 OPERATIONS AND MAINTENANCE MANUAL

- A. The CONTRACTOR shall submit technical operation and maintenance information for each item of mechanical, electrical and instrumentation equipment in an organized manner in the OPERATIONS AND MAINTENANCE MANUAL. It shall be written so that it can be used and understood by the OWNER'S operation and maintenance staff.

#### 1.7 REQUESTS FOR INFORMATION

- A. In the event that the CONTRACTOR, Subcontractor or supplier, at any tier, determines that some portion of the drawings, specifications, or other Contract Documents requires clarification or interpretation by the OWNER, the CONTRACTOR shall submit a Request for Information in writing to the OWNER. Requests for Information may only be submitted by the CONTRACTOR and shall only be submitted on the Request for Information form provided by the OWNER. The CONTRACTOR shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the OWNER. In the Request for Information the CONTRACTOR shall set forth their own interpretation or understanding of the requirement along with reasons why they have reached such an understanding.
- B. The OWNER will review all Requests for Information to determine whether they are Requests for Information within the meaning of this term. If the OWNER determines that the document is not a Request for Information it will be returned to the CONTRACTOR, unreviewed as to content, for resubmittal on the proper form and in the proper manner.
- C. Responses from the OWNER will not change any requirement of the Contract Documents unless so noted by the OWNER in the response to the Request for Information. In the event the CONTRACTOR believes that a response to a Request for Information will cause a change to the requirements of the Contract Documents the CONTRACTOR shall immediately give written notice to the OWNER stating that the CONTRACTOR considers the response to be a Change Order. Failure to give such written notice immediately shall waive the CONTRACTOR's right to seek additional time or cost under the Contract.

#### **PART 2 – PRODUCTS (NOT USED)**

#### **PART 3 – EXECUTION (NOT USED)**

-END OF SECTION-

## SECTION 01302 - SCHEDULE OF VALUES

### PART 1 – GENERAL

#### 1.1 GENERAL

- A. This Section defines the process whereby the Schedule of Values shall be developed. Monthly progress payment amounts shall be determined from the Schedule of Values as updated.

#### 1.2 PRELIMINARY SCHEDULE OF VALUES

- A. The CONTRACTOR shall submit a preliminary Schedule of Values for the major components of the WORK at the Preconstruction Conference in accordance with Section 01010 – Summary of Work. The listing shall include, at a minimum, the proposed value for the following major WORK components:

1. Mobilization: Up to a maximum of three (3) percent of contract price.
2. The total value of electrical and instrumentation WORK, if applicable.
3. The total value of Protective Coatings WORK, if applicable.
4. The total value of miscellaneous demolition WORK.
5. The total value of yard piping WORK, if applicable.
6. The total value of site civil WORK inclusive of landscaping, paving, grading and drainage WORK, if applicable.
7. The total value of structural reinforced concrete WORK, if applicable.
8. The total value of the equipment per Schedule A & Additive Schedule B.
9. The total value for installation of the equipment and all mechanical WORK.
10. The total value of all other WORK not specifically included in the previous items.

- B. The CONTRACTOR and OWNER's REPRESENTATIVE shall meet and jointly review the preliminary Schedule of Values and make any adjustments in value allocations if, in the opinion of the OWNER, these are necessary to establish fair and reasonable allocation of values for the major WORK components. Front end loading will not be permitted. The OWNER may require reallocation of major WORK components from items in the above listing if such reallocation is necessary. This review and any necessary revisions shall be completed within 15 days from the date of Notice to Proceed.

#### 1.3 DETAILED SCHEDULE OF VALUES (NOT REQUIRED)

1.4 CHANGES TO SCHEDULE OF VALUES

- A. In the event that the CONTRACTOR and OWNER agree to make adjustments to the original Schedule of Values because of inequities discovered in the original accepted detailed Schedule of Values, increases and equal decreases to values for activities may be made.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

-END OF SECTION-

**SECTION 13270  
BIOFILTER ODOR CONTROL SYSTEM**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. CONTRACTOR shall furnish and install the biofilter media indicated in the Contract Documents. The work shall be installed, complete and operable, in accordance with the Contract Documents.

- B. Related Sections include the following:

1. Division 1 Section 01030 – Special Project Constraints
2. Division 1 Section 01300 – Contractor Submittals

**1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS**

- A. All codes, as referenced herein and applicable in the State of Utah.

**1.4 SUBMITTALS**

- A. Biofilter Shop Drawings: CONTRACTOR shall submit complete shop drawings of all the odor control equipment specified in this section in accordance with Section 01300 – Contractor Submittals. The biofilter odor control equipment shop drawing submittals shall include a submittal for the following:

1. Material gradation reports shall be submitted for bark media. Bark gradation reports may come from supplier as a reference to bark size and screening method.
2. Material Samples: A one cubic foot material sample shall be submitted for the bark biofilter media. All samples shall be received by ENGINEER at least 14-days prior to their scheduled delivery at the jobsite. Samples shall be marked with the source of the material, suppliers name and contact information.

**1.5 QUALITY ASSURANCE**

- A. Prior to beginning the biofilter rehabilitation project, CONTRACTOR shall test the fan for power draw, airflow, suction and discharge pressure, noise, vibration, overheating, etc. Compliance shall be based on the equipment manufacturer's specifications and all applicable codes and standards.

- B. CONTRACTOR shall work with ENGINEER and be responsible for the successful startup and testing of the biofilter odor control system. CONTRACTOR shall provide all necessary facilities, manpower, tools to move bark media as needed and to adjust sprinkler heads.

- C. At the conclusion of the tests, CONTRACTOR shall submit a test report to ENGINEER, which shall include the air flow and pressure to each of four biofilter cells. Measurements shall be performed during normal operating conditions with the odor control system fully operational. The test report shall include the airflow rates (cfm), static pressures (inches W.C.) for each cell, and motor amperages for the biofilter fan motor. The test report will be reviewed for accuracy and approved by ENGINEER prior to the final acceptance of any of the odor control system.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. CONTRACTOR shall add additional screened bark and fines to the the existing Headworks biofilter & Solids Disposal biofilter.

### **2.2 BIOFILTER MEDIA**

- A. CONTRACTOR shall provide a biofilter media of the depth and composition specified herein. The primary media shall consist of Douglas Fir bark as specified in Paragraph 2.3 B. The media shall be provided as a homogeneous mixture having a pH from 6-8. Bark fines Paragraph 2.3 D will added to the perimeter only. Bark fines will not be mixed into the virgin bark under any circumstance. Bark fines shall be applied around the perimeter of the walls. Bark fines shall be materials left over from the on-site bark screening operation.
- B. Bark material shall consist primarily of fresh large 100% Douglas Fir bark chips. A minimum 90% by volume of the bark chips shall be 3-inch to 6-inches in the greatest dimension and approximately ¾ to 1-inch thick. The Bark shall be virgin uncomposted material screened and stored for less than 60 days. Up to 10% of the Bark may be wood chips left over from the debarking process. Wood chips shall NOT be added to the bark under any circumstances. Up to 5% of the Bark Chips may be pieces less the 1-inch nominal diameter; however, most of these will be removed during onsite screening process. Wood chips shall have same size and shape requirements as the Bark. Similar high-density pine or fir bark may be used if approved by ENGINEER. Bark chips shall be screened 1/2-inch plus before installing in the biofilter. Screening shall be conducted on site to remove fine material from the media (Note that the Large bark settles approximately 15 to 25% during transport and fine material typically exceeds 5% of the volume of clean bulk bark) Screening shall be performed using a portable variable speed trommel screen or Equal. Screening shall by sufficiently slow to remove greater than 95% of the 1-inch minus material from the Bark shipments. Bark that does not meet specifications will be rejected and rescreened. No exceptions. Composted wood chips or bark chips shall not be used. Bark shall be placed without the use of rock slingers, conveyors or other "throwing" type material movers. ENGINEER shall be notified 7 days prior to the Bark screening and installation.
- C. Fine Biofilter Material: Bark fines from the screening process in Paragraph 2.3 B shall be used where indicated. If sufficient bark screenings are not available, then stabilized Yard Waste Compost shall be used. Yard waste compost shall be the product of a thermophilic aerobic decomposition process. It shall be subjected to a minimum of 60

days of thermophilic conditions, and be adequately stabilized to be free of odors. Tub ground yard waste may be allowed if screened and cured such that it is no longer self-heating. The material shall be graded so it passes through a 3/8-inch mesh screen. Compost must have a pH of 6 to 8. The compost source shall be subject to review by ENGINEER, compost from biosolids composting is not allowed. All compost shall be stabilized so that it is no longer self-heating. Bark fines and yard waste compost shall be friable and free of stones and objectionable debris and dirt of any kind.

## 2.3 IRRIGATION SYSTEM AND CONTROLS

- A. The drip irrigation system will need to be removed, protected, and replaced once all of the bark and wedge have been installed.
- B. Sprinkler systems will need to be protected and kept in operation during the placement of bark and wedge.

## PART 3 - EXECUTION

### 3.1 INSTALLATION OF BIOFILTER

- A. Installation of each biofilter shall be in full conformity with the original drawings. Drawings of each biofilter will be made available from the OWNER.
- B. The biofilter media shall be placed loose, with no mechanical compaction. Rock slingers or similar "throwing" type material movers are not allowed.
- C. 24" of new bark material in noncompacted depth shall be placed on the Solids Disposal biofilter.
- D. 18" of new bark material in noncompacted depth shall be placed on the Headworks biofilter.

-END OF SECTION-