Exhibit V
Solid Waste and Wastewater Minimization

Boardman to Hemingway Transmission Line Project

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Amended Preliminary Application for Site Certificate

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ACRONYMS AND ABBREVIATIONS

Amended Project Order	First Amended Project Order, Regarding Statutes, Administrative Rules and Other Requirements Applicable to the Proposed Boardman to Hemingway Transmission Line (December 22, 2014)
BMP	best management practice
CFR	Code of Federal Regulations
ESCP	Erosion and Sediment Control Plan
IPC	Idaho Power Company
kV	kilovolt
OAR	Oregon Administrative Rule
ODEQ	Oregon Department of Environmental Quality
OPGW	optical ground wire
ORS	Oregon Revised Statute
Project	Boardman to Hemingway Transmission Line Project
RCRA	Resource Conservation and Recovery Act

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1.0 INTRODUCTION

Exhibit V demonstrates that Idaho Power Company's (IPC) solid waste and wastewater plans for the Boardman to Hemingway Transmission Line Project (Project) are likely to minimize generation of solid waste and wastewater in the construction and operation of the Project, and when solid waste or wastewater is generated, to result in recycling and reuse of such wastes, as required by the Waste Minimization Standard at Oregon Administrative Rule (OAR) 345-022-0120(1). During construction, the Project will generate waste and wastewater in amounts described in detail herein. During the operation and maintenance, the Project will generate insignificant amounts of solid waste and wastewater. The Project will generate little or no hazardous waste. Additionally, the information presented in Exhibit V demonstrates that IPC's plans to manage the accumulation, storage, disposal, and transportation of waste generated by the Project are likely to result in minimal adverse impact on surrounding and adjacent areas.

2.0 APPLICABLE RULES AND AMENDED PROJECT ORDER PROVISIONS

2.1 General Standards for Siting Facilities

The Waste Minimization Standard set forth in OAR 345-022-0120(1) provides IPC must demonstrate the following, to the extent reasonably practicable:

> *(a) The applicant's solid waste and wastewater plans are likely to minimize generation of solid waste and wastewater in the construction and operation of the facility, and when solid waste or wastewater is generated, to result in recycling and reuse of such wastes;*
>
> *(b) The applicant's plans to manage the accumulation, storage, disposal, and transportation of waste generated by the construction and operation of the facility are likely to result in minimal adverse impact on surrounding and adjacent areas.*

2.2 Site Certificate Application Requirements

OAR 345-021-0010(1)(v) provides Exhibit V must include the following information about the IPC's plans to minimize the generation of solid waste and waste water and to recycle or reuse solid waste and waste water:

> *(A) A description of the major types of solid waste and waste water that construction, operation and retirement of the facility are likely to generate, including an estimate of the amount of solid waste and waste water.*
>
> *(B) A description of any structures, systems and equipment for management and disposal of solid waste, waste water and storm water.*
>
> *(C) A discussion of any actions or restrictions proposed by the applicant to reduce consumptive water use during construction and operation of the facility.*
>
> *(D) The applicant's plans to minimize, recycle or reuse the solid waste and waste water described in (A).*
>
> *(E) A description of any adverse impact on surrounding and adjacent areas from the accumulation, storage, disposal and transportation of solid waste, waste water and storm water during construction and operation of the facility.*

(F) Evidence that adverse impacts described in (D) are likely to be minimal, taking into account any measures the applicant proposes to avoid, reduce or otherwise mitigate the impacts.

(G) The applicant's proposed monitoring program, if any, for minimization of solid waste and waste water impacts.

2.3 Amended Project Order

The Amended Project Order includes the following discussion:

The application shall demonstrate compliance with the applicable standards, including the waste minimization standard and public services standard. Include in the application evidence that identified landfills have the capacity to accept the generated quantities of non-recyclable/non-reusable waste.

The applicant shall comply with ODEQ regulations concerning the storage and management of hazardous materials and the clean-up and disposal of hazardous waste. Exhibit V shall include a list of all hazardous materials that would potentially be stored or used at the facility site during construction and operation, and a description of the applicant's plans and programs for storage of hazardous materials and management of hazardous waste. If the applicant proposes any on-site fuel storage during construction, the fuel storage areas and management plan shall be described in detail in the application.

The proposed facility will entail clearing activities through forested lands. Exhibit V shall contain information on how the applicant will manage or dispose of the debris generated by clearing activities, including brush disposal, as well as excess material from cut and fill.

(Amended Project Order, Section III(v)).

3.0 ANALYSIS

3.1 Analysis Area

The analysis area for Exhibit V includes all areas within the Site Boundary, which is defined as "the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas, and all corridors and micrositing corridors proposed by the applicant" (OAR 345-001-0010(55)). The Site Boundary encompasses the following facilities in Oregon:

- The Proposed Route, consisting of 270.8 miles of new 500-kilovolt (kV) electric transmission line, removal of 12 miles of existing 69-kV transmission line, rebuilding of 0.9 mile of a 230-kV transmission line, and rebuilding of 1.1 miles of an existing 138-kV transmission line;
- Four alternatives that each could replace a portion of the Proposed Route, including the West of Bombing Range Road Alternative 1 (3.74 miles), West of Bombing Range Road Alternative 2 (3.7 miles), Morgan Lake Alternative (18.5 miles), and Double Mountain Alternative (7.4 miles);
- One proposed 20-acre station (Longhorn Station);
- Ten communication station sites of less than ¼-acre each and two alternative communication station sites;

- Permanent access roads for the Proposed Route, including 206.3 miles of new roads and 223.2 miles of existing roads requiring substantial modification, and for the Alternative Routes including 30.2 miles of new roads and 22.7 miles of existing roads requiring substantial modification; and
- Thirty-one temporary multi-use areas and 299 pulling and tensioning sites of which four will have light-duty fly yards within the pulling and tensioning sites.

The Project features are fully described in Exhibit B and the Site Boundary for each Project feature is described in Exhibit C, Table C-24. The location of the Project features and the Site Boundary is outlined in Exhibit C.

3.2 Methods

Estimated quantities of construction waste, vegetation waste, and wastewater were provided by IPC's engineering group and IPC's engineering contractor. Hazardous materials and waste are discussed in Exhibit G. IPC's and their engineering contractor's experience that qualifies them to make these estimates is detailed in Exhibit D.

3.3 Estimated Quantities of Solid Waste and Wastewater

OAR 345-021-0010(1)(v)(A): A description of the major types of solid waste and waste water that construction, operation and retirement of the facility are likely to generate, including an estimate of the amount of solid waste and waste water.

3.3.1 Construction Solid Waste

This section provides IPC's estimates, based on IPC's experience on other transmission line projects, of the vegetation waste, native earth materials (soil, rock, and similar), and household-type solid waste that likely will be generated during the construction of the Project.

3.3.1.1 Vegetation Waste

Construction of the Project will require clearing of vegetation from portions of the Site Boundary, including the Longhorn Station site, certain access roads, multi-use areas, temporary pulling and tensioning sites, light-duty fly yards, and other temporary and permanent disturbance areas. Vegetation waste will consist of herbaceous plant materials scraped from disturbances areas, and trees and shrubs removed to facilitate construction, transmission line stringing, and to prevent interference with energized circuits. IPC estimates approximately 3,516,256 cubic yards of vegetation waste (311,212 tons) will be generated from construction (see Table V-1). It is estimated approximately 80 percent (2,813,005 cubic yards [843,902 tons]) of vegetation waste will be mulched and spread around on the ground in the Site Boundary. The remaining 20 percent (703,251 cubic yards [210,975 tons]) will be disposed of off-site. Where county landfills accept vegetation waste for recycling, the vegetation waste will be recycled. Otherwise, it will be disposed of at the nearest county landfill, preferably in the county construction and demolition (C and D) landfill.

Vegetation waste quantities to be generated by the alternatives are also shown in Table V-1. The percent of vegetation waste to be left on-site or recycled/disposed of off-site is the same as for the Proposed Route. If IPC develops the alternative route in lieu of the corresponding segment of the Proposed Route, the net volumes of waste are not likely to deviate substantially from the "total amounts" provided in Table V-1 for the Proposed Route.

Table V-1. Materials Generated from Construction Activities and Ultimate Disposition

Route/County	Site Boundary in cubic yards (tons)		
	Vegetation[1]	**Native Material[2]**	**Solid Waste[3]**
Proposed[4]/Morrow	157,300 (47,190)	37,635 (48,926)	1,380 (414)
Amount Recycled[5]	125,840 (37,752)	3,764 (4,893)	1,104 (331)
Amount to Finley Buttes Landfill[6]	31,460 (9,438)	33,871 (44,033)	276 (83)
Proposed/Umatilla	492,066 (147,620)	28,920 (37,596)	805 (242)
Amount Recycled[5]	393,653 (118,096)	2,892 (3,760)	664 (194)
Amount to Finley Buttes Landfill[6]	98,413 (29,524)	26,028 (33,836)	161 (48)
Proposed/Union	680,019 (204,006)	21,665 (28,165)	852 (256)
Amount Recycled[5]	544,015 (163,205)	2,167 (2,817)	682 (205)
Amount to Baker County Landfill[6]	136,004 (40,801)	19,499 (25,349)	170 (51)
Proposed/Baker	746,166 (223,850)	47,995 (62,394)	1,407 (422)
Amount Recycled[5]	596,933 (179,080)	4,800 (6,239)	1,126 (338)
Amount to Baker County Landfill[6]	149,233 (44,770)	43,196 (56,155)	281 (84)
Proposed/Malheur	1,432,639 (429,792)	58,925 (76,603)	1,691 (507)
Amount Recycled[5]	1,146,111 (343,834)	5,893 (7,660)	1,353 (406)
Amount to Clay Peak Landfill[6]	286,528 (85,958)	53,033 (68,943)	338 (101)
Proposed 230-kV Rebuild/Baker	4,033 (1,210)	929 (1,208)	45 (14)
Amount Recycled[5]	3,226 (968)	93 (121)	36 (11)
Amount to Baker County Landfill[6]	807 (242)	836 (1,087)	9 (3)
Proposed 138/69-kV Rebuild/Baker	4,033 (1,210)	1,149 (1,493)	55 (17)
Amount Recycled[5]	3,226 (968)	115 (149)	44 (14)
Amount to Baker County Landfill[6]	807 (242)	1,034 (1,344)	11 (3)
TOTAL Proposed Route			
Total Generated	***3,516,256 (1,054,877)***	***197,218 (256,383)***	***6,235 (1,870)***
Proposed Route TOTAL Amount Recycled[5]	**2,813,005 (843,902)**	**19,722 (25,638)**	**4,988 (1,496)**
Proposed Route TOTAL Amount to Landfill[6]	**703,251 (210,975)**	**177,496 (230,744)**	**1,247 (374)**

Route/County	Site Boundary in cubic yards (tons)		
	Vegetation[1]	**Native Material[2]**	**Solid Waste[3]**
Double Mountain Alternative/Malheur	124,227 (37,268)	5,758 (7,485)	169 (51)
Amount Recycled[5]	99,382 (29,814)	576 (749)	135 (41)
Amount to Baker County Landfill[6]	24,845 (7,457)	5,182 (6,737	34 (10)
Morgan Lake Alternative/Union	1,161,599 (348,480)	15,499 (20,149)	409 (123)
Amount Recycled[5]	929,279 (278,784)	1,550 (2,015)	327 (98)
Amount to Baker County Landfill[6]	232,320 (69,696)	13,949 (18,134)	82 (25)
West of Bombing Range Rd Alternatives/Morrow	10,890 (3,267)	5,678 (7,381)	225 (68)
Amount Recycled[5]	8,712 (2,614)	568 (738)	180 (54)
Amount to Baker County Landfill[6]	2,178 (653)	5,110 (6,643)	45 (14)
Total Alternative Routes			
Alternative Routes TOTAL Amount Recycled[5]	**1,037,372 (311,212)**	**2,693 (3,501)**	**642 (192)**
Alternative Routes TOTAL Amount to Landfill[6]	**259,343 (77,803)**	**24,241 (31,513)**	**160 (48)**

[1] Vegetation consists of woody vegetation to be removed during construction. It is assumed that approximately 80% can remain within the Site Boundary and 20% will be hauled away to a county landfill for recycling or disposal, as approved by local entities.

[2] Native material consists of excess soil, large rocks, or other natural materials that cannot be reused on-site. It is assumed that approximately 10% of native material excavated for structure foundations, temporary work areas, the Longhorn Station, or access roads, can be recycled on site. Native materials may be suitable for disposal at fill dirt sites, or county construction and demolition (C and D) landfills, as approved by local entities.

[3] Solid waste is non-hazardous refuse from materials delivered to the Project, and includes containers, boxes, bags, sacks, packing materials, broken insulators, scrap conductor, empty wire spools, and other miscellaneous non-hazardous paper, plastic or similar materials. These are materials that will be recycled, hauled directly, or placed in a dumpster or roll-off for disposal at a municipal solid waste landfill, as approved by local entities. It is estimated that up to 80% of solid waste would be recycled.

[4] Includes materials generated from construction of Longhorn Station.

[5] Amount Recycled for vegetation is the amount of vegetation that will be left on-site. Amount Recycled for solid waste is the amount of material that goes to a recycling facility for future useful purposes.

[6] Amount to Landfill: Includes vegetation and native material that would go to a County C and D landfill, or solid waste that would go to a municipal solid waste landfill for all facilities within Site Boundary.

NA – not applicable

3.3.1.2 Native Earth Materials

Native earth materials consist of excess soil, fill material, and aggregates that may be generated from access road construction and foundation excavations along the Proposed Route and Alternative Route. The Project will balance soil cuts and fills to the greatest extent possible to minimize excess, but it is anticipated that some material surplus will remain, which will require disposal. It is estimated that out of approximately 197,218 cubic yards (256,383 tons) of native material generated, about 177,496 cubic yards (230,744 tons) will need to be hauled off-site (see Table V-1). The native material quantities shown in Table V-1 represent material excavated for foundations and material graded for tower pads and work areas. Approximately 90 percent of material excavated for foundations and 50 percent of material removed from tower pad and work area grading will be disposed of at the nearest C and D landfill or used for daily cover at county municipal solid waste landfills. The construction contractor may also opt to arrange for native material disposal at local sand and gravel/aggregate pits where the materials could be recycled for fill or aggregate sources on unrelated projects. Native material quantities that will be transported off-site by the alternatives are also shown in Table V-1.

3.3.1.3 Household-Type Solid Waste

Household-type solid waste generated during construction will include scrap metal, wire, wood, concrete, incidental litter, and other debris. Much of this waste will be packing material such as crates, pallets, and paper wrapping to protect equipment during shipping. IPC's engineering contractor estimates that approximately 6,235 cubic yards (1,870 tons) of solid waste will be generated (see Table V-1). Given the bulk of the materials are wood, wire, and metal, IPC's engineering contractor estimates that up to 80 percent (4,988 cubic yards [1,496 tons]) of solid waste will be recycled. The remaining 20 percent (1,247 cubic yards [374 tons]) will be disposed of at the nearest county landfill as shown in Table V-1. Worker personal items, such as meal residue, cups, cans, etc., represent a very minor amount of household-type waste included within the 20 percent of solid waste going to a landfill. Solid waste quantities to be generated by the alternatives are also shown in Table V-1. The proportion of solid waste to be recycled vs. landfilled will be the same for the Alternative Route as for the Proposed Route.

3.3.2 Construction Wastewater

This section provides IPC's estimates, based on IPC's experience on other transmission line projects, of the sanitation facilities wastewater and concrete washout residue that likely will be generated during the construction of the Project.

3.3.2.1 Sanitation Facilities

Temporary sanitation during construction activities will consist of portable toilets located at multi-use areas and construction sites. Portable toilets will be provided by a subcontractor, who will be responsible for servicing the facilities at regular intervals and disposing of wastewater in accordance with local jurisdictional regulations. The construction contractor will ensure that a sufficient number of toilets is provided and that the portable restroom company complies with applicable regulations; uses holding tanks for biological waste that conform to Oregon Department of Environmental Quality (ODEQ) regulations at OAR Chapter 340, Division 71; and transports waste in accordance with Oregon Revised Statute (ORS) Chapters 465 and 466.

3.3.2.2 Concrete Washout Residue

Most of the wastewater produced over the life of the Project will be concrete washout water produced during construction of tower and substation foundations. Designated aboveground washouts will be used to contain residual concrete, concrete associated liquids, and the wash water from cleaning trucks, hoppers, and chutes. Washout containment best management

practices (BMPs) will be earthen berm or straw bale enclosures lined with plastic, a storage tank, or other structure approved by the engineer or inspector. These washouts will be located within each structure work area at least 50 feet away from storm drains, ditches, streams, or other water bodies. Washouts will be visually inspected on a daily basis to ensure there are no leaks and that they are operating effectively. They will be cleaned out when they reach 75 percent of their design capacity. Care will be taken to ensure these structures do not overflow during storm events. The locations of concrete washouts are provided in the Erosion and Sediment Control Plan (ESCP), Exhibit I, Attachment I-3.

After a concrete washout is no longer needed, IPC and its contractor will ensure proper disposal of washout materials. Washout liquids are generally allowed to evaporate or they will be pumped out and properly disposed of by the construction contractor. Washout liquids will not be discharged into storm drains, ditches, streams or other water bodies. Dried concrete will be broken up and used as clean fill on the Project, recycled, or properly disposed of by other means. Hardened concrete that is not recycled may be buried in embankments on-site.

Multi-use areas may contain portable concrete batch plants during the construction period. The contractor will obtain an Air Contaminant Discharge Permit, which is a permit federally delegated to ODEQ for batch plant operation at the multi-use areas and will comply with applicable permit requirements.

Some foundations may require slurry to stabilize foundation shafts during drilling. Slurry fluids will be recycled to the extent practicable. Excess and degraded slurry fluids will be disposed of at off-site location(s). The disposal will be in strict accordance with local, state, and federal environmental, and pollution laws and ordinances. Synthetic slurries will continue to be contained and disposed to an available municipal sanitary sewer in accordance with the permit requirements.

Dust control water will be sprayed onto disturbed areas to moisten the surface. The amount of water used for dust control will be sufficiently small that it will not create runoff, but instead will infiltrate into the ground or evaporate. Washing of large construction equipment to prevent the spread of weeds will also generate a minimal amount of wastewater. Construction contractor vehicles will be cleaned using high-pressure equipment (compressed air or water) when moving from weed-contaminated areas to other areas along the Project. The cleaning activities will focus on tracks, feet, or tires, and vehicle undercarriages including axles, frame, motor mounts, running boards, and front bumper/brush guards. All washing of vehicles will be performed in designated, approved wash stations. The washing of the construction vehicles will generate a minimal amount of wastewater. Wash station locations will be monitored to ensure that weedy vegetation does not germinate at the wash stations.

Stormwater is not considered to be wastewater. Stormwater management will be in conformance to State of Oregon stormwater management rules. Precipitation that falls on construction areas will be managed as stormwater in accordance with an ODEQ National Pollution Discharge Elimination System construction stormwater permit (1200-C) and ESCP (see Exhibit I, Attachment I-3).

3.3.3 Operations and Maintenance Solid Waste and Wastewater

Insignificant amounts of solid waste and wastewater are expected to be generated during the operation and maintenance of the Project. Solid waste will include replaced equipment and components, packing materials, and soils. The transmission line will be patrolled regularly to inspect insulators, wire and tower conditions, and a small amount of solid waste will be generated during repairs or replacements.

Permanent disturbance areas, including the cleared Proposed Route and Alternative Routes and permanent roads, will be managed to limit the types and height of vegetation that is allowed to regrow in these areas. Vegetation management techniques will be implemented in accordance with IPC's standard practices using motorized hand tools, clearing and grubbing machinery, and herbicides to retard the growth of trees within the wire and border zones. These methods are described in the Vegetation Management Plan, Exhibit P1, Attachment P1-4. During vegetation management cycles, which will occur on 4- or 5-year intervals, it is estimated that approximately 850 cubic yards of vegetation waste will be created.

Operation of the Project will generate approximately 11,000 gallons of wastewater annually for operation of a restroom facility at the Longhorn Station. This facility will be connected to the City of Boardman's water and sewer system.

3.3.4 Retirement Solid Waste and Wastewater

The Project is designed to have an indefinite useful life. As a general matter, IPC designs, constructs, and operates its transmission system on the assumption that the system's transmission lines will not be retired. If IPC is required to retire the transmission line, it will do so in accordance with an Energy Facility Siting Council (EFSC or Council)–approved retirement plan, as required by OAR 345-027-0020(9) and OAR 345-027-0110. Retirement and site restoration activities will also be in full compliance with all applicable statutes and regulations in effect at the time of retirement.

Wire and structures are removed in a similar fashion to how they are constructed, except in reverse. Vibration dampers will be removed from the conductors, all wire will be put into stringing sheaves at each insulator attachment, and the wire will be removed and placed onto reels. Then, towers will be deconstructed in sections, just as they were installed, after which individual steel members will be removed one by one.

The majority of the material generated at retirement is recyclable. All steel, aluminum, and copper will be salvaged or recycled if their condition allows. Likewise, all recyclable hardware will be recycled, and the remainder disposed of at the county landfill. Optical ground wire (OPGW) will be recycled for aluminum, steel and alloy materials as practical. The labor involved with separating the glass portions from the metal portions of insulators makes recycling likely unfeasible; therefore, insulators will be disposed of as solid waste.

Project retirement wastewater will be limited mainly to dust abatement water, applied to unpaved disturbed areas to minimize generation of blowing dust. Retirement wastewater will be applied in quantities that will minimize surface runoff. Wastewater used for dust abatement will be allowed to evaporate or infiltrate into the native soil.

Table V-2 presents estimates for the amount of materials that will be removed from the Project. Steel, aluminum, OPGW, and copper, representing the majority of the material, will be recycled. Non-recyclable materials will be placed in the landfill, and concrete waste will be disposed of on-site or removed to a county construction/demolition landfill.

Table V-2. Waste Materials Generated from Retirement

Route	County	Miles Crossed	Number of Structures	Structure Steel (tons)[2]	Conductor Steel (tons)	Conductor Aluminum (tons)	Shield Wire Steel (tons)	OPGW (tons)[2]	Copper Grounding Materials (tons)	Miscellaneous Hardware (cubic yards)	Insulators (tons)	Concrete Waste (cubic yards)[3]
Proposed[1]	Morrow	48	220	5,201	224	1,409	65	52	1	1,748	303	16,500
Proposed	Umatilla	41	160	3,782	192	1,207	55	45	1	1,497	309	12,000
Proposed	Union	40	169	3,995	189	1,189	55	44	1	1,476	285	12,675
Proposed	Baker	68	280	6,619	322	2,028	93	75	1	2,517	486	21,000
Proposed	Malheur	74	336	7,943	349	2,197	101	82	1	2,727	465	25,200
Proposed 230-kV Rebuild	Baker	1	9	NA	2	4	–	NA	–	33	2	NA
Proposed 138/69-kV Rebuild	Baker	1	11	NA	15	32	–	NA	1	41	2	NA
Total		**272.8**	**1,185**	**27,541**	**1,292**	**8,066**	**368.3**	**298**	**5.62505**	**10,039**	**1,852**	**87,375**
Alternative Route												
Double Mountain	Malheur	7	33	780	35	219	10	8	0	273	39	2,475
Morgan Lake	Union	19	81	1,915	87	549	25	20	0	681	134	6,075
West of Bombing Range Rd	Morrow	8	45	1,064	35	222	10	8	0	276	52	3,375

[1] Does not include the Longhorn Station. The Longhorn Station is a private Bonneville Power Administration utility property. In this application, IPC is requesting authorization to develop (construct and operate) the Longhorn Station if the Bonneville Power Administration does not develop the Longhorn Station on a timely basis, and it would remain in service even if the Project terminal were no longer used. The station site pad, foundations, security fence, major structures, bus, etc. would all remain in service. Only the major equipment installed for the Project terminal would be removed, all of which would be salvageable/recyclable.

[2] Weight of structure steel and OPGW based on weighted average of 19.7 tons.

[3] Approximately 75 cubic yards of concrete will be completely removed at each structure during retirement.

NA – not applicable; OPGW – optical ground wire

3.4 Waste Management and Disposal Systems

OAR 345-021-0010(1)(v)(B): A description of any structures, systems and equipment for management and disposal of solid waste, waste water and storm water.

IPC will comply with all applicable waste handling and disposal regulations on all lands associated with the Project. Solid waste will be stored in a manner that does not constitute a fire, health, or safety hazard until such waste can be hauled off-site for recycling or disposal, as appropriate. The following sections describe the handling and disposal of solid waste, wastewater, and stormwater anticipated throughout the duration of the Project.

3.4.1 Management and Disposal of Construction Waste, Wastewater, and Stormwater

The multi-use areas will serve as the collection points for solid waste generated at each of the tower construction or road construction sites along the Site Boundary. Waste generated at the Longhorn Station will be collected on-site for recycling or disposal in accordance with ODEQ regulations.

Excavation along the Proposed Route or Alternative Route and the Longhorn Station will generate solid wastes that will be used as fill as much as possible; however, some of the excavated material will be removed for disposal. Surplus excavated material may be used to construct shallow earthen berms on the edge of the route or spread along access roads in layers to raise the road profile and improve drainage. The volumes shown in Table V-1 reflect the waste that will be hauled away or recycled in the Site Boundary for each county during construction of the Project.

The majority of waste associated with substation construction results from spoils created during site grading. The values shown in Table V-1 reflect the amount of vegetation and rock larger than 6 inches in diameter that cannot be processed and converted into backfill for compaction. Approximately 90 percent of the native material excavated during foundation installation is waste product. Surplus native material may be temporarily stockpiled until it can be incorporated into earthwork in other portions of the Project or disposed of off-site. Where feasible, native material will be disposed of at local gravel pits for recycling for unrelated construction projects. Native material that cannot be recycled will be disposed of at a county C and D landfill.

Stockpile protection measures will be in place to reduce the potential for air and stormwater pollution originating from stockpiles of construction materials, including:

- Stockpiles will be located a minimum of 100 feet away from storm drains, ditches, streams, and other water bodies.
- Physical diversions will be provided to protect stockpiles from concentrated runoff.
- Stockpiles will be covered with plastic or comparable material prior to a rain event and during the rainy season.
- Silt fence, fiber filtration tubes, or straw wattles will be placed around stockpiles to limit sediment migration.
- When disposal of surplus fill is necessary, the first option will be to utilize acceptable sites within the route and/or roadway right-of-ways and in the general proximity of the source as a disposal site. Disposal sites will have undergone adequate review and consideration for environmental and cultural issues.

On-site disposal options may include:

- Construction of shallow earthen berms on the exterior of the route; and
- Construction of access road embankments, spreading materials in layers over existing road bed fill ruts to raise road profile and improve drainage. Materials shall be consolidated and shaped to form a smooth travel surface.

If no disposal sites are readily available or the area is environmentally sensitive, IPC's contractor will haul surplus material to disposal sites on IPC-controlled property or other available private or public property. All soil stockpiles will be managed in accordance with ODEQ stormwater requirements. The ESCP provides BMPs for management of material stockpiles.

Above-grade waste will consist of packing material such as crates, pallets, and paper wrapping to protect equipment during shipping. It is assumed that a 12 cubic yard dumpster will be filled once a week with waste material for the duration of each substation facility. A waste hauling subcontractor will be used to manage recycling and waste disposal. Project recycling or disposal containers will consist of rolloffs or dumpsters supplied by the waste handling subcontractor. Containers storing food wastes will be covered, leak-proof, and maintained to prevent a nuisance (e.g., odor, sight) and control vectors such as animals and insects. Materials such as wood pallets, plastic, metal, and paper will be separated from disposable wastes for recycling. Disposable waste will be disposed of by the subcontractor at nearby landfills. Interim recycling or disposal for solid waste prior to final disposition may be at county transfer stations.

Vegetation waste will be crushed, chipped, burned, spread, or stacked and left on-site as vegetation growth medium, erosion and sediment control, or wildlife habitat; any such waste not used on-site will be disposed of at a landfill.

Sanitary wastewater from portable toilets will be handled by a sanitary system subcontractor used to provide the sanitary facilities. This will consist of scheduled removal of the sanitary waste using a vacuum truck and disposal in accordance with the sanitary system subcontractor's permits.

To ensure proper management and disposal of construction-related solid waste and waste water, IPC proposes that the Council include the following conditions in the site certificate providing that IPC will prepare a waste management plan to be implemented during construction of the Project:

> ***Waste Minimization Condition 1:*** *Prior to construction, the site certificate holder shall develop a Construction Waste Management Plan, which addresses:*
> *a. The number and types of waste containers to be maintained at construction sites and construction yards;*
> *b. Waste segregation methods for recycling or disposal;*
> *c. Names and locations of appropriate recycling and waste disposal facilities, collection requirements, and hauling requirements to be used during construction;*
> *. . . .*
>
> ***Waste Minimization Condition 2:*** *During construction, the site certificate holder shall conduct all work in compliance with the Construction Waste Management Plan referenced in Waste Minimization Condition 1.*
>
> ***Waste Minimization Condition 3:*** *During construction, the site certificate holder shall provide to the department a report on the implementation of the*

Construction Waste Management Plan referenced in Waste Minimization Condition 1 in the 6-month construction report required pursuant to OAR 345-026-0080(1)(a).

Concrete washout stations will be distributed throughout the Project and will generally be located within each structure work area. The construction contractor will obtain any necessary permits for concrete washout and will comply with applicable permit requirements. The procedures for constructing, maintaining, and disposing of concrete debris and washout water at washout stations will also be covered in the ESCP. The locations of concrete washouts will be provided in the ESCP. The ESCP is a part of the 1200-C stormwater permit required by ODEQ. IPC has submitted a 1200-C permit application, including an ESCP (see Exhibit I, Attachment I-3). Construction stormwater will be managed in accordance with the 1200-C permit and ESCP, as described in Exhibit I, Attachment I-3.

To ensure proper management and disposal of construction-related storm water, IPC proposes that the Council include the following conditions in the site certificate providing that IPC will comply with the ESCP:

Soil Protection Condition 3: *Prior to construction, the site certificate holder shall submit to the department a copy of an ODEQ-approved construction-related final Erosion and Sediment Control Plan (ESCP). The protective measures described in the draft ESCP Plan in ASC Exhibit I, Attachment I-3, shall be included as part of the construction-related final ESCP Plan, unless otherwise approved by the department.*

Soil Protection Condition 6: *During construction, the site certificate holder shall conduct all work in compliance with the final ESCP referenced in Soil Protection Condition 3.*

3.4.2 Management and Disposal of Operations and Maintenance Waste, Wastewater, and Stormwater

The amount of operations-derived solid waste will be minimal compared to construction waste. Any solid waste generated during replacement of insulators, hardware, splices, or tower retrofits will be collected by the maintenance crews and transported to appropriately permitted, off-site to facilities that handle the disposal or recycling of these items. Vegetation waste will be crushed, chipped, spread, or stacked and left on-site as vegetation growth medium or wildlife habitat..

Operation of the Project will require approximately 11,000 gallons of water and will generate an equal amount of wastewater annually for operation of a restroom facility at the Longhorn Station. This facility will be connected to the City of Boardman's water and sewer system.

Permanent stormwater structures will minimize Project-derived erosion or sedimentation using stormwater BMP processes, as appropriate and in accordance with ODEQ stormwater requirements. Permanent BMPs will be selected based on location and need and will be described in the ESCP. Examples of permanent stormwater BMPs include, but are not limited to, vegetation-covered slopes, stormwater detention ponds, rock-lined or armored drainages, permanent drainage ditches, grass-covered swales, and properly installed and maintained culverts.

3.4.3 Solid Waste Disposal Facilities

Several municipal solid waste landfill facilities are located along the Project. All municipal solid waste landfill facilities must comply with the federal regulations in 40 Code of Federal

Regulations (CFR) Part 258 (Subtitle D of the Resource Conservation and Recovery Act [RCRA]), or equivalent state regulations. The disposal of solid waste in Oregon must be conducted in accordance with ORS Chapter 459 and OAR Chapter 340, Divisions 93 through 97. The state rules were re-written in 1993 to conform with new federal standards for solid waste facilities, contained in 40 CFR Part 258.

Solid waste suitable for disposal at municipal facilities will be transported by a disposal subcontractor. For additional discussion regarding solid waste disposal facilities, see Exhibit U. Solid waste disposal typically varies by county. The following provides waste disposal information for the counties crossed by the Project:

- **Morrow and Southern Umatilla Counties:** Morrow County and southern Umatilla County use the Finley Buttes Landfill. Finley Buttes Landfill is a modern municipal solid waste disposal facility permitted by the ODEQ. The landfill is privately owned, but approved by Morrow County in 1987. The landfill is expected to provide service in its current configuration for the next 200 years (Large 2016). Finley Buttes can accept municipal solid waste, construction/demolition waste, and special waste including liquids with proper approvals. Waste in these counties will either be hauled directly to the landfill, or first moved to transfer stations located near populated areas.
- **Union County:** There is no operating municipal landfill in Union County. Residential and commercial waste is transferred to the Baker Sanitary Landfill.
- **Baker County:** Baker County maintains the Baker Sanitary Landfill near Baker City, permitted by the ODEQ.
- **Malheur County:** Malheur County holds permits from ODEQ for the operation of the Lytle Boulevard Landfill located approximately 10 miles south of Vale, Oregon. The daily operation is conducted by a private contractor.

IPC contacted these landfills by telephone to verify that they have adequate capacity to receive Project solid waste. Follow-up letters were submitted to the landfill operators to request written confirmation that the facilities are available to receive Project solid waste. Lytle Boulevard is permitted to received only 20 tons per day and currently receives 15 to 16 tons per day. As indicated in Table V-1, project waste will not be disposed of at Lytle Boulevard Landfill, but at a nearby landfill (Clay Peak Landfill) in Payette County, Idaho. Telephone interviews with landfill operators are contained in Exhibit U, Attachment U-1.

3.5 Water Minimization

OAR 345-021-0010(1)(v)(C): A discussion of any actions or restrictions proposed by the applicant to reduce consumptive water use during construction and operation of the facility.

IPC will minimize water use by implementing appropriate BMPs to reduce water use to the greatest extent feasible. Construction water will be purchased from off-site sources, and IPC will take actions to minimize water uses. Drilling slurry fluids for stabilization of drilled shaft foundations will be recycled to the extent practicable. The amount of water for concrete mixing is controlled by the need for a proper water-cement ratio to provide adequate concrete strength and is therefore relatively fixed, although water reducing additives will generally be incorporated into the concrete mix design. Water for dust abatement will be minimized to prevent surface water migration and accompanying erosion or sediment transport, and to maximize the efficiency of the water trucks used to control dust. The construction contractors may also elect to use eco-sage, biodegradable, liquid copolymers to stabilize road surfaces where extended

use is anticipated. Water used at concrete washout stations is typically provided by the concrete truck, and it is in the interest of drivers to conserve water to minimize water fill-ups.

The restroom facility at the Longhorn Station will be equipped with low-flow toilets and faucets to minimize water use.

3.6 Minimizing, Recycling or Reusing Waste

OAR 345-021-0010(1)(v)(D): The applicant's plans to minimize, recycle or reuse the solid waste and waste water described in (A).

3.6.1 Minimization, Recycling, and Reusing Construction Solid Waste and Wastewater

IPC will promote a recycling program to minimize waste to be disposed of in landfills. IPC has an existing Investment Recovery department that maintains a facility to process scrap and they will work with vendors throughout their service territory. IPC's construction contractor will submit a plan for approval by IPC on how solid waste materials will be reused, recycled, or disposed of. That plan will specify the number and types of waste containers to be maintained at construction sites, multi-use areas and substations, and how solid waste or wastewater will be segregated for recycling or disposal. It will also specify the names and locations of recycling and waste disposal facilities that will be used for the Project, as well as collection and hauling requirements.

Wastes generated during construction along the Proposed Route or the Alternative Route or access roads will be collected in recycling and disposal containers at the multi-use areas. Separate disposal and recycling containers will be labeled by waste type to segregate materials as appropriate for recycling or disposal. Disposal and recycling containers will be of adequate size, design, and number to handle the amount of waste being generated. Landfill-supplied containers, such as 20- or 30-cubic-yard rolloffs, will be used to collect scrap metal, wood and paper products, concrete waste, and other recyclable materials. Paper products and other materials, such as chemicals, batteries, glass, metals, and plastic, will be recycled when practical in a method recommended by landfills or disposal subcontractors. As disposal and recycling containers reach capacity, they will be removed to disposal facilities that can handle these materials, and the containers will be replaced with empty units. Transportation of wastes will comply with OAR 340-093-0220. IPC's waste hauling contractor will be responsible for overseeing waste management, transporting waste to appropriate disposal facilities, and managing disposal and recycling containers.

Most excess spoils generated during road cut and fill and foundation excavation activities will be incorporated into Project grading activities as fill material. Excess spoils areas will be identified in the ESCP. Solvents and thinners will be filtered and reused whenever possible.

To ensure IPC's plans for minimizing, recycling, and reusing waste is incorporated in the site certificate, IPC proposes that the Council include the following condition in the site certificate:

> ***Waste Minimization Condition 1:*** *Prior to construction, the site certificate holder shall develop a Construction Waste Management Plan, which addresses:*
> *. . .*
> *d. Recycling steel and other metal scrap;*
> *e. Recycling wood waste;*
> *f. Recycling packaging wastes such as paper and cardboard;*

g. Collecting non-recyclable waste for transport to a local landfill by a licensed waste hauler or by using facility equipment and personnel to haul the waste;
h. Segregating all hazardous and universal wastes such as used oil, oily rags and oil-absorbent materials, mercury-containing lights and lead-acid and nickel-cadmium batteries for disposal by a licensed firm specializing in the proper recycling or disposal of hazardous and universal wastes; and
i. Discharging concrete truck rinse-out within foundation holes, completing truck wash-down off-site, and burying other concrete waste as fill on-site whenever possible.

3.6.2 Minimization, Recycling, and Reusing Operations and Maintenance Solid Waste and Wastewater

The amounts of waste materials and wastewater generated during operations are expected to be minimal. Wastes derived during this part of the Project will likely be recycled or disposed of off-site by individual operations and maintenance crews. Any vegetation waste will remain on-site as chips or stacked logs.

3.7 Impacts of Waste on Surrounding Areas

OAR 345-021-0010(1)(v)(E): A description of any adverse impact on surrounding and adjacent areas from the accumulation, storage, disposal and transportation of solid waste, waste water and storm water during construction and operation of the facility.

No adverse impacts are expected during construction and operations from the Project accumulation, storage, disposal, and transport of solid waste, wastewater, or stormwater. Project waste will be stored only on a temporary basis, and then disposed of or recycled off-site in ODEQ-permitted municipal solid waste landfills that comply with Subtitle D of RCRA and equivalent Oregon regulations and recycling facilities. Transportation of wastes to landfills or recycling facilities will involve periodic truck trips over public and private roads between the Project and the nearest transfer station, landfill, or recycling facility. Given the number and frequency of these trips and the anticipated volume of waste materials, these trips are not anticipated to have adverse effects on the adjacent or surrounding area. It was estimated that each landfill will receive waste for approximately 6 months. The landfills have verified that they will be able to accept the increase in their waste volumes during Project construction.

Exhibit U, Table U-3 provides the current volume of waste received by each landfill (tons/day). The total estimated solid waste from this Project (tons/day) in Table V-1 will not exceed the current column of waste permitted to be received at these landfills (tons/day) as identified in Table U-3 because the landfills do not have any permitting restrictions on the amount of waste they can receive. Baker Sanitary Landfill stated that they currently receive 50 to 60 tons/day of waste, so will need to hire additional operators to handle the increased load during Project construction (Henry 2016). Finley Buttes Landfill and Clay Peak Landfill will be able handle the increased loads during Project construction (Large 2016; Schmidt 2016).

The majority of Project water will be used for dust abatement. It will be applied in quantities sufficient to minimize dust from construction vehicles, but not sufficient to result in runoff. Other construction water will be used to produce Portland cement concrete, and where soil conditions necessitate drilling slurry required to maintain excavations for drilled shaft foundation construction. Water will also be used in the application of hydro mulch to help stabilize disturbed slopes. Minimal water will be used by concrete trucks to wash their chutes and drums after delivering concrete. Concrete washout will occur at dedicated concrete washout stations. Their

locations will be described in the ESCP (Exhibit I, Attachment I-3) and their operation will be in accordance with ODEQ stormwater requirements. Concrete washout water will be allowed to evaporate or infiltrate into the native soil.

Stormwater and erosion will be managed via the 1200-C permit and ESCP (see Exhibit I, Attachment I-3). The effects of wastewater will be minimal. Water used for dust abatement will be applied at rates to maximize infiltration and minimize runoff.

3.8 Evidence that Impacts Will Likely Be Minimal

> OAR 345-021-0010(1)(v)(F): Evidence that adverse impacts described in (D) are likely to be minimal, taking into account any measures the applicant proposes to avoid, reduce or otherwise mitigate the impacts.

Generation of wastes from construction will be minimized by estimating materials needs and employing efficient construction practices. Waste generated during construction, operation, or retirement of the Project will be recycled when feasible. In 2011, IPC's Investment Recovery facility processed 1,327 tons of material including 106 tons of paper, 48 tons of wood, 121 tons of ACSR conductor, and 531 tons of scrap iron.

Because waste generation will be minimal, there is little anticipated adverse impact on surrounding or adjacent areas from solid waste or wastewater associated with Project construction, operations, or retirement. As discussed in this Exhibit, waste will be reused or recycled, or, when necessary, disposed of at permitted disposal facilities. Any waste disposed of on-site (e.g., wood chippings from clearing operations) will be inert and disposed of in a manner consistent with applicable regulations and protective of human health and the environment.

Solid wastes will be disposed of in ODEQ-permitted landfills. Disposal of native construction materials as fill on-site will be conducted in accordance with OAR 340-093-0080 and other applicable regulations. OAR 340-093-0080 provides a permit exemption to the permit requirement for disposal of inert wastes (such as soil, rock, and concrete) that do not contain contaminants that could adversely affect waters of the state or the United States. To meet the clean fill definition, any inert construction debris to be disposed of on-site will be separated from other debris that is not inert.

Water will be used primarily for dust control and concrete mixing. Water will be transported to the Project via water trucks and will be used only as needed. No on-site sewage treatment system is proposed. The restroom facility at the Longhorn Station will be connected to the City of Boardman's sewer system.

Based on the summary above, material adverse impacts from Project waste are not expected.

3.9 Waste Minimization Monitoring

> OAR 345-021-0010(1)(v)(G): The applicant's proposed monitoring program, if any, for minimization of solid waste and wastewater impacts.

IPC's solid waste and wastewater plans will minimize generation of solid waste and wastewater in the construction and operations of the Project and maximize recycling and reuse of any such wastes that are generated. IPC's plans to manage accumulation, storage, disposal, and transportation of waste generated by the construction and operation of the Project will also result in minimal adverse impact on the surrounding and adjacent areas.

IPC expects that no significant adverse impacts from waste or wastewater will occur on the adjacent or surrounding areas, and accordingly, no monitoring program is proposed. Waste minimization activities will be maintained.

4.0 IDAHO POWER'S PROPOSED SITE CERTIFICATE CONDITIONS

IPC proposed the following site certificate conditions to ensure compliance with the relevant EFSC standards.

Prior to Construction

Waste Minimization Condition 1: *Prior to construction, the site certificate holder shall develop a Construction Waste Management Plan, which addresses:*
a. The number and types of waste containers to be maintained at construction sites and construction yards;
b. Waste segregation methods for recycling or disposal;
c. Names and locations of appropriate recycling and waste disposal facilities, collection requirements, and hauling requirements to be used during construction;
d. Recycling steel and other metal scrap;
e. Recycling wood waste;
f. Recycling packaging wastes such as paper and cardboard;
g. Collecting non-recyclable waste for transport to a local landfill by a licensed waste hauler or by using facility equipment and personnel to haul the waste;
h. Segregating all hazardous and universal wastes such as used oil, oily rags and oil-absorbent materials, mercury-containing lights and lead-acid and nickel-cadmium batteries for disposal by a licensed firm specializing in the proper recycling or disposal of hazardous and universal wastes; and
i. Discharging concrete truck rinse-out within foundation holes, completing truck wash-down off-site, and burying other concrete waste as fill on-site whenever possible.

Soil Protection Condition 3: *Prior to construction, the site certificate holder shall submit to the department a copy of an ODEQ-approved construction-related final Erosion and Sediment Control Plan (ESCP). The protective measures described in the draft ESCP Plan in ASC Exhibit I, Attachment I-3, shall be included as part of the construction-related final ESCP Plan, unless otherwise approved by the department.*

During Construction

Waste Minimization Condition 2: *During construction, the site certificate holder shall conduct all work in compliance with the Construction Waste Management Plan referenced in Waste Minimization Condition 1.*

Waste Minimization Condition 3: *During construction, the site certificate holder shall provide to the department a report on the implementation of the Construction Waste Management Plan referenced in Waste Minimization Condition 1 in the 6-month construction report required pursuant to OAR 345-026-0080(1)(a).*

Soil Protection Condition 6: *During construction, the site certificate holder shall conduct all work in compliance with the final ESCP referenced in Soil Protection Condition 3.*

5.0 CONCLUSIONS

Exhibit V includes the application information provided for in OAR 345-021-0010(1)(v). Further, the evidence set forth in this exhibit establishes that, in compliance with the Waste Minimization Standard, OAR 345-022-0120(1), IPC's solid waste and waste water plans are likely: (a) to minimize generation of solid waste and waste water in the construction and operation of the Project, and when solid waste or waste water is generated, to result in recycling and reuse of such wastes; and (b) to result in minimal adverse impact on surrounding and adjacent areas.

6.0 COMPLIANCE CROSS-REFERENCES

Table V-3 identifies the location within the application for site certificate of the information responsive to the application submittal requirements in OAR 345-021-0010(v), the Waste Minimization Standard at OAR 345-022-0120(1), and the relevant Amended Project Order provisions.

Table V-3. Compliance Cross-References

Requirement	Location
OAR 345-021-0010(1)(v)	
Exhibit V. Information about the applicant's plans to minimize the generation of solid waste and wastewater and to recycle or reuse solid waste and wastewater, providing evidence to support a finding by the Council as required by OAR 345-022-0120. The applicant shall include:	
(A) A description of the major types of solid waste and wastewater that construction, operation and retirement of the facility are likely to generate, including an estimate of the amount of solid waste and wastewater.	Exhibit V, Section 3.3
(B) A description of any structures, systems and equipment for management and disposal of solid waste, wastewater and storm water.	Exhibit V, Section 3.4
(C) A discussion of any actions or restrictions proposed by the applicant to reduce consumptive water use during construction and operation of the facility.	Exhibit V, Section 3.5
(D) The applicant's plans to minimize, recycle or reuse the solid waste and wastewater described in (A).	Exhibit V, Section 3.6
(E) A description of any adverse impact on surrounding and adjacent areas from the accumulation, storage, disposal and transportation of solid waste, wastewater and stormwater during construction and operation of the facility.	Exhibit V, Section 3.7
(F) Evidence that adverse impacts described in (D) are likely to be minimal, taking into account any measures the applicant proposes to avoid, reduce or otherwise mitigate the impacts.	Exhibit V, Section 3.8
(G) The applicant's proposed monitoring program, if any, for minimization of solid waste and wastewater impacts.	Exhibit V, Section 3.9

Requirement	Location
OAR 345-022-0120(1)	
(a) The applicant's solid waste and wastewater plans are likely to minimize generation of solid waste and wastewater in the construction and operation of the facility, and when solid waste or wastewater is generated, to result in recycling and reuse of such wastes;	Exhibit V, Section 3.3 through Section 3.6, and Section 3.9
(b) The applicant's plans to manage the accumulation, storage, disposal, and transportation of waste generated by the construction and operation of the facility are likely to result in minimal adverse impact on surrounding and adjacent areas.	Exhibit V, Section 3.7 and Section 3.8
Amended Project Order, Section III(v)	
The application shall demonstrate compliance with the applicable standards, including the waste minimization standard and public services standard. Include in the application evidence that identified landfills have the capacity to accept the generated quantities of non-recyclable/non-reusable waste.	Exhibit V, Section 3.4.3,
The applicant shall comply with ODEQ regulations concerning the storage and management of hazardous materials and the clean-up and disposal of hazardous waste. Exhibit V shall include a list of all hazardous materials that would potentially be stored or used at the facility site during construction and operation, and a description of the applicant's plans and programs for storage of hazardous materials and management of hazardous waste. If the applicant proposes any on-site fuel storage during construction, the fuel storage areas and management plan shall be described in detail in the application.	Exhibit G
The proposed facility will entail clearing activities through forested lands. Exhibit V shall contain information on how the applicant will manage or dispose of the debris generated by clearing activities, including brush disposal, as well as excess material from cut and fill.	Exhibit V, Section 3.3.1.1, Section 3.3.3, Section 3.4.1, Section 3.4.2, Section 3.6.2, and Table V-1

7.0 REFERENCES

Henry, D. 2016. Baker Sanitary Landfill. Personal Communication between Suzy Cavanagh (Tetra Tech) and David Henry (President); October 27, 2016.

Large, D. 2016. Finley Buttes Landfill. Personal Communication between Suzy Cavanagh (Tetra Tech) and Dean Large (Environmental Health Director); October 27, 2016.

Schmidt, T. 2016. Clay Peak Landfill. Personal Communication between Suzy Cavanagh (Tetra Tech) and Tracy Schmidt (Office Manager); November 3, 2016.