# WaterSMART Grant Application

Installation of Automated Gates – Blocks 40 & 41

March 17, 2021

**East Columbia Basin Irrigation District**

55 North 8th Ave.
Othello, WA 99344

Project Manager:

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1/25

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## Executive Summary

March 16, 2021

The East Columbia Basin Irrigation District (District), headquartered in Othello, Washington, which is in Adams County, a Category A applicant, is proposing to replace existing turnout gates with automated gates along the East Low Canal. With the expansion of the East Low Canal and the adding of future pumping plants there is anticipated to be more fluctuations in the Canal than there have in the past. The automated gates will provide higher flow measurement accuracy than the existing gates. They can be set to maintain a constant level or a constant flow rate, and automatically adjust when water levels fluctuate. This provides a stable flow to the canal downstream, and more stable deliveries to individual farms. In turn, less waste is needed at the end of the canal to account for fluctuations. It is estimated that this replacement project will begin in July, 2022, and will be complete by July, 2023 and will be completed by District forces. Existing turnout gates are a federal facility that is operated by the District.

## Project Location

Please see Appendix A for a general location map. All automated gate replacement locations are located north of Moses Lake, Washington, along the East Low Canal. The proposed project is in Irrigation Blocks 40 and 41 of the Columbia Basin Project.

## Project Description

If selected to receive a WaterSMART grant, the District plans to replace 6 gates with automated gates ranging in sizes from 2' x 2' to 2.5' x 2.5' with varying frame heights. The East Low Canal has been expanded to allow for the addition of more water to be able to get water to the Odessa Subarea to replace the wells that are drying up with the declining aquifer. To get water to the Odessa Subarea the District will be constructing seven new pumping plants that range in flows from 76 to 260 CFS. As these plants become operational we can expect to see an increase in fluctuations in the East Low Canal. The existing gates were designed as manual gates. When the water fluctuates in the canal, it also causes fluctuation in the flow through the gate itself. Currently water is added to or reduced from the East Low Canal either in the morning or evening with a call from the Bureau letting the ditch rider know what to expect and when, giving them ample time to adjust the gates as needed. With the addition of the pumping plants, they could turn on or off at any given time without notice and not allow enough time for the ditch rider to keep up with the resulting fluctuations in the East Low Canal. Replacing the headgates with automated gates will increase the existing laterals efficiencies and allow more accuracy on the amount of water being sent down the lateral.

Since our canals and laterals are being used to deliver water from March 31st to October 25th, our construction season is fairly short. The District is comprised of two (2) watermaster sections, each with approximately 20 maintenance personnel. Each section is equipped with a digging excavator, long boom excavator, backhoe, Grade-all, dozers, several dump trucks, loaders, trench compactors, etc. The removal of the existing turnout gates is a routine activity which District crews are prepared for. Installation of automated gates requires drilling new anchors for the frame and setting a new gate. There is also additional work to install new pedestals to maintain the level of the automated gate. The District has previously installed automated gates and is prepared with a knowledgeable crew and necessary equipment.

# Evaluation Criteria

## Evaluation Criterion A: Project Benefits

Automating headgates along the East Low Canal (ELC) will substantially contribute to water savings, reduce operation and maintenance expenses, and reduce fluctuation in the distribution canals. When water is increased/decreased for delivery in the ELC headgates need to adjust to maintain consistent delivery. Currently the ELC fluctuates roughly 0.1' throughout the day according to the District SCADA system. With that fluctuation existing gates spill more water than needed. By looking at the size of the gate and weighting the average gate opening water loss by number of days the gate is opened a table of water savings can be calculated (Appendix B). The following table shows the total water savings the District expects to see by replacing six manual headgates.

Water Savings

| Gate Size | Water savings (acre-ft/year) | # of gates | Total water savings (acre-ft/year) |
|---|---|---|---|
| 24" | 416.5 | 5 | 2082.4 |
| 30" | 885.3 | 1 | 885.3 |
| | | Total | 2967.7 |

Additional savings the District will see are reduced operations and maintenance. Automation will provide less operational necessity which in turn lowers the miles driven by personnel reducing the wear and tear on vehicles, less fuel consumption, and increased employee safety. The gates use solar power reducing the load on the federal power system.

## Evaluation Criterion B: Planning Efforts Supporting the Project

In the area known as the Odessa subarea, farmers currently use private wells to irrigate their land. They must pump from thousands of feet below ground to run their irrigation sprinkler systems. In the area known as the Odessa subarea, farmers currently use private wells to irrigate their land. The aquifer is declining rapidly and much of the land currently irrigated by these wells is projected to be infeasible in the near future. The loss of this farmland would be a huge economic impact to the immediate area as well as the state of Washington. Moving these farmers to surface water from the Columbia Basin Project would significantly reduce pumping costs and result in reduced electric use. More importantly, they would obtain a long-term, reliable water supply.

The Odessa subarea contains over 100,000 acres currently irrigated by groundwater that are within the East District boundaries. The current preferred alternative to serve this area allows for about 90,000 of these acres to be served by Project water.

The Odessa subarea special study is a collaborative effort, primarily led by the Bureau of Reclamation and Washington State Department of Ecology. In April 2005, a Memorandum of Understanding (MOU) between the East District, Ecology, and Reclamation established goals on how to handle conserved water within the District. It was determined that the conserved water would be available as a replacement water supply for groundwater deliveries in the Odessa Subarea, municipal and industrial water supply, and environmental uses. Ecology funded the preparation of the Plan through the Columbia River Water Management Program.

Furthermore, in July 2006, the Washington State Legislature passed the Revised Code of Washington (RCW), Title 90, Chapter 90 (90.90) which declared that a Columbia River basin water supply development program was needed and directed the Department of Ecology to aggressively pursue the development of water supplies to benefit both instream and out-of-stream uses.

A Record of Decision was issued in 2013 by the Pacific Northwest Regional Director of the Bureau of Reclamation regarding the Odessa Subarea Special Study. That decision was to move forward with development of a replacement water supply for those farms on wells in the Odessa subarea. Work has been done to increase the capacity in the East Low Canal so that the District can deliver surface water to replace groundwater in the Odessa Subarea.

Much of the Odessa subarea is within East Columbia Basin Irrigation District boundaries. This land was envisioned to be served by second half development of the Columbia Basin Project. Second half development has not yet occurred. Water conserved by the proposed automated gates can be used to issue new water contracts to these farms currently using private wells. The full amount of the estimated savings (2,968 acre-feet) could be used as a source of supply for new water contracts. The District would issue these new contracts upon execution of a contract between the

Bureau and the District. At a water duty of 3 acre-feet per acre, approximately 989 acres could be served by the water conserved under this proposal.

Upon issuance of a new water service contract, landowners would move their existing groundwater right to a status in which it would only be used in an emergency. Past water service contracts issued by the District run for a period of 10 years and can be renewed indefinitely. It is anticipated that new contracts will be of a similar nature. This type of contract would provide a secure, long-term source of water, enhancing the viability of continued agricultural production.

It is anticipated that all of the water conserved under this proposal would be made available to serve commercial agriculture needs in the Odessa subarea through contracts between individual landowners and the East District. The District has the authority to write these contracts through a master water service contract with the Bureau of Reclamation. This contractual relationship imposes Reclamation water law with respect to the way the water is used.

## Evaluation Criterion C: Project Implementation

Automated gate installation will be implemented during the construction season, October to March, 2022-2023. Procurement of gates will begin when the District is given the notice to proceed, projected to be July 2022. When water is no longer in the ELC the existing manual gates will be removed, the structures cleaned and prepared for the installation of automated gates. As the new gates arrive they will be installed and calibrated for water delivery for the 2023 irrigation season.

The District will be required to obtain approval from the State Historic Preservation Office in order to complete the proposed projects. In the most recent projects where this was required, the District coordinated with the Bureau of Reclamation to contract the work to a consultant, who prepared a report describing their findings and submitted it to the State Historic Preservation Office for review and approval. The District intends to use this same process to obtain approval for the proposed projects.

## Evaluation Criterion D: Nexus to Reclamation

Columbia Basin Project water is pumped from Lake Roosevelt on the Columbia River into Banks Lake and flows by gravity from there to the three irrigation Districts on the project. There are 13 pumps, ranging in size from 56,000 hp to 65,000 hp. The Bonneville Power Administration has declared that each acre-foot of water pumped from Lake Roosevelt to Banks Lake requires 558 busbar kilowatt-hours. Water saved as a result of the proposed automated gates will no longer have to be pumped from Lake Roosevelt to supply the East District. Therefore, based on water savings of 2,968 acre-ft per year, the annual power savings will be approximately 1,656,144 kilowatt-hours.

In addition, some of the water saved by the proposed projects will be used to issue new water service contracts to farmers in the Odessa subarea. Currently, these farmers are using wells drilled deep into an aquifer that is declining. While these farmers are within the East District boundaries, project water has not been made available to them yet. Their farmland lies east of the East Low Canal (the District's main source of supply) and initial development of the Columbia Basin Project did not include service to that land. Second half development of the project, which would serve much of the land in the Odessa subarea, has not yet occurred. In anticipation of full project development, the state of Washington allowed the drilling of wells into the aquifer below them. The aquifer supplying the Odessa subarea is rapidly declining. These farmers rely on very deep wells-many of which are 2000' deep or deeper-to draw water from. Moving these farmers from wells to surface water from the Columbia Basin Project will accomplish significant energy savings through reduced pump horsepower needed.

## Project Budget

## Funding Plan and Letters of Commitment

To fund these projects, the District plans on obtaining 40% of the total cost from Reclamation through the WaterSMART program. The District is prepared to contribute in-kind labor and equipment costs as well as the remainder of the funding needed for the project. District funds come from assessments collected annually from our landowners as well as revenue from electricity generated by District-owned hydroelectric generation facilities.

| **Funding Sources** | **Funding Amount** |
|---|---|
| Non-Federal Entities: | |
| 1. ECBID | $101,195.12 |
| | |
| Requested Reclamation Funding: | $75,000.00 |
| | |
| **Total Project Funding:** | **$176,195.12** |

No project costs have been incurred. Design costs are anticipated to occur beginning in July of 2022.

# Budget Proposal

| Budget Item Description | $/Unit | Quantity | District Funding | Reclamation Funding | Total Cost |
|---|---|---|---|---|---|
| **Salaries and Wages** | | | | | |
| **Engineers** | | | | | |
| District Engineer | $49.04 | 60 | $2,942.40 | $0.00 | $2,942.40 |
| **Laborers** | | | | | |
| Laborer 1 | $26.13 | 200 | $5,226.00 | $0.00 | $5,226.00 |
| Laborer 2 | $26.13 | 200 | $5,226.00 | $0.00 | $5,226.00 |
| Laborer 3 | $24.35 | 200 | $4,870.00 | $0.00 | $4,870.00 |
| Laborer 4 | $20.58 | 200 | $4,116.00 | $0.00 | $4,116.00 |
| **Fringe Benefits** | | | | | |
| **Engineers** | | | | | |
| District Engineer | $25.08 | 60 | $1,504.80 | $0.00 | $1,504.80 |
| **Laborers** | | | | | |
| Laborer 1 | $13.55 | 200 | $2,710.00 | $0.00 | $2,710.00 |
| Laborer 2 | $15.55 | 200 | $3,110.00 | $0.00 | $3,110.00 |
| Laborer 3 | $12.41 | 200 | $2,482.00 | $0.00 | $2,482.00 |
| Laborer 4 | $8.99 | 200 | $1,798.00 | $0.00 | $1,798.00 |
| **Equipment** | | | | | |
| Gradall | $12.00 | 8 | $96.00 | $0.00 | $96.00 |
| Hydrocrane | $30.00 | 20 | $600.00 | $0.00 | $600.00 |
| Pickup Truck Mileage | $0.55 | 2,160 | $1,188.00 | $0.00 | $1,188.00 |
| (See Attached Breakdown) | | | | | |
| **Supplies/Materials** | | | | | |
| Gate (2'x2'x8' frame) | $19,150.00 | 2 | $20,616.89 | $17,683.11 | $38,300.00 |
| Gate (2'x2'x12' frame) | $19,690.00 | 3 | $31,803.29 | $27,266.71 | $59,070.00 |
| Gate (2.5'x2.5'x10' frame) | $21,170.00 | 1 | $11,397.93 | $9,772.07 | $21,170.00 |
| Concrete | $150.00 | 4 | $321.89 | $278.11 | $600.00 |
| **Environmental and Regulatory Compliance** | | | | | |
| Coordination with SHPO/USBR | $20,000.00 | 1 | 0 | $20,000.00 | $20,000.00 |
| **Reporting** | | | | | |
| Submitting Progress and Final Reports | $74.12 | 16 | $1,185.92 | 0 | $1,185.92 |
| | | | | | |
| **Total Project Costs** | | | **$101,195.12** | **$75,000.00** | **$176,195.12** |

## Budget Narrative

Salaries and wages are based on anticipated rates as of December 2020. Benefit rates are actual rates for 2020. Benefit rates include District contributions to: FICA, Medicare, employee health insurance, retirement, and industrial insurance premiums through the State of Washington.

Equipment rates for construction are based on the anticipated amount of time it will take to install the gates. Equipment rates are based on the District's actual costs to operate and maintain District equipment. District equipment rates are shown in Appendix F.

Automated Gate prices are based on gates purchased in 2020.

The price shown on the budget for environmental and regulatory compliance is based on a contract with a consultant for the same type of work in 2020.

Reporting costs are based on the District Engineer's combined wage and benefit rate and the number of hours anticipated to prepare the required semi-annual and final reports to Reclamation.

The District does not have an approved indirect costs rate agreement. The District does not intend to recover indirect costs under a WaterSMART grant agreement, and no indirect costs have been included in the proposed budget.

The proposed project budget and construction budget are shown in Appendix C.

## Environmental and Cultural Resources Compliance

The installation of automated gates requires disturbing and possibly modifying the existing structure to conform to the new gate. The existing structure was constructed as part of the original system and there will be minimal effect on the existing canal prism during construction. No impacts to air or water quality are anticipated. The work will be done when water is out of the canals and no discharge of stormwater from the project site will occur.

The pygmy rabbit, Columbia Basin DPS has been reported to live within the area. However, the District is not aware of any pygmy rabbits living near the proposed project sites. No effect is anticipated by construction of the proposed projects.

There are no wetlands within the proposed project sites.

The water delivery system was constructed primarily in the 1950s.

The project will potentially modify the existing structures to conform to the new automated gates. Most of these structures have not been modified since original construction with the exception of replacing gates with the same design as the original.

The District's main canals, the East Low Canal and the Potholes East Canal, are eligible for listing on the National Register of Historic Places. The proposed project will only affect the headgates off the East Low Canal and will not change the shape of the East Low Canal.

There are no known archaeological sites within the project areas.

No adverse impact to low income or minority populations is anticipated.

No impacts to tribal lands are anticipated. There are no sacred Indian sites in the project area.

The projects will have no impact on the introduction, spread, or existence of noxious weeds or invasive species. District crews control weeds on an ongoing basis.

## Required Permits or Approvals

The District will be required to obtain approval from the State Historic Preservation Office in order to complete the proposed projects. In the most recent projects where this was required, the District coordinated with the Bureau of Reclamation to contract the work to a consultant, who prepared a report describing their findings and submitted it to the State Historic Preservation Office for review and approval. The District intends to use this same process to obtain approval for the proposed projects.

## Letters of Support

None.

## Official Resolution

An official resolution in support of the proposed projects will be included as Appendix E after the April 2021 board meeting.

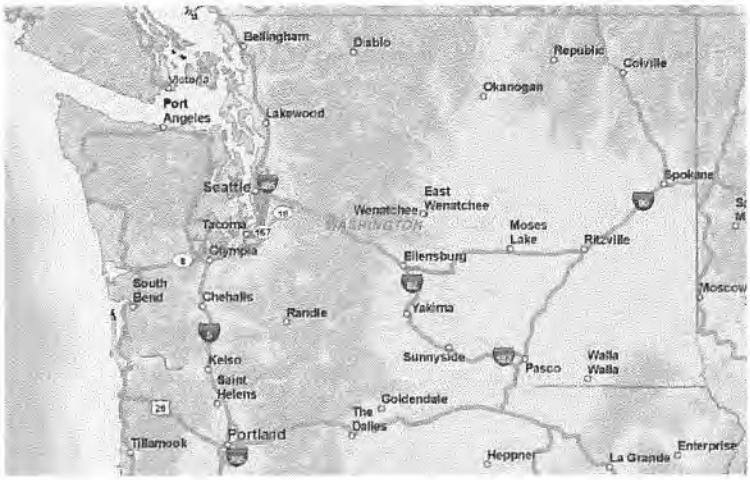
## Unique Entity Identifier and System for Award Management

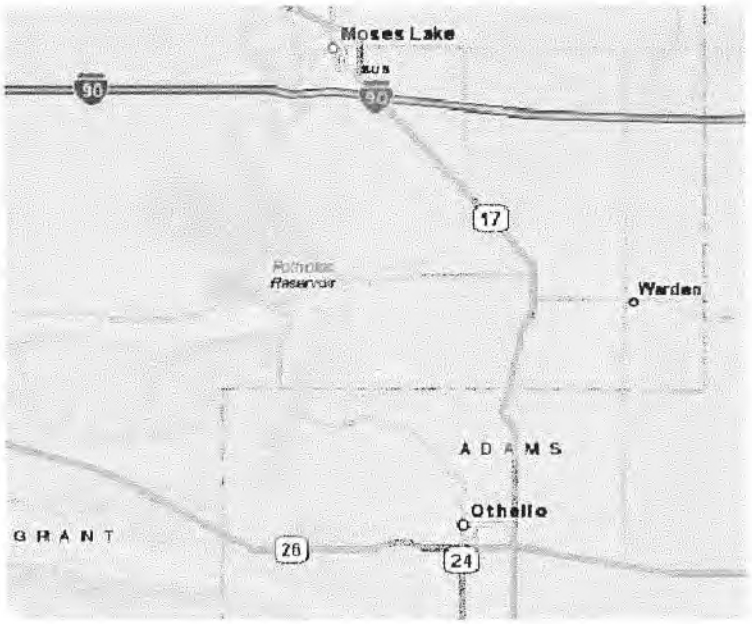
The East Columbia Basin Irrigation District is registered with the System for Award Management (SAM) with the DUNS number of 07-096-5710.

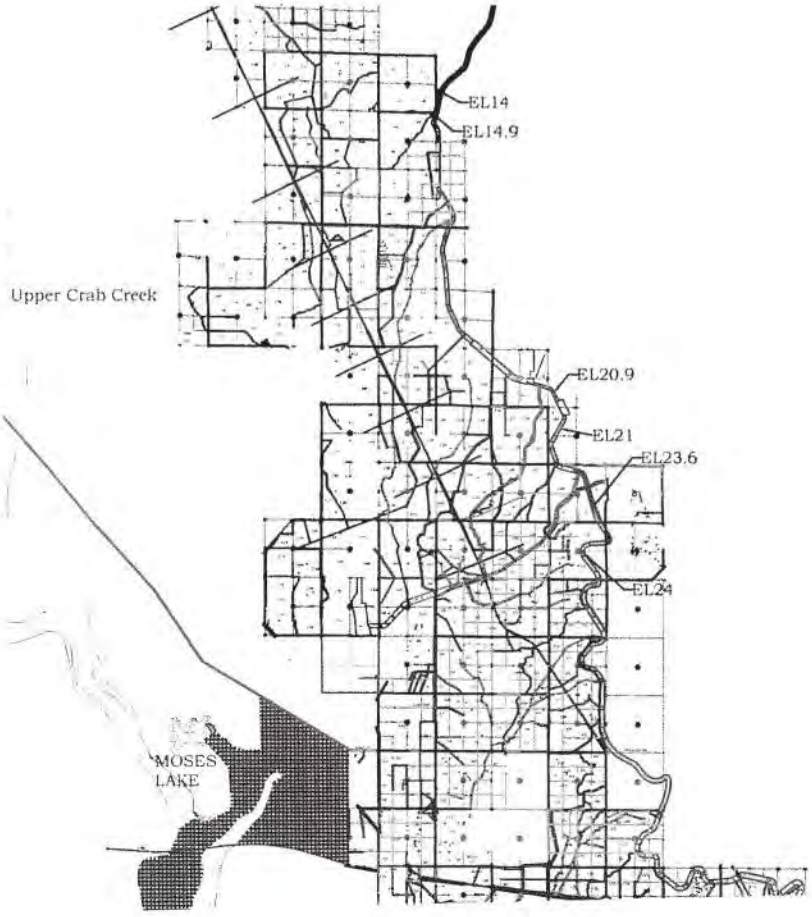
# Appendix A

## Location Map

# APPENDIX A 2021 WATERSMART GRANT APPLICATION LOCATION MAP



# Appendix B

## Water Savings

# Appendix B - Installation of Automated Gates - Block 40 & 41

Water Savings

| 24" gate | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Gate opening | Discharge (cfs) 0.2' head | Discharge (cfs) 0.1' fluctuation | Water savings (cfs) | Water savings (cfs/year) | Water savings (acre-ft/yr) | # of days at gate opening | % days run at gate opening | Actual water savings (acre-ft/year) |
| 0.5 | 2.51 | 3.1 | 0.6 | 107.7 | 213.6 | 58 | 0.3 | 64.1 |
| 1 | 5.02 | 6.1 | 1.1 | 2.2 | 427.2 | 59 | 0.3 | 128.1 |
| 1.5 | 7.53 | 9.2 | 1.7 | 3.3 | 640.7 | 78 | 0.4 | 224.3 |
| | | | | | | 195.0 | 1.0 | 416.5 |

| 30" gate | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Gate opening | Discharge (cfs) 0.2' head | Discharge (cfs) 0.1' fluctuation | Water savings (cfs) | Water savings (cfs/year) | Water savings (acre-ft/yr) | # of days at gate opening | % days run at gate opening | Actual water savings (acre-ft/year) |
| 0.5 | 3.14 | 3.8 | 0.7 | 1.4 | 267.2 | 26 | 0.1 | 35.6 |
| 1 | 6.28 | 7.7 | 1.4 | 2.7 | 534.4 | 26 | 0.1 | 71.3 |
| 1.5 | 9.41 | 11.5 | 2.1 | 4.1 | 800.7 | 62 | 0.3 | 254.6 |
| 2 | 12.6 | 15.4 | 2.8 | 5.5 | 1072.2 | 23 | 0.1 | 126.5 |
| 2.5 | 15.7 | 19.2 | 3.5 | 6.9 | 1335.9 | 58 | 0.3 | 397.4 |
| | | | | | | 195 | 1.0 | 885.3 |

## Appendix C

## Budget Proposal

Appendix C - East Columbia Basin Irrigation District - Budget Proposal
Installation of Automated Gates - Blocks 40 41

| Budget Item Description | $/Unit | Quantity | District Funding | Reclamation Funding | Total Cost |
|---|---|---|---|---|---|
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| Laborer 4 | $20.58 | 200 | $4,116.00 | $0.00 | $4,116.00 |
| **Fringe Benefits** | | | | | |
| **Engineers** | | | | | |
| District Engineer | $25.08 | 60 | $1,504.80 | $0.00 | $1,504.80 |
| **Laborers** | | | | | |
| Laborer 1 | $13.55 | 200 | $2,710.00 | $0.00 | $2,710.00 |
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| Concrete | $150.00 | 4 | $321.89 | $278.11 | $600.00 |
| **Environmental and Regulatory Compliance** | | | | | |
| Coordination with SHPO/USBR | $20,000.00 | 1 | 0 | $20,000.00 | $20,000.00 |
| **Reporting** | | | | | |
| Submitting Progress and Final Reports | $74.12 | 16 | $1,185.92 | 0 | $1,185.92 |
| | | | | | |
| **Total Project Costs** | | | **$101,195.12** | **$75,000.00** | **$176,195.12** |

## Appendix D

## SF424, SF424C, and SF424D Forms

## Appendix E

## Official Resolution

# Appendix F

# ECBID Equipment Rates

# Appendix F - Installation of Automated Gates - Blocks 40 & 41

## Equipment Rates

| Object Label | Description | Type | Hourly Rate |
|---|---|---|---|
| Backhoe | Backhoes, per hour | E | $12.00 |
| CIP | Construction In Progress | C | $0.00 |
| Comp | Compressors | E | $10.00 |
| ConcPump | Concrete Pump | E | $60.00 |
| D Truck | Dump Truck-OGWRP | E | $5.99 |
| Dozer | Dozers, per hour | E | $31.00 |
| Dozer-JD | John Deer Dozer-OGWRP | E | $49.96 |
| Dozer-Koma | Kamatsu Dozer-OGWRP | E | $85.63 |
| Dump Tr | Dump Trucks, per mile | E | $1.00 |
| DumpTruck | Dump Truck-Federal | E | $0.54 |
| Excavate | Excavators, per hour | E | $31.00 |
| Excavator | Volvo Excavator OGWRP | E | $61.63 |
| Fuel Truck | Fuel/Lube Truck | E | $5.99 |
| Gradall | Gradall, per hour | E | $12.00 |
| Grader | Graders, per hour | E | $23.00 |
| Hyd-Cran | Hydrocrane, per hour | E | $30.00 |
| HydJet | HydroJet | E | $25.00 |
| Labor | Labor | L | $0.00 |
| LaborCst | Labor Cost | L | $0.00 |
| Loader | Loaders, per hour | E | $12.00 |
| Lowboy | Lowboy Tactor, Per Mile | E | $4.00 |
| Matl | Materials | M | $0.00 |
| Mower | Tractor/Mowers | E | $21.00 |
| Pickup | Pickups, per mile | E | $0.55 |
| Pump | 2" Pump | E | $3.00 |
| Rodder | Power Rodder | E | $25.00 |
| Scraper | Scraper-OGWRP | E | $60.94 |
| Tamper | Tamper | E | $9.00 |