Canyon Fuel Company, LLC
A Subsidiary of Wolverine Fuels Holding, LLC

Sufco Mine
John D. Byars
General Manager
397 South 800 West
Salina, Utah 84654
(435) 286-4400
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Received
6-5-20

May 26, 2020

Permit Supervisor, Utah Regulatory Program
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, UT 84114-5801

Re: Midterm Review – Clean Copies, Task ID# 6136, Canyon Fuel Company, LLC, Sufco Mine, C/041/002

Dear Sirs:

Enclosed with this letter are clean copies of revisions to information in the Waste Rock Site permit, Appendix 5-9 Bond and revisions to Chapters 2 and 3 of the Sufco M&RP.

Please contact Vicky Miller at (435)286-4481 or 636-2887 if there are questions or additional information is needed.

Sincerely,

Vicky S Miller
for
John D. Byars
General Manager
Sufco Coal Mine

Encl.

Cc: DOGM Correspondence File

# APPLICATION FOR COAL PERMIT PROCESSING

Permit Change X New Permit ☐ Renewal ☐ Exploration ☐ Bond Release ☐ Transfer ☐

**Permittee:** Canyon Fuel Company, LLC
**Mine:** Sufco Mine **Permit Number:** C/041/002
**Title:** Midterm Review Clean Copies, Task ID# 6136
**Description,** Include reason for application and timing required to implement:

**Instructions:** If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

☐ Yes X No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ ☐ increase ☐ decrease.
☐ Yes X No 2. Is the application submitted as a result of a Division Order? DO# _____
☐ Yes X No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes X No 4. Does the application include operations in hydrologic basins other than as currently approved?
☒ Yes No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes X No 6. Does the application require or include public notice publication?
☐ Yes X No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
☐ Yes X No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes X No 9. Is the application submitted as a result of a Violation? NOV # _____
☐ Yes X No 10. Is the application submitted as a result of other laws or regulations or policies?
*Explain*: _____
☐ Yes X No 11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes X No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
☐ Yes X No 13. Does the application require or include collection and reporting of any baseline information?
☐ Yes X No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
☒ Yes No 15. Does the application require or include soil removal, storage or placement?
☒ Yes No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
☐ Yes X No 17. Does the application require or include construction, modification, or removal of surface facilities?
☐ Yes X No 18. Does the application require or include water monitoring, sediment or drainage control measures?
☒ Yes No 19. Does the application require or include certified designs, maps or calculation?
☐ Yes X No 20. Does the application require or include subsidence control or monitoring?
☒ Yes No 21. Have reclamation costs for bonding been provided?
☐ Yes X No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
☐ Yes X No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

**Please attach one (1) review copy of the application.**

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

WAYNE SQUIRE — HR DIRECTOR 5/22/20
Print Name — Sign Name, Position, Date

Subscribed and sworn to before me this 22nd day of May, 2020

Jill White
Notary Public
My commission Expires: 3/28, 2024
Attest: State of Utah } ss:
County of Sevier

JILL WHITE
Notary Public
State of Utah
My Commission Expires 03/28/2024
COMMISSION NUMBER 711129

| For Office Use Only: | Assigned Tracking Number: | Received by Oil, Gas & Mining |
|---|---|---|
| | | |

# APPLICATION FOR COAL PERMIT PROCESSING
## Detailed Schedule Of Changes to the Mining And Reclamation Plan

**Permittee:** Canyon Fuel Company, LLC
**Mine:** Sufco Mine **Permit Number:** C/041/002
**Title:** Midterm Review, Task ID# 6136 - Clean Copies

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

| | | | DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED |
|---|---|---|---|
| ☐ Add | ☐ Replace | ☐ Remove | Waste Rock Disposal Site |
| ☐ Add | ☒ Replace | ☐ Remove | Map 4D |
| ☐ Add | ☒ Replace | ☐ Remove | Chapter 2, Page 2-4 |
| ☐ Add | ☐ Replace | ☐ Remove | |
| ☐ Add | ☐ Replace | ☐ Remove | MRP - Mine Site |
| ☐ Add | ☒ Replace | ☐ Remove | Chapter 2, Pages 2-12, 2-21 thru 2-29 |
| ☐ Add | ☒ Replace | ☐ Remove | Chapter 3, Pages 3-v, 3-28,3-48C, 3-48D and add 3-48E |
| ☒ Add | ☐ Replace | ☐ Remove | Appendix 3-6, add information to the back of existing information |
| ☐ Add | ☒ Replace | ☐ Remove | Appendix 5-9 |
| ☐ Add | ☐ Replace | ☐ Remove | |
| ☐ Add | ☐ Replace | ☐ Remove | |
| ☐ Add | ☐ Replace | ☐ Remove | |
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| ☐ Add | ☐ Replace | ☐ Remove | |

| **Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.** | **Received by Oil, Gas & Mining** |
|---|---|
| May 26, 2020 | |

# WASTE ROCK DISPOSAL SITE

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**Topsoil and Subsoil Storage Piles at Waste Rock Disposal Site (Pre-Expansion - Historic)**

| **TOPSOIL** | | | | |
|---|---|---|---|---|
| Description | Volume (cy)[(a)] | Area (acres) | Distribution Location | Location Post Expansion |
| 1A | 8.2 | 1.19* | Mine Site | ## |
| 1B | 456.9 | 0* | Waste Rock | # |
| Topsoil Storage Combined Pile (2, 3 & Lift 5 Exp.)*** | 4,114 | 0.24 | Waste Rock | # |
| Sediment Pond | 634.9 | 0.293 | Waste Rock | # |
| Lift # 4 Area** | 1847 | 0.34 | Waste Rock | # |
| TOTAL | 7061 | NA | NA | |
| **SUBSOIL** | | | | |
| Subsoil | 11,260 | 0* | Mine Site | ## |
| Soil Nail Wall | 487 | 0* | Mine Site | ## |

(a) Estimated Quantity

* The acreages for Piles 1A,1B and Subsoil are combined

** Topsoil stored in piles on top of Lift #4, estimated depth of stored topsoil - 3.5 feet

***Topsoil excavated for the Lift 5 Expansion was combined into a single pile with piles 2 and 3, Figure 2A shows dimensions and cross sections of this pile.

# Used to reclaim Lift 5 or moved to large soil pile north of new sediment pond during the construction of Phase I.

## Stored in the WRDS soil storage piles north of southern sediment pond. When the waste rock site is expanded/filled in the future (post 2019) or reclaimed, this quantity of soils will be allocated and kept for use in the reclamation of the Sufco Mine site.

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## LEGEND

- EXISTING GROUND MAJOR CONTOUR (10 FOOT)
- EXISTING GROUND MINOR CONTOUR (2 FOOT)
- EXISTING ROAD
- EXISTING PAVED ROAD
- EXISTING RIPRAP
- EXISTING DITCH
- PROPOSED ROAD
- PROPOSED ANCILLARY ROAD
- EXISTING CULVERT
- PROPOSED CULVERT
- EXISTING SIGN
- PROPOSED DRAINAGE BERM
- PROPOSED DITCH
- DISTURBED AREA BOUNDARY
- PROPERTY BOUNDARY
- TOPSOIL / SUBSOIL STORAGE BOUNDARY
- EXISTING TREELINE

| REVISIONS | | | | |
|---|---|---|---|---|
| NO. | DATE | REQ. BY | DWG. BY | REMARKS |
| 1 | 8/6/2014 | VW | JA | PLAT UPDATES |
| 2 | 9/9/2014 | VW | JA | PLAT UPDATES |
| 3 | 6/9/2016 | VW | JA | PLAT UPDATES |
| 4 | 6/18/2016 | VW | JA | PLAT UPDATES |
| 5 | 10/18/2016 | VW | JA | PLAT UPDATES |
| 6 | 03/05/2017 | BB | JA | DISTURBED AREA BOUNDARY UPDATE |
| 7 | 1/08/2020 | BB | BB | MRP - Midterm |


Canyon Fuel Company, LLC
SUFCO Mine
567 South 100 East - Salina, UT 84654
(435) 286-7880 Phone
(435) 286-4499 Fax


# WASTE ROCK PILE
## OPERATIONAL PHASES OF PILE CONSTRUCTION

| PEN TBL: | SCALE: | DATE: | DRAWN BY: | ENGINEER: | CHECKED BY: | SHEET NO. |
|---|---|---|---|---|---|---|
| _1Stncrd-HP11100.ctb | 1" = 100' | 1/08/2020 | BB | BB | | MAP 4D |
| SHT SET: 1406-120 | PROJECT NUMBER: 1406-120 | FILE NAME: | | | | #9 |

NOTE:
TOPOGRAPHIC DATA BASED ON 2016 AERIAL SURVEY


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# CHAPTER 2

# SOILS

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Where topsoil thicknesses of less than 6 inches are encountered, the topsoil and underlying unconsolidated materials (up to 6 inches total) will be removed and stockpiled together; the entire mixture will be treated as topsoil in compliance with R645-201-234.300.

In the Link Canyon Substation No. 1 disturbed area, the A and C horizons will be removed together from the topsoil salvage area and stored on the pad outslope as a single soil resource. A 3 inch wide non-biodegradable polyethylene underground warning tape marker flagging will be utilized on an eight foot centerline square grid pattern to mark the proximity of the original, undisturbed topsoil surface area beneath the side-cast materials to help prevent surface damage during reclamation and excavation of the side-cast topsoil. The maximum projected volume of topsoil salvage based on the soil survey depth of 20 inches and the projected topsoil salvage area of 0.08 acres is 224 cubic yards. The projected original, undisturbed topsoil surface area that will be marked with flagging tape (0.10 acres) and the projected cut Topsoil salvage area (0.08 acres) are delineated by the Cut and Fill Boundary line as shown on Plate 5-2D. The salvaged topsoil will be removed as a separate layer, segregated and placed on the south end of the pad outslope. The remaining excavated material in the deeper cuts will be used as fill material for the access road and the north end of the substation pad. Substation #1 was never constructed and therefore when the site was examined in 2010, there was no topsoil stockpile or fill material available on site.

The soil to be removed at the Link Canyon Substation No. 2 will include the A horizons and a portion of the C horizon. As described in Appendix 2-6, six mapped soil units exist in the No. 2 pad area. Following is an estimated volume of soil to be salvaged and placed in the topsoil storage pile based on the area of each soil unit and average depth of salvage for each unit area. The actual total volume of soil stored may differ from the total provided below and is dependent upon conditions found during construction.

| Soil Map Unit | Estimated Thickness (ave) | Mapped Area | Volume |
|---|---|---|---|
| A | 24-inches | 612 sf | 24 CY |
| B | 8-inches | 579 sf | 14 CY |
| C | 6-inches | 473 sf | 9 CY |
| D | 36-inches | 600 sf (approx.) | 67 CY |
| E | 8-inches | 28 sf | 1 CY |
| F | 5-inches | 198 sf | 3 CY |
| | | TOTAL | 118 CY |

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Immediately adjacent to the subsoil pile at the waste rock site is stored 756.3 cubic yards of topsoil collected from beneath the footprint of the subsoil pile. This total represents the removal of approximately 12" of topsoil prior to placement of the subsoil.

### 2.3.2 Topsoil and Subsoil Removal

#### 2.3.2.1 Topsoil Removal and Segregation

All topsoil thicker than 6 inches will be removed as a separate layer from the subsoil, segregated, and stockpiled separately. Topsoil less than 6 inches thick will be removed according to Section 2.3.2.3. However, in the areas of the Link Canyon Substation Nos. 1 and 2 pads, all soil will be removed and stored in one area as a single soil resource. At substation pad No. 1, the maximum projected volume of topsoil salvage based on the soil survey depth of 20 inches and the projected topsoil salvage area of 0.08 acres is 224 cubic yards. The salvaged topsoil will be removed as a separate layer, segregated and placed on the south end of the pad outslope. The remaining excavated material in the deeper cuts will be used as fill material for the access road and the north end of the substation pad. At substation No. 2, the volume of soil projected to be removed is 118 CY. Substation #1 was never constructed, as the site was examined in 2010 an assumption was made that the soils had been disturbed but not removed. The area appeared to have been roughened and has revegetated. There is not a soil stockpile at the Substation #1 site.

#### 2.3.2.2 Poor Topsoil

Topsoil that is of an insufficient quantity, or of poor quality (for sustaining vegetation) will be removed as a separate layer and segregated. Such operations will be done with approval of the UDOGM, and in compliance with R645-301-233.100 (Section 2.3.3.1).

#### 2.3.2.3 Thin Topsoil

Topsoil to be removed that is less than 6 inches thick will be removed with the immediately underlying unconsolidated materials (up to a total of 6 inches). This material mixture will be treated as topsoil and stockpiled together without any horizon segregation.

#### 2.3.2.4 Minor Disturbances Not Requiring Topsoil Removal

**Small Structures.** Topsoil will not be removed prior to construction resulting in only minor disturbances as described in R645-301-232.400. Such construction activity includes work on small structures such as power poles, signs, fence lines, and other small structures which do not significantly disturb the site.

**Vegetation.** SUFCO Mine will not remove topsoil for minor disturbances where such activity will not destroy vegetation or cause erosion.

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#### 2.3.2.5 Subsoil Segregation

Due to the poor quality of the subsoil, the B and C soil horizons will not be individually segregated and stockpiled. The topsoil will be segregated and stockpiled separately from the subsoil (B & C horizons) except in the area of the Link Canyon Substations Nos. 1 and 2, and Link Canyon Mine Portal. These soils will be salvaged as specified in Section 2.3.2.1

#### 2.3.2.6 Timing

Where possible, soil removal will take place after all vegetation has been removed that could interfere with soil salvage. Surface disturbance activities will take place after the soil has been removed.

#### 2.3.2.7 Topsoil and Subsoil Removal Under Adverse Conditions

In areas of surface disturbance, topsoil and subsoil will be each removed separately and segregated, except where natural conditions render operations hazardous.

**Conventional Machines.** In localities where steep grades, adverse terrains, severe rockiness, limited depth of soils, or other adverse conditions exist that render soil removal and segregation activities using conventional machines hazardous, soils will not be salvaged and stockpiled.

**Substitute Topsoil.** Importing of substitute topsoil is not expected to be required. The applicant will evaluate importation of topsoil with the regulatory authority if deemed necessary based upon revegetation success.

### 2.3.3 Topsoil Substitutes and Supplements

#### 2.3.3.1 Overburden Materials Supplementing and/or Replacing Topsoil

Selected overburden materials may be used as a supplement to topsoil during reclamation operations. If overburden materials are used, the operator commits to demonstrating, to the UDOGM prior to topsoil emplacement, that the resultant soil is equal to or more suitable than the original soil in supporting revegetation efforts.

#### 2.3.3.2 Suitability of Topsoil Substitutes and Supplements

At the time (1941) the Convulsion Canyon operations began and surface facilities were constructed, no topsoil was segregated and saved. Topsoil and other fill material was used in construction of the surface facilities pad. This material will be excavated and used as a topsoil substitute after recontouring of the site during reclamation. The total quantity of this topsoil substitute required for a 6-inch soil layer will come from within the present mine facility pad fill and from slopes at the mine which are restored during the active life of the mine. A random composite sample will be taken for every 2000 tons as the topsoil is collected. Topsoil will be collected into

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a pile for storage during the recontouring process and spread over the disturbed area prior to preparation for seeding.

#### 2.3.3.3 Physical and Chemical Analyses

Physical and chemical analyses of the soil material will be conducted during collection operations to determine if/what supplemental fertilizer is needed. The material has already been tested where it is exposed and a report describing its vegetation potential appears in Appendix 2-3.

The applicant will utilize the proposed topsoil subsequent to approval by the regulatory authorities.

**Certification of Reclamation Topsoil Suitability.** The suitability of the substitute topsoil shall be certified by an approved laboratory in accordance with at least one of the following: Soil Conservation Service (SCS) published data, SCS technical guides, state agricultural agency, Tennessee Valley Authority, BLM - USFS published data, physical and chemical analyses results, field-site trials, and greenhouse tests.**2.3.3.4 Testing of Substitute Topsoil**
Only the substitute topsoil used in lieu of, or in conjunction with, on-site overburden and topsoil will be tested as described in Section 2.3.3.3.

### 2.3.4 Topsoil Storage

#### 2.3.4.1 Topsoil Stockpiling

Topsoil removed will be stockpiled for later use in reclamation operations when it is impractical to promptly redistribute the topsoil on regraded areas.

Presently, the topsoil storage piles at the SUFCO Mine are of the small amounts of topsoil removed from the substation and sediment pond areas (Section 2.3.1.4).

#### 2.3.4.2 Stockpiled Topsoil

| Stockpiled Volumes at Sufco Mine Site * | | |
|---|---|---|
| Location | Type | Volume (CY) |
| Substation Bin Wall | Subsoil | 2160 |
| Upper Sediment Pond | Topsoil | 1200 |
| Substation Pad | Topsoil | 27 |



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| | | |
|---|---|---|
| Overflow Pond (Lower) | Topsoil | 1488 |
| Volumes of Soils Stored at Waste Rock Disposal Site for distribution at Mine Site | | |
| Waste Rock Disposal Site | Topsoil | 8.2 |
| Waste Rock Disposal Site | Subsoil | 11,260 |
| Waste Rock Disposal Site | Subsoil | 487 |
| | | |
| Link Canyon Site* | | |
| Portal | Topsoil | 38 |
| Substation #2 | Topsoil | 84** |

* Per Sections 2.3.3.3, 2.3.1.4, 2.3.4.2 and Plates 5-2B, 5-2D, 5-2E,5-2F

**Quantity estimated by measurement of existing pile, actual salvage volume not available.

Stable Stockpile Site. Stockpiled materials will be placed on a stable site within the permit area. The topsoil pile containing the topsoil removed from the sediment pond site was stockpiled in a small area exemption pile on a stable surface area (0.105 acres) below the sediment pond (Section 2.3.1.4). Topsoil removed for the construction of the overflow pond is stockpiled southwest of the overflow pond, see Plate 7-4A, in a small area exemption pile on a stable surface area (0.141 acres) The topsoil pile containing the soil removed from the substation area (0.02 acres) is located in a small area exemption pile on the south side of the substation. Topsoil removed from the Link Canyon Substation No. 1 will be located on the outslope below the pad as shown on Plate 5-2D. Topsoil removed from the Link Canyon Substation No. 2 will be stored in the soil stockpile as shown on Plate 5-2E. Topsoil removed from the Link Canyon Mine Portal area will be stored in the soil stockpile as shown on Plate 5-2F.

**Protection from Contaminants and Compaction.** Stockpiled topsoil shall be protected from contaminants and unnecessary compaction. To protect the topsoil from contaminants and unnecessary compaction that could interfere with vegetation, the sediment pond topsoil and the

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substation stockpiles are isolated with no means of access from the main surface area (Section 2.3.1.4). A topsoil storage sign was installed at the base of both stockpiles and will be placed on the Link Canyon Substation 2 and Link Canyon Mine Portal storage areas.

**Wind and Water Erosion Protection.** All topsoil stockpiles will be protected from wind and water erosion by prompt establishment and maintenance of a vegetative cover (standard seed mix in section 3.4.1.2 minus the shrubs and trees). The sediment pond and substation topsoil stockpiles are protected from wind and water erosion by the establishment of a protective vegetative cover. The Link Canyon Portal topsoil pile will be protected by adding vegetative material removed during site construction. Grasses native to the area will be planted either through seeding or by obtaining and planting plugs from nearby undisturbed sites. A silt fence was installed below the stockpiles to help trap sediment runoff from the stockpiles.

**Topsoil Redistribution.** All stockpiled topsoil will not be moved until redistributed during reclamation operations unless approved by the UDOGM.

#### 2.3.4.3 Topsoil Stockpile Relocation

Stockpiled topsoil in jeopardy of being detrimentally affected in terms of its quantity and quality by mine operations may be temporarily redistributed after approval from the UDOGM.

**Host Site.** Topsoil relocation may occur provided that such action does not permanently adversely affect topsoil of the host site.

**Topsoil Suitability.** Topsoil relocation may occur provided the topsoil is retained in a condition more suitable for redistribution than if stockpiled.**********

## 2.40 Reclamation Plan

### 2.4.1 General Requirements

Topsoil redistribution, amendments, and stabilization are discussed in Sections 2.4.2, 2.4.3, and 2.4.4, respectively.

### 2.4.2 Soil Redistribution

#### 2.4.2.1 Soil Redistribution Practices

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In addition to the redistribution practices discussed herein, the following action will be taken. Within the disturbed areas the contaminated surface soil layer will be removed and stored during the final reclamation process. The contaminating gravels, crushed stone, and other contaminates will be buried along with the structure foundations.

**Soil Thickness.** Topsoil will be distributed on all areas with slopes less than 1h:1.5v that are to be reclaimed. Topsoil redistribution procedures will ensure an approximate uniform thickness of six inches. During this time period, the topsoil will be allowed to settle and attain equilibrium with its natural environment. This procedure will be followed for all areas in which facilities such as road beds, mine pads, and building sites are to be abandoned.

**Compaction.** To prevent compaction of topsoil, soil moving equipment will refrain from unnecessary operation over spread topsoil. Front-end-loaders and other wheel mounted equipment may be used to transport and dump topsoil. However, to minimize compaction, only track-mounted equipment (example bulldozer) will be used to spread the topsoil. The topsoil will be disced or ripped, surface roughened, pitted, and/or deep gouged prior to seeding to help alleviate soil compaction, increase soil stability, and to increase water harvesting.

In the 300,000 gallon fire water tank area, the concrete foundation of the water tank will be broken up and placed against the base of the cutslope. The fill material used to create the foundation pad will be used first to backfill the tank area. The remainder of the fill necessary for reclamation will be obtained from the subsoil stockpile at the waste rock site. Finally, the topsoils will be returned to the site for distribution. The thickness of the redistributed topsoil should roughly equal six inches, the thickness originally removed.

**Erosion.** Procedures will be exercised to ensure the stability of topsoil on graded slopes to guard against erosion during and after topsoil application. Erosion control measures will include surface roughing, pitting, deep gouging, and/or placement of organic matting on slope areas thought to be unstable.

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#### 2.4.2.2 Regrading

Since the mine is over 55 years old, there are no private or public topographic maps which can be used to accurately determine the original geometric configuration of the canyon. Prior to topsoil redistribution, the disturbed area will be regraded to agree with final reclamation topography (Chapter 5 and Plate 5-3).

The postmining topography was designed by Sergent, Hauskins & Beckwith's (SH&B) (Appendix 2-4). The cut and fill quantities are 74,734 and 71,173 yards, respectively (Appendix 2-5). These values supersede those presented in Appendix 2-4.

On slopes less than 1.5h:1v, regraded land will be scarified by a ripper-equipped tractor or with other suitable equipment. The surface will be ripped to a suitable depth to reduce surface compaction, provide a roughened surface to assure topsoil adherence, and promote root penetration.

#### 2.4.2.3 Topsoil Redistribution on Impoundments and Roads

This regulation does not apply as the sedimentation pond and dam will be dismantled and reclaimed with the other surface disturbed areas. Similarly, reclamation of abandoned roads will also follow the same technique as for other disturbed areas.

### 2.4.3 Soil Nutrients and Amendments

Soil nutrients and amendments will be applied to the redistributed soil as necessary, to establish the vegetative cover. Soils will be analyzed prior to redistributing, following the Division's Guidelines for Management of Topsoil and Overburden, to determine what fertilizers and amendments will promote successful revegetation and the appropriate application rates.

### 2.4.4 Soil Stabilization

#### 2.4.4.1 Protection and Stabilization of Surface Areas

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All reclaimed areas will be stabilized to control erosion by application of mulch and regrading of rills and gullies.

The Link Canyon Substation ~~s Nos. 1 and 2~~ and Portal area reclaimed pads, access roads, and affected slopes will be pitted or deep gouged and have the large rocks and boulders and slash previously removed spread out over the surface to help increase soil stability and will be fenced to prevent damage from cattle grazing during reclamation.

#### 2.4.4.2 Mulch Application

Mulch will be applied to all areas that have been regraded and covered with soil to stabilize the topsoil. For further discussion of revegetation practices to be utilized see Chapter 3.

#### 2.4.4.3 Rills and Gullies

**Postmining Land Use and Revegetation**. Rills and gullies that disrupt the postmining land use or reestablishment of vegetative cover will be regraded, the topsoil replaced, and reseeded.

**Water Quality.** Rills and gullies that contribute to the degradation of stream quality will be regraded, receive new topsoil, and be revegetated.

## 2.50 Performance Standards

### 2.5.1 Topsoil, Subsoil, and Topsoil Supplements Management

All topsoil, subsoil, and topsoil supplements shall be managed as outlined in Sections 2.30 and 2.40.

### 2.5.2 Stockpiled Topsoil and Subsoil

All stockpiled topsoil and subsoil will be managed according to plans outlined in Sections 2.30 and 2.40.

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REFERENCES:

Johnson, Wm. M., 1975, Soil Taxonomy, A Basic System of Soil Classification For Making and Interpreting Soil Surveys, Supt. of Doc. S.C.S., Washington, D.C.

U.S. Department of the Interior, Final Supplemental Impact Statement for Leasing and Underground Mining of the Greens Hollow Federal Coal Lease Tract UTU-84102, Sanpete and Sevier Counties, Utah, February 2015

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# CHAPTER 3

# BIOLOGY

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## LIST OF APPENDICES

(Appendices appear in Volume 5)

Appendix

3-1 Report of 1983 Field Investigations

3-2 Aquatic Resource Inventory of Southern Utah Fuel Company Permit Area

3-3 Wildlife Assessment of the Southern Utah Fuel Company Mining Property and Adjacent Areas

3-4 Raptor and General Avifauna Studies

3-5 Fauna of Southeastern Utah and Life Requisites Regarding their Ecosystems

3-6 Vegetation Information Guidelines, Appendix A, Reference Area Reports and Plate

3-7 Power Line Correspondence

3-8 Bat Survey for the SUFCO Mine

3-9 Vegetation and Wildlife of the Pines Tract Project.

3-10 Monitoring and Mitigation Plan for Mining Under the East Fork of Box Canyon

3-11 Muddy Creek Technical Report-Wildlife

3-12 Mexican Spotted Owl Survey Muddy Tract

3-13 Vegetation and Wildlife of the West Coal Lease Modifications

3-14 Monitoring and Mitigation Plan for Undermining the South Fork of Quitchupah 2R2S Block "A" and 3R2S Block "B"

3-15 3R4E & 4R4E Reports (Confidential)

3-16 Greens Hollow Tract

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#### 3.2.2.3 Fish and Wildlife Service Review

If requested, the applicant authorizes the release of information pertaining to Section 3.2.2 and 3.3.3 to the U.S. Fish and Wildlife Service Regional and Field office for their review.

### 3.2.3 Maps and Aerial Photographs

The lease area was mapped by use of a mosaic of aerial photographs and assured by ground inspection. Vegetation sampling locations/reference areas are shown on Plate 3-1 and reference areas on a drawing in Appendix 3-6.

**Greens Hollow**. To the best of the applicants knowledge there are no reference areas, monitoring stations for fish and wildlife, habitat features, facilities used to protect and enhance fish/wildlife within the Greens Hollow Lease area. Land Uses for the Greens Hollow Lease are shown on Plate 4-1C.

#### 3.2.3.1 Location and Boundary of Proposed Reference Area

The locations of the vegetative reference areas are found on Plate 3-1 and reference areas on a drawing in Appendix 3-6. Area 13 shown on Plate 3-1 is to be used as a mapping unit only and not a reference area or validation site. Site 12 will be used as the reference area for the minesite sedimentation pond area.

#### 3.2.3.2 Elevations and Locations of Monitoring Stations

Raptor nest locations and elk and deer range are shown on Plate 3-2 and 3-3. The permit area contains no fish monitoring stations.

#### 3.2.3.3 Facilities for Protection and Enhancement

Sections 3.3.3.3 and 3.5.8.5 contain additional discussion pertaining to protective measures taken by the applicant in behalf of wildlife.

Power lines within the SUFCO Mine permit area were modified during the summer of 1981 to comply with the guidelines of REA Bulletin 61-10, "Power Line Contacts by Eagles and Other Large Birds" (see Plate 5-5 for the power pole locations).

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#### 3.2.3.4 Vegetation Type and Plant Communities

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Vegetative types and plant communities are outlined on Plate 3-1 of this application.

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is no change in the designated use of the sinkhole, in 2026 the ground cover and production of living plants on the revegetated area will be at least equal to that of the 100' square reference area to enable bond release. The reference area will be evaluated during the same year for comparison. If the production is not equal to the reference area the permittee will determine a course of action in consultation with biologists from the Fishlake National Forest and the Division.

**Sinkhole Geology, Soils, Slope and Vegetation**

The sinkhole is in area where the geologic formations transition from the Castlegate Sandstone formation to the Price River formation. According the Ecological Site Description (NRCS) the site contains Rizno Skos soils and further describes the soil as follows. "The soils in this site are very shallow to shallow and well to excessively drained. These soils are typically eolian deposits over residum derived dominantly from sandstone and interbedded shale. The soil temperature and moisture regimes are mesic and aridic respectively. Surface and subsurface textures are generally fine sands, fine sandy loams and loamy sands." The location of the sinkhole and reference area is relatively flat and slightly sloping to the west. Vegetation for the area on a large scale is shown on Plate 3-1, the qualified persons who did these studies are referenced on Plate 3-1. The information from Plate 3-1 has been enlarged on the figure included in Appendix 3-13. More specific description of the vegetation for the sinkhole and its immediately adjacent reference area is sagebrush, grasses and forbs with Ponderosa pines growing within a couple hundred feet of the western edge of the sinkhole and reference area site (see photos Appendix 3-13).

**Pre-Law Site Reclamation**

A reference area nor success standard is required by Surface Mining Control and Reclamation Act (SMCRA) regulation for pre-law mining disturbance. Reclamation of pre-law mining activities is not specifically outlined in regulation by Federal or State agencies. According to two available sources the establishment of ground cover adequate to control erosion seems to be designated as the best practice for coal mining surface disturbance created pre-law (1977).

1) Abandoned mine land (AML) sites are coal mining disturbances that were not adequately reclaimed before the passage of SMCRA on August 3, 1977. Areas disturbed by mining activity prior to SMCRA and never reclaimed to the requirements of SMCRA will be required to establish a minimum ground cover adequate to control erosion.

2) "For previously mined areas that were not reclaimed to the requirements of these Rules as a minimum ground cover of living plants shall not be less than can be supported by the best available topsoil or other suitable material in the re-affected areas, shall not be less than the ground cover

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existing before redisturbance, and shall be adequate to control erosion (Colorado Division of Minerals and Geology, Regulation of the Colorado Mined Land Reclamation Board for Coal Mining, Section 4.15.10 - 1).

Within the disturbed area boundary Sufco Mine has pre-law disturbance at Link Canyon of approximately 0.411 acres and approximately 25.7 acres at the mine site. It should not be assumed that the entire acreage is vegetated, at both locations, litter, rock, rock outcrops and bare ground are part of the pre-law disturbance within the disturbed area boundary. The majority of the pre-law area has reestablished vegetation providing varying degree of cover.

Within the year prior to the start of reclamation a vegetation survey will be completed on a one acre area representative of the pre-law mine site disturbance and a vegetation survey of 0.5 acres at Link Canyon. The most representative location for the survey will be agreed upon between the Permittee and Division. The survey will be used to create an erosion control success standard for the pre-law disturbance.

**Method Used for Planting and Seeding.** The disturbed area will be revegetated using various seeding methods such as hydroseeding, broadcasting or drilling. The best available economically feasible technology will be used at the time of seeding. The tree and shrub seedlings will be planted in clumps to maximize edge effect and provide more adequate cover for wildlife. At least five clumps per acre (consisting of 100 seedlings per clump) will be planted at intervals ensuring that 35 to 50 percent of each acre is covered.

**Mulching Techniques.** The mixture and application rate will be:

2000 lbs. of mulch per acre
100 lbs. of nitrogen per acre
100 lbs. of phosphorus per acre

The slopes and overfill areas will involve scarification and/or construction of small terraces on the slopes. The prepared slope will tend to hold moisture and to allow for places where plants can grow.

If hydro-seeding is used, first seed, tackifier and wood fiber mulch (400 lbs/acre) will be mixed in a water slurry and applied. The mulch acts as a buffer to protect the seed from damage while spraying and as a visual indicator to verify the area covered. Next, fertilizer, tackifier, and wood fiber mulch

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(2000 lbs/acre) will be mixed in a water slurry and applied. The seedlings of shrubs and trees will be placed through the hydro-mulch material.

The pond area should be reclaimed using similar methodology at the conclusion of the mining operation. See Section 3.5.5 for additional discussion.

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# APPENDIX 3-6

Vegetation Information Guidelines, Appendix A
Reference Area Reports and Plate

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# Vegetation & Sensitive Species of the Segregation Facility Area in Convulsion Canyon

at the
SUFCO Mine

in
Sevier County, Utah

Aerial view of the mine site and study area

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October 2014

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# Introduction

## Proposed Disturbances

Construction activities are planned to build a Segregation Facility at the SUFCO Mine, an underground coal mine located in Sevier County, Utah. In doing so, the construction will entail disturbances to portions of the resident plant communities that exist in and adjacent to Convulsion Canyon. Convulsion Canyon is situated in central Utah at the southern end of the Wasatch Plateau. Construction of the facility will impact native plant communities as well as other areas that have been disturbed previously by activities associated with mining and road building. The scope of this report is to provide quantitative data results from sampling those plant communities, both native and previously disturbed, that will be impacted by the proposed construction activities planned at the SUFCO Mine site.

## Reference Areas

As required by applicable state and federal regulations, once mining-related activities have terminated, final reclamation of the impacted areas is mandatory. Following revegetation and at the end of the "*Responsibility Period*", the restored plant communities are required to attain specific **revegetation success standards**. These standards are frequently derived by comparing the revegetated areas with native plant communities that are often situated near or adjacent to those that have been disturbed or proposed for disturbance. Before construction activities begin, these analogous communities, called *reference areas*, are quantitatively sampled along with those that are to be disturbed. The datasets of the areas are then compared to demonstrate their similarities (or differences). If the reference areas are approved, the communities will again be compared to determine whether or not the restored communities meet specific revegetation success standards following final reclamation.

This document reports the results of sampling in the proposed disturbed areas as well as the potential reference areas for the Segregation Facility. In addition, threatened, endangered and sensitive plant species were surveyed and addressed in the document.

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# Methods

## Quantitative Sampling

Sample methods used for this study were performed in accordance with the vegetation guidelines recommended by the State of Utah, Division of Oil, Gas and Mining (DOGM). Quantitative and qualitative data were recorded within the plant communities proposed for disturbance and their respective reference areas in June 2014 (see Map A).

## Sampling Design & Transect/Quadrat Placement

Sample transect lines were placed randomly within the boundaries of the proposed disturbed and reference areas. The transect placement technique was employed with the goal to adequately sample a representation of the entire site. Once the transects were established, quadrat locations for sampling were chosen using random numbers on the transect lines with the objective to record data without preconceived bias. The following data were then recorded.

## Cover & Composition

Cover estimates were made using ocular methods with meter-square quadrats. Species composition, cover by species, and relative frequencies were also assessed from the quadrats. Additional information recorded on the raw data sheets were notes such as: slope, exposure, grazing use, disturbance and/or other appropriate notes. Plant species nomenclature follows *A Utah Flora* (Welsh et al., 2008).

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## Woody Species Density

Density of woody plant species for the proposed disturbed and reference areas were estimated using the point-quarter distance method. In this method, random points were placed on the sample sites and measured into four quarters. The distances to the nearest woody plant species were then recorded in each quarter. The average point-to-individual

distance was equal to the square root of the mean area per individual. The number of individuals per acre was the end result of the calculations.

## Sample Size & Adequacy

Sampling adequacy for cover and density was attempted by using the formula given below.

$$nMIN = \frac{t^2 s^2}{(dx)^2}$$

where,

| | |
|---|---|
| *nMIN* | = minimum adequate sample |
| t | = appropriate confidence t-value |
| s | = standard deviation |
| x | = sample mean |
| d | = desired change from mean |

With the values used for "t" and "d" above, the goal was to meet appropriate sample adequacy values.

## Statistical Analyses

Student's t-tests were employed to compare the total living covers and total woody species densities of the proposed disturbed areas with their respective reference areas.

## Photographs

Color photographs of the sample areas were taken at the time of sampling and a subset of them have been submitted with this report.

## Threatened, Endangered & Sensitive Species

Prior to recording quantitative data on the plant communities, a sensitive plant species and

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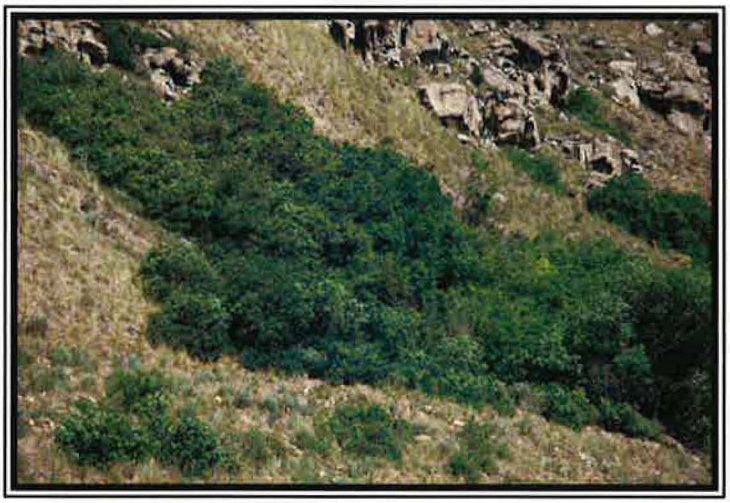
habitat survey was conducted. To initiate the studies in the area, database searches and literature reviews were conducted for potential species that are known to be rare, endemic, threatened, endangered or otherwise sensitive in the general area. Additionally, the current list of federally protected species for Sevier County, Utah was reviewed along with potential habitats for these species in the areas proposed for disturbance.

# Results

## Oak Brush Community (Proposed Disturbed)

The proposed disturbed oak brush community was located near the lower elevations and at several aspects of the study area (Map A). This undisturbed plant community was dominated by quite a large margin by scrub oak (*Quercus gambelii*) and bigtooth maple (*Acer grandidentatum*). These two woody species were most important in the overstory and understory cover as well as frequency of occurrences in the sample quadrats. However, other species present here included chokecherry (*Prunus virginiana*), Indian ricegrass (*Stipa hymenoides*), and mountain brome (*Bromus carinatus*). For a list of all plant species that occurred in the samples along with their cover and frequency values, refer to Table 1.



Oak Brush (proposed disturbed)

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The total living cover of the oak brush community was estimated at 72.17%, of which 46.33% came from understory and 25.83% from overstory (Table 2-A). Species composition of the understory cover was comprised of 87.28% trees & shrubs, 8.64% grasses and 4.09% forbs

(Table 2-B).

When woody species density was measured, results indicated that the most species were scrub oak, bigtooth maple and chokecherry. The total density in the oak brush community was estimated at 3,476 individuals per acre (Table 3).

## Oak Brush Reference Area

Another oak brush community in the general vicinity, but outside the proposed disturbed area, was chosen to represent future revegetation success standards (Map A). Like the community it was chosen to represent, the dominant species by cover and frequency were scrub oak and bigtooth maple. Other important species included snowberry (*Symphoricarpos oreophilus*) and Rocky Mountain juniper (*Juniperus scopulorum*). The complete list of species including their cover and frequency values is shown on Table 4.

Oak Brush Reference Area

The total living cover in this reference area was estimated at 70.00%. Of that total, 46.00% consisted of understory cover and the remaining 24.00% came from overstory (Table 5-A). Composition of the understory was 89.67% trees and shrubs, 7.00% forbs and 3.33% grasses (Table 5-B).

The total woody species density of the Oak Brush Reference Area was estimated at 4,926 plants per acre with the dominants that included scrub oak, bigtooth maple and snowberry (Table 6). Other woody species present in the samples included Rocky Mountain juniper and

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Utah serviceberry (*Amelanchier utahensis*).

## Pinyon-Juniper Community (Proposed Disturbed)

A native pinyon-juniper plant community has also been proposed for disturbance by the construction activities at the Segregation Facility (Map A). The cover and frequency values for this community show the dominant plants species to be Salina wildrye (*Elymus salinus*) and pinyon-pine (*Pinus edulis*) . Other species present in the sample quadrats were corymb buckwheat (*Eriogonum corymbosum*), broom snakeweed (*Gutierrezia sarothrae*), scrub oak and Utah juniper (*Juniperus osteosperma*). For a complete list of all species present, refer to Table 7.

Pinyon-Juniper (proposed disturbed)

The total living cover in the proposed disturbed pinyon-juniper community was estimated at 44.50%, with most of it coming from understory, or 36.00% of the total cover (Table 8-A). The composition of the understory cover consisted of 60.69% grasses, 36.17% trees/shrubs and 3.14% forbs (Table 8-B).

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Total woody species density in this community was estimated at 1,520 individuals per acre with the dominants here consisting of corymb buckwheat, pinyon-pine, rubber rabbitbrush (*Chrysothamnus nauseosus*), broom snakeweed, scrub oak and Utah juniper (Table 9). The remaining and less-common species present here included curl-leaf mountain mahogany (*Cercocarpus ledifolius*), and big sagebrush (*Artemisia tridentata*).

## Pinyon-Juniper Reference Area

The location of the native, undisturbed plant community chosen as a reference area is also shown on Map A. The dominant plant species by cover and frequency in this area were pinyon-pine, salina wildrye, scrub oak and Utah juniper (Table 10).

The total living cover for the Pinyon-Juniper Reference Area was 45.33%. Of that total, understory cover made up 32.33% and overstory 13.00% (Table 11-A). The composition consisted of only woody plants at 65.69% and grasses at 34.31% (Table 11-B).

Pinyon-Juniper Reference Area

The woody species density measurements showed the total to be 1,223 plants per acre and consisted of pinyon-pine, scrub oak, curl-leaf mountain mahogany, Utah juniper and corymb buckwheat (Table 12).

## Grassland Community (Proposed Disturbed)

Another plant community proposed for disturbance to create the Segregation Facility at the mine site was a grassland type (Map A). This community was established as

Grassland (proposed disturbed)



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a result of re-seeding after previous mine and road building activities were conducted. Consequently, community has therefore been altered from its natural or native state.

The grassland community was greatly dominated by crested wheatgrass (*Agropyron cristatum*). Other, but less-important taxa from a cover and frequency perspective, included Russian wheatgrass (*Elymus junceus*), bluebunch wheatgrass (*E. spicatus*), corymb buckwheat, rubber rabbitbrush and cheatgrass (*Bromus tectorum*). For the complete list of species encountered in the samples, refer to Table 13.

The total living cover in this community was estimated at 45.83%, all of which was understory (Table 14-A). The composition was comprised of grasses, trees/shrubs and forbs at 80.92%, 16.04% and 3.03%, respectively (Table 14-B).

There were relatively few woody plants established in this area. Total woody species density measurements showed only 147 individuals per acre with the most common species being corymb buckwheat and rubber rabbitbrush (Table 15).

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## Riparian/Willow Communities (Proposed Disturbed)

Other areas have been proposed for disturbance, but will not be reclaimed to their current condition (additional information about this is provided later in the report). One such area supports riparian vegetation and is located directly adjacent a small creek. The creek has been augmented by additional waters from mine-related activities and was dominated by willows (*Salix exigua* and *S. lucida*) and

Riparian (proposed disturbed)

Red-osier dogwood (*Cornus sericea*). Another area, located adjacent to the stream-side vegetation and slightly more upland, supported a similar community. This area was dominated by the same species, but at somewhat different proportions (Table 16). Map A shows these areas. The two areas were sampled separately, but because of their similarities, their datasets were lumped together.

The total living cover with their layers of overstory and understory combined was 134.33%; 80.67% was comprised of understory cover and 53.67% from overstory (Table 17-A). Composition of the understory cover for riparian/willow community consisted of 78.38% trees/shrubs, 18.78% forbs and 2.84% grasses (Table 17-B).

Total woody species density was measured to be 8,822 individuals per acre with the same three species mentioned above as the most common, however, Wood's rose (*Rosa woodsii*) was also an important species for this parameter (Table 18).

Willows (proposed disturbed)

**NOTE:** Community Comparisons, Sensitive Species review, Discussion and Summary follow the date summary tables below.

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Data Summary Tables

**Table 1: Segregation Facility at the SUFCO Mine. Living Cover and Frequency by Plant Species (2014).**

| Proposed Disturbed Oak Brush Community | | | n=30 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| OVERSTORY | | | |
| *Acer grandidentatum* | 11.67 | 21.58 | 26.67 |
| *Juniperus scopulorum* | 1.33 | 7.18 | 3.33 |
| *Pinus edulis* | 0.50 | 2.69 | 3.33 |
| *Prunus virginiana* | 0.83 | 4.49 | 3.33 |
| *Quercus gambelii* | 11.50 | 18.26 | 36.67 |
| | | | |
| UNDERSTORY | | | |
| **TREES & SHRUBS** | | | |
| *Acer grandidentatum* | 10.00 | 20.33 | 36.67 |
| *Juniperus scopulorum* | 0.83 | 3.67 | 6.67 |
| *Mahonia repens* | 0.83 | 2.91 | 10.00 |
| *Prunus virginiana* | 5.67 | 14.13 | 16.67 |
| *Quercus gambelii* | 21.83 | 22.82 | 60.00 |
| *Symphoricarpos oreophilus* | 0.67 | 2.81 | 6.67 |
| | | | |
| **FORBS** | | | |
| *Physaria chambersii* | 0.17 | 0.90 | 3.33 |
| *Smilacina stellata* | 1.33 | 6.32 | 6.67 |
| | | | |
| **GRASSES** | | | |
| *Bromus carinatus* | 1.17 | 4.78 | 6.67 |
| *Elymus junceus* | 0.67 | 3.59 | 3.33 |
| *Elymus salinus* | 1.00 | 3.00 | 10.00 |
| *Stipa hymenoides* | 2.17 | 6.01 | 13.33 |

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**Table 2: Segregation Facility at the SUFCO Mine. Total Cover and Composition (2014).**

| Proposed Disturbed Oak Brush Community | | n=30 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Overstory (O) | 25.83 | 21.95 |
| Understory (U) | 46.33 | 20.77 |
| Litter | 21.67 | 18.36 |
| Bareground | 18.63 | 15.82 |
| Rock | 13.37 | 12.17 |
| O + U | 72.17 | 9.19 |
| | | |
| **B. % COMPOSITION** | | |
| Trees/Shrubs | 87.28 | 22.11 |
| Forbs | 4.09 | 18.05 |
| Grasses | 8.64 | 15.28 |

**Table 3: Segregation Facility at the SUFCO Mine. Woody Species Density (2014).**

| Proposed Disturbed Oak Brush Community | n=30 |
|---|---|
| | Individuals/Acre |
| *Acer glabrum* | 28.97 |
| *Acer grandidentatum* | 927.01 |
| *Chrysothamnus nauseosus* | 115.88 |
| *Eriogonum corymbosum* | 28.97 |
| *Gutierrezia sarothrae* | 86.91 |
| *Juniperus scopulorum* | 57.94 |
| *Pinus edulis* | 86.91 |
| *Prunus virginiana* | 492.47 |
| *Quercus gambelii* | 1622.26 |
| *Symphoricarpos oreophilus* | 28.97 |
| | |
| TOTAL | **3476.28** |

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**Table 4: Segregation Facility at the SUFCO Mine. Living Cover and Frequency by Plant Species (2014).**

| **Oak Brush Reference Area** | | | n=20 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| OVERSTORY | | | |
| *Acer grandidentatum* | 6.50 | 16.21 | 15.00 |
| *Juniperus scopulorum* | 3.75 | 9.07 | 15.00 |
| *Quercus gambelii* | 13.75 | 18.70 | 40.00 |
| | | | |
| UNDERSTORY | | | |
| **TREES & SHRUBS** | | | |
| *Acer grandidentatum* | 11.75 | 17.70 | 50.00 |
| *Juniperus scopulorum* | 2.25 | 6.02 | 15.00 |
| *Pachystima myrsinites* | 3.25 | 7.12 | 20.00 |
| *Quercus gambelii* | 18.25 | 19.12 | 65.00 |
| *Symphoricarpos oreophilus* | 7.75 | 14.01 | 35.00 |
| | | | |
| **FORBS** | | | |
| *Ligusticum porteri* | 0.50 | 2.18 | 5.00 |
| *Osmorhiza obtusa* | 1.00 | 3.39 | 10.00 |
| *Smilacina stellata* | 0.75 | 2.38 | 10.00 |
| | | | |
| **GRASSES** | | | |
| *Stipa hymenoides* | 0.50 | 2.18 | 5.00 |

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**Table 5: Segregation Facility at the SUFCO Mine. Total Cover and Composition (2014).**

| Oak Brush Reference Area | | n=20 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Overstory (O) | 24.00 | 19.08 |
| Understory (U) | 46.00 | 18.55 |
| Litter | 38.50 | 19.56 |
| Bareground | 9.45 | 9.97 |
| Rock | 6.05 | 9.28 |
| O + U | 70.00 | 8.06 |
| | | |
| **B. % COMPOSITION** | | |
| Trees/Shrubs | 89.67 | 23.44 |
| Forbs | 7.00 | 12.76 |
| Grasses | 3.33 | 14.53 |

**Table 6: Segregation Facility at the SUFCO Mine. Woody Species Density (2014).**

| Oak Brush Reference Area | n=30 |
|---|---|
| *Acer grandidentatum* | 1108.26 |
| *Amelanchier utahensis* | 123.14 |
| *Juniperus scopulorum* | 184.71 |
| *Quercus gambelii* | 2832.23 |
| *Symphoricarpos oreophilus* | 677.27 |
| | |
| TOTAL | **4925.62** |

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**Table 7: Segregation Facility at the SUFCO Mine. Living Cover and Frequency by Plant Species (2014).**

| **Proposed Disturbed Pinyon-Juniper Community** | | | n=30 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| OVERSTORY | | | |
| *Cercocarpus ledifolius* | 1.17 | 6.28 | 3.33 |
| *Pinus edulis* | 6.83 | 15.03 | 23.33 |
| *Quercus gambelii* | 0.50 | 2.69 | 3.33 |
| | | | |
| UNDERSTORY | | | |
| **TREES & SHRUBS** | | | |
| *Chrysothamnus nauseosus* | 0.67 | 2.13 | 10.00 |
| *Chrysothamnus viscidiflorus* | 0.50 | 1.98 | 6.67 |
| *Eriogonum corymbosum* | 2.67 | 6.67 | 20.00 |
| *Gutierrezia sarothrae* | 2.67 | 7.82 | 13.33 |
| *Juniperus osteosperma* | 1.33 | 4.27 | 10.00 |
| *Mahonia repens* | 0.17 | 0.90 | 3.33 |
| *Pinus edulis* | 4.33 | 10.14 | 16.67 |
| *Quercus gambelii* | 1.67 | 6.24 | 6.67 |
| | | | |
| **FORBS** | | | |
| *Cryptantha flava* | 0.17 | 0.90 | 3.33 |
| *Penstemon palmeri* | 0.27 | 1.44 | 3.33 |
| *Physaria chambersii* | 0.50 | 1.50 | 10.00 |
| | | | |
| **GRASSES** | | | |
| *Elymus salinus* | 19.90 | 12.47 | 90.00 |
| *Stipa hymenoides* | 1.17 | 4.41 | 6.67 |

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**Table 8: Segregation Facility at the SUFCO Mine. Total Cover and Composition (2014).**

| Proposed Disturbed Pinyon-Juniper Community | | n=30 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Overstory (O) | 8.50 | 15.77 |
| Understory (U) | 36.00 | 9.78 |
| Litter | 14.67 | 11.69 |
| Bareground | 17.83 | 8.23 |
| Rock | 31.50 | 10.34 |
| O+ U | 44.50 | 13.12 |
| | | |
| **B. % COMPOSITION** | | |
| Trees/Shrubs | 36.17 | 35.31 |
| Forbs | 3.14 | 7.24 |
| Grasses | 60.69 | 34.61 |

**Table 9: Segregation Facility at the SUFCO Mine. Woody Species Density (2014).**

| Proposed Disturbed Pinyon-Juniper Community | n=30 |
|---|---|
| *Artemisia tridentata* | 12.66 |
| *Cercocarpus ledifolius* | 50.65 |
| *Chrysothamnus viscidiflorus* | 12.66 |
| *Chrysothamnus nauseosus* | 253.27 |
| *Eriogonum corymbosum* | 354.58 |
| *Gutierrezia sarothrae* | 202.62 |
| *Juniperus osteosperma* | 126.64 |
| *Pinus edulis* | 329.26 |
| *Quercus gambelii* | 177.29 |
| | |
| TOTAL | **1519.65** |

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**Table 10: Segregation Facility at the SUFCO Mine. Living Cover and Frequency by Plant Species (2014).**

| **Pinyon-Juniper Reference Area** | | | n=30 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| OVERSTORY | | | |
| *Cercocarpus ledifolius* | 1.83 | 5.55 | 10.00 |
| *Juniperus osteosperma* | 2.00 | 7.59 | 10.00 |
| *Pinus edulis* | 8.50 | 13.43 | 36.67 |
| *Quercus gambelii* | 0.67 | 3.59 | 3.33 |
| | | | |
| UNDERSTORY | | | |
| **TREES & SHRUBS** | | | |
| *Juniperus osteosperma* | 2.50 | 8.24 | 10.00 |
| *Pinus edulis* | 13.33 | 15.56 | 53.33 |
| *Quercus gambelii* | 5.83 | 13.11 | 20.00 |
| | | | |
| **FORBS** | | | |
| | | | |
| **GRASSES** | | | |
| *Elymus salinus* | 10.33 | 14.26 | 40.00 |
| *Stipa hymenoides* | 0.33 | 1.80 | 3.33 |

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**Table 11: Segregation Facility at the SUFCO Mine. Total Cover and Composition (2014).**

| Pinyon-Juniper Reference Area | | n=30 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Overstory | 13.00 | 13.88 |
| Understory | 32.33 | 9.55 |
| Litter | 26.33 | 16.68 |
| Bareground | 18.17 | 12.94 |
| Rock | 23.17 | 12.81 |
| O + U | 45.33 | 7.95 |
| | | |
| **B. % COMPOSITION** | | |
| Trees/Shrubs | 65.69 | 43.39 |
| Forbs | 0.00 | 0.00 |
| Grasses | 34.31 | 43.39 |

**Table 12: Segregation Facility at the SUFCO Mine. Woody Species Density (2014).**

| Pinyon-Juniper Reference Area | n=30 |
|---|---|
| *Cercocarpus ledifolius* | 163.12 |
| *Eriogonum corymbosum* | 20.39 |
| *Juniperus osteosperma* | 142.73 |
| *Pinus edulis* | 693.27 |
| *Quercus gambelii* | 203.90 |
| | |
| TOTAL | **1223.41** |

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**Table 13: Segregation Facility at the SUFCO Mine. Living Cover and Frequency by Plant Species (2014).**

| Proposed/Previously Disturbed Grassland Community | | | n=30 |
|---|---|---|---|
| | Mean Percent | Standard Deviation | Percent Frequency |
| **TREES & SHRUBS** | | | |
| *Atriplex canescens* | 1.17 | 6.28 | 3.33 |
| *Chrysothamnus nauseosus* | 2.67 | 6.16 | 16.67 |
| *Clematis ligusticifolia* | 1.33 | 4.99 | 6.67 |
| *Eriogonum corymbosum* | 3.00 | 9.27 | 10.00 |
| | | | |
| **FORBS** | | | |
| *Artemisia ludoviciana* | 0.33 | 1.80 | 3.33 |
| *Penstemon palmeri* | 1.17 | 4.41 | 6.67 |
| *Penstemon sp.* | 0.33 | 1.80 | 3.33 |
| | | | |
| **GRASSES** | | | |
| *Agropyron cristatum* | 21.00 | 15.67 | 80.00 |
| *Bromus tectorum* | 2.17 | 4.78 | 20.00 |
| *Elymus hispidus* | 0.33 | 1.80 | 3.33 |
| *Elymus junceus* | 7.17 | 10.06 | 40.00 |
| *Elymus spicatus* | 4.17 | 9.84 | 16.67 |
| *Stipa hymenoides* | 1.00 | 3.74 | 6.67 |

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**Table 14: Segregation Facility at the SUFCO Mine. Total Cover and Composition (2014).**

| Proposed/Previously Disturbed Grassland Community | | n=30 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Understory | 45.83 | 10.96 |
| Litter | 16.33 | 6.82 |
| Bareground | 20.00 | 13.48 |
| Rock | 17.83 | 7.92 |
| | | |
| **B. % COMPOSITION** | | |
| Trees/Shrubs | 16.04 | 24.76 |
| Forbs | 3.03 | 9.65 |
| Grasses | 80.92 | 24.68 |

**Table 15: Segregation Facility at the SUFCO Mine. Woody Species Density (2014).**

| Proposed/Previously Disturbed Grassland Community | n=30 |
|---|---|
| *Atriplex canescens* | 15.95 |
| *Chrysothamnus nauseosus* | 50.31 |
| *Clematis ligusticifolia* | 3.68 |
| *Eriogonum corymbosum* | 68.72 |
| *Gutierrezia sarothrae* | 1.23 |
| *Quercus gambelii* | 4.91 |
| *Rosa woodsii* | 2.45 |
| | |
| TOTAL | **147.25** |

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**Table 16: Segregation Facility at the SUFCO Mine. Living Cover and Frequency by Plant Species (2014).**

| **Proposed Disturbed Riparian/Willow Community** | | | n=30 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| OVERSTORY | | | |
| *Cornus sericea* | 9.50 | 20.95 | 20.00 |
| *Salix exigua* | 36.17 | 28.54 | 66.67 |
| *Salix lucida* | 8.00 | 20.44 | 13.33 |
| | | | |
| UNDERSTORY | | | |
| **TREES & SHRUBS** | | | |
| *Clematis ligusticifolia* | 1.00 | 5.39 | 3.33 |
| *Cornus sericea* | 20.33 | 30.96 | 33.33 |
| *Rosa woodsii* | 5.00 | 16.23 | 13.33 |
| *Salix exigua* | 29.50 | 26.31 | 66.67 |
| *Salix lucida* | 8.83 | 21.36 | 16.67 |
| | | | |
| **FORBS** | | | |
| *Urtica dioica* | 13.67 | 20.89 | 33.33 |
| | | | |
| **GRASSES** | | | |
| *Carex nebrascensis* | 1.00 | 5.39 | 3.33 |
| *Phragmities australis* | 1.33 | 7.18 | 3.33 |

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**Table 17: Segregation Facility at the SUFCO Mine. Total Cover and Composition (2014).**

| Proposed Disturbed Riparian/Willow Community | | n=30 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Overstory | 53.67 | 15.91 |
| Understory | 80.67 | 14.19 |
| Litter | 12.27 | 12.56 |
| Bareground | 5.93 | 6.36 |
| Rock | 1.13 | 0.72 |
| Overstory + Understory | 134.33 | 22.35 |
| | | |
| **B. % COMPOSITION** | | |
| Trees/Shrubs | 78.38 | 30.18 |
| Forbs | 18.78 | 30.02 |
| Grasses | 2.84 | 10.81 |

**Table 18: Segregation Facility at the SUFCO Mine. Woody Species Density (2014).**

| Proposed Disturbed Riparian/Willow Community | n=30 |
|---|---|
| *Acer glabrum* | 73.52 |
| *Clematis ligusticifolia* | 147.04 |
| *Cornus sericea* | 1690.91 |
| *Rosa woodsii* | 735.18 |
| *Salix exigua* | 5219.76 |
| *Salix lucida* | 955.73 |
| | |
| TOTAL | **8822.12** |

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## Community Comparisons

Oak Brush Communities. Statistical analyses were employed to compare parameters of the proposed disturbed plant communities with similar native communities chosen as reference areas that could represent future revegetation success standards. When the **total living cover** of the proposed disturbed oak brush community was compared to the reference area the differences were non-significant. This was true when the overstory and understory values were combined together and compared (Figure 1-A) as well as when the understory only values were compared (Figure 1-B).

**Figure 1.** A statistical comparison (Student's t-tests) of the **total living cover** (overstory + understory combined and understory only) between the Proposed Disturbed Oak Brush and Reference Area of the Segregation Facility at the SUFCO Mine.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Oak Brush | | | | | | |
| A. Proposed Disturbed (o+u) | 72.17 | 9.19 | 30 | | | |
| Reference Area (o+u) | 70.00 | 8.06 | 20 | | | |
| t-test | | | | 0.8581 | 48 | NS |
| B. Proposed Disturbed (u) | 46.33 | 20.77 | 30 | | | |
| Reference Area (u) | 46.00 | 18.55 | 20 | | | |
| t-test | | | | 0.0574 | 48 | NS |

$\bar{x}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom
n/a = not applicable

p = probability
SL= Significance Level
N.S.=Non-Significant
u = understory
o = overstory

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When the total **woody species density** values for these two communities were compared statistically, the difference was significant – the reference area had significantly more plants per acre than the proposed disturbed area (Figure 2).

**Figure 2.** A statistical comparison (Student's t-tests) of the **woody species density** between the Proposed Disturbed Oak Brush and Reference Area of the Segregation Facility at the SUFCO Mine.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Oak Brush | | | | | | |
| Proposed Disturbed | 3476.28 | 1471.81 | 30 | | | |
| Reference Area | 4925.63 | 1182.93 | 20 | | | |
| t-test | | | | 3.6787 | 48 | p<0.01 |

$\bar{x}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom

p = probability
SL= Significance Level
N.S.=Non-Significant

Pinyon-Juniper Communities. When the proposed disturbed pinyon-juniper was compared to that of the reference area, the **total living covers** were not statistically significant (Figure 3).

**Figure 3.** A statistical comparison (Student's t-tests) of the **total living cover** between the Proposed Disturbed Pinyon-Juniper and Reference Areas of the Segregation Facility at the SUFCO Mine.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Pinyon-Juniper | | | | | | |
| Proposed Disturbed (o+u) | 44.45 | 13.12 | 30 | | | |
| Reference Area (o+u) | 45.33 | 7.95 | 30 | | | |
| t-test | | | | 0.3142 | 58 | N.S. |

$\bar{x}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom

n/a = not applicable

p = probability
SL= Significance Level
N.S.=Non-Significant

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Next, when the total **woody species density** values of the proposed disturbed and reference areas were statistically compared, the difference was again non-significant (Figure 4).

**Figure 4.** A statistical comparison (Student's t-tests) of the **woody species density** between the Proposed Disturbed Pinyon-Juniper and Reference Areas of the Segregation Facility at the SUFCO Mine.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Pinyon-Juniper | | | | | | |
| Proposed Disturbed | 1519.65 | 964.91 | 30 | | | |
| Reference Area | 1223.41 | 453.35 | 30 | | | |
| t-test | | | | 1.5220 | 58 | N.S. |

$\bar{x}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom

p = probability
SL= Significance Level
N.S.=Non-Significant

Grassland Community. The grassland area proposed for disturbance by the construction plans had been disturbed previously and later re-seeded as a result of mine-related and road building activities. Current state regulations have different revegetation success standards for previously disturbed areas – they must be returned to their current condition or better. Consequently, no reference area was chosen to be compared to at the time of final reclamation and revegetation for this community.

Willow/Riparian Communities. As mentioned in the RESULTS section above, there are areas that support water-loving willows and riparian vegetation, but these areas are currently not in their natural or undisturbed condition. At the time of final reclamation, these sites will not have the present waters concentrated in those specific areas, so a riparian reference area was not chosen for revegetation success standards. Specific details about this rationale have been provided in the DISCUSSION below.

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## Threatened, Endangered & Sensitive Species

A table of federally listed threatened, endangered and candidate species for Sevier County, Utah has been provided below (Table 19). The table also includes the status of the species, along with site-specific notes about the area proposed for disturbance and the probabilities of their occurrences in the study area. The State of Utah, Department of Natural Resources' biodiversity database specialist was consulted with regard to threatened, endangered or otherwise sensitive species in the mine area in 2013. Findings for this research indicated no such species, plant or animal, were found within a 2-mile radius of the mine site.

Additionally, GIS data and shape files from the State of Utah, Division of Wildlife Resources (DWR), Utah Conservation Data Center (UCDC) database were consulted for potential habitats of sensitive species. This database suggested southern Wasatch Plateau area could be general habitat for the northern goshawk (*Accipter gentilis*). In Utah, however, the greatest proportion of nests for this raptor occur in mixed lodgepole pine (*Pinus contorta*) and Quaking aspen (*Populus tremuloides*), neither of which occur in the study area. No other sensitive species are known to occur in the study area.

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**Table 19: Federally listed threatened, endangered and candidate species for Sevier County, Utah (last updated January 12, 2012).**

| ENDANGERED | | SITE-SPECIFIC NOTES |
|---|---|---|
| *Sclerocactus wrightiae* | Wright fishhook cactus | Wright's fishhook cactus is known to be present primarily in salt desert habitats on Mancos Shale, Dakota, Morrison, Summerville and Entrada Sandstone formations. This habitat is not present in the study area. Consequently, there will be no impact to this species as a result of construction of the Segregation Plant. |
| **THREATENED** | | |
| *Astragalus montii* | Heliotrope milkvetch | This species is known to occur only in Flagstaff Limestone, a formation that is not present at the waste rock site. There should be no impact to this species as a result of construction of the Segregation Plant. |
| *Townsendia aprica* | Last chance townsendia | Although this species can be found in pinyon-juniper communities and this community is relatively close to the study area, it most commonly occurs on clay and clay-silt exposures on the Mancos Shale formation. This formation is not found in the study area. There should be no impact to this species as a result of construction of the Segregation Plant. |
| *Lynx canadensis* | Canada lynx | State of Utah, Division of Wildlife Resources (DWR) distribution maps show that the general area on the Wasatch Plateau in Sevier County may be "critical habitat" for this species.<br><br>The Canada lynx range extends from Canada and Alaska south to Maine, the Rocky Mountains, and also to the Great Lakes region. DWR biologists state that, *although sightings of the Canada lynx in Utah over the past twenty years are exceedingly rare, the USDA Forest Service recently announced that Canada lynx hair was found in the Manti-La Sal National Forest during 2002.*<br><br>The preferred habitat of the Canada lynx is montane coniferous forest, where it often hunts snowshoe hares. Coniferous forests do not exist at the study area. Consequently, there will be no impact to this species as a result of construction of the Segregation Plant. |

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**Table 19: Federally listed threatened, endangered and candidate species for Sevier County, Utah (last updated January 12, 2012).**

| | | |
|---|---|---|
| **CANDIDATE** | | |
| *Centrocercus urophasianus* | Greater sage-grouse | Greater sage-grouse inhabit sagebrush zones in Utah's mountain valleys and foothills. There is no brooding or winter habitat for this species shown on the DWR database maps at or near the study area.<br><br>Utah's Conservation Plan for Greater Sage-grouse (February 14, 2013) shows areas near the "Opportunity Area" habitats for the sage-grouse in this portion of the Parker Mtn-Emery Sage-Grouse Management Area (SGMA). No leks have been mapped near the site and little and no habitat is located is located at the study site for this species.<br><br>Consequently, there should be no impact to this species as a result of expansion of construction of the Segregation Plant. |
| *Cynomys parvidens* | Utah prairie-dog | Habitat for this prairie-dog does not exist in the study area. Consequently, there will be no impact to this species as a result of construction of the Segregation Plant. |
| **EXTIRPATED** | | |
| *Ursus arctos* | Brown (grizzly) bear | The brown (grizzly) bear was extirpated from Utah in the 1920s. It probably once occurred in the Wasatch Plateau.<br><br>Even though the brown bear may have been present in the general area historically, suitable habitat for the brown bear at or near the study area is questionable. There will be no impact to this species as a result construction of the Segregation Plant. |

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# Discussion

The statistical analyses reported above for **oak brush** community cover included comparisons for the total living cover of the overstory and understory (combined) as well as a comparison of the understory total living cover (only). When the total living covers of the communities were compared to the reference area, the differences were statistically non-significant.

The woody species density values for proposed disturbed oak brush and reference area were, however, significantly different – the reference area had more individuals per acre when compared to the proposed disturbed community. Although the proposed disturbed community's woody species density was lower than the reference area, an even lower success standard for density may be warranted here. Previous consultations with state wildlife biologists sometimes resulted in suggestions for a lesser woody species density value because it may provide more opportunity for increased forb and grass species establishment and could provide greater species diversity in the summer range for the resident wildlife species. Consequently, a pre-set woody species value of 2,000 plants per acre may be a more appropriate recommendation for a revegetation success standard for the proposed disturbed oak brush once the site is reclaimed. Consequently, and subject to approval by biologists from the State of Utah, Division of Oil, Gas and Mining (DOGM), revegetation success standards for each area are shown on Table 20. That said, the reference area values remain an option for final success standards.

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| Table 20: Summary of recommended final revegetation success standards for the Segregation Facility at the SUFCO Mine. | | | |
|---|---|---|---|
| **PROPOSED DISTURBED** | **COVER** | **DENSITY** | **DIVERSITY** |
| Oak Brush | Compare to Oak Brush Reference Area (understory) | 2,000 plants/acre [a] | Compare to Oak Brush Reference Area |
| Pinyon-Juniper | Compare to Pinyon-Juniper Reference Area | Compare to Pinyon-Juniper Reference Area | Compare to Pinyon-Juniper Reference Area |
| Grassland | 46.00% [b] | 150 plants/acre [b] | No standard |
| Riparian/Willow | 55.00% (understory)[a] | 2,000 plants/acre [a] | No standard |

[a] Pre-set standard; [b] Based on current baseline data

When the proposed disturbed **pinyon-juniper** community was compared to the reference area, there was not a statistically significant difference for total living cover or woody species density.

As mentioned, the **grassland** community had been re-seeded following previous disturbance from mine-related and road building activities. In those plant communities that have been disturbed previously by other activities and not reclaimed to the current revegetation standards, applicable regulations state that "*at a minimum, the vegetative ground cover will be not less than the ground cover existing before redisturbance and will be adequate to control erosion*". Consequently, a reference area was not chosen to represent future final revegetation success standards for this *previously disturbed* area located within the proposed *new disturbances* of the Segregation Facility. Nonetheless, the grassland community was sampled to reveal its current total living cover, cover by species, composition and woody species density. Consequently, these baseline values may be used for future revegetation success standards at the time of final reclamation (Table 20).

Also mentioned above, there are other areas that support more water-loving riparian plants, but these areas are not currently in their natural, undisturbed state. For example, the small creek that supports willows and other riparian species such as Red-osier dogwood, is in a drainage that has had water added to it by activities associated with the mining operations.

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Evidently, prior to building the lower sediment pond there were some small seeps or springs located in that general vicinity. At that time, these seeps did not travel more than a few feet and did not reach the existing drainage, at least from surface flows. During construction, these flows were collected and artificially directed to the drainage below the pond, thus encouraging and supporting the stream-side riparian plants as well as the more upland willow stands as shown in the photographs above on Map A.

These riparian/willow areas were sampled and the results have been submitted herein to document the existing condition of the vegetation in the study area. However, it did not seem prudent to choose and sample a riparian reference area that would be used for future revegetation success standards if the present concentrated creek flows are dissimilar at the time of final reclamation. When the area is reclaimed, it will probably return to a pre-mining condition where the seeps and springs will be restored and the drainage will return to a dryer creek-bed and become ephemeral at best. Likewise, if there is enough water concentrated in those areas to support wetland and riparian species at that time, they will likely be restored naturally and without augmented seeding practices.

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# Summary

Engineers for the SUFCO Mine have proposed to construct the Segregation Facility at their coal mine site to augment current operations. In doing so, the construction activities will impact existing plant communities. The native plant communities that would be impacted by the proposed construction activities included: oak brush and pinyon-juniper. Additionally, there were other plant communities that had been disturbed previously by other activities including: grasslands and riparian/willow. All plant communities that could be impacted were quantitatively sampled and the results have been provided in this report. Additionally, reference areas, or those native plant communities that were similar to those proposed for disturbance were also sampled. These areas will remain undisturbed for the life of the Segregation Facility and will be used for revegetation success standards at the time of final reclamation. Those plant communities within the construction zone that had been disturbed by previous activities were sampled to provide baseline data to be used as future revegetation success standards.

Additionally, surveys for potential threatened, endangered or sensitive (TES) species were conducted in the study area. No TES species or their habitats were found at the site.

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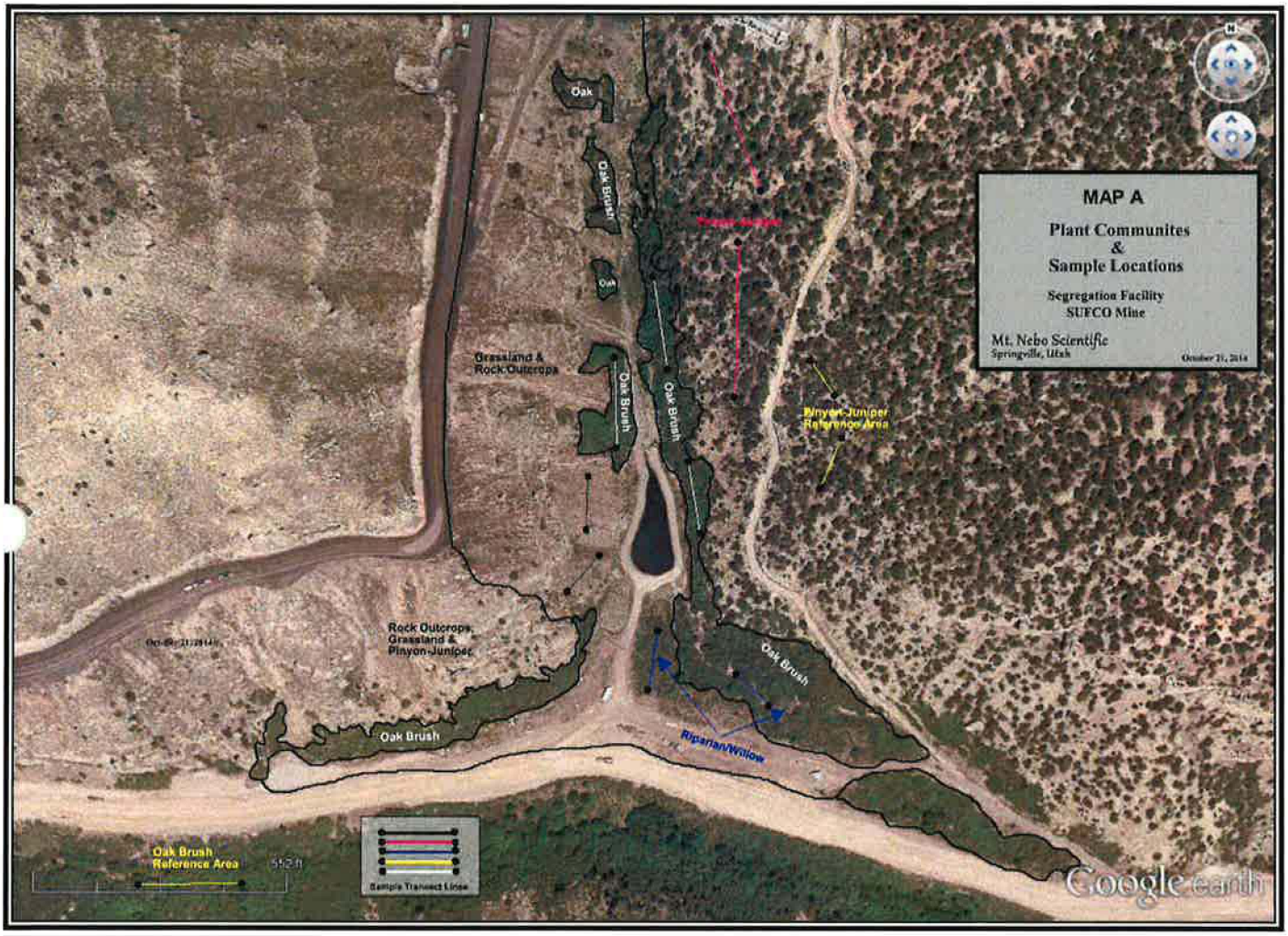


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# Vegetation Monitoring
# at the
# Link Canyon Portal Area:
# An Update
2013

View From the Link Canyon Portal Site

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February 2014

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# INTRODUCTION

In 2002, engineers for Canyon Fuel Company designed a new access portal and other minor surface facilities for the SUFCO Mine. The new portal was constructed in Link Canyon at the site of an old portal that was created from earlier mining activities. Construction of the portal created about 1/4 acre of new land disturbance, or more appropriately called re-disturbance.

The portal site in Link Canyon is located in Sevier County, Utah about 7 miles northwest of the town of Emery (GPS coordinates: NAD 27, 12 S, 471190E, 4312294N). Native plant communities at the site consisted primarily of pinyon-juniper and riparian types. Elevation at the site was approximately 7,600 ft above sea level.

The purpose of this document is to provide an update of the vegetation at the Link Canyon Portal site and also to provide recommendations for future studies.

Prior to construction of the new portal, field studies were conducted by *Mt. Nebo Scientific, Inc.* One such study provided a report called: Survey Report, Aquatic Fauna, Link Canyon Portal Area (July 2002). The objectives of this study were to 1) survey for presence of specific sensitive aquatic fauna species and 2) to assess the potential for the habitat to support other sensitive aquatic species. Another field study was conducted that resulted in a report called: Vegetation of the Link Canyon Portal Surface Facilities (August 2002). This study provided information about the plant communities at the site as well as proposed vegetation reference areas that could be used for revegetation success standards when the site is ultimately reclaimed. Information about potential threatened, endangered and sensitive plant species was also provided in that report.

Since the time the portal was constructed, the vegetation has been monitored by Mr. Keith W. Zobell, an environmental specialist. Mr. Zobell's reports provided color photographs at specific locations as well as a qualitative assessments of the vegetation at the Link Canyon Portal site.

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# METHODS

Field work was conducted at the Link Canyon Portal site on September 18, 2013. The entire disturbed area was surveyed including the portal, its access road, stream buffer zones, culverts and road cut slopes. The reference areas were also visited on that day. Qualitative notes as well as photographs were recorded.

# RESULTS

The cover, density, diversity, productivity and vigor of the vegetation at the Link Canyon Portal site were in excellent condition. A list of plant species observed is shown on Table 1. One relevant or telling method of assessing the site it to observe the photographs taken during the field work. The portal site entrance gate is shown in Fig. 1, whereas the access road behind the gate is shown in Fig. 2. Not surprising because the road was not seeded, this is where some "weedy" species were located. The topsoil pile was covered with desirable vegetation (Fig. 3), and is was controlling erosion. Signs have been placed and remain in good condition at the stream buffer boundaries (Figs. 4 and 5). The stream has been protected by these buffer zones. The actual portal entrance is closed to the public by a chainlink gate (Fig. 6). The drainage culverts are clear, the bank around them is stable and has good vegetative cover (Fig. 7). Fig. 8 shows some of the general disturbance area – note the good cover and vigor of the vegetation here too. The access road fill banks have also been stabilized by plant growth, although some of it is comprised of a few weedy plants (Fig. 9). The weeds were a minor component here however, adding to the bank stability and probably not enough to be concerned about implementing weed control measures at this time.

The reference areas, or those communities chosen to represent future revegetation success standards at the time of final reclamation, remain in good condition. The Pinyon-Juniper Reference Area is shown in Fig. 10; the Riparian Reference Area is shown in Fig. 1

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| Table 1: Plant species observed at the Link Canyon Portal Site. | |
|---|---|
| SCIENTIFIC NAME | COMMON NAME |
| **Trees & Shrubs** | |
| *Betula occidentalis* | Water birch |
| *Chrysothamnus nauseosus* | Rubber rabbitbrush |
| *Clematis ligusticifolia* | White virgins-bower |
| *Cornus sericea* | Red-osier dogwood |
| *Ephedra viridis* | Mormon tea |
| *Eriogonum corymbosum* | Corymb buckwheat |
| *Juniperus osteosperma* | Utah Juniper |
| *Pinus edulis* | Pinyon-pine |
| *Pseudotsuga menziesii* | Douglas fir |
| *Rhus aromatica* | Squaw bush |
| *Ribes aureum* | Golden current |
| *Rosa woodsii* | Wood's rose |
| *Salix exigua* | Coyote willow |
| | |
| **Forbs** | |
| *Aster foliaceous* | Leafy-bract aster |
| *Halogeton glomeratus* | Halogeton |
| | |
| **Grasses & Grass-likes** | |
| *Agropyron cristatum* | Crested wheatgrass |
| *Elymus cinereus* | Gt. Basin wildrye |
| *Elymus smithii* | Western wheatgrass |
| *Elymus salinus* | Salina wildrye |
| *Juncus arcticus* | Wiregrass |
| *Stipa hymenoides* | Indian ricegrass |

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# SUMMARY & RECOMMENDATIONS

Over 10 years ago, a new mine portal was constructed at Link Canyon in south-central Utah. The new portal was placed in an area that was once disturbed by another portal from earlier mining operations. In 2002, prior to construction of the new portal, biological studies were conducted to gather baseline information at the site. These studies included aquatic fauna, vegetation and sensitive species work. Following construction of the new portal, the area was seeded and the vegetation has been regularly monitored. Status reports have been provided to the State of Utah, Division of Oil, Gas & Mining (DOGM).

This report provides the general condition of the vegetation at the Link Canyon Portal site in 2013. Vegetation has become well established on the road-cuts, road banks, topsoil pile, culvert bank, stream buffer zones and other disturbed areas. Signs and access gates are also in good condition.

The reference areas previously chosen to represent future revegetation success standards remain in good condition and continue to be viable to be used for comparisons at the time of final reclamation.

Because the vegetation has become well established, has stabilized over-time and remains in good condition with respect to cover, diversity, density and productivity, there appears no practical reason to continue to monitor the site on an annual basis – at least from a vegetation prospective – unless more mine-related disturbance is conducted, or until the time of final reclamation and revegetation.

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Fig. 1: Portal Entrance

Fig. 2: Portal Access Road

Fig. 3: Topsoil Pile

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Fig. 4: Stream Buffer Zone

Fig 5: Stream Buffer Zone

Fig 6: Link Canyon Portal

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Fig 7: Drainage Culverts

Fig 8: General Disturbance

Fig 9: Road Fill Bank

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Fig 10: Pinyon-Juniper Reference Area

Fig 11: Riparian Reference Area

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# Vegetation & Sensitive Species of the Proposed Expansion at the Waste Rock Site

for the
SUFCO Mine

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in
Sevier County, Utah

Coal truck passing the SUFCO Waste Rock Study Area

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February 2014

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# Introduction

## Proposed Disturbance

Engineers at SUFCO have been planning to expand the mine's current Waste Rock Site to augment their coal mining operations in Sevier County, Utah. Prior to construction and disturbance to the existing plant communities within the boundaries of the expansion area, quantitative data were recorded to provide information about the baseline conditions of the vegetation.

## Revegetation Success Standards

As required by applicable state and federal regulations, once a mining-related activity has run the course of its use and function, the site and land disturbances associated with it are subsequently reclaimed and revegetated. The restored plant communities must then achieve specific revegetation success standards. These standards are frequently derived by comparing similar plant communities, often adjacent to those being proposed for disturbance. These analogous communities, called the *reference areas*, are also quantitatively sampled prior to disturbance. The datasets of the areas are then compared to demonstrate their similarities (or differences). If they are approved as reference areas, the communities will again be compared to determine whether or not the restored communities meet specific revegetation success standards following final reclamation.

This document reports the results of sampling in the proposed disturbed areas of the expansion area as well as the reference areas for the Waste Rock Site. In addition, threatened, endangered and sensitive plant species were surveyed and addressed in the document.

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# Methods

## Quantitative Sampling

Sample methods used for this study were performed in accordance with the vegetation guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOGM). Quantitative and qualitative data were recorded within the plant communities proposed for disturbance and their respective reference areas in September 2013 (see Map 1 at the end of the report). The GPS coordinates for all sample areas are provided below.

**GPS COORDINATES FOR SAMPLE AREAS FOR THE EXPANSION AREAS AT SUFCO'S WASTE ROCK SITE**
(UTM, ZONE 12S, NAD 27)

| Sample Area | Waypoint Name | Coordinates (m) | Community Type |
|---|---|---|---|
| A | SufWRSa | 456113E 4305344N | Proposed Disturbed Sagebrush/Grass |
| B | SufWRSb | 456408E 4305366N | Proposed Disturbed Sagebrush/Grass |
| C | SufWRSc | 456356E 4305728N | Proposed Disturbed Sagebrush/Grass |
| D | SufWRSd | 456189E 4305526N | Proposed Disturbed Sagebrush/Grass |
| E | SufWRSe | 456179E 4305389N | Proposed Disturbed Rabbitbrush/Sagebrush |
| F | SufWRSf | 456014E 4305471N | Proposed Disturbed Rabbitbrush/Sagebrush |
| G | SufWRSg | 456636E 4305351N | Proposed Disturbed Mountain Brush |
| H | SufWRSh | 456490E 4305436N | Proposed Disturbed Mountain Brush |
| I | SufWRSi | 456379E 4305675N | Proposed Disturbed Mountain Brush |
| J | SufWRSj | 456472E 4305694N | Proposed Disturbed Mountain Brush |
| K | SufWRSk | 456197E 4305198N | Sagebrush/Grass Reference Area |
| L | SufWRSl | 456231E 4305209N | Rabbitbrush/Sagebrush Reference Area |
| M | SufWRSm | 456371E 4305195N | Mountain Brush Reference Area |

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## Sampling Design & Transect/Quadrat Placement

Vegetation sample transect lines were placed randomly within the boundaries of the proposed disturbed and reference areas. The transect placement technique was employed with the goal to adequately sample a representation of the entire site. Once the transects were established, quadrat locations for sampling were chosen using random numbers on the transect lines with the objective to record data without preconceived bias. The following data were then recorded.

## Cover & Composition

Cover estimates were made using ocular methods with meter-square quadrats. Species composition, cover by species, and relative frequencies were also assessed from the quadrats. Additional information recorded on the raw data sheets were notes such as: slope, exposure, grazing use, disturbance and/or other appropriate notes. Plant species nomenclature follows *A Utah Flora* (Welsh et al., 2008).

## Woody Species Density

Density of woody plant species for the proposed disturbed and reference areas were estimated using the point-quarter distance method. In this method, random points were placed on the sample sites and measured into four quarters. The distances to the nearest woody plant species were then recorded in each quarter. The average point-to-individual distance was equal to the square root of the mean area per individual. The number of individuals per acre was the end result of the calculations.

## Sample Size & Adequacy

Sampling adequacy for cover and density was attempted by using the formula given below.

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$$nMIN = \frac{t^2 s^2}{(dx)^2}$$

where,

| | |
|---|---|
| *nMIN* | = minimum adequate sample |
| t | = appropriate confidence t-value |
| s | = standard deviation |
| x | = sample mean |
| d | = desired change from mean |

With the values used for "t" and "d" above, the goal was to meet appropriate sample adequacy values.

## Statistical Analyses

Student's t-tests were employed to compare the total living covers and total woody species densities of the proposed disturbed areas with their respective reference areas.

## Photographs

Color photographs of the sample areas were taken at the time of sampling and have been submitted with this report.

## Threatened, Endangered & Sensitive Species

Prior to recording quantitative data on the plant communities, a sensitive plant species survey was conducted. To initiate the studies in the area, database searches and literature reviews were conducted for potential plant species that are known to be rare, endemic, threatened, endangered or otherwise sensitive in the general area. Additionally, the current list of federally protected species for Sevier County, Utah was reviewed along with potential habitats for these species in the areas proposed for disturbance.

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# Results

## Proposed Disturbed Sagebrush/Grass Community

The Sagebrush/Grass Community was found in several areas within the Waste Rock Expansion site. Accordingly, sample transects were placed in several locations of this community throughout the study area [Sample Areas A, B, C, D (Map 1)]. As a method to more accurately represent all areas of the community, the datasets of all Sagebrush/Grass sample areas were combined for the summary tables.

Sagebrush/Grass (a collection of photographs of the sample areas later in the document)

The most common species by cover and frequency in this community, by far, were big sagebrush (*Artemisia tridentata* var. *tridentata*) and bluebunch wheatgrass (*Elymus spicatus*). Percent cover of big sagebrush was 19.88%, and its frequency value showed it occurred in 75.00% of the sample quadrats. Percent cover and frequency of bluebunch wheatgrass were 19.38% and 85.00%, respectively. These values, as well as the results for all other species encountered in the samples, are shown in Table 1.

The total living cover in the Sagebrush/Grass areas was estimated at 69.13%, where 68.00% of it came from understory and only 1.13% from overstory cover (Table 2-A). Composition of the combined data indicated that 53.57% of the understory cover were shrubs, 39.32% grasses

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and 7.11% forbs (Table 2-B).

The total woody species density for the Sagebrush/Grass Community was estimated at 3,448 plants per acre. The most important species for this parameter by quite a wide margin was big sagebrush, however, other important woody species included snowberry (*Symphoricarpos oreophilus*), viscid rabbitbrush (*Chrysothamnus viscidiflorus*), Vasey's sagebrush (*Artemisia tridentata* var. *vaseyana*) and bitterbrush (*Purshia tridentata*). Density values for all species have been provided on Table 3.

## Sagebrush/Grass Reference Area

The reference area chosen to represent future revegetation success standards [Sample Area K (Map 1)] was also dominated by many of the same species as the proposed disturbed area described above. Big sagebrush and bluebunch wheatgrass were again the clear dominates by cover and frequency and were nearly equally represented; the former had a cover and frequency of 21.83% and 76.67% and the latter 22.67% and 86.67%, respectively. For a list of all species found in the samples refer to Table 4.

Sagebrush/Grass Reference Area

The total living cover for this reference area was estimated at 67.67% (Table 5-A). Composition of the total living cover was calculated at 47.57% grasses, 44.08% shrubs and 8.35% forbs (Table 5-B).

Total density of woody species was estimated at 2,944 individuals per acre – the most common were big sagebrush, followed distantly by snowberry, Vasey's sagebrush, viscid rabbitbrush and bitterbrush (Table 6).

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## Proposed Disturbed Rabbitbrush/Sagebrush Community

Another community type proposed for disturbance, a Rabbitbrush/Sagebrush Community [Sample Areas E, F (Map 1)], was historically probably quite similar to the Sagebrush/Grass Communities described above. It appears this community has been disturbed previously, which could have been the result of heavy grazing or stock handling pressure, and was later re-seeded with plant species that included some non-natives. This community was greatly dominated by crested wheatgrass (*Agropyron cristatum*), but rubber rabbitbrush (*Chrysothamnus nauseosus*) and big sagebrush were also important components as shown by cover and frequency values (Table 7). Reviewing Table 7 also suggests less diversity in this community when compared to the undisturbed Sagebrush/Grass Community above.

Rabbitbrush/Sagebrush

The total living cover in the community was estimated at 81.50% (Table 8-A); composition consisted of only grasses at 58.73% and shrubs at 41.27% (Table 8-B).

Woody species density totaled 1,673 plants per acre and was dominated with nearly equal densities of rubber rabbitbrush and big sagebrush (Table 9).

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## Rabbitbrush/Sagebrush Reference Area

The reference area chosen to represent future revegetation success standards [Sample Area L (Map 1)] was also dominated by some of the same species as the proposed disturbed area described above. For example, crested wheatgrass was also the most common species by cover and frequency (27.33% cover with a frequency of 70.00%) followed distantly, and nearly equally represented, by two rabbitbrush species (viscid and rubber rabbitbrush). Viscid rabbitbrush had a cover and frequency of 12.17% and 46.67% and rubber rabbitbrush was 11.83% and 43.33%, respectively. For a list of all species found in the samples refer to Table 10.

The total living cover for this reference area was estimated at 78.83% (Table 11-A). Composition of the understory cover was calculated at 47.96% grasses, 42.91% shrubs and 9.13% forbs (Table 11-B).

Total density of woody species here was estimated at 6,168 individuals per acre; the most common shrubs were rubber rabbitbrush, viscid rabbitbrush, snowberry and big sagebrush (Table 12).

Rabbitbrush/Sagebrush Reference Area

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## Proposed Disturbed Mountain Brush Community

While mapping the plant communities in the expansion area it was evident that there was a host of shrubland communities located within the study site – some of which were dominated by alder-leaf mountain-mahogany (*Cercocarpus montanus*), others by Utah serviceberry (*Amelanchier utahensis*), and still others by Gambel's oak (*Quercus gambelii* var. *gambelii*). There were also plant communities that appeared to have equal amounts of two or more of these woody species. Finally, there was one area that appeared to be a typical aspen (*Populus tremuloides*) community, but closer scrutiny suggested it was on the fringes of those communities described above (e.g. Gamble's oak and sagebrush were also major components within the community).

Mountain Brush

Rather than trying to separate all these communities into distinct types, it seemed prudent and more practical to place them into one community type called "Mountain Brush". Since they seemed to be more of a 'continuum' of each other, results from this logic should provide a meaningful baseline dataset for future revegetation planning. With this in mind, although the communities were sampled separately [Sample Areas G, H, I, J (Map 1)], the data were later combined or "lumped" to reflect averages or intermediate values of the variations between the community types.

According to cover and frequency values the most important plant species in the proposed

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disturbed Mountain Brush Community were alder-leaf mountain mahogany, bluebunch wheatgrass, Vasey's sagebrush, Gambel's oak, Utah serviceberry and snowberry (Table 13).

The total living cover of the community was estimated at 66.70%, which was comprised of 57.90% understory and 8.80% overstory cover (Table 14-A). The composition of the understory cover was comprised of 62.05% trees/shrubs, 29.93% grasses and 8.02% forbs (Table 14-B).

The mean total woody species density of the sample areas was estimated at 3,937 individuals per acre (Table 15). The most important species for this parameter were alder-leaf mountain-mahogany, Gambel's oak, Vasey's sagebrush, snowberry, Utah serviceberry and aspen.

Mountain Brush

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## Mountain Brush Reference Area

A reference area was chosen that seemed to be intermediate or transitional to most of the communities described in the proposed disturbed Mountain Brush Communities above [Sample Areas M (Map 1)].

Mountain Brush Reference Area

The most common species in the Mountain Brush Reference Area by cover and frequency were alder-leaf mountain-mahogany, Sandberg's bluegrass (*Poa secunda*), Gambel's oak, Utah serviceberry and Vasey's sagebrush (Table 16).

The total living cover for this reference area was estimated at 63.33% (Table 17-A). Composition of the understory cover was calculated at 73.62% trees/shrubs, 22.82% grasses and 3.56% forbs (Table 17-B).

Total density of woody species was estimated at 4,092 individuals per acre; the most common were alder-leaf mountain-mahogany, followed by Gambel's oak, Vasey's sagebrush, Utah serviceberry and snowberry (Table 18).

Mountain Brush Reference Area

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**The next several pages present the data summary tables referenced above. Included after the tables are the follow report sections:**

- Community Comparisons
- Discussion about Threatened, Endangered & Sensitive Species
- Summary & Discussion

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Data Summary Tables

**Table 1: Waste Rock Site Expansion Areas at the SUFCO Mine. Cover and Frequency by Plant Species (2013).**

| **Proposed Disturbed Sagebrush/Grass** Sample Areas: A, B, C, D (combined) | | | n=40 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| OVERSTORY | | | |
| *Amelanchier utahensis* | 0.75 | 3.46 | 5.00 |
| *Juniperus osteosperma* | 0.38 | 2.34 | 2.50 |
| | | | |
| UNDERSTORY | | | |
| **TREES & SHRUBS** | | | |
| *Amelanchier utahensis* | 0.50 | 3.12 | 2.50 |
| *Artemisia tridentata var. tridentata* | 19.88 | 15.10 | 75.00 |
| *Artemisia tridentata var. vaseyana* | 2.25 | 6.98 | 10.00 |
| *Chrysothamnus nauseosus* | 0.75 | 3.27 | 5.00 |
| *Chrysothamnus viscidiflorus* | 6.50 | 10.14 | 35.00 |
| *Gutierrezia sarothrae* | 0.25 | 1.56 | 2.50 |
| *Juniperus osteosperma* | 0.63 | 3.90 | 2.50 |
| *Purshia tridentata* | 2.63 | 7.58 | 12.50 |
| *Symphoricarpos oreophilus* | 3.00 | 7.48 | 17.50 |
| | | | |
| **FORBS** | | | |
| *Achillea millefolium* | 0.50 | 3.12 | 2.50 |
| *Antennaria dimorpha* | 0.75 | 4.68 | 2.50 |
| *Artemisia ludoviciana* | 0.25 | 1.56 | 2.50 |
| *Castilleja sp.* | 0.38 | 2.34 | 2.50 |
| *Cirsium sp.* | 0.50 | 2.45 | 5.00 |
| *Eriogonum racemosa* | 0.25 | 1.56 | 2.50 |
| *Machaeranthera grindelioides* | 0.38 | 1.32 | 7.50 |
| *Penstemon watsonii* | 2.00 | 4.72 | 17.50 |
| | | | |
| **GRASSES** | | | |
| *Agropyron cristatum* | 4.88 | 9.58 | 27.50 |
| *Bromus inermis* | 0.50 | 2.18 | 5.00 |
| *Elymus spicatus* | 19.38 | 12.71 | 85.00 |
| *Poa secunda* | 1.88 | 5.88 | 10.00 |

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**Table 2: Waste Rock Site Expansion Areas at the SUFCO Mine. Total Cover and Composition (2013).**

| **Proposed Disturbed Sagebrush/Grass** Sample Areas: A, B, C, D (combined) | | n=40 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Overstory (O) | 1.13 | 4.11 |
| Understory (U) | 68.00 | 10.23 |
| Litter | 16.93 | 8.31 |
| Bareground | 11.73 | 8.94 |
| Rock | 3.35 | 2.36 |
| | | |
| O + U | 69.13 | 9.61 |
| | | |
| **B. % COMPOSITION** | | |
| Trees/Shrubs | 53.57 | 18.81 |
| Forbs | 7.11 | 11.25 |
| Grasses | 39.32 | 16.08 |

**Table 3: Waste Rock Site Expansion Areas at the SUFCO Mine. Woody Species Density (2013).**

| **Proposed Disturbed Sagebrush/Grass** Sample Areas: A, B, C, D (combined) | n=40 |
|---|---|
| **SPECIES** | **Individuals/Acre** |
| *Amelanchier utahensis* | 43.10 |
| *Artemisia tridentata var. tridentata* | 1917.98 |
| *Artemisia tridentata var. vaseyana* | 280.15 |
| *Chrysothamnus nauseosus* | 64.65 |
| *Chrysothamnus viscidiflorus* | 387.91 |
| *Juniperus osteosperma* | 64.65 |
| *Purshia tridentata* | 193.95 |
| *Symphoricarpos oreophilus* | 474.11 |
| *Tetradymia canescens* | 21.55 |
| | |
| TOTAL | 3448.05 |

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**Table 4: Waste Rock Site Expansion Areas at the SUFCO Mine. Cover and Frequency by Plant Species (2013).**

| Sagebrush/Grass Reference Area<br>Sample Area: K | | | n=30 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| TREES & SHRUBS | | | |
| *Artemisia tridentata var. tridentata* | 21.83 | 15.99 | 76.67 |
| *Artemisia tridentata var. vaseyana* | 2.00 | 7.48 | 6.67 |
| *Chrysothamnus viscidiflorus* | 1.00 | 5.39 | 3.33 |
| *Mahonia repens* | 1.00 | 2.00 | 20.00 |
| *Symphoricarpos oreophilus* | 4.17 | 9.04 | 23.33 |
| | | | |
| FORBS | | | |
| *Cirsium sp.* | 2.83 | 4.22 | 36.67 |
| *Eriogonum racemosa* | 2.00 | 3.32 | 30.00 |
| *Lupinus argenteus* | 0.67 | 2.13 | 10.00 |
| | | | |
| GRASSES | | | |
| *Agropyron cristatum* | 5.17 | 11.22 | 26.67 |
| *Bromus inermis* | 0.33 | 1.80 | 3.33 |
| *Elymus elymoides* | 0.67 | 3.59 | 3.33 |
| *Elymus spicatus* | 22.67 | 13.15 | 86.67 |
| *Poa secunda* | 3.33 | 7.11 | 20.00 |

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**Table 5: Waste Rock Site Expansion Areas at the SUFCO Mine. Total Cover and Composition (2013).**

| Sagebrush/Grass Reference Area<br>Sample Area: K | | n=30 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Total Living Cover | 67.67 | 8.83 |
| Litter | 21.33 | 6.94 |
| Bareground | 8.63 | 7.39 |
| Rock | 2.37 | 1.87 |
| | | |
| **B. % COMPOSITION** | | |
| Shrubs | 44.08 | 17.89 |
| Forbs | 8.35 | 8.41 |
| Grasses | 47.57 | 18.94 |

**Table 6: Waste Rock Site Expansion Areas at the SUFCO Mine. Woody Species Density (2013).**

| Sagebrush/Grass Reference Area<br>Sample Area: K | n=30 |
|---|---|
| **SPECIES** | **Individuals/Acre** |
| *Artemisia tridentata var. tridentata* | 2305.84 |
| *Artemisia tridentata var. vaseyana* | 220.77 |
| *Chrysothamnus viscidiflorus* | 171.71 |
| *Purshia tridentata* | 24.53 |
| *Symphoricarpos oreophilus* | 220.77 |
| | |
| TOTAL | **2943.62** |

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**Table 7: Waste Rock Site Expansion Areas at the SUFCO Mine. Cover and Frequency by Plant Species (2013).**

| Proposed Disturbed Rabbitbrush/Sagebrush<br>Sample Areas: E, F (combined) | | | n=30 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| **TREES & SHRUBS** | | | |
| *Artemisia tridentata var. tridentata* | 12.67 | 15.26 | 43.33 |
| *Chrysothamnus nauseosus* | 14.83 | 19.43 | 46.67 |
| *Chrysothamnus viscidiflorus* | 6.00 | 10.98 | 26.67 |
| *Symphoricarpos oreophilus* | 0.33 | 1.80 | 3.33 |
| | | | |
| **FORBS** | | | |
| | | | |
| **GRASSES** | | | |
| *Agropyron cristatum* | 38.50 | 23.31 | 86.67 |
| *Elymus spicatus* | 9.17 | 13.61 | 36.67 |

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**Table 8: Waste Rock Site Expansion Areas at the SUFCO Mine. Total Cover and Composition (2013).**

| Proposed Disturbed Rabbitbrush/Sagebrush<br>Sample Areas: E, F (combined) | | n=30 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Total Living Cover | 81.50 | 8.48 |
| Litter | 12.17 | 7.47 |
| Bareground | 4.70 | 4.37 |
| Rock | 1.63 | 1.02 |
| | | |
| **B. % COMPOSITION** | | |
| Shrubs | 41.27 | 20.88 |
| Forbs | 0.00 | 0.00 |
| Grasses | 58.73 | 20.88 |

**Table 9: Waste Rock Site Expansion Areas at the SUFCO Mine. Woody Species Density (2013).**

| Proposed Disturbed Rabbitbrush/Sagebrush<br>Sample Areas: E, F (combined) | n=30 |
|---|---|
| **SPECIES** | **Individuals/Acre** |
| *Artemisia tridentata var. tridentata* | 655.24 |
| *Chrysothamnus nauseosus* | 669.18 |
| *Chrysothamnus viscidiflorus* | 278.83 |
| *Symphoricarpos oreophilus* | 69.71 |
| | |
| TOTAL | **1672.96** |

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**Table 10: Waste Rock Site Expansion Areas at the SUFCO Mine. Cover and Frequency by Plant Species (2013).**

| Rabbitbrush/Sagebrush Reference Area<br>Sample Area: L | | | n=30 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| **TREES & SHRUBS** | | | |
| *Artemisia tridentata var. tridentata* | 2.00 | 5.42 | 13.33 |
| *Artemisia tridentata var. vaseyana* | 0.67 | 2.81 | 6.67 |
| *Chrysothamnus nauseosus* | 11.83 | 15.94 | 43.33 |
| *Chrysothamnus viscidiflorus* | 12.17 | 16.87 | 46.67 |
| *Symphoricarpos oreophilus* | 6.50 | 7.21 | 53.33 |
| *Rosa woodsii* | 0.33 | 1.25 | 6.67 |
| | | | |
| **FORBS** | | | |
| *Achillea millefolium* | 2.50 | 6.02 | 16.67 |
| *Cirsium sp.* | 0.17 | 0.90 | 3.33 |
| *Erigeron sp.* | 1.67 | 6.24 | 6.67 |
| *Iva axillaris* | 1.67 | 4.35 | 13.33 |
| *Penstemon watsonii* | 1.17 | 4.41 | 6.67 |
| | | | |
| **GRASSES** | | | |
| *Agropyron cristatum* | 27.33 | 23.16 | 70.00 |
| *Elymus smithii* | 3.00 | 12.95 | 6.67 |
| *Elymus spicatus* | 6.00 | 12.07 | 23.33 |
| *Poa pratensis* | 1.50 | 5.65 | 6.67 |
| *Poa secunda* | 0.33 | 1.80 | 3.33 |

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**Table 11: Waste Rock Site Expansion Areas at the SUFCO Mine. Total Cover and Composition (2013).**

| Rabbitbrush/Sagebrush Reference Area<br>Sample Area: L | | n=30 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Total Living Cover | 78.83 | 8.91 |
| Litter | 13.73 | 8.28 |
| Bareground | 6.17 | 5.13 |
| Rock | 1.27 | 0.77 |
| | | |
| **B. % COMPOSITION** | | |
| Shrubs | 42.91 | 24.00 |
| Forbs | 9.13 | 14.69 |
| Grasses | 47.96 | 23.80 |

**Table 12: Waste Rock Site Expansion Areas at the SUFCO Mine. Woody Species Density (2013).**

| Rabbitbrush/Sagebrush Reference Area<br>Sample Area: L | n=30 |
|---|---|
| **SPECIES** | **Individuals/Acre** |
| *Artemisia tridentata var. tridentata* | 1079.41 |
| *Chrysothamnus nauseosus* | 2313.02 |
| *Chrysothamnus viscidiflorus* | 1387.81 |
| *Rosa woodsii* | 102.80 |
| *Symphoricarpos oreophilus* | 1285.01 |
| | |
| TOTAL | **6168.04** |

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**Table 13: Waste Rock Site Expansion Areas at the SUFCO Mine. Cover and Frequency by Plant Species (2013).**

| Proposed Disturbed Mountain Brush<br>Sample Areas: G, H, I, J (combined) | | | n=50 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| OVERSTORY | | | |
| **TREES & SHRUBS** | | | |
| *Amelanchier utahensis* | 0.30 | 2.10 | 2.00 |
| *Cercocarpus montanus* | 0.30 | 2.10 | 2.00 |
| *Populus tremuloides* | 2.60 | 7.09 | 12.00 |
| *Quercus gambelii* | 5.60 | 9.88 | 24.00 |
| | | | |
| UNDERSTORY | | | |
| **TREES & SHRUBS** | | | |
| *Amelanchier utahensis* | 6.00 | 12.37 | 24.00 |
| *Artemisia tridentata var. tridentata* | 0.90 | 3.70 | 6.00 |
| *Artemisia tridentata var. vaseyana* | 6.20 | 10.42 | 30.00 |
| *Cercocarpus montanus* | 11.50 | 15.07 | 44.00 |
| *Chrysothamnus nauseosus* | 0.30 | 2.10 | 2.00 |
| *Populus tremuloides* | 0.90 | 3.96 | 6.00 |
| *Purshia tridentata* | 0.50 | 3.50 | 2.00 |
| *Quercus gambelii* | 5.60 | 13.14 | 18.00 |
| *Rosa woodsii* | 0.20 | 1.40 | 2.00 |
| *Symphoricarpos oreophilus* | 4.20 | 8.96 | 6.00 |
| | | | |
| **FORBS** | | | |
| *Achillea millefolium* | 1.00 | 4.24 | 6.00 |
| *Erigeron engelmannii* | 0.20 | 1.40 | 2.00 |
| *Lupinus argenteus* | 1.90 | 4.68 | 16.00 |
| *Machaeranthera grindelioides* | 0.40 | 1.69 | 6.00 |
| *Penstemon watsonii* | 0.60 | 2.37 | 6.00 |
| *Taraxacum officinale* | 0.20 | 1.40 | 2.00 |
| | | | |
| **GRASSES** | | | |
| *Bromus carinatus* | 0.20 | 1.40 | 2.00 |
| *Elymus canadensis* | 2.20 | 10.50 | 6.00 |
| *Elymus salinus* | 2.60 | 6.73 | 16.00 |
| *Elymus spicatus* | 8.00 | 10.82 | 44.00 |
| *Poa secunda* | 3.90 | 8.38 | 22.00 |
| *Stipa hymenoides* | 0.40 | 2.80 | 2.00 |

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**Table 14: Waste Rock Site Expansion Areas at the SUFCO Mine. Total Cover and Composition (2013).**

| Proposed Disturbed Mountain Brush<br>Sample Areas: G, H, I, J (combined) | | n=50 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Overstory (O) | 8.80 | 11.56 |
| Understory (U) | 57.90 | 10.40 |
| Litter | 19.76 | 11.99 |
| Bareground | 12.66 | 10.12 |
| Rock | 9.68 | 9.13 |
| | | |
| O + U | 66.70 | 12.51 |
| | | |
| **B. % COMPOSITION** | | |
| Trees/Shrubs | 62.05 | 24.74 |
| Forbs | 8.02 | 15.11 |
| Grasses | 29.93 | 20.08 |

**Table 15: Waste Rock Site Expansion Areas at the SUFCO Mine. Woody Species Density (2013).**

| Proposed Disturbed Mountain Brush<br>Sample Areas: G, H, I, J (combined) | n=50 |
|---|---|
| **SPECIES** | **Individuals/Acre** |
| *Amelanchier utahensis* | 354.33 |
| *Artemisia tridentata var. tridentata* | 78.74 |
| *Artemisia tridentata var. vaseyana* | 531.50 |
| *Ceratoides lanata* | 39.37 |
| *Cercocarpus montanus* | 1259.85 |
| *Chrysothamnus nauseosus* | 78.74 |
| *Juniperus osteosperma* | 19.69 |
| *Pinus edulis* | 19.69 |
| *Populus tremuloides* | 295.28 |
| *Purshia tridentata* | 59.06 |
| *Quercus gambelii* | 767.72 |
| *Rosa woodsii* | 39.37 |
| *Symphoricarpos oreophilus* | 393.70 |
| | |
| TOTAL | **3937.03** |

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**Table 16: Waste Rock Site Expansion Areas at the SUFCO Mine. Living Cover and Frequency by Plant Species (2013).**

| Mountain Brush Reference Area<br>Sample Area: M | | | n=30 |
|---|---|---|---|
| | **Mean Percent** | **Standard Deviation** | **Percent Frequency** |
| OVERSTORY | | | |
| *Juniperus osteosperma* | 0.67 | 3.59 | 3.33 |
| *Pinus edulis* | 1.00 | 3.00 | 10.00 |
| *Quercus gambelii* | 2.33 | 6.80 | 13.33 |
| | | | |
| UNDERSTORY | | | |
| **TREES & SHRUBS** | | | |
| *Amelanchier utahensis* | 5.67 | 9.37 | 33.33 |
| *Artemisia tridentata var. tridentata* | 2.00 | 8.43 | 6.67 |
| *Artemisia tridentata var. vaseyana* | 5.00 | 8.37 | 33.33 |
| *Cercocarpus montanus* | 19.17 | 20.58 | 60.00 |
| *Chrysothamnus viscidiflorus* | 0.33 | 1.80 | 3.33 |
| *Gutierrezia sarothrae* | 0.33 | 1.80 | 3.33 |
| *Penstemon watsonii* | 1.50 | 3.20 | 20.00 |
| *Pinus edulis* | 3.33 | 8.79 | 13.33 |
| *Quercus gambelii* | 5.83 | 11.26 | 23.33 |
| *Symphoricarpos oreophilus* | 0.50 | 1.98 | 6.67 |
| | | | |
| **FORBS** | | | |
| *Antennaria dimorpha* | 0.50 | 1.98 | 6.67 |
| *Erigeron sp.* | 0.33 | 1.80 | 3.33 |
| *Juniperus osteosperma* | 1.00 | 5.39 | 3.33 |
| *Machaeranthera grindelioides* | 0.33 | 1.80 | 3.33 |
| *Tetradymia canescens* | 0.00 | 0.00 | 3.33 |
| | | | |
| **GRASSES** | | | |
| *Bromus carinatus* | 1.33 | 7.18 | 3.33 |
| *Elymus spicatus* | 4.83 | 9.17 | 26.67 |
| *Poa secunda* | 6.33 | 8.46 | 46.67 |
| *Stipa hymenoides* | 1.00 | 5.39 | 3.33 |

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**Table 17: Waste Rock Site Expansion Areas at the SUFCO Mine.**
**Total Cover and Composition (2013).**

| Mountain Brush Reference Area<br>Sample Area: M | | n=30 |
|---|---|---|
| **A. TOTAL COVER** | **Mean Percent** | **Standard Deviation** |
| Overstory (O) | 4.00 | 7.68 |
| Understory (U) | 59.33 | 8.73 |
| Litter | 15.17 | 9.70 |
| Bareground | 9.17 | 4.30 |
| Rock | 16.33 | 11.90 |
| | | |
| O + U | 63.33 | 6.87 |
| | | |
| **B. % COMPOSITION** | | |
| Trees/Shrubs | 73.62 | 20.29 |
| Forbs | 3.56 | 9.99 |
| Grasses | 22.82 | 19.03 |

**Table 18: Waste Rock Site Expansion Areas at the SUFCO Mine. Woody Species Density (2013).**

| Mountain Brush Reference Area<br>Sample Area: M | |
|---|---|
| | |
| **SPECIES** | **Individuals/Acre** |
| *Amelanchier utahensis* | 477.41 |
| *Artemisia tridentata var. tridentata* | 102.30 |
| *Artemisia tridentata var. vaseyana* | 511.51 |
| *Cercocarpus montanus* | 1568.63 |
| *Chrysothamnus viscidiflorus* | 68.20 |
| *Gutierrezia sarothrae* | 34.10 |
| *Juniperus osteosperma* | 136.40 |
| *Pinus edulis* | 170.50 |
| *Quercus gambelii* | 716.11 |
| *Symphoricarpos oreophilus* | 238.70 |
| *Tetradymia canescens* | 68.20 |
| | |
| TOTAL | **4092.07** |

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## Community Comparisons

When the **total living cover** of the Proposed Disturbed Sagebrush/Grass Community was compared to the Sagebrush/Grass Reference Area, the difference was not statistically significant (Figure 1).

**Figure 1.** A statistical comparison (Student's t-tests) of the **total living cover** between the Proposed Disturbed and Reference Areas of the Waste Rock Site.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Sagebrush/Grass | | | | | | |
| Proposed Disturbed (Sample Areas A,B,C,D) | 69.13 (o+u) | 9.61 | 40 | | | |
| Reference Area (Sample Area K) | 67.67 | 8.83 | 30 | | | |
| t-test | | | | 0.6510 | 68 | N.S. |

$\bar{x}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom
n/a = not applicable

p = probability
SL= Significance Level
N.S.=Non-Significant
u = understory
o = overstory

Also, when the **woody species densities** between these two communities were compared statistically, results from a Student's t-test also suggested that the difference was non-significant (Figure 2).

**Figure 2.** A statistical comparison (Student's t-tests) of the **woody species density** between the Proposed Disturbed and Reference Areas of the Waste Rock Site.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Sagebrush/Grass | | | | | | |
| Proposed Disturbed (Sample Areas A,B,C,D) | 3448.05 | 1172.92 | 40 | | | |
| Reference Area (Sample Area K) | 2943.63 | 1154.60 | 30 | | | |
| t-test | | | | 1.7925 | 68 | N.S. |

$\bar{x}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom

p = probability
SL= Significance Level
N.S.=Non-Significant



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Next, when the **total living cover** value of the Proposed Disturbed Rabbitbrush/Sagebrush Community was compared with the Rabbitbrush/Sagebrush Reference Area, the difference was again non-significant (Figure 3).

**Figure 3.** A statistical comparison (Student's t-tests) of the **total living cover** between the Proposed Disturbed and Reference Areas of the Waste Rock Site.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Rabbitbrush/Sagebrush | | | | | | |
| Proposed Disturbed (Sample Areas E, F) | 81.50 | 8.48 | 30 | | | |
| Reference Area (Sample Area L) | 78.83 | 8.91 | 30 | | | |
| t-test | | | | 1.1889 | 58 | N.S. |

$\bar{X}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom
n/a = not applicable

p = probability
SL= Significance Level
N.S.=Non-Significant

However, when the **woody species densities** of these two areas were compared, the difference was significant statistically (Figure 4).

**Figure 4.** A statistical comparison (Student's t-tests) of the **woody species density** between the Proposed Disturbed and Reference Areas of the Waste Rock Site.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Rabbitbrush/Sagebrush | | | | | | |
| Proposed Disturbed (Sample Areas E, F) | 6168.04 | 2017.02 | 30 | | | |
| Reference Area (Sample Area L) | 1672.96 | 801.92 | 30 | | | |
| t-test | | | | 11.3428 | 58 | p<.01 |

$\bar{X}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom

p = probability
SL= Significance Level
N.S.=Non-Significant

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Next, when the **total living cover** of the Proposed Disturbed Mountain Brush Community was compared to its reference area, the difference was once again non-significant statistically (Figure 5).

**Figure 5.** A statistical comparison (Student's t-tests) of the **total living cover** between the Proposed Disturbed and Reference Areas of the Waste Rock Site.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Mountain Brush | | | | | | |
| Proposed Disturbed (Sample Areas G,H,I,J) | 66.70 (o+u) | 12.51 | 50 | | | |
| Reference Area (Sample Area M) | 63.33 | 6.87 | 30 | | | |
| t-test | | | | 1.3557 | 78 | N.S. |

$\bar{x}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom
n/a = not applicable

p = probability
SL= Significance Level
N.S.=Non-Significant
P-J = Pinyon-Juniper
u = understory
o = overstory

Finally, when the **woody species density** of the Proposed Disturbed Mountain Brush Community was compared to the Mountain Brush Reference Area, the difference was statistically non-significant (Figure 6).

**Figure 6.** A statistical comparison (Student's t-tests) of the **woody species density** between the Proposed Disturbed and Reference Areas of the Waste Rock Site.

| | $\bar{x}$ | s | n | t | df | SL |
|---|---|---|---|---|---|---|
| Mountain Brush | | | | | | |
| Proposed Disturbed (Sample Areas G,H,I,J | 3937.13 | 1535.74 | 50 | | | |
| Reference Area (Sample Area M) | 4092.07 | 2402.10 | 30 | | | |
| t-test | | | | 0.3523 | 78 | N.S. |

$\bar{x}$ = mean
s = standard deviation
n = sample size
t = Student's t-value
df = degrees of freedom

p = probability
SL= Significance Level
N.S.=Non-Significant

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## Threatened, Endangered & Sensitive Species

A table of federally listed threatened, endangered and candidate species for Sevier County, Utah has been provided below (Table 19). The table also includes the status of the species, along with site-specific notes about the area proposed for disturbance and the probabilities of their occurrences in the study area.

**Table 19: Federally listed threatened, endangered and candidate species for Sevier County, Utah** (last updated January 12, 2012).

| ENDANGERED | | SITE-SPECIFIC NOTES |
|---|---|---|
| *Sclerocactus wrightiae* | Wright fishhook cactus | Wright's fishhook cactus is known to be present primarily in salt desert habitats on Mancos Shale, Dakota, Morrison, Summerville and Entrada Sandstone formations. This habitat is not present in the study area. Consequently, there will be no impact to this species as a result of expansion of the waste rock site. |
| **THREATENED** | | |
| *Astragalus montii* | Heliotrope milkvetch | This species is known to occur only in Flagstaff Limestone, a formation that is not present at the waste rock site. There should be no impact to this species as a result of proposed expansion. |
| *Townsendia aprica* | Last chance townsendia | Although this species can be found in pinyon-juniper communities and this community is relatively close to the study area, it most commonly occurs on clay and clay-silt exposures on the Mancos Shale formation. This formation is not found in the study area. There should be no impact to this species as a result of proposed expansion. |
| *Lynx canadensis* | Canada lynx | State of Utah, Division of Wildlife Resources (DWR) distribution maps show that the general area on the Wasatch Plateau in Sevier County may be "critical habitat" for this species.<br><br>The Canada lynx range extends from Canada and Alaska south to Maine, the Rocky Mountains, and also to the Great Lakes region. DWR biologists state that, *although sightings of the Canada lynx in Utah over the past twenty years are exceedingly rare, the USDA Forest Service recently announced that Canada lynx hair was* |

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| Table 19: Federally listed threatened, endangered and candidate species for Sevier County, Utah (last updated January 12, 2012). | | |
|---|---|---|
| | | *found in the Manti-La Sal National Forest during 2002.*<br><br>The preferred habitat of the Canada lynx is montane coniferous forest, where it often hunts snowshoe hares. Coniferous forests do not exist at the study area. Consequently, there will be no impact to this species as a result of expansion of the waste rock site. |
| **CANDIDATE** | | |
| *Centrocercus urophasianus* | Greater sage-grouse | Greater sage-grouse inhabit sagebrush zones in Utah's mountain valleys and foothills. There is no brooding or winter habitat for this species shown on the DWR database maps at or near the study area.<br><br>Utah's Conservation Plan for Greater Sage-grouse (February 14, 2013) shows areas near, but outside the study area to have "Opportunity Area" habitats for the sage-grouse in this portion of the Parker Mtn-Emery Sage-Grouse Management Area (SGMA). No leks have been mapped near the site.<br><br>Consequently, there should be no impact to this species as a result of expansion of the waste rock site. |
| *Cynomys parvidens* | Utah prairie-dog | Habitat for this prairie-dog does not exist in the study area. Consequently, there will be no impact to this species as a result of the proposed waste rock expansion. |
| **EXTIRPATED** | | |
| *Ursus arctos* | Brown (grizzly) bear | The brown (grizzly) bear was extirpated from Utah in the 1920s. It probably once occurred in the Wasatch Plateau.<br><br>Even though the brown bear may have been present in the general area historically, suitable habitat for the brown bear at or near the study area is questionable. There will be no impact to this species as a result of the proposed waste rock expansion. |

The State of Utah, Department of Natural Resources' biodiversity database specialist was consulted with regard to threatened, endangered or otherwise sensitive species in the mine area in 2013. Findings for this research indicated no such species, plant or animal, were

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found within a 2-mile radius of the mine site.

Additionally, GIS data and shape files from the State of Utah, Division of Wildlife Resources (DWR), Utah Conservation Data Center (UCDC) database were consulted for potential habitats of sensitive species. This database suggested there could be general habitat for one sensitive mammal in the Wasatch Plateau area, the big free-tailed bat (*Nyctinomops macrotis*). Below is some descriptive information provided by DWR.

> *"The big free-tailed bat occurs in the western United States, as well as in much of Latin America. The species is rare in Utah, occurring primarily in the southern half of the state, although individuals may rarely occur in northern Utah. The big free-tailed bat is included on the Utah Sensitive Species List."*
>
> *"The big free-tailed bat prefers rocky and woodland habitats, where roosting occurs in caves, mines, old buildings, and rock crevices. The species is typically active year-round, spending summers in temperate North America and migrating to warmer areas in North America and South America for the winter."*

Although there are woodlands in the expansion area, there is no or very little of the roosting habitat described above. Based on that fact and the rareness of the species, it is unlikely the proposed expansion project would impact this species.

# Summary & Discussion

Quantitative sampling has been conducted in those plant communities that have the potential of being impacted by construction of proposed expansion areas of SUFCO's Waste Rock Site. Additionally, similar plant communities outside the expansion area were also sampled with the goal to find appropriate revegetation success standards when the site is reclaimed in the future. These communities are called *reference areas*.

Statistical comparisons between the means of the proposed disturbed and reference areas (Figures 1 through 6), suggested that nearly all differences were non-significant. When the

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mean **total living covers** for the Proposed Disturbed Sagebrush/Grass, Rabbitbrush/ Sagebrush and Mountain Brush Communities were compared with their reference areas, there were no statistically significant differences. This suggests that the reference areas chosen may be appropriate to be used for revegetation success standards for living cover at the time of final reclamation.

Additionally, when statistics were used to make comparisons to their respective reference areas, the mean total **woody species densities** of the Proposed Disturbed Sagebrush/Grass and Mountain Brush Communities had differences were also non-significant. The one exception was that the total density of the Proposed Disturbed Sagebrush/Rabbitbrush Community was significantly greater than its reference area. As mentioned, these communities were probably not in their native condition – they have been somewhat altered by previous activities unrelated to mining. State R645 regulations require lands previously disturbed "*and that are remined by or otherwise redisturbed by coal mining and reclamation operations, at a minimum the vegetative cover will be not less than the ground cover that existed before redisturbance and will be adequate to control erosion*". A discussion regarding this site as well as other suggestions for revegetation success standards are provided below.

Because they match so closely, it seems appropriate that the reference areas could be used for final revegetation success standards for total living cover values. Regarding the woody species densities, however, it has been suggested at other future reclamation sites that perhaps the high woody species density values in some of the native plant communities are a result of domestic livestock and wildlife grazing pressure which often selects for the herbaceous species over the woody plants. Consequently, after consultations with the DWR biologists, sometimes less woody species density values may provide more opportunity for increased forb and grass species establishment that could provide greater species diversity in the summer range for the resident wildlife species as well as domestic livestock. Consequently, a pre-set woody species value of 2,000 plants per acre may be a more appropriate recommendation for a revegetation standard for the proposed disturbed Rabbitbrush/Sagebrush as well as the Sagebrush/Grass sites at the Waste Rock Site. Subject

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to approval by biologists from the State of Utah, Division of Oil, Gas and Mining (DOGM), revegetation success standards for each area are shown on Table 20.

**Table 20: Summary of revegetation recommended success standards for the expansion area of the Waste Rock Site at the SUFCO Mine.**

| PROPOSED DISTURBED AREA | COVER | DENSITY | DIVERSITY |
|---|---|---|---|
| Sagebrush/Grass | Sagebrush Reference Area | 2,000 plants/acre | Sagebrush Reference Area |
| Rabbitbrush/Sagebrush | Rabbitbrush/Sagebrush Reference Area | 2,000 plants/acre | Rabbitbrush/Sagebrush Reference Area |
| Mountain Brush | Mountain Brush Reference Area | Mountain Brush Reference Area | Mountain Brush Reference Area |

Finally, with relation to the success standards described above, there is one very important consideration for final reclamation and revegetation planning – this is the final post-mining topography. If the final slopes, aspects and elevations deviate greatly from the current, pre-disturbance topography (and they probably will), thought should be given to what community types and the extent of them should be created at specific locations on the reclaimed land.

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# Color Photographs of the Sample Areas

## Proposed Disturbed Sagebrush/Grass Community

Sample Area A

Sample Area B

Sample Area C

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Sample Area C

Sample Area C

Sample Area D

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Sample Area D

## Proposed Disturbed Rabbitbrush/Sagebrush Community

Sample Area E

Sample Area E

Sample Area E

Sample Area E

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Sample Area E

Sample Area F

Sample Area F

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Proposed Disturbed Mountain Brush Community

Sample Area G

Sample Area G

Sample Area H

Sample Area H

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Sample Area H

Sample Area H

Sample Area I

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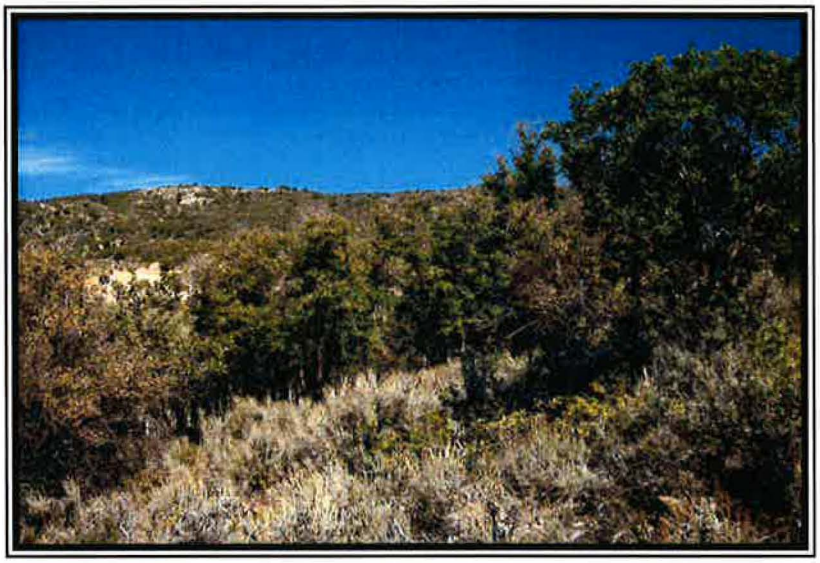
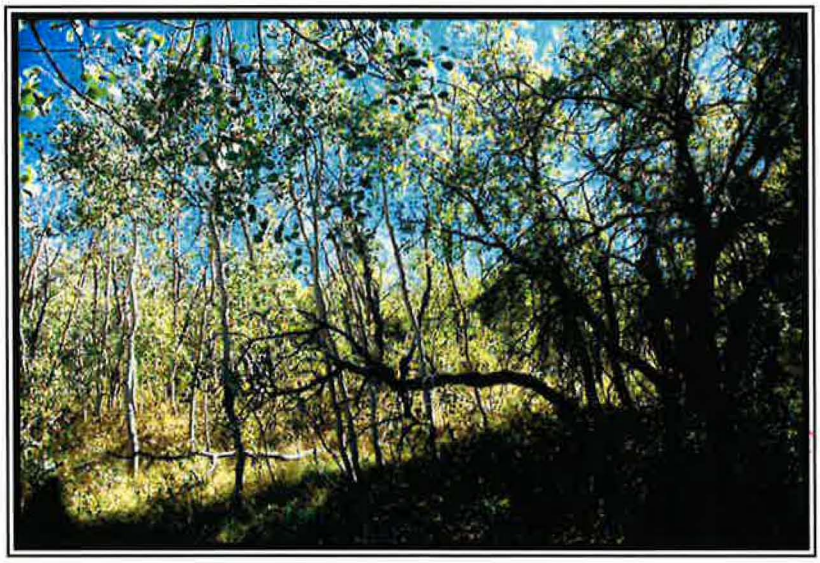


Sample Area I

Sample Area J



Sample Area J

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## Sagebrush/Grass Reference Area

Sample Area K

Sample Area K

Sample Area K

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## Rabbitbrush/Sagebrush Reference Area

Sample Area L

Sample Area L

Sample Area L

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## Mountain Brush Reference Area

Sample Area M

Sample Area M

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Sample Area M

Sample Area M

Sample Area M

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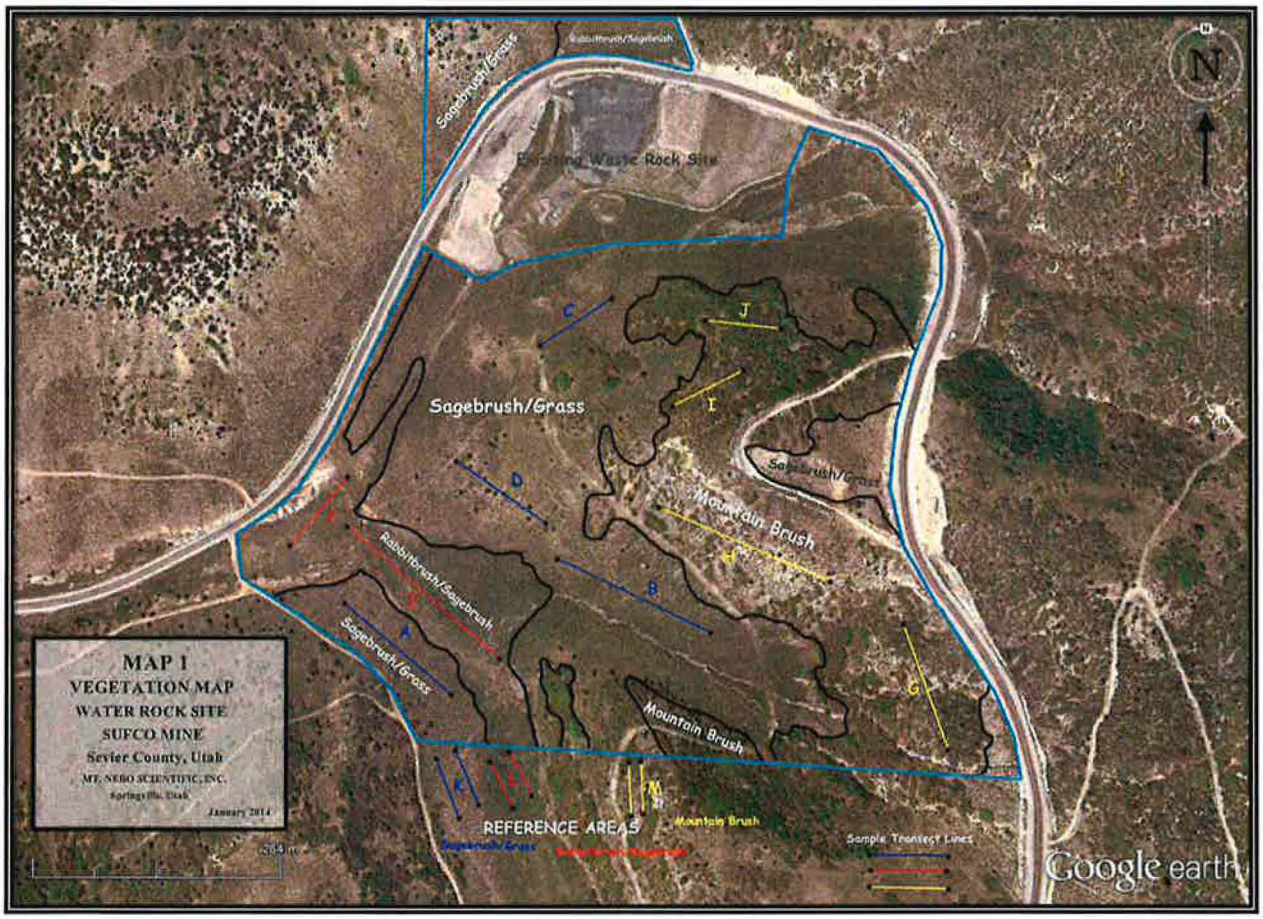
Sample Area M

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| SUFCO Mine Reclamation Sites and Associated Reference Area | | |
|---|---|---|
| | Estimated Acreage of Distbance | Reference area |
| **MINE SITE** | | |
| Lower Pond | 1.3 | Riparian |
| Exterior of Lower Pond and Spring Collection System | 2 | Oakbrush |
| Soil Nail Wall | 0.02 | Pinyon Juniper |
| Substation | 0.28 | Pinyon Juniper |
| Portals | 2.5 | Pinyon Juniper |
| | | |
| **Leachfield** | 0.8 | Sagebrush/Grass |
| | | |
| **Sinkhole** | 0.45 | Sagebrush/Grass |
| | | |
| **Link Canyon** | | |
| Culvert | 0.001 | Riparian |
| Substation and Access Road | 0.5 | Pinyon Juniper |
| | | |
| **Waste Rock Site** | | |
| Site (except as listed below) | 48 | Sagebrush/Grass |
| Large Sediment Pond | 2 | Rabbitbrush/Sagebrush |
| Hillside lifts 4 & 5 | 9 | Mountain brush |

**Pre-Law Disturbance Not Requiring Reference Area**

**Mine Site**

All except what is listed above

**Link Canyon**

All except what is listed above

EXPLANATION

REFERENCE AREA BOUNDARY

1100 0 1100

PROFESSIONAL ENGINEER No. 9073281 JACOB D. SMITH STATE OF UTAH

I CERTIFY THE ITEMS SHOWN ON THIS DRAWING ARE ACCURATE TO THE BEST OF MY KNOWLEDGE

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REGISTERED PROFESSIONAL ENGINEER 5152506 R. JAY MARSHALL STATE OF UTAH

| REVISIONS | | | | |
|---|---|---|---|---|
| NO. | DATE | REQ. BY | DWG. BY | REMARKS |
| | | | | |

Canyon Fuel Company, LLC
SUFCO Mine
597 South SR 24 – Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

PLATE
REFERENCE AREA

| PEN TBL: | SCALE: | DATE: | DRAWN BY: | ENGINEER: | CHECKED BY: | SHEET NO. |
|---|---|---|---|---|---|---|
| _1Stndrd-SUFENP1.ctb | 1" = 1100' | 12/2/2019 | J.G.C. | V.M. | V.M. | PLATE R.A. |
| SHT SET: ### | PROJECT NUMBER: ### | FILE NAME: H:\DRAWINGS\MRP\PLATES\PLATE REF AREA.dwg | | | | |

# APPENDIX 5-9

## Reclamation Bond Estimate

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## Direct Costs

| | | |
|---|---|---|
| Subtotal Demolition and Removal | $1,725,251 | |
| Subtotal Backfilling and Grading | $1,652,064 | |
| Subtotal Revegetation | $183,809 | |
| Direct Costs | $3,561,124 | *2019 Dollars* |

## Indirect Costs

| | | |
|---|---|---|
| Mob/Demob | $356,112 | 10.0% |
| Contingency | $178,056 | 5.0% |
| Engineering Redesign | $89,028 | 2.5% |
| Main Office Expense | $242,156 | 6.8% |
| Project Mainagement Fee | $89,028 | 2.5% |
| Subtotal Indirect Costs | $954,380 | 26.8% |

| | | |
|---|---|---|
| **Total Cost** | **$4,515,504.00** | *2019 Dollars* |

| | | |
|---|---|---|
| *Escalation factor for 2019* | | *0.0232* |
| *Number of years to next midterm (2024)* | | *4* |
| *Escalation Amount* | *$463,739.28* | |
| *Reclamation Cost Escalated* | *$ 4,979,243* | *2024 Dollars* |

| | |
|---|---|
| **Bond Amount (rounded to nearest $1,000) 2024 Dollars** | **$4,979,000.00** |

| | | |
|---|---|---|
| Posted Bond 2018 | $5,103,000.00 | |
| Difference Between Cost Estimate and Bond | $124,000.00 | |
| Percent Difference | 2.43% | |

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| | Equipment Cost | Hourly Operating Costs | Equipment Overhead | Operator's Hourly Wage Rate | Hourly Cost | Number of Men or Eq. | Total Eq. & Lab. Costs | Units | Quantity | Units | Production Rate | Units | Equip. + Labor Time/Dis. | Units | Cost 2019 Dollars |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | |
| Mine Site Cut and Fill | | | | | | | | | | | | | | | 843965 |
| Waste Rock Site | | | | | | | | | | | | | | | 799147 |
| Link Canyon Substation | | | | | | | | | | | | | | | 678 |
| Link Canyon Portals | | | | | | | | | | | | | | | 3526 |
| SITLA Muddy Tract Exploration | | | | | | | | | | | | | | | 4748 |
| Subtotal | | | | | | | | | | | | | | | 1652064 |

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| | Equipment Cost | Hourly Operating Costs | Equipment Overhead | Operator's Hourly Wage Rate | Hourly Cost | Number of Men or Eq. | Total Eq. & Lab. Costs | Units | Quantity | Units | Production Rate | Units | Equip. + Labor Time/Dis. | Units | 2019 Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mine Site Cut and Fill** | | | | | | | | | | | | | | | |
| D9R Semi-U EROPS (9-35) (2H14) | 23835 | 250 | 0.1 | 48.9 | 472.87 | 1 | 472.87 | $/HR | 93606 | CY | 150 | CY/HR | 624 | HR | 295071 |
| 826H ((6-12) (2N14) | 23545 | 250 | 0.1 | 48.9 | 471.06 | 1 | 471.06 | $/HR | | | | | 624 | HR | 293941 |
| CLAB | | | | | 56.55 | 1.5 | 62.1 | $/HR | | | | | 624 | HR | 38750 |
| 8,000 gal H2O truck Diesel (20-16) (2N14) | 13165 | 72.35 | 0.1 | 56.55 | 218.42 | 1 | 218.42 | $/HR | | | | | 624 | HR | 136294 |
| Pickup Truck Crew 4x4 1 ton (20-17) (2N14) | 850 | 9 | 0.1 | 36.5 | 51.71 | 1 | 51.71 | $/HR | | | | | 624 | HR | 32267 |
| Foreman Average, Outside | | | | | 76.35 | 1 | 76.35 | $/HR | | | | | 624 | HR | 47642 |
| **Subtotal** | | | | | | | | | | | | | | | **843965** |

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| | Equipment Cost | Hourly Operating Costs | Equipment Overhead | Operator's Hourly Wage Rate | Hourly Cost | Number of Men or Eq. | Total Eq. & Lab. Costs | Units | Quantity | Units | Production Rate | Units | Equip. + Labor Time/Dis. | Units | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Waste Rock Site** | | | | | | | | | | | | | | | |
| D9R Semi-U EROPS (9-35) (2H14) | 23835 | 250 | 0.1 | 48.9 | 472.87 | 1 | 472.87 | $/HR | 132944 | CY | 225 | CY/HR | 590.86 | HR | 279401 |
| 826H ((6-12) (2N14) | 23545 | 250 | 0.1 | 48.9 | 471.06 | 1 | 471.06 | $/HR | | | | | 590.86 | HR | 278332 |
| CLAB | | | | | 56.55 | 1.5 | 62.1 | $/HR | | | | | 590.86 | HR | 36693 |
| 8,000 gal H2O truck Diesel (20-16) (2N14) | 13165 | 72.35 | 0.1 | 56.55 | 218.42 | 1 | 218.42 | $/HR | | | | | 590.86 | HR | 129056 |
| Pickup Truck Crew 4x4 1 ton (20-17) (2N14) | 850 | 9 | 0.1 | 36.5 | 51.71 | 1 | 51.71 | $/HR | | | | | 590.86 | HR | 30553 |
| Foreman Average, Outside | | | | | 76.35 | 1 | 76.35 | $/HR | | | | | 590.86 | HR | 45112 |
| Phase 1 | | | | | | | | | 33700 | CY | | | | | |
| Phase 2 & Transition topsoil removal Lift 1&2 | | | | | | | | | 33241 | CY | | | | | |
| Phase 3/4 Topsoil | | | | | | | | | 36510 | CY | | | | | |
| Phase 3/4 Subsoil | | | | | | | | | 29493 | CY | | | | | |
| Total Phase 1 through 4 | | | | | | | | | 132944 | CY | | | | | |
| **Subtotal** | | | | | | | | | | | | | | | **799147** |

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| | Equipment Cost | Hourly Operating Costs | Equipment Overhead | Operator's Hourly Wage Rate | Hourly Cost | Number of Men or Eq. | Total Eq. & Lab. Costs | Units | Quantity | Units | Production Rate | Units | Equip. + Labor Time/Dis. | Units | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Link Canyon Substation** | | | | | | | | | | | | | | | |
| Place Backfill Material | | | | | | | | | | | | | | | |
| CAT 325DL (10-20)(2nd14) | 11225 | 120 | 0.1 | 48.9 | 251.06 | 1 | 251.06 | $/HR | 423 | CY | 225 | CY/HR | 1.9 | HR | 477 |
| Place Topsoil | | | | | | | | | | | | | | | |
| CAT 325DL (10-20)(2nd14) | 11225 | 120 | 0.1 | 48.9 | 251.06 | 1 | 251.06 | $/HR | 170 | CY | 225 | CY/HR | 0.8 | HR | 201 |
| **Subtotal** | | | | | | | | | | | | | | | **678** |

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| | Equipment Cost | Hourly Operating Costs | Equipment Overhead | Operator's Hourly Wage Rate | Hourly Cost | Number of Men or Eq. | Total Eq. & Lab. Costs | Units | Quantity | Units | Production Rate | Units | Equip. + Labor Time/Dis. | Units | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Link Canyon Portals** | | | | | | | | | | | | | | | |
| Place Backfill Material | | | | | | | | | | | | | | | |
| CAT 325DL (10-20)(2nd14) | 11225 | 120 | 0.1 | 48.9 | 251.06 | 1 | 251.06 | $/HR | 267 | CY | 36 | CY/HR | 7.4 | HR | 1858 |
| Place Topsoil | | | | | | | | | | | | | | | |
| CAT 325DL (10-20)(2nd14) | 11225 | 120 | 0.1 | 48.9 | 251.06 | 1 | 251.06 | $/HR | 67 | CY | 36 | CY/HR | 1.9 | HR | 477 |
| Support | | | | | | | | | | | | | | | |
| Pickup Truck Crew 4x4 1 ton (20-17) (2N14) | 850 | 9 | 0.1 | 36.5 | 51.71 | 1 | 51.71 | $/HR | | | | | 9.3 | HR | 481 |
| Foreman Average, Outside | | | | | 76.35 | 1 | 76.35 | $/HR | | | | | 9.3 | HR | 710 |
| **Subtotal** | | | | | | | | | | | | | | | **3526** |

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| | Equipment Cost | Hourly Operating Costs | Equipment Overhead | Operator's Hourly Wage Rate | Hourly Cost | Number of Men or Eq. | Total Eq. & Lab. Costs | Units | Quantity | Units | Production Rate | Units | Equip. + Labor Time/Dis. | Units | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SITLA Muddy Tract Exploration** | | | | | | | | | | | | | | | |
| 410J EROPS 4WD EXTEN. (9-22)(2nd14) | 3950 | 41 | 0.1 | 48.9 | 118.69 | 1 | 118.69 | $/HR | | | | | 40 | HR | 4748 |
| **Subtotal** | | | | | | | | | | | | | | | **4748** |

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| Ref. | Description | Materials | Unit | Length | Width | Height | Diameter | Area | Number | Unit | Quantity | Unit | Cost 2019 Dollars |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Main Facilities** | | | | | | | | | | | | |
| 2 | Ambulance Garage | | | | | | | | | | | | $3,403.00 |
| 3 | Annex Building | | | | | | | | | | | | $27,858.50 |
| 4 | Blast Channels A | | | | | | | | | | | | $135,099.00 |
| 5 | Blast Channels B | | | | | | | | | | | | $43,846.00 |
| 6 | Bulk and Used Oil Storage | | | | | | | | | | | | $3,636.00 |
| 7 | Cap Magazine | | | See Clorinator Building | | | | | | | | | $0.00 |
| 8 | Chlorinator Bld | | | | | | | | | | | | $812.00 |
| 9 | Diesel Tank - 16,900 Gal | | | | | | | | | | | | $4,644.50 |
| 10 | Drainage Culverts | | | | | | | | | | | | $40,895.00 |
| 11 | Electrical Bld | | | | | | | | | | | | $1,498.00 |
| 12 | Fan | | | | | | | | | | | | $13,878.00 |
| 13 | Fire Water Tank 300,000 Gal | | | | | | | | | | | | $12,731.00 |
| 14 | Fuel Dock | | | | | | | | | | | | $1,591.00 |
| 15 | Guard House | | | | | | | | | | | | $546.00 |
| 16 | Loadout Belt | | | | | | | | | | | | $4,358.00 |
| 17 | Lower Stacker Coal Storage | | | | | | | | | | | | $3,524.00 |
| 18 | Lump Coal Belt | | | | | | | | | | | | $1,587.00 |
| 19 | Lump Coal Storage | | | | | | | | | | | | $2,596.00 |
| 20 | Mine 1 Pad | | | | | | | | | | | | $5,346.00 |
| 21 | No 1 Belt | | | | | | | | | | | | $4,544.00 |
| 22 | Office Building | | | | | | | | | | | | $137,212.00 |
| 23 | Pavement Removal | | | | | | | | | | | | $189,413.00 |
| 24 | Powder Magazine | | | | | | | | | | | | $157.00 |
| 25 | Pump House | | | | | | | | | | | | $1,891.00 |
| 26 | Riprap Filter Fabric | | | | | | | | | | | | $390,855.00 |
| 27 | Rock Dust Bin | | | | | | | | | | | | $4,982.00 |
| 28 | ROM MCC Building | Storage | | | | | | | | | | | $1,543.00 |
| 29 | ROM Coal Storage | Building | | | | | | | | | | | $25,610.00 |
| 30 | Sampler Building | | | | | | | | | | | | $918.00 |
| 31 | Sand and Salt Storage | | | | | | | | | | | | $3,527.00 |
| 32 | Seal Portals | | | | | | | | | | | | $60,168.00 |
| 33 | Sediment Trap | | | | | | | | | | | | $2,626.00 |
| 34 | Septic Tanks | | | | | | | | | | | | $16,388.00 |
| 35 | Shelves | | | | | | | | | | | | $5,619.00 |
| 36 | Shop and Warehouse | | | | | | | | | | | | $106,593.00 |
| 37 | Shop Garage | | | | | | | | | | | | $13,427.00 |
| 38 | Shop Office | | | | | | | | | | | | $3,006.00 |
| 39 | Side Release Tank | | | | | | | | | | | | $1,162.00 |
| 40 | Steam Cleaner Building | | | | | | | | | | | | $11,171.00 |
| 41 | Stoker Belt | | | | | | | | | | | | $2,024.00 |
| 42 | Stoker Bin | | | | | | | | | | | | $16,011.00 |
| 43 | Stoker Coal Storage | | | | | | | | | | | | $3,796.00 |
| 44 | Stoker Oil Tank | | | | | | | | | | | | $4,412.00 |
| 45 | Storage Trailers | | | | | | | | | | | | $2,050.00 |
| 46 | Substation Lower | | | | | | | | | | | | $111,202.00 |
| 47 | Ticket Printers | | | | See Tipple Building | | | | | | | | $0.00 |
| 48 | Tipple Building | | | | | | | | | | | | $71,900.00 |
| 49 | Tipple MCC Buidling | | | | | | | | | | | | $5,313.00 |
| 50 | Tipple Office Building | | | | | | | | | | | | $4,535.00 |
| 51 | Trash Pit | | | | | | | | | | | | $913.00 |
| 52 | Transfer Building | | | | | | | | | | | | $12,157.00 |
| 53 | Truck Loader Bin | | | | | | | | | | | | $2,175.00 |
| 54 | Truck Scale | | | | | | | | | | | | $47,313.00 |
| 55 | Water Tank Lower | | | | | | | | | | | | $1,150.00 |
| 56 | Water Tank Upper | | | | | | | | | | | | $1,150.00 |
| 57 | West Lease Tunnels | | | | | | | | | | | | $52,006.00 |
| 58 | Yard Hoist | | | | See Transfer Building | | | | | | | | $0.00 |
| | **Link Canyon Facilities** | | | | | | | | | | | | |
| 60 | Link Canyon Portals | | | | | | | | | | | | $5,411.00 |
| 61 | Link Canyon Substation | | | | | | | | | | | | $38,899.00 |
| | **Fourth East Facilities** | | | | | | | | | | | | |
| 63 | Fan Generator Building | | | | | | | | | | | | $2,371.00 |
| 64 | Four East Fan | | | | | | | | | | | | $19,072.00 |
| | **Mitigation** | | | | | | | | | | | | |
| 66 | Northwater Mitigation | | | | | | | | | | | | $32,730.00 |
| | Total | | | | | | | | | | | | $725,251.00 |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Ambulance Garage** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 7888 | | | | | CF | | 7888 | CF | 2840 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 852 | | | | | |
| | | | | | | | | | | | | | | | | | 0.1 | 29 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 2.4 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.8 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 6.4 | HR | |
| | **Transportation Cost Truck/Driver** | **Nielson Construction - 10 whl DT - 12 CY** | **Truck & Driver '14** | 760 | Day | | | | | | | | | | | | | | | **760** |
| | Subtotal | | | | | | | | | | | | | | | | | | | **3600** |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | **Subtotal** | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 19 | | | | | CY | | 19 | CY | 261 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 25 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 25 | CY | 33 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.63 | /CY | | | | | | | | | | | | | 25 | CY | 91 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 10.8 | /CY | | | | | | | | | | | | | 25 | CY | 270 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 655 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | **Subtotal** | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **3403** |

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| Ref. | Description | Materials | Means Reference Num | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Annex Building** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 11263 | | | | | CF | | 11263 | CF | 4055 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 1216 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 41.71 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 3.5 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 2 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 16 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 1520 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 5575 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 563 | | | | | CY | | 563 | CY | 7741 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 732 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 732 | CY | 974 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 732 | CY | 2591 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 732 | CY | 8125 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 19431 |
| | SOIL NAIL WALL | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Concrete w/ rienforcing 6' high | 02 41 13.90 0400 | 16.2 | LF | 65 | | | | | 42.5 | | | | | CY | | 65 | LF | 1053 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 55 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 55 | CY | 73 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 55 | CY | 195 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 55 | CY | 611 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1932 |
| | | | | | | | | | | | | | | | | | | | | |
| | CHAIN LINKFENCE | | | | | | | | | | | | | | | | | | | |
| | Chainlink Removal | 8'-10' - Crew Includes Loader | 02 41 13.60 1700 | 4.42 | /LF | 119.42 | | | | | | | | | 119.42 | LF | | 119 | LF | 526 |
| | Concrete demolition | Footings 2' thick and 3' wide Gate posts | 02 41 16.17 1140 | 20.5 | LF | 3 | | | | | | | | | 12 | LF | | 12 | LF | 246 |
| | Concrete demolition | Footings 2' thick and 3' wide Line post | 02 41 16.17 1140 | 20.5 | LF | 2 | | | | | | | | | 20 | LF | | 20 | LF | 410 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 4 | CY | 14 |
| | Chain link Gates | Two Gates (3' & 5') | 02 41 13.62 0100 | 66 | EA | | | | | | | | | | 2 | EA | | 2 | EA | 132 |
| | Chain link Gates | 10' Wide heavy duty gate | 02 41 13.62 0200 | 123 | EA | | | | | | | | | | 1 | EA | | 1 | EA | 123 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 4 | /CY | 14 |
| | Post Removal | Gate Post 3"x 9' SCH 40 GALV | 02 41 13.62 1000 | 24.5 | ea | | | | | | | | | | 3 | | | 3 | EA | 74 |
| | Bollards Removal | 6" bollards | 02 41 13.92 0800 | 24.5 | EA | | | | | | | | | | 2 | | | 2 | EA | 49 |
| | Post Braces | Braces on end and gate Braces | 02 41 13.62 0800 | 0.76 | EA | | | | | | | | | | 9 | | | 9 | EA | 7 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 4 | /CY | 14 |
| | Disposal Costs | On site disposal (Dozer) | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 4 | /CY | 44 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 188 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **27859** |

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Div. of Oil, Gas & Mining

| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Blast Channels A** | | | | | | | | | | | | | | | | | | | |
| | Reach 2 | | | | | | | | | | | | | | | | | | | |
| | Blasting | | | | | | | | | | | | | | | | | | | |
| | Blasting Cost | Drill and Blast open face under 1,500 CY | 31 23 16 30 0020 | 19.5 | BCY | | | | | | 496 | | | | | CY | | 496 | CY | 9672 |
| | Volume of Rubble | | | | | | | | | | | | | | | | 1.3 | 645 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 645 | CY | 858 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 645 | CY | 839 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 11369 |
| | Reach 3 | | | | | | | | | | | | | | | | | | | |
| | Blasting | | | | | | | | | | | | | | | | | | | |
| | Blasting Cost | Drill and Blast open face under 1,500 CY | 31 23 16 30 0020 | 19.5 | BCY | | | | | | 1227 | | | | | CY | | 1227 | CY | 23927 |
| | Volume of Rubble | | | | | | | | | | | | | | | | 1.3 | 1595 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 1595 | CY | 2121 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 1595 | CY | 2074 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | LCY | | | | | | | | | | | | | 1595 | CY | 17705 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 45827 |
| | Reach 4 | | | | | | | | | | | | | | | | | | | |
| | Blasting | | | | | | | | | | | | | | | | | | | |
| | Blasting Cost | Drill and Blast open face under 1,500 CY | 31 23 16 30 0020 | 19.5 | BCY | | | | | | 2708 | | | | | CY | | 2708 | CY | 52806 |
| | Volume of Rubble | | | | | | | | | | | | | | | | 1.3 | 3520 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 3520 | CY | 4682 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 3520 | CY | 4576 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 62064 |
| | Reach 5 | | | | | | | | | | | | | | | | | | | |
| | Blasting | | | | | | | | | | | | | | | | | | | |
| | Blasting Cost | Drill and Blast open face under 1,500 CY | 31 23 16 30 0020 | 19.5 | BCY | | | | | | 259 | | | | | CY | | 259 | CY | 5051 |
| | Volume of Rubble | | | | | | | | | | | | | | | | 1.3 | 337 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 337 | CY | 448 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 337 | CY | 438 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 5937 |
| | Reach 6 | | | | | | | | | | | | | | | | | | | |
| | Blasting | | | | | | | | | | | | | | | | | | | |
| | Blasting Cost | Drill and Blast open face under 1,500 CY | 31 23 16 30 0020 | 19.5 | BCY | | | | | | 432 | | | | | CY | | 432 | CY | 8424 |
| | Volume of Rubble | | | | | | | | | | | | | | | | 1.3 | 562 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 562 | CY | 747 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 562 | CY | 731 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 9902 |
| | **Total** | | | | | | | | | | | | | | | | | | | **135099** |

Note: Blasted Material will be placed as fill during reclamation

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Blast Channels B** | | | | | | | | | | | | | | | | | | | |
| | Reach 7 | | | | | | | | | | | | | | | | | | | |
| | Blasting | | | | | | | | | | | | | | | | | | | |
| | Blasting Cost | Drill and Blast open face under 1,500 CY | 31 23 16 30 0020 | 19.5 | BCY | | | | | | 492 | | | | | CY | | 492 | CY | 9594 |
| | Volume of Rubble | | | | | | | | | | | | | | | | 1.3 | 640 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 640 | CY | 851 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 640 | CY | 832 |
| | **Subtotal** | | | | | | | | | | | | | | | | | | | **11277** |
| | Reach 8 | | | | | | | | | | | | | | | | | | | |
| | Blasting | | | | | | | | | | | | | | | | | | | |
| | Blasting Cost | Drill and Blast open face under 1,500 CY | 31 23 16 30 0020 | 19.5 | BCY | | | | | | 820 | | | | | CY | | 820 | CY | 15990 |
| | Volume of Rubble | | | | | | | | | | | | | | | | 1.3 | 1066 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 1066 | CY | 1418 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 1066 | CY | 1386 |
| | Subtotal | | | | | | | | | | | | | | | | | | | **18794** |
| | Reach A-1, A-2 | | | | | | | | | | | | | | | | | | | |
| | Blasting | | | | | | | | | | | | | | | | | | | |
| | Blasting Cost | Drill and Blast open face under 1,500 CY | 31 23 16 30 0020 | 19.5 | BCY | | | | | | 151 | | | | | CY | | 151 | CY | 2945 |
| | Volume of Rubble | | | | | | | | | | | | | | | | 1.3 | 196 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 196 | CY | 261 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 196 | CY | 255 |
| | **Subtotal** | | | | | | | | | | | | | | | | | | | **3461** |
| | Reach A-3, A-4, A-5 | | | | | | | | | | | | | | | | | | | |
| | Blasting | | | | | | | | | | | | | | | | | | | |
| | Blasting Cost | Drill and Blast open face under 1,500 CY | 31 23 16 30 0020 | 19.5 | BCY | | | | | | 450 | | | | | CY | | 450 | CY | 8775 |
| | Volume of Rubble | | | | | | | | | | | | | | | | 1.3 | 585 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 585 | CY | 778 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 585 | CY | 761 |
| | Subtotal | | | | | | | | | | | | | | | | | | | **10314** |
| | **Total** | | | | | | | | | | | | | | | | | | | **43846** |

Note: Blasted Material will be placed as fill during reclamation, therefore there will be no on site disposal

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Bulk and Used Oil Storage** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Tank | 02 65 10.30 1023 | 830 | EA | 21 | | | 8 | | 1055 | | | | 1 | FT/FT$^3$/ea | | 1 | EA | 830 |
| | | Steel Tank | 02 65 10.30 1023 | 830 | EA | 5.5 | 10.5 | 10.5 | | | 606 | | | | 1 | FT/FT$^3$/ea | | 1 | EA | 830 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 6 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 1 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.3 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 2.4 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2420 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 35 | | | | | CY | | 35 | CY | 481 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 46 | CY | |
| | Loading Cost | Front end loader track 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 46 | CY | 61 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 46 | CY | 163 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 46 | CY | 511 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1216 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **3636** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Cap Magazine** | See Clorinator Building | | | | | | | | | | | | | | | | | | |
| | See Clorinator Building | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Truck/Driver | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | **Subtotal** | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | |

| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Chlorinator Bld** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 5.8 | 2.4 | 6.6 | | | | | | | | | | 92 | CF | 34 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 10 | | | | | |
| | **Cap Magazine** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 4 | 5.75 | 4.8 | | | | | | | | | | 110 | CF | 40 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 12 | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 92.41 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 1 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.3 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 2.4 | HR | |
| | **Transportation Cost Truck/Driver** | **Nielson Construction - 10 whl DT - 12 CY** | **Truck & Driver '14** | **760** | **Day** | | | | | | | | | | | | | | | **760** |
| | Subtotal | | | | | | | | | | | | | | | | | | | 834 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | **Disposal Costs** | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | **Subtotal** | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **812** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Diesel Tank - 16,900 Gal** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Petro tank 9000-12000 excavate load | 02 65 10.30 0130 | 1825 | EA | 20 | | | 12 | | 2261 | | | | 1 | FT/ $FT^3$ | | 1 | EA | 1825 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Truck/Driver | Haul tank to certified dump, 100 miles rd | 02 65 10.30 1029 | 1150 | EA | | | | | | | | | | | | | 1 | EA | 1150 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2975 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | Foundations <15" | Nielson '14 | 13.75 | CY | 84 | 6 | 0.5 | | | | | | | | FT | | 9 | CY | 124 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | 9 | CY | 1.3 | 12 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 12 | CY | 16 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 12 | CY | 42 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 12 | CY | 133 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 315 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | Foundations <15" | Nielson '14 | 13.75 | CY | 20 | 26 | 0.5 | | | | | | | | FT | | 10 | CY | 138 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | 10 | CY | 1.3 | 13 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 13 | CY | 17 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 13 | CY | 46 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 13 | CY | 144 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 345 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **4645** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Drainage Culverts** | | | | | | | | | | | | | | | | | | | |
| | 42" Mud Spring Canyon CMP removal | | | | | | | | | | | | | | | | | | | |
| | 42" Culvert Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.80 | BCY | 445 | 3.5 | 7 | | | | | | | | FT | | 404 | CY | 727 |
| | 42" Culvert Backfill | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | 445 | 3.5 | 7 | | | | | | | | FT | 1.3 | 525 | CY | 1307 |
| | 72" East Spring Canyon CMP | | | | | | | | | | | | | | | | | | | |
| | 72" Culvert Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.80 | BCY | 1554 | 6 | 12 | | | | | | | | FT | | 4144 | CY | 7459 |
| | 72" Culvert Backfill | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | 1554 | 6 | 12 | | | | | | | | FT | 1.3 | 5387 | CY | 13414 |
| | 48" East Spring Canyon CMP | | | | | | | | | | | | | | | | | | | |
| | 48" Culvert Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.80 | BCY | 505 | 4 | 8 | | | | | | | | FT | | 599 | CY | 1078 |
| | 48" Culvert Backfill | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | 505 | 4 | 8 | | | | | | | | FT | 1.3 | 778 | CY | 1937 |
| | 24" East Spring Canyon CMP | | | | | | | | | | | | | | | | | | | |
| | 24" Culvert Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.80 | BCY | 250 | 2 | 4 | | | | | | | | FT | | 74 | CY | 133 |
| | 24" Culvert Backfill | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | 250 | 2 | 4 | | | | | | | | FT | 1.3 | 96 | CY | 239 |
| | 66" East Spring Canyon Contech Pipe | | | | | | | | | | | | | | | | | | | |
| | 66" Culvert Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.80 | BCY | 340 | 5.5 | 4 | | | | | | | | FT | | 277 | CY | 499 |
| | 66" Culvert Backfill | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | 340 | 5.5 | 4 | | | | | | | | FT | 1.3 | 360 | CY | 896 |
| | 18" CMP Sediment Pond Diversion | | | | | | | | | | | | | | | | | | | |
| | 18" Culver Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.80 | BCY | 1300 | 2 | 4 | | | | | | | | FT | | 385 | CY | 693 |
| | 18" Culvert Backfill | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | 1300 | 2 | 4 | | | | | | | | FT | 1.3 | 501 | CY | 1247 |
| | 6" ADS Sediment Pond Diversion | | | | | | | | | | | | | | | | | | | |
| | 6" Culvert Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.80 | BCY | 230 | 2 | 4 | | | | | | | | FT | | 68 | CY | 122 |
| | 6" Culvert Backfill | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | 230 | 2 | 4 | | | | | | | | FT | 1.3 | 89 | CY | 222 |
| | Backfill ROM 84" Escapeway CMP | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | | | | | | 108 | | | | | CY | 1.3 | 140 | CY | 349 |
| | Backfill Concrete Reclaim Tunnel | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | | | | | | 600 | | | | | CY | 1.3 | 780 | CY | 1942 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 32264 |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 58.9 | | | | | CY | | 59 | SF | 811 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 77 | CY | |
| | Loading Cost | Front End Loader 3CY | 31 23 16 42 1601 | 1.33 | BCY | | | | | | | | | | | | | 77 | CY | 102 |
| | Transportation Cost | 12 CY (16Ton) Dump Truck 1/2 mi. rnd. Trip | 31 23 23 20 1014 | 3.54 | LCY | | | | | | | | | | | | | 77 | CY | 273 |
| | Disposal Costs | On Site disposal | 02 41 16 17 4200 | 11.1 | LCY | | | | | | | | | | | | | 77 | CY | 855 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2041 |
| | **Upper Yard Paving & Drainage, Salt sump** | | | | | | | | | | | | | | | | | | | |
| | Culvert Excavation | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.80 | BCY | 78 | 2 | 4 | | | | | | | | | | 23 | CY | 41 |
| | Culvert Backfill | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | 78 | 2 | 4 | | | | | | | | | 1.3 | 30 | CY | 75 |
| | Culvert Excavation | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.80 | BCY | 30 | 3 | 4 | | | | | | | | | | 13 | CY | 23 |

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| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Culvert Backfill | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 2.49 | LCY | 30 | 3 | 4 | | | | | | | | | 1.3 | 17 | CY | 42 |
| | Removal of CMP | CMP aluminum 6"-10" | 02 41 13.40 0100 | 1.98 | LF | 3237 | | | | | | | | | | | | 3237 | LF | 6409 |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 6590 |
| | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | 40895 |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Electrical Bld** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Masonry Building | 02 41 16 13 0080 | 0.39 | /CF | | | | | | 1700 | | | | | CF | | 1700 | CF | 663 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 200 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | 63 | CY | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 63 | CY | 699 |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1362 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 4 | | | | | CY | | 4 | CY | 55 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 5 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 5 | CY | 7 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 5 | CY | 18 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 5 | CY | 56 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 136 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | 1498 |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Fan** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Fan Removal (3) | 23 05 05.10 3600 | 1250 | TON | | | | | | | | | | 6 | ton | | 6 | ton | 7500 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | 2 | | | | tons | | 6 | | |
| | Haulage | | | | | | | | | | | | | | | | | 3 | trip | |
| | Transportation Cost Steel Truck | Nelson Con. 10 wheel dump truck 12 CY | Truck/driver | 760 | day | | | | | | | | | | | | | 2 | day | 1520 |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 9020 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 33 | | | | | CY | | 33 | CY | 454 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 43 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | LCY | | | | | | | | | | | | | 43 | CY | 57 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 43 | CY | 56 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | LCY | | | | | | | | | | | | | 43 | CY | 477 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1044 |
| | | | | | | | | | | | | | | | | | | | | |
| | Backfill Fan Portal | Backfill Trench Mininal Haul 2 1/4 CY | 31 23 16 13 3080 | 1.77 | LCY | | | | | | 150 | | | | | CY | 1.3 | 195 | CY | 345 |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 115.2 | | | | | CY | | 115 | CY | 1581 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 150 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 150 | CY | 200 |
| | Transportation Cost | F.E loader 80HP 50' haul clay | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 150 | CY | 195 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 150 | CY | 1665 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 3641 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **13878** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Fire Water Tank 300,000 Gal** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 300000 | | | | | Gal | | 40107 | CF | 10829 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 3249 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 149 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 12.4 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 4.1 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 32.8 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 3800 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 14629 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 39 | | | | | CY | | 39 | CY | 536 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 51 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 51 | CY | 68 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 51 | CY | 181 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 51 | CY | 566 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1351 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **12731** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Fuel Dock** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | 30 | 41.5 | 1 | | | | | | | | FT | | 46 | CY | 633 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | 46 | CY | 1.3 | 60 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 60 | CY | 80 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 60 | CY | 212 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 60 | CY | 666 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1591 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **1591** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Guard House** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Mixed Materials Building | 02 41 16 13 0100 | 0.39 | /CF | 8 | 14 | 10 | | | | | | | | | | 1120 | CF | 437 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 131 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.35 | 16 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 1.25 | Trips | |
| | Haulage | Front end loader 3 CY | 31 23 16 42 1300 | 1.33 | /CY | | | | | | | | | 3 | | Trip/Day | | 15 | CY | 20 |
| | Transportation Cost Non Steel Truck | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 15 | CY | 53 |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | 15 | CY | 167 |
| | Disposal Cost Non Steel | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 677 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **546** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Loadout Belt** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 259 | 5.5 | 3.5 | | | | | | | | FT | | 4986 | CF | 1795 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 538 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 18 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 2 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.7 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 5.6 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2555 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 68 | | | | | CY | | 68 | CY | 935 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 88 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 88 | CY | 117 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 88 | CY | 312 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 88 | CY | 977 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2341 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **4358** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lower Stacker Coal Storage** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 173 | 5.5 | 3.5 | | | | | | | | FT | | 3330 | CF | 1199 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 360 | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 2462 | | | | | CF | | 2462 | CF | 886 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 266 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 21 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 2 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.7 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 5.6 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2845 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 8 | | | | | CY | | 8 | CY | 110 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 10 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 10 | CY | 13 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 10 | CY | 35 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 10 | CY | 111 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 269 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 30 | | | | | CY | | 30 | CY | 413 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 39 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 39 | CY | 52 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 39 | CY | 138 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 39 | CY | 433 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1036 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **3524** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lump Coal Belt** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 80 | 4 | 3 | | | | | | | | FT | | 960 | CF | 346 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 104 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 4 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 0.333 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.1 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 0.8 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1106 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 17.07 | | | | | CY | | 17 | CY | 234 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 22 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 22 | CY | 29 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 22 | CY | 78 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 22 | CY | 244 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 585 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **1587** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lump Coal Storage** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 75 | | | | | CY | | 75 | CY | 1031 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 98 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 98 | CY | 130 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 98 | CY | 347 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 98 | CY | 1088 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2596 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **2596** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Mine 1 Pad** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 160 | | | | | FT | | 160 | CF | 58 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 17 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 0.59 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 1 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.3 | DAY | 0 |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 2.4 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 818 |
| | Structure's Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 131.5 | | | | | CY | | 132 | CY | 1815 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 171 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 171 | CY | 227 |
| | Transportation Cost | F.E loader 80HP 50' haul | 31 23 23 20 1014 | 3.54 | LCY | | | | | | | | | | | | | 171 | CY | 605 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 171 | CY | 1898 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 4545 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **5346** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **No 1 Belt** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 200 | 4 | 15 | | | | | | | | FT | | 12000 | CF | 4320 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 1296 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 44 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 4 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | Truck dump 16 ton payload | | | | | | | | | | | | | | | | 1.3 | DAY | |
| | Transportation Cost Steel Truck Drive | Truck Driver, Heavy | | | | | | | | | | | | | | | | 10.4 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 1520 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 5840 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | 4544 |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Office Building** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Mixed Material Building | 02 41 16 13 0100 | 0.39 | /CF | | | | | | 236842 | | | | | CF | | 236842 | CF | 92368 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.35 | 3070 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 64 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 21.3 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 170.4 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 16720 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 109088 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | Manhole Demo | 02 41 13.42 0200 | 22 | SF Face | 4.43 | 3.77 | 4 | 2 | | | | | | 32.8 | SF Face | | 33 | SF Face | 726 |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 2 | CY | |
| | Loading Costs | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 2 | CY | 3 |
| | Transport Costs | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 2 | CY | 7 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 2 | CY | 22 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 758 |
| | | | | | | | | | | | | | | | | | | | | |
| | Asphalt Demo | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Asphalt 6 inches thick | 02 41 13 17 5050 | 9.6 | /SY | | | | | | 292 | | | | | CY | | 584 | SY | 5606 |
| | Ashpalt's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 380 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 380 | CY | 505 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 380 | CY | 1345 |
| | Disposal Costs | Off site disposal | 31 23 23 20 1100 | 11.05 | /CY | | | | | | | | | | | | | 380 | CY | 4199 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 11655 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | 4' gutter bituminous | 02 41 13.17 6300 | 3.73 | /LF | 207 | | | | | | | | | | LF | | 207 | LF | 772 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 13 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 13 | CY | 17 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 13 | CY | 46 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 13 | CY | 144 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 979 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 21.3 | | | | | CY | | 21 | CY | 289 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 28 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 28 | CY | 37 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 28 | CY | 99 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 28 | CY | 311 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 736 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 292 | | | | | CY | | 292 | CY | 4015 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 380 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 380 | CY | 505 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 380 | CY | 1345 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 380 | CY | 4218 |

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| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Subtotal | | | | | | | | | | | | | | | | | | | 10083 |
| | | | | | | | | | | | | | | | | | | | | |
| | Untreated Base Course | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | 8 inches untreated base course | | | | | | | | 6617 | | | | | | CF | | 245 | CY | |
| | Base Course's Vol. Demolished | | | | | | | | | | | | | | | | | 245 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 245 | CY | 326 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 245 | CY | 867 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 245 | CY | 2720 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 3913 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **137212** |

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| Description | Materials | Means Number | Unit | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pavement Removal** | | | | | | | | | | | | | | | | | | | |
| Loading Dock | | | | | | | | | | | | | | | | | | | |
| Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| Demolition Cost | Demo foundation 6" thick Rods | 02 41 16.17 0440 | 0.99 | SF | | | | | | 15 | | | | | CY | | 810 | SF | 802 |
| Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | 15 | CY | |
| Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | 1.3 | 19.5 | CY | 26 |
| Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 19.5 | CY | 69 |
| Disposal Costs | Off site disposal | 31 23 23 20 1100 | 11.05 | /CY | | | | | | | | | | | | | 19.5 | CY | 215 |
| Subtotal | | | | | | | | | | | | | | | | | | | 1112 |
| Pavement in Front of Shop | | | | | | | | | | | | | | | | | | | |
| Asphalt Demolition | | | | | | | | | 1657.658 | | | | | | | | 1658 | SY | 11755 |
| Demolition Cost | Pavement Removal 4-6" | 02 41 13 17 5050 | 7.09 | SY | | | | | | 184 | | | | | CY | | 184 | CY | |
| Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 239 | CY | |
| Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 239 | CY | 318 |
| Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 239 | CY | 846 |
| Disposal Costs | Off site disposal | 31 23 23 20 1100 | 11.05 | /CY | | | | | | | | | | | | | 239 | CY | 2641 |
| Subtotal | | | | | | | | | | | | | | | | | | | 15560 |
| Pavement in Front of Shop | | | | | | | | | | | | | | | | | | | |
| Concrete Demolition | | | | | | | | | 1279.279 | | | | | | | | 1279 | SY | 9068 |
| Demolition Cost | Pavement Removal 4-6" | 02 41 13 17 5050 | 7.09 | SY | | | | | | 142 | | | | | CY | | 142 | CY | |
| Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 185 | CY | |
| Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 185 | CY | 246 |
| Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 185 | CY | 655 |
| Disposal Costs | Off site disposal | 31 23 23 20 1100 | 11.05 | /CY | | | | | | | | | | | | | 185 | CY | 2044 |
| Subtotal | | | | | | | | | | | | | | | | | | | 12013 |
| Pavement In Front of Office | | | | | | | | | | | | | | | | | | | |
| Asphalt Demolition | | | | | | | | | 4207.207 | | | | | | | | 4207 | SY | 29828 |
| Demolition Cost | Pavement Removal 4-6" | 02 41 13 17 5050 | 7.09 | SY | | | | | | 467 | | | | | CY | | 467 | CY | |
| Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 607 | CY | |
| Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 607 | CY | 807 |
| Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 607 | CY | 2149 |
| Disposal Costs | Off site disposal | 31 23 23 20 1100 | 11.05 | /CY | | | | | | | | | | | | | 607 | CY | 6707 |
| Subtotal | | | | | | | | | | | | | | | | | | | 39491 |
| Roadway Paving | | | | | | | | | | | | | | | | | | | |
| Asphalt Demolition | | | | | | | | | 5477.477 | | | | | | | | 5477 | SY | 38832 |
| Demolition Cost | Pavement Removal 4-6" | 02 41 13 17 5050 | 7.09 | SY | | | | | | 608 | | | | | CY | | 608 | CY | |
| Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 790 | CY | |
| Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 790 | CY | 1051 |
| Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 790 | CY | 2797 |
| Disposal Costs | Off site disposal | 31 23 23 20 1100 | 11.05 | /CY | | | | | | | | | | | | | 790 | CY | 8730 |
| Subtotal | | | | | | | | | | | | | | | | | | | 51410 |
| Fuel Dock Paving | | | | | | | | | | | | | | | | | | | |
| Concrete Demolition | | | | | | | | | 288.2883 | | | | | | | | 288 | SY | 2042 |
| Demolition Cost | Pavement Removal 4-6" | 02 41 13 17 5050 | 7.09 | SY | | | | | | 32 | | | | | CY | | 32 | CY | |
| Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 42 | CY | |
| Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 42 | CY | 56 |
| Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 42 | CY | 149 |
| Disposal Costs | Off site disposal | 31 23 23 20 1100 | 11.05 | /CY | | | | | | | | | | | | | 42 | CY | 464 |
| Subtotal | | | | | | | | | | | | | | | | | | | 2711 |

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| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Upper Yard Paving | | | | | | | | | | | | | | | | | | | |
| | Asphalt Demolition | | | | | | | | | 6000 | | | | | | | | 6000 | SY | 42540 |
| | Demolition Cost | Pavement Removal 4-6" | 02 41 13 17 5050 | 7.09 | SY | | | | | | 666 | | | | | CY | | 666 | CY | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 866 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 866 | CY | 1152 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 866 | CY | 3066 |
| | Disposal Costs | Off site disposal | 31 23 23 20 1100 | 11.05 | /CY | | | | | | | | | | | | | 866 | CY | 9569 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 56327 |
| | Upp Yard Gutter | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | 909.9099 | | | | | | | | 910 | SY | 6452 |
| | Demolition Cost | Pavement Removal 4-6" | 02 41 13 17 5050 | 7.09 | SY | | | | | | 101 | | | | | CY | | 101 | CY | |
| | Concrete's Vol. Demolished | upper yard gutter | 02 41 13.17 6000 | 5.45 | LF | 413 | | | | | | | | | | | | 413 | LF | 2251 |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | 1.3 | 131 | CY | 174 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 131 | CY | 464 |
| | Disposal Costs | Off site disposal | 31 23 23 20 1100 | 11.05 | /CY | | | | | | | | | | | | | 131 | CY | 1448 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 10789 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **189413** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Powder Magazine** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 4 | 5.75 | 4.8 | | | | | | | | | | 110 | CF | 40 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 12 | | | | | |
| | Structure's Demolition Cost | Steel Building (vault) | 02 41 16 13 0020 | 0.36 | /CF | 8 | 8 | 8 | | | | | | | | | | | | |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 55 | | | 512 | CF | 184 |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Truck/Driver | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 224 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | 157 |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Pump House** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 3001 | | | | | CF | | 3001 | CF | 1080 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 324 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 11 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 1 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.3 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 2.4 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1840 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 11 | | | | | CY | | 11 | CY | 151 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 14 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 14 | CY | 19 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 14 | CY | 50 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 14 | CY | 155 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 375 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **1891** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Riprap Filter Fabric** | | | | | | | | | | | | | | | | | | | |
| | **Reach 1** | | | | | | | | | | | | | | | | | | | |
| | Riprap Area | Machine placed rip-rap slope protection | 31 37 13 10 0100 | 58.85 | LCY | | | | | | 3248 | | | | | CY | 1.3 | 4222 | CY | 248465 |
| | Filter Fabric Area | Fabric, in trench, poly, ideal cond. | 31 25 14.16 0070 | 0.81 | /SY | | | | | 1949 | | | | | | SY | | 1949 | SY | 1579 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 250044 |
| | **Upper Intercept Ditch** | | | | | | | | | | | | | | | | | | | |
| | Riprap Area | Machine placed rip-rap slope protection | 31 37 13 10 0100 | 58.85 | LCY | | | | | | 93 | | | | | CY | 1.3 | 121 | CY | 7121 |
| | Filter Fabric Area | Fabric, in trench, poly, ideal cond. | 31 25 14.16 0070 | 0.81 | /SY | | | | | 186 | | | | | | SY | | 186 | SY | 151 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 7272 |
| | **Lower Intercept Ditch** | | | | | | | | | | | | | | | | | | | |
| | Riprap Area | Machine placed rip-rap slope protection | 31 37 13 10 0100 | 58.85 | LCY | | | | | | 79 | | | | | CY | 1.3 | 103 | CY | 6062 |
| | Filter Fabric Area | Fabric, in trench, poly, ideal cond. | 31 25 14.16 0070 | 0.81 | /SY | | | | | 158 | | | | | | SY | | 158 | SY | 128 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 6190 |
| | **East Collector Channel** | | | | | | | | | | | | | | | | | | | |
| | **Reaches B-1, B-2, B-4, B-5** | | | | | | | | | | | | | | | | | | | |
| | Riprap Area | Machine placed rip-rap slope protection | 31 37 13 10 0100 | 58.85 | LCY | | | | | | 763 | | | | | CY | 1.3 | 992 | CY | 58379 |
| | Filter Fabric Area | Fabric, in trench, poly, ideal cond. | 31 25 14.16 0070 | 0.81 | /SY | | | | | 1531 | | | | | | SY | | 1531 | SY | 1240 |
| | Reach B-3 | | | | | | | | | | | | | | | | | | | |
| | Riprap Area | Machine placed rip-rap slope protection | 31 37 13 10 0100 | 58.85 | LCY | | | | | | 51 | | | | | CY | 1.3 | 66 | CY | 3884 |
| | Filter Fabric Area | Fabric, in trench, poly, ideal cond. | 31 25 14.16 0070 | 0.81 | /SY | | | | | 102 | | | | | | SY | | 102 | SY | 83 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 63586 |
| | **West Collector Channel** | | | | | | | | | | | | | | | | | | | |
| | **Reaches A-1, A-2** | | | | | | | | | | | | | | | | | | | |
| | Riprap Area | Machine placed rip-rap slope protection | 31 37 13 10 0100 | 58.85 | LCY | | | | | | 765 | | | | | CY | 1.3 | 995 | CY | 58556 |
| | Filter Fabric Area | Fabric, in trench, poly, ideal cond. | 31 25 14.16 0070 | 0.81 | /SY | | | | | 1531 | | | | | | SY | | 1531 | SY | 1240 |
| | Reach A-3, A-4, A-5 | | | | | | | | | | | | | | | | | | | |
| | Riprap Area | Machine placed rip-rap slope protection | 31 37 13 10 0100 | 58.85 | LCY | | | | | | 51 | | | | | CY | 1.3 | 66 | CY | 3884 |
| | Filter Fabric Area | Fabric, in trench, poly, ideal cond. | 31 25 14.16 0070 | 0.81 | /SY | | | | | 102 | | | | | | SY | | 102 | SY | 83 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 63763 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **390855** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Rock Dust Bin** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Masonry Building | 02 41 16 13 0080 | 0.39 | /CF | | | | | | 9982 | | | | | CF | | 9982 | CF | 3893 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 1168 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.35 | 129 | CY | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 129 | CY | 1432 |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 5325 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 24 | | | | | | | 24 | CY | 330 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 31 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 31 | CY | 41 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 31 | CY | 110 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 31 | CY | 344 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 825 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | 4982 |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ROM MCC Building** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 280 | 5.5 | 3.5 | | | | | | | | FT | | 5390 | CF | 1940 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 582 | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 345 | 5.5 | 3.5 | | | | | | | | FT | | 6641 | CF | 2391 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 717 | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 7238 | | | | | CF | | 7238 | CF | 2606 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 782 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 71 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 6 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 2 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 16 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 1520 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 8457 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 11 | | | | | CY | | 11 | CY | 151 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 14 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 14 | CY | 19 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 14 | CY | 50 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 14 | CY | 155 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 375 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 24 | | | | | CY | | 24 | CY | 330 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 31 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 31 | CY | 41 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 31 | CY | 110 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 31 | CY | 344 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 825 |
| | | | | | | | | | | | | | | | | | | | | |
| | Excavation** | | | | | | | | | | | | | | | | | | | |
| | Excavate Binwall | | | | | | | | | | | | | | | | | | | |
| | Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.8 | /CY | | | | | | 249 | | | | | CY | | 249 | CY | 448 |
| | Loader | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 249 | CY | 331 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 779 |
| | | | | | | | | | | | | | | | | | | | | |
| | Excavation** | | | | | | | | | | | | | | | | | | | |
| | Excavate Binwall | | | | | | | | | | | | | | | | | | | |
| | Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.8 | /CY | | | | | | 5513 | | | | | CY | | 5513 | CY | 9923 |
| | Loader | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 5513 | CY | 7332 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 17255 |
| | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | 25610 |

** Excavated Material will be placed as fill during reclamation

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ROM Coal Storage** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Masonry Building | 02 41 16 13 0080 | 0.39 | /CF | | | | | | 1870 | | | | | CF | | 1870 | CF | 729 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 219 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.35 | 24 | CY | |
| | Disposal Cost Non Steel | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 24 | CY | 266 |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 995 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 22 | | | | | CY | | 22 | CY | 303 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 29 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 29 | CY | 39 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 29 | CY | 103 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 29 | CY | 322 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 767 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **1543** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Sampler Building** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 1675 | | | | | CF | | 1675 | CF | 603 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 181 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 6 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 0 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 0 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 603 |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 14.25 | | | | | CY | | 14 | CY | 193 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 19 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 19 | CY | 25 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 19 | CY | 67 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 19 | CY | 211 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 496 |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **918** |

* Now know as transformer building

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Sand and Salt Storage** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | **Rubble's Weight (exclude steel)** | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | **Transport Costs** | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Concrete Demolition** | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 102 | | | | | CY | | 102 | CY | 1403 |
| | **Concrete's Vol. Demolished** | | | | | | | | | | | | | | | | 1.3 | 133 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 133 | CY | 177 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 133 | CY | 471 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 133 | CY | 1476 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 3527 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Concrete Demolition** | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **3527** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Seal Portals** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | Seal Portals | | | | | | | | | | | | | | | | | | | |
| | Main Mine Area | Seal Portals | JennChem Bid | 5014 | EA. | | | | | | | | | | 2 | EA | | 2 | EA | 10028 |
| | Quitchupah Portals | Seal Portals | JennChem Bid | 5014 | EA. | | | | | | | | | | 2 | EA | | 2 | EA | 10028 |
| | Three East Portals | Seal Portals | JennChem Bid | 5014 | EA. | | | | | | | | | | 2 | EA | | 2 | EA | 10028 |
| | South Portals | Seal Portals | JennChem Bid | 5014 | EA. | | | | | | | | | | 1 | EA | | 1 | EA | 5014 |
| | Transport Costs | Seal Portals | JennChem Bid | 5014 | EA. | | | | | | | | | | 2 | EA | | 2 | EA | 10028 |
| | Disposal Costs | Seal Portals | JennChem Bid | 5014 | EA. | | | | | | | | | | 3 | EA | | 3 | EA | 15042 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 60168 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **60168** |

JennChem Bid per Justin Etchel, DOGM March 2020, email to Bryant Bunnell

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Sediment Trap** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 76 | | | | | CY | | 76 | CY | 1045 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 99 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 99 | CY | 132 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 99 | CY | 350 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 99 | CY | 1099 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2626 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **2626** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Septic Tanks** | | | | | | | | | | | | | | | | | | | |
| | Item disposal | Septic Tank 1000 gal | 02 41 13 44 0100 | 270 | EA | | | | | | | | | | 1 | EA | | 1 | EA | 270 |
| | Item disposal | Septic Tank 2500 gal | 02 41 13 44 0300 | 435 | EA | | | | | | | | | | 1 | EA | | 1 | EA | 435 |
| | Item disposal | Septic Tank 10,000-20,000 Gal | 02 41 13 44 0600 | 2850 | EA | | | | | | | | | | 1 | EA | | 1 | EA | 2850 |
| | Tank sludge removal | Sufco 2500 gall valley tank service | | 450 | EA | | | | | | | | | | 1 | EA | | 1 | EA | 450 |
| | Tank sludge removal | Sufco 10000 gall valley tank service | | 350 | EA | | | | | | | | | | 1 | EA | | 1 | EA | 350 |
| | Disposal of Sludge off site | Sufco 10000 gall valley tank service | | 120 | hr | | | | | | | | | | 16 | hr | | 16 | hr | 1920 |
| | Disposal of Sludge off site | Sufco 10000 gall valley tank service | | 120 | hr | | | | | | | | | | 1 | hr | | 1 | hr | 120 |
| | Item Excavation | Excavate, pull , load and backfill | 02 65 10.30 1233 | 3175 | EA | | | | | | | | | | 3 | EA | | 3 | EA | 9525 |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 15650 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | Manhole precast | 02 41 13.42 0400 | 246 | EA | | | | | | | | | | 3 | EA | | 3 | EA | 738 |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 738 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **16388** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Shelves** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 8.5 | 37 | 12 | | | | | | | 3 | FT | | 11322 | CY | 4076 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 1223 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 42 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 4 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 1.3 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 10.4 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 1520 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 5596 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | 3 | 3 | 9 | | | | | | | 12 | FT | | 36 | CY | 495 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | 36 | CY | 1.3 | 47 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 47 | CY | 63 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 47 | CY | 166 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 47 | CY | 522 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1246 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **5619** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Shop and Warehouse** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 269360 | | | | | CF | | 269360 | CF | 96967 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 29091 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 998 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 83.17 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 27.7 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 221.6 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 21280 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 118247 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| 123 | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 505 | | | | | | | 505 | CY | 6944 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 657 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 657 | CY | 874 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. md. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 657 | CY | 2326 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 657 | CY | 7293 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 17437 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **106593** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Shop Garage** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 60 | 40 | 14 | | | | | | | | FT | | 33600 | CF | 12096 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 3629 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 124 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 10.33 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 3.4 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 27.2 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 3040 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 15136 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 55.5 | | | | | CY | | 56 | CY | 770 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 72 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 72 | CY | 96 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 72 | CY | 255 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 72 | CY | 799 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1920 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **13427** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Shop Office** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 8910 | | | | | CF | | 8910 | CF | 3208 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 962 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 33 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 2.75 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.9 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 7.2 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 3968 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **3006** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Side Release Tank** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 16 | | | 8 | | | | | | | FT | | 804 | CF | 289 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 87 | | | | | |
| | Structure's Demolition Cost | Tank removal | 02 65 10.30 1026 | 960 | EA | | | | | | | | | | 1 | EA | | 1 | EA | 960 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 3 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 0.25 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.1 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 0.8 | HR | |
| | Transportation Cost Truck/Driver | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1249 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **1162** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Steam Cleaner Building** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Masonry Building | 02 41 16 13 0080 | 0.39 | /CF | | | | | | 18848 | | | | | CF | | 18848 | CF | 7351 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 2205 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.35 | 244 | CY | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 244 | CY | 2708 |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 10059 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 96 | | | | | CY | | 96 | CY | 1320 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 125 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 125 | CY | 166 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 125 | CY | 443 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 125 | CY | 1388 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 3317 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **11171** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Stoker Belt** | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 4.6 | 140 | 4 | | | | | | | | FT | | 2576 | CF | 927 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 278 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 10 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 1 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.3 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 2.4 | HR | |
| | Transportation Cost Truck/Driver | Nielson Construction - 10 whl DT - 12 CY | Truck & Driver '14 | 760 | Day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1687 |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 17.7 | | | | | CY | | 18 | CY | 248 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 23 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 23 | CY | 31 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 23 | CY | 81 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 23 | CY | 255 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 615 |
| | **Total** | | | | | | | | | | | | | | | | | | | **2024** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Stoker Bin** | | | | | | | | | | | | | | | | | | | |
| | Steel Structure | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 20 | 32 | 35 | | | | | | | | | | 22400 | CF | 8064 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 2419 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 83 | CY | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Belt Truss | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 45 | 3.5 | 3 | | | | | | | | | | 473 | CF | 170 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 51 | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | 18 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 6.92 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 2.3 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 18.4 | HR | |
| | Disposal Cost Steel | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 2280 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 10514 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 12964 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 42.9 | | | | | CY | | 43 | CY | 591 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 56 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 56 | CY | 74 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 56 | CY | 198 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 56 | CY | 622 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1485 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **16011** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Stoker Coal Storage** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 110 | | | | | CY | | 110 | CY | 1513 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 143 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 143 | CY | 190 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. md. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 143 | CY | 506 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 143 | CY | 1587 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 3796 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **3796** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Stoker Oil Tank** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 23.5 | | | 8.5 | | | | | | | FT | | 1333 | CF | 480 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 144 | | | | | |
| | Structure's Demolition Cost | Tank removal | 02 65 10.30 1029 | 1150 | EA | | | | | | | | | | | | | 1 | EA | 1150 |
| | **Belt Truss** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 19 | | | 6.5 | | | | | | | FT | | 630 | CF | 287 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 86 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 5 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 0.313 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.1 | DAY | 0 |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 0.8 | HR | 0 |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2677 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 57 | | | | | CY | | 57 | CY | 784 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 74 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 74 | CY | 98 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 74 | CY | 262 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 74 | CY | 821 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1965 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **4412** |

Div. of Oil, Gas & Mining
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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Storage Trailers** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 8 | 8 | 40 | | | | | | | 2 | FT | | 5120 | CF | 1843 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 553 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 19 | CY | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 1.58 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.5 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 4 | HR | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2603 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **2050** |

INCORPORATED
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Div. of Oil, Gas & Mining

| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Substation Lower** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Mechanical equipment heavy | 23 05 05.10 3600 | 1250 | TON | | | | | | | 61 | | | | ton | | 61 | ton | 76250 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | 20 | | | | ton | | 3 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 1 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 8 | HR | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 77010 |
| | | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.8 | /CY | | | | | | 61 | | | | | CY | | 61 | CY | 110 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 79 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 79 | CY | 105 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 79 | CY | 280 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 79 | CY | 877 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1372 |
| | Excavation | | | | | | | | | | | | | | | | | | | |
| | Excavate Binwall | | | | | | | | | | | | | | | | | | | |
| | Excavate | Excavation Bulk Bank 2 CY (322BL) | 31 23 16 42 0260 | 1.8 | /CY | | | | | | 11846 | | | | | CY | | 11846 | CY | 21323 |
| | Vol. To be Disposed | | | | | | | | | | 299 | | | | | CY | | 299 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 299 | CY | 398 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 299 | CY | 1058 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 299 | CY | 3319 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 26098 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition-Retaining Wall | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 60.5 | | | | | CY | | 61 | CY | 839 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 79 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 79 | CY | 105 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 79 | CY | 280 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 79 | CY | 877 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2101 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition-Generator Building | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 134 | | | | | CY | | 134 | CY | 1843 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 174 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 174 | CY | 231 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 174 | CY | 616 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 174 | CY | 1931 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 4621 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **111202** |

Div. of Oil, Gas & Mining
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INCORPORATED

| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Ticket Printers** | See Tipple Building | | | | | | | | | | | | | | | | | | |
| | See Tipple Building | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck & Driver | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | |

INCORPORATED
JUN 05 2020
Div. of Oil, Gas & Mining

| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Tipple Building** | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | 105056 | | | | | CF | | 105056 | CF | 37820 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | 11346 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | 0.1 | 389 | CY | |
| | Truck's Capacity | | | | | | | | | 12 | | | | | CY | | 32 | Trips | |
| | Haulage | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | 10.7 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | 85.6 | HR | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | 8360 |
| | Subtotal | | | | | | | | | | | | | | | | | | 46180 |
| | Steel Disposal | Rock Chute | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | Remove Whole or Cut up-500-1000 lbs | 05 05 05.10 0390 | 84 | EA | | | | | | 147407 | | | | LB | | 147 | EA | 12382 |
| | Dismantling Cost | | | | | | | | | | 67 | | | | tons | | 67 | tons | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | 3.35 | trips | |
| | **Ticket Printers** | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 1.8 | 3 | 3.3 | | | | | | | | | 18 | CF | 6 |
| | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | 3 | trips | | 1.1 | DAY | |
| | Disposal Costs | | | | | | | | | | | | | | | | 8.8 | HR | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | 1520 |
| | Subtotal | | | | | | | | | | | | | | | | | | 12388 |
| | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | 93 | | | | | CY | | 93 | CY | 1279 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | 1.3 | 121 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | 121 | CY | 161 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | 121 | CY | 428 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | 121 | CY | 1343 |
| | Subtotal | | | | | | | | | | | | | | | | | | 3211 |
| | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition - Sump | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | 39.2 | | | | | CY | | 39 | CY | 536 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | 1.3 | 51 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | 51 | CY | 68 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | 51 | CY | 181 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | 51 | CY | 566 |
| | Subtotal | | | | | | | | | | | | | | | | | | 1351 |
| | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | RockBunk2015 | | | | | | | | | | | | | | | | |
| | Demolition Cost | Precast Block removal | Sufco Invoice | 92 | EA | | | | | 170 | | | | | | EA | 170 | EA | 15640 |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | 4 | 5 | 2 | | 96.5 | | | | | | | 97 | CY | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | 1.3 | 125 | CY | 1719 |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | 125 | CY | 166 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | 125 | CY | 443 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | 125 | CY | 1388 |
| | Subtotal | | | | | | | | | | | | | | | | | | 19356 |
| | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | **71900** |

Div of Oil, Gas & Mining
JUN 05 2020
RECEIVED

| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Tipple MCC Buidling** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Masonry Building | 02 41 16 13 0080 | 0.39 | /CF | | | | | | 10260 | | | | | CF | | 10260 | CF | 4001 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 1200 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.35 | 133 | CY | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 133 | CY | 1476 |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 5477 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | 21.3 | 32 | 0.5 | | | | | | | | FT | | 13 | CY | 179 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | 13 | CY | 1.3 | 17 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 17 | CY | 23 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 17 | CY | 60 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 17 | CY | 189 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 451 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | 106.6 | 5.5 | 0.8 | | | | | | | | FT | | 17 | CY | 234 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | 17 | CY | 1.3 | 22 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 22 | CY | 29 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 22 | CY | 78 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 22 | CY | 244 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 585 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | Front end loader 3 CY | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | On site disposal | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **5313** |

JUN 05 2020
Davis County Assessing
COMPLETED

| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Tipple Office Building** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Masonry Building | 02 41 16 13 0080 | 0.39 | /CF | | | | | | 7900 | | | | | CF | | 7900 | CF | 3081 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 924 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.35 | 102 | CY | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 102 | CY | 1132 |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 4213 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 36 | | | | | CY | | 36 | CY | 495 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 47 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 47 | CY | 63 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 47 | CY | 166 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 47 | CY | 522 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1246 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **4535** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Trash Pit** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 26.5 | | | | | CY | | 27 | CY | 371 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 34 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 34 | CY | 45 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 34 | CY | 120 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 34 | CY | 377 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 913 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **913** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Transfer Building** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 15641 | | | | | CF | | 15641 | CF | 5631 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 1689 | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 81 | 10 | 20 | | | | | | | | FT | | 16200 | CF | 5832 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 1750 | | | | | |
| | **Yard Hoist** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 225 | | | | | FT | | 225 | CF | 81 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 24 | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 119 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 10 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 3.3 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 26.4 | HR | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 3040 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 14584 |
| | | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 4 | | | | | CY | | 4 | CY | 55 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 5 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 5 | CY | 7 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 5 | CY | 18 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 5 | CY | 56 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 136 |
| | | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 26 | | | | | CY | | 26 | CY | 358 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 34 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 34 | CY | 45 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 34 | CY | 120 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 34 | CY | 377 |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 900 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **12157** |

Now know as transformer building

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Truck Loader Bin** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 13.8 | 22 | 18.5 | | | | | | | | FT | | 5617 | CF | 2022 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 607 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 21 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 2 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.7 | DAY | 0 |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 5.6 | HR | 0 |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2782 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **2175** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Truck Scale** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 90200 | | | | | CF | | 90200 | CF | 32472 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 9742 | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 3200 | | | | | CF | | 3200 | CF | 1152 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 346 | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 38850 | | | | | CF | | 38850 | CF | 13986 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 4196 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 490 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 41 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 13.7 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 109.6 | HR | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 10640 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 58250 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 52 | | | | | CY | | 52 | CY | 715 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 68 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 68 | CY | 90 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 68 | CY | 241 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 68 | CY | 755 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1801 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 27 | | | | | CY | | 27 | CY | 371 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 35 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 35 | CY | 47 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 35 | CY | 124 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 35 | CY | 389 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 931 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 18 | | | | | CY | | 18 | CY | 248 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 23 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 23 | CY | 31 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 23 | CY | 81 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 23 | CY | 255 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 615 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **47313** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Water Tank Lower** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Tank | 02 65 10.30 1029 | 1150 | EA | | | | | | | | | | 1 | EA | | 1 | EA | 1150 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 1 | trip | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **1150** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Water Tank Upper** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Tank | 02 65 10.30 1029 | 1150 | EA | | | | | | | | | | 1 | EA | | 1 | EA | 1150 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | **Transportation Cost Non Steel Truck** | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 1 | trip | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **1150** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **West Lease Tunnels & Belt** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 183 | 14 | 12 | | | | | | | | FT | | 30744 | CF | 11068 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 3320 | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 139 | 8.3 | 9 | | | | | | | | FT | | 10383 | CF | 3738 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 1121 | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 352 | 8.3 | 3.5 | | | | | | | | FT | | 10226 | CF | 3681 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 1104 | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | 30 | 24.5 | 4 | | | | | | | | FT | | 2940 | CF | 1058 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 318 | | | | | |
| | Structure's Vol. Demolished | Total steel vol for all buildings | | | | | | | | | | | | | | | 0.1 | 201.09 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 17 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 5.7 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 45.6 | HR | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 4560 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 19545 |
| | Asphalt Removal - Phase 2 Yard | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Asphalt 6-8 " Dismantling Cost | Pavement Removal 4-6" | 02 41 13 17 5050 | 9.6 | SY | | | | | 1662.22 | | | | | | SY | | 1662 | SY | 15955 |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 480 | CY | |
| | Loading Costs | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 480 | CY | 638 |
| | Transport Costs | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 480 | CY | 1699 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 480 | CY | 5328 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 23620 |
| | **Tunnels** | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 239 | | | | | CY | | 239 | CY | 3286 |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 311 | CY | |
| | Loading Costs | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 311 | CY | 414 |
| | Transport Costs | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 311 | CY | 1101 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 311 | CY | 3452 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 8253 |
| | **Belt** | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 20 | | | | | CY | | 20 | CY | 275 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 26 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 26 | CY | 35 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 26 | CY | 92 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 26 | CY | 289 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 691 |
| | **Belt #1 Sump** | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 7.06 | | | | | CY | | 26 | CY | 358 |
| | Concrete's Vol. Demolished | | | | | | | | | | 19.34 | | | | | | 1.3 | 19 | CY | 0 |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 34 | CY | 45 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 34 | CY | 120 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 34 | CY | 377 |

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| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Subtotal | | | | | | | | | | | | | | | | | | | 900 |
| | **Junction Boxes** | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | junciation box precast | 02 41 13.42 0400 | 246 | EA | | | | | | 14 | | | | 7 | EA | | 7 | SF | 1722 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 18 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 18 | CY | 24 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 18 | CY | 64 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 18 | CY | 200 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2010 |
| | **CMP Pipe Removal** | | | | | | | | | | | | | | | | | | | |
| | Pipe Removal | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | CMP Aluminum 6-10" pipe | 02 41 13.40 0020 | 1.98 | LF | 246.6 | | | | | | | | | | LF | | 247 | LF | 489 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 5 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 5 | CY | 7 |
| | Transportation Cost | 12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip | 31 23 23 20 1014 | 3.54 | /CY | | | | | | | | | | | | | 5 | CY | 18 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 5 | CY | 56 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 570 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **52006** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Yard Hoist** | See Transfer Building | | | | | | | | | | | | | | | | | | |
| | See Transfer Building | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Link Canyon Substation** | | | | | | | | | | | | | | | | | | | |
| | Substation | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Mechanical equipment heavy | 23 05 05.10 3600 | 1250 | TON | | | | | | | 30 | | | | TON | | 30 | TON | 37500 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | 20 | | | | TON | | 20 | TON | |
| | Haulage | | | | | | | | | | | | | | | | | 1.5 | Trips | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | 1 | day | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 38260 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Power Poles | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Silt Fence | Fence | 31 25 14.16 1000 | 1.93 | LF | 330 | | | | | | | | | 330 | LF | | 330 | LF | 637 |
| | Wire | 3' wide | 32 31 26.20 0700 | 0.53 | CSF | 300 | | | | | | | | | 3 | CSF | | 3 | CSF | 2 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 639 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **38899** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Link Canyon Portals** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Seal Portals | | | | | | | | | | | | | | | | | | | |
| | Seal Portal | Portals | Jennchem bid | 5014 | EA. | | | | | | | | | | | | | 1 | EA | 5014 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Silt Fence | Fence | 31 25 14.16 1000 | 1.93 | LF | 330 | | | | | | | | | 330 | LF | | 330 | LF | 637 |
| | Wire | 3' wide | 32 31 26.20 0700 | 0.53 | CSF | 330 | | | | | | | | | 40 | CSF | | 50 | CSF | 27 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 664 |
| | | | | | | | | | | | | | | | | | | | | |
| | Power Lines | | | | | | | | | | | | | | | | | | | |
| | Power Lines | Dugout Powerline | Dugout 1 | 0.23 | /FT | 455 | | | | | | | | | | FT | | 455 | FT | |
| | Power Poles | Dugout Power Poles | 02 41 13.80 0100 | 320 | /EA | | | | | | | | | | 7 | EA | | 7 | EA | 2240 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 2240 |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **5411** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Fan Generator Building** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Steel Building | 02 41 16 13 0020 | 0.36 | /CF | | | | | | 6395 | | | | | CF | | 6395 | CF | 2302 |
| | Subtract 30% No Interior Walls | | 02 41 16 13 0750 | | | | | | | | | | | | 691 | | | | | |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 24 | CY | |
| | Truck's Capacity | | | | | | | | | | 12 | | | | | CY | | 2 | Trips | |
| | Haulage | | | | | | | | | | | | | 3 | | Trip/Day | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | 0.7 | DAY | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | 5.6 | HR | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | | | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 3062 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **2371** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Four East Fan** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Fan Removal | 23 05 05.10 3600 | 1250 | TON | | | | | | | | | | 2 | TONS | | 2 | TONS | 2500 |
| | Seal Portals | | Jennchem bid | 5014 | EA | | | | | | | | | | 2 | EA | | 2 | EA | 10028 |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck & Driver | Nielson Construction, 12 CY dump truck | Truck and driver | 760 | day | | | | | | | | | | | | | 1 | day | 760 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 13288 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 36 | | | | | CY | | 36 | CY | 495 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 47 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 47 | CY | 63 |
| | Transportation Cost | F.E loader 80HP 50' haul | 31 23 23 20 1014 | 3.54 | LCY | | | | | | | | | | | | | 47 | CY | 166 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 47 | CY | 522 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 1246 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Backfill Trench Min haul 2 1/4 CY | 31 23 16.13 3080 | 2.49 | CY | | | | | | 150 | | | | | CY | | 150 | CY | 374 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 195 | CY | |
| | Loading Cost | | | | | | | | | | | | | | | | | 195 | CY | 0 |
| | Transportation Cost | | | | | | | | | | | | | | | | | 195 | CY | 0 |
| | Disposal Costs | | | | | | | | | | | | | | | | | 195 | CY | 0 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 374 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 115 | | | | | CY | | 115 | CY | 1581 |
| | Demolition Cost | | | | | | | | | | | | | | | | 1.3 | 150 | CY | |
| | Concrete's Vol. Demolished | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 150 | CY | 200 |
| | Loading Cost | F.E loader 80HP 50' haul | 31 23 23 20 1014 | 3.54 | LCY | | | | | | | | | | | | | 150 | CY | 531 |
| | Transportation Cost | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 150 | CY | 1665 |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | 4351 |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **19072** |

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| Ref. | Description | Materials | Means Reference Number | Unit Cost | Unit | Length | Width | Height | Diameter | Area | Volume | Weight | Density | Time | Number | Unit | Swell Factor | Quantity | Unit | Cost 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Northwater Mitigation** | | | | | | | | | | | | | | | | | | | |
| | Structure's Demolition Cost | Pipe Removal | 02 41 13.38 1600 | 2.81 | LF | 10269 | | | 0.15 | | | | | | | FT | | 10269 | LF | 28856 |
| | Structure's Vol. Demolished | | | | | | | | | | | | | | | | 0.1 | 38.03 | CY | |
| | Rubble's Weight (exclude steel) | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Non Steel Truck | F.E loader 80HP 50' haul | 31 23.23.14 2000 | 1.3 | LCY | | | | | | | | | | | | | 38.03 | CY | 49 |
| | Transportation Cost Non Steel Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Non Steel | | | | | | | | | | | | | | | | | | | |
| | Steel's Weight | | | | | | | | | | | | | | | | | | | |
| | Truck's Capacity | | | | | | | | | | | | | | | | | | | |
| | Haulage | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost Steel Truck Drive | | | | | | | | | | | | | | | | | | | |
| | Disposal Cost Steel | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | 28905 |
| | | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Disposal Cost | | | | | | | | | | | | | | | | | | | |
| | Dismantling Cost | | | | | | | | | | | | | | | | | | | |
| | Equipment 's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Costs | | | | | | | | | | | | | | | | | | | |
| | Transport Costs | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | Foundations <15" | Nielson '14 | 13.75 | CY | | | | | | 5 | | | | | CY | | 270 | SF | 3713 |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | 1.3 | 7 | CY | |
| | Loading Cost | Front end loader 3 CY | 31 23 16 42 1601 | 1.33 | /CY | | | | | | | | | | | | | 7 | CY | 9 |
| | Transportation Cost | F.E loader 80HP 50' haul | 31 23 23 20 1014 | 3.54 | LCY | | | | | | | | | | | | | 7 | CY | 25 |
| | Disposal Costs | On site disposal | 02 41 16 17 4200 | 11.1 | /CY | | | | | | | | | | | | | 7 | CY | 78 |
| | Subtotal | | | | | | | | | | | | | | | | | | | 3825 |
| | | | | | | | | | | | | | | | | | | | | |
| | Concrete Demolition | | | | | | | | | | | | | | | | | | | |
| | Demolition Cost | | | | | | | | | | | | | | | | | | | |
| | Concrete's Vol. Demolished | | | | | | | | | | | | | | | | | | | |
| | Loading Cost | | | | | | | | | | | | | | | | | | | |
| | Transportation Cost | | | | | | | | | | | | | | | | | | | |
| | Disposal Costs | | | | | | | | | | | | | | | | | | | |
| | Subtotal | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | **Total** | | | | | | | | | | | | | | | | | | | **32730** |

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