

# LETTER OF TRANSMITTAL

**DATE: SEPTEMBER 4, 2009**

**RE: CLASS III MUNICIPAL SOLID WASTE LANDFILL (MSWLF)  
ADEC PERMIT NO. SW SW3A063-12 UPDATED TO  
AUGUST 30, 2009  
ELECTRONIC COPY**

To: AJ Salkoski  
Environmental Program Coordinator  
Rural Alaska Community Action Program, Inc.  
(RurAL CAP)  
731 East 8th Avenue

From: Independent Consultant Associated  
(ICA)  
269 Bias Drive #B  
Fairbanks, Alaska 99712  
(907) 457-6767

Dear AJ:

Attached is an electronic copy of the City of Tanana Solid Waste (SW) Permit No. SW3A063-12 issued by the Alaska Department of Environmental Conservation (ADEC) on DVD. This electronic version has been updated to August 30, 2009 to include post permit landfill inspections and important correspondence.

This completes the required information as part of the ICA July 7, 2009 Landfill Upgrades Funding Reallocation Scope of Work (SOW) for the remaining RurAL CAP funds; Code no. 26008-00-D-2110-371.

Please contact me at [bias@alaska.net](mailto:bias@alaska.net) or (907) 388-8671 if you have any questions.

Sincerely,

Susan L. Vogt, CPESC  
Principal Consultant  
Independent Consultant Associated  
Licensed and Insured

cc: Bear Ketzler, City of Tanana Administrator/City Manager  
City of Tanana Pat Moore, Project Manager

**CITY OF  
TANANA  
LANDFILL**

**ADEC Permit No.  
SW3A063-12**

**ADEC FILE NO. 780.15.001**

The City of Tanana  
P.O. Box 249  
Tanana, Alaska 99777

Updated to August 30, 2009

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*Forms discussed in other sections; and where stated "see attached" have all been moved to Section C "Blank Forms".*

**SECTION A:**

**ADEC PERMIT  
MODIFICATION  
AND PERMIT –  
EXPIRES  
NOVEMBER 27,  
2012**

# STATE OF ALASKA

**DEPT. OF ENVIRONMENTAL CONSERVATION  
DIVISION OF ENVIRONMENTAL HEALTH  
SOLID WASTE AND PESTICIDES PROGRAM**

**SARAH H. PALIN, GOVERNOR**

610 University Avenue  
Fairbanks, Alaska 99709  
PHONE: (907) 451-2108  
FAX: (907) 451-2188  
<http://www.dec.state.ak.us/>

May 20, 2008

**Certified Mail #\_7007 1490 0001 1646 0147  
Return Receipt Requested**

File Number: 780.15.001

Alfred Ketzler, Jr., City Manager  
Tanana Landfill  
P.O. Box 77249  
Tanana, Alaska 99777 0249

**RE: Modification to Class III Solid Waste Permit No. SW3A063-12**

Dear Mr. Ketzler:

The Alaska Department of Environmental Conservation (ADEC) is in receipt of a May 14, 2008 letter from Independent Consultant Associated (ICA) on behalf of the City of Tanana requesting modification of Solid Waste Permit #SW3A063-12. The request of May 14, 2008, describes the proper handling of non-regulated Asbestos Containing Material (ACM), and satisfies stipulation #2 in the original permit. Therefore, ADEC is granting your request for modification and has removed that stipulation from the permit.

The request for modification is a request to accept non-regulated (ACM) at the Class III Landfill owned by the City of Tanana. The modification will allow the City of Tanana to dispose of non-regulated ACM in accordance with ADEC Solid Waste Management regulations. The classification of any ACM as regulated or non-regulated will be made by a certified asbestos contractor generating the waste. Before disposing of any non-regulated ACM, the City will either prepare an existing cell or excavate a new cell for disposal. ACM wastes will be transferred from the transport vehicle to the disposal cell as appropriate to prevent damage to the materials that could make them friable. At the end of each day on which ACM is disposed, the disposed waste will be covered with at least six inches of soil. When the disposal cell is full, a final cover of 24 inches of soil will be placed over the entire cell.

Please make sure the May 14, 2008 letter referenced above is inserted as an addendum in your operations plan. If you have any questions about this letter, please feel free to contact Linda Demientieff at 907-451-2174 or by email at [linda.demientieff@alaska.gov](mailto:linda.demientieff@alaska.gov).

Sincerely,

Douglas Buteyn  
Northern/Southeastern Program Coordinator  
ADEC Solid Waste Program

cc: Susan Vogt, Independent Consultant Associated, Fairbanks

Attachment: re-issued Permit #SW3A063-12, expiring November 27, 2012

STATE OF ALASKA  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
610 University Avenue  
Fairbanks, AK 99709

**SOLID WASTE DISPOSAL PERMIT**

Permit No. **SW3A063-12**

Date Issued: November 27, 2007

Re-Issue Date: May, 20, 2008

Date Expires: November 27, 2012

The Alaska Department of Environmental Conservation (ADEC), under authority of AS 46.03 and 18 AAC 60, issues a solid waste disposal permit to:

**City of Tanana  
P.O. Box 77249  
Tanana, Alaska 99777 0249**

and designated representatives for the operation of a Class III municipal solid waste disposal facility. It authorizes the disposal of an annual average of less than 5 tons per day of domestic and commercial refuse at the community's 4.7-acre site.

The landfill is located at Tanana, Alaska approximately 1.1 miles west of the Tanana airport, in Sections 11 and 14, Township 4 N, Range 23 W, Fairbanks Meridian.

The permit holder shall manage and operate the facility in accordance with 18 AAC 60 and the permit application materials. In addition, the following general conditions and permit-specific stipulations are required:

**General Conditions**

1. Access and inspection - The Permittee shall allow the Commissioner or his representative access to the permitted facilities at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, State laws, and regulations.
2. Information access - Except for information relating to confidential processes or methods of manufacture, all records and reports submitted in accordance with the terms of this permit shall be available for public inspection at the State of Alaska, Department of Environmental Conservation, 610 University Avenue, Fairbanks, AK 99709.
3. Civil and criminal liability - Nothing in this permit shall relieve the Permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, including, but not limited to, accidents, equipment breakdowns, or labor disputes.
4. Availability - The Permittee shall post or maintain a copy of this permit available to the public at the disposal facility.

5. Adverse impact - The Permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation specified in this permit, including any additional monitoring needed to determine the nature and impact of the noncomplying activity. The Permittee shall clean up and restore all areas adversely impacted by the noncompliance.
6. Cultural or paleontological resources - Should cultural or paleontological resources be discovered as a result of this activity, work which would disturb such resources is to be stopped, and the State Historic Preservation Office, Division of Parks and Outdoor Recreation, Department of Natural Resources, is to be notified immediately (907-269-8721).
7. Applications for renewal - In accordance with 18 AAC 15.100(d), applications for renewal or amendment of this permit must be made no later than 30 days before the expiration date of the permit or the planned effective date of the amendment.
8. Other legal obligations - The requirements, duties, and obligations set forth in this permit are in addition to any requirements, duties, or obligations contained in any permit that the Alaska Department of Environmental Conservation or the U.S. Environmental Protection Agency has issued or may issue to the Permittee. This permit does not relieve the Permittee from the duty to obtain any and all necessary permits and to comply with the requirements contained in any such permit or with applicable state and federal laws and regulations. All activities conducted by the Permittee pursuant to the terms of this permit and all plans implemented by the Permittee pursuant to the terms of this permit shall comply with all applicable state and federal laws and regulations.
9. Pollution prevention - In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the Permittee shall consider the following order of priority options: waste source reduction; recycling of waste; waste treatment; and waste disposal.

### **Stipulations**

1. A pavilion will be constructed to be used as a designated drop off point for HHW and salvageable items.

The City of Tanana has met the requirements for the disposal of asbestos-containing materials (ACM) in their letter of May 14, 2008. This modification will become an addendum to the permit issued on November 27, 2007.

2. Open burning of municipal solid waste is prohibited. Any open burning of clean wood or clean construction debris must be done in accordance with the air quality regulations in 18 AAC 50.065 and must occur in a designated area away from the working face.
3. The storage, disposal, or use of contaminated soils in the landfill must be approved by ADEC on a case-by-case basis.

This permit expires on September 21, 2012 and may be revoked or amended in accordance with 18 AAC 60.260. The permit can be renewed if the facility will operate beyond this date. To avoid expiration of this permit, a renewal application must be submitted to ADEC at least 30 days before the expiration date, as set forth in 18 AAC 15.110.

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***Douglas Buteyn, Acting  
Manager, Solid Waste and Pesticides Program***

**INDEPENDENT  
CONSULTANT  
ASSOCIATED**



269 Bias Drive #B  
Fairbanks, Alaska 99712  
(907) 457-6767  
[bias@alaska.net](mailto:bias@alaska.net)

May 14, 2008

Ms. Linda Demientieff  
Environmental Program Specialist II  
Solid Waste Program  
Division of Environmental Health  
Alaska Department of Environmental Conservation  
610 University Avenue  
Fairbanks, Alaska 99709

**RE: CITY OF TANANA SOLID WASTE PERMIT NO. SW3A063-12  
MODIFICATION 1  
TANANA LANDFILL PROCESSING OF INCOMING NON-REGULATED  
ASBESTOS CONTAINING MATERIAL  
ADEC FILE NO. 780.15.001**

Dear Ms. Demientieff:

On behalf of the City of Tanana, Independent Consultant Associated (ICA) is providing Solid Waste (SW) Permit No. SW3A063-12 Modification I as requested in the April 15, 2008 Alaska Department of Environmental Conservation (ADEC) letter.

This Modification I is a result of a series of The City of Tanana ("The City") request letters and ADEC response letters as outlined:

- City February 29, 2008 Letter Request for Solid Waste Permit Addendum Waiver;
- ADEC March 6, 2008 Response letter; and,
- The City Response to the March 6, 2008 ADEC Letter and Request for Solid Waster Permit Modification

Modification I provides that non-regulated Asbestos Containing Material (ACM) will be accepted for disposal in the Tanana Landfill and landfill workers will process incoming non-regulated ACM in accordance with ADEC solid waste regulations 18 AAC 450 Solid Waste Management as amended through August 8, 2003.

The classification of any ACM as regulated or non-regulated will be made by the certified asbestos contractor generating the waste. Before disposing of any non-regulated ACM, The City will either prepare an existing cell or excavate a new cell for disposal.

All non-regulated ACM transported to the City landfill for disposal will be covered during transport. Non-regulated ACM wastes will be transferred from the transport vehicle to the disposal cell as appropriate to prevent damage to the materials that could make them friable.

At the end of each day on which ACM is disposed, the disposed waste will be covered with at least six inches of soil. When the disposal cell is full, a final cover of 24 inches of soil will be placed over the entire cell.

This Modification will be placed in the front of The City of Tanana permit binder which contains the May 3, 2007 Permit Application, June 29, 2007 Application Addendum and November 28, 2007 ADEC Solid Waste Permit.

Please contact me at (907) 457-6767 if you have any questions or require additional information.

Sincerely,

*Susan L. Vogt, CPESC*  
*Principal Consultant*  
*Independent Consultant Associated*

Cc: *Mr. Alfred Ketzler, City of Tanana Manager/Administrator*

# STATE OF ALASKA

**DEPT. OF ENVIRONMENTAL CONSERVATION  
DIVISION OF ENVIRONMENTAL HEALTH  
SOLID WASTE AND PESTICIDES PROGRAM**

**SARAH H. PALIN, GOVERNOR**

610 University Avenue  
Fairbanks, Alaska 99709  
PHONE: (907) 451-2108  
FAX: (907) 451-2188  
<http://www.dec.state.ak.us/>

November 28, 2007

**Certified Mail # 7002 3150 0003 6567 0520  
Return Receipt Requested**

File Number: 780.15.001

Alfred Ketzler, Jr., City Manager  
Tanana Landfill  
P.O. Box 77249  
Tanana, Alaska 99777

RE: Solid Waste Permit No. **SW3A063-12**

Dear Mr. Ketzler:

The Alaska Department of Environmental Conservation (ADEC) has completed its evaluation of your permit application for the Class III Municipal Solid Waste disposal facility at Tanana, Alaska. Please review the conditions and stipulations in the permit and ensure that they are understood. This permit is being issued in accordance with Alaska Statute (AS) 46.03; Title 18, Chapter 15 of the Alaska Administrative Code (18 AAC 15); and the Solid Waste Regulations (18 AAC 60).

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 - 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. **Informal review requests** must be delivered to the Division Director, Alaska Department of Environmental Conservation, 555 Cordova Street, Anchorage, AK 99501 within 15 days of the permit decision. **Adjudicatory hearing requests** must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived. Even if an adjudicatory hearing has been requested and granted, all permit conditions remain in effect unless a stay has been granted.

If you have any questions, or require any additional information, please do not hesitate to contact me at (907) 269-1099.

Sincerely,

Douglas Buteyn for  
Kimberly K. Stricklan, P.E.  
Solid Waste and Pesticides Program Manager

Attachment: Permit #SW3A063-12, expiring November 27, 2012

STATE OF ALASKA  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
610 University Avenue  
Fairbanks, AK 99709

**SOLID WASTE DISPOSAL PERMIT**

Permit No. **SW3A063-12**

Date Issued: November 28, 2007

Date Expires: November 27, 2012

The Alaska Department of Environmental Conservation (ADEC), under authority of AS 46.03 and 18 AAC 60, issues a solid waste disposal permit to:

**City of Tanana  
P.O. Box 77249  
Tanana, Alaska 99777**

and designated representatives for the operation of a Class III municipal solid waste disposal facility. It authorizes the disposal of an annual average of less than 5 tons per day of domestic and commercial refuse at the community's 4.7-acre site.

The landfill is located at Tanana, Alaska approximately 1.1 miles west of the Tanana airport, in Sections 11 and 14, Township 4 North, Range 23 West, Fairbanks Meridian.

The permit holder shall manage and operate the facility in accordance with 18 AAC 60 and the permit application materials. In addition, the following general conditions and permit-specific stipulations are required:

**General Conditions**

1. Access and inspection - The Permittee shall allow the Commissioner or his representative access to the permitted facilities at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, State laws, and regulations.
2. Information access - Except for information relating to confidential processes or methods of manufacture, all records and reports submitted in accordance with the terms of this permit shall be available for public inspection at the State of Alaska, Department of Environmental Conservation, 610 University Avenue, Fairbanks, AK 99709.
3. Civil and criminal liability - Nothing in this permit shall relieve the Permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, including, but not limited to, accidents, equipment breakdowns, or labor disputes.
4. Availability - The Permittee shall post or maintain a copy of this permit available to the public at the disposal facility.

5. Adverse impact - The Permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation specified in this permit, including any additional monitoring needed to determine the nature and impact of the noncomplying activity. The Permittee shall clean up and restore all areas adversely impacted by the noncompliance.
6. Cultural or paleontological resources - Should cultural or paleontological resources be discovered as a result of this activity, work which would disturb such resources is to be stopped, and the State Historic Preservation Office, Division of Parks and Outdoor Recreation, Department of Natural Resources, is to be notified immediately (907-269-8721).
7. Applications for renewal - In accordance with 18 AAC 15.100(d), applications for renewal or amendment of this permit must be made no later than 30 days before the expiration date of the permit or the planned effective date of the amendment.
8. Other legal obligations - The requirements, duties, and obligations set forth in this permit are in addition to any requirements, duties, or obligations contained in any permit that the Alaska Department of Environmental Conservation or the U.S. Environmental Protection Agency has issued or may issue to the Permittee. This permit does not relieve the Permittee from the duty to obtain any and all necessary permits and to comply with the requirements contained in any such permit or with applicable state and federal laws and regulations. All activities conducted by the Permittee pursuant to the terms of this permit and all plans implemented by the Permittee pursuant to the terms of this permit shall comply with all applicable state and federal laws and regulations.
9. Pollution prevention - In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the Permittee shall consider the following order of priority options: waste source reduction; recycling of waste; waste treatment; and waste disposal.

### **Stipulations**

1. A pavilion will be constructed to be used as a designated drop off point for household hazardous wastes and salvageable items.
2. All asbestos-containing waste disposed at the landfill will be in handled in accordance with 18 AAC 60.450. However, no asbestos-containing waste may be disposed at the landfill until the ADEC has reviewed and approved an addendum to the facility operations plan that details the procedures for handling and disposing of asbestos-containing waste. To allow the addendum to be approved prior to the start of the 2008 construction season, it must be submitted to the ADEC for review no later than March 1, 2008.
3. Open burning of municipal solid waste is prohibited. Any open burning of clean wood or clean construction debris must be done in accordance with the air quality regulations in 18 AAC 50.065 and must occur in a designated area away from the working face.
4. The storage, disposal, or use of contaminated soils in the landfill must be approved by ADEC on a case-by-case basis.

This permit expires on November 27, 2012 and may be revoked or amended in accordance with 18 AAC 60.260. The permit can be renewed if the facility will operate beyond this date. To avoid expiration of this permit, a renewal application must be submitted to ADEC at least 30 days before the expiration date, as set forth in 18 AAC 15.110.

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***Kimberly K. Stricklan, P.E.***  
***Manager, Solid Waste and Pesticides Program***

# **SECTION B:**

# **COMPLETED**

# **INSPECTION**

# **FORMS**

CLASS III ANNUAL LANDFILL FIELD INSPECTION FORM

Date of inspection 8/24/09

NAME OF LANDFILL CITY OF TANANA  
PERMIT NUMBER: SW3A063-12

file no. 780.15.001  
facility ID \_\_\_\_\_

LOCATION, LANDOWNER CITY OF TANANA

LATITUDE/LONGITUDE 65.1833 / 152.1568

WEATHER/WIND CONDITIONS DURING INSPECTION, PRIOR WEEK

PARTLY CLOUDY ~60 5-10 MPH INTERMIT. DRIZZLE.

LANDFILL CONTACT PERSON PAT MOORE

MAILING ADDRESS

CITY/STATE/ZIP CODE P.O. BOX 77249  
TANANA AK 99777

PHONE NUMBER: (907) 366-7159 Fax number: (907) 366-7169

LEAD INSPECTOR SWAN VOLT Phone number 907-388-8671

2ND INSPECTOR Phone number \_\_\_\_\_

AIRPORT DISTANCE ~ 2 MILES WEST

General Notes— operating conditions, types of waste observed, community solid waste issues, etc.

MOST OF DEBRIS HAS BEEN BURIED INSTEAD OF RECYCLED BECAUSE TRIBAL COUNCIL COULD NOT GET TO TANANA.

NEW LARGE CELL EXCAVATED FOR HOSPITAL DEMOLITION DEBRIS.

Provide a sketch of the facility, showing roads, gates, buildings or workshops, open disposal cells, closed cells, recycle/salvage areas, and septage/sludge or asbestos disposal areas, if applicable. Also, direction(s) of nearest surface water, prevailing winds.

SEE ATTACHED

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>1. PERMIT:</b> Current permit or approved plan Expired or no permit/plan approved	<u>10</u> 0	10	18 AAC 60.200
<b>2. LIMITED ACCESS:</b> Well controlled, fences and gates Access limited, not fully controlled Inadequate effort to control access No effort to control access	<u>5</u> 3 1 0	5	60.220
<b>3. ACCESS ROADS:</b> All weather, good shape Moderate conditions, alternatives Good weather only, no alternatives Roads non-existent, not maintained	<u>5</u> <del>3</del> 1 0	3.5	60.220
<b>4. SCAVENGING:</b> Site access limited, not allowed Access not limited, not allowed Scavenging not controlled	<u>2</u> 1 0	2	60.220
<b>5. BURNING WASTES:</b> Burn boxes or cages used, attendant present; or no burning allowed Controlled burning in designated area, attendant present Burning controlled, no attendant Burning uncontrolled, no attendant	5 3 <u>1</u> 0	1	60.355
<b>6. DEPTH TO HIGH GROUNDWATER:</b> Base of landfill area more than 2 ft above natural ground surface or more than 10 ft from highest groundwater Less than 10 ft	<u>10</u> 0	10	60.217
<b>7. PLACEMENT IN SURFACE WATER:</b> No contact with water Intermittent contact (storms/breakup) Frequent contact Wastes placed in surface water	15 <u>10</u> 3 0	10	60.225
<b>9. ANIMAL/VECTOR CONTROL:</b> Fencing with locked gate, waste covered or incinerated, no odors Fencing inadequate, waste covered, animals rarely attracted, or <u>incineration incomplete</u> Fencing inadequate, wastes uncovered, animal problems	5 <u>3</u> 0	3	60.230

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>10. PROCEDURES TO EXCLUDE HAZARDOUS WASTES:</b> Sign in place at entrance, lists types of wastes and PCBs prohibited No sign present, no visible regulated waste present at site Regulated hazardous waste present	5 3 0	5	60.240
<b>11. POLLUTED SOILS:</b> Soils not accepted unless they meet a clean up level allowed by regulation Polluted soils accepted that do not meet clean up levels	<del>5</del> 0	-NA-	60.025
<b>12. SETBACK DISTANCES:</b> Minimum 50-ft setback between property boundary and waste unless permitted Setback distance not maintained, waste at edge of property.	5 <del>0</del>	0	60.233
<b>13. WELLHEAD PROTECTION DISTANCE:</b> Minimum 500-ft setback from drinking water well Less than 500-ft setback	<del>15</del> 0	-NA-	60.040
<b>14. MEDICAL WASTES:</b> Shipped to approved facility or sterilized, decontaminated or incinerated before disposal Infectious wastes present, uncontrolled	5 0	-NA-	60.030
<b>15. DISPOSAL OF VEHICLES OR EQUIPMENT:</b> Drained of all fluids and batteries removed, doesn't attract disease vectors, not a visual nuisance Batteries, fluids, or petroleum products remain in vehicle at time of disposal, does attract disease vectors, is a nuisance	5 0	5	60.035
<b>16. LITTER:</b> Litter controlled, site cleaned up regularly Blowing litter contained by fencing, but messy No fences or containment, but some effort at clean up No effort at litter control	5 <del>3</del> 1 0	3	60.345

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>17. COMPACTING REFUSE:</b> When refuse in <2-ft increments Somewhat or partially compacted (when greater than 2-ft layers) No compaction	5 3 0	3	64.010 NOT ON REGULAR BASIS
<b>18. SIZE OF WORKING FACE:</b> Size meets requirements of permit or approved plan or as small as practicable Size exceeds permit or plan, but waste still in one designated area More than one trench or designated area open Dumping uncontrolled	5 3 1 0	3	60.345
<b>19. OPERATIONAL COVER:</b> Minimum 6" depth, frequency adequate Minimum 6" depth, frequency inadequate Inadequate frequency and depth No cover applied	5 3 1 0	3	60.345
<b>20. NUISANCE CONTROL (ODORS, DUST, NOISE, ETC.):</b> Not necessary or applied as needed Occasionally applied, not effective Needed but not applied	5 3 0	5	60.233
<b>21. INTERMEDIATE COVER (FORMERLY USED AREAS):</b> Minimum of 12 inches, properly graded improperly graded Inadequate or no cover	5 3 0	-NA-	60.243
<b>22. FINAL COVER (CLOSED AREAS):</b> Compacted, minimum 2-ft depth Uncompacted or inadequate depth No final cover	5 3 0	-NA-	60.390
<b>23. FINAL SURFACE GRADING (CLOSED AREAS):</b> Proper grading without visible erosion or ponding of surface water Ponding or erosion present, grading inadequate, Not graded or serious ponding or erosion	5 3 0	-NA-	60.390

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>24. SITE CLOSURE:</b> Site revegetated, permanent markers established, ADEC notified <b>5</b> Site not revegetated, no markers, or ADEC not notified <b>0</b>		-NA-	60.390
<b>25. LANDS RECORD OFFICE CLOSURE NOTICE FILED:</b> Yes <b>5</b> No <b>0</b>		-NA-	60.396
<b>26. SEWAGE SLUDGE DISPOSAL (IF APPLICABLE):</b> ----- Single separate cell or trench, smaller than 4 ft wide and 12 ft deep <b>5</b> <u>AND</u> Separate cell(s) limed and immediately covered (6 inches of soil) <b>5</b> <u>AND</u> Separated from groundwater by 6 or more feet <b>5</b> (5 to 15 total points) ----- Separate cell or cells, lime, no cover <b>3</b> Separate cell or cells, not disinfected, no cover <b>2</b> Not in separate cells, access uncontrolled <b>0</b>		-NA-	60.365
<b>28. ASBESTOS DISPOSAL (IF APPLICABLE)</b> Done as required in permit conditions, records kept, waste adequately covered <b>10</b> Asbestos inadequately covered and/or records not kept <b>5</b> Asbestos disposed without a permit <b>0</b>		-NA-	60.450

<b>29. IN CASE OF DUMP FIRES, IS THERE A FIRE-FIGHTING PROCEDURE AND EQUIPMENT?</b> Excellent effort, equipment on-hand <b>3</b> Moderate effort <b>2</b> Minimal protection <b>1</b> Open burning on working face <b>0</b>		2	
<b>30. RECYCLING EFFORTS</b> Active community program in place <b>2</b> Limited effort or not maintained <b>1</b> No effort at recycling <b>0</b>		1	

29. RECORD KEEPING REQUIREMENTS		SCORE	COMMENTS
Permit application	3	3	60.235
Copy of permit or solid waste management plan	3	3	60.235
Operating plans for the site	3	3	60.235
Closure plan	3	3	60.210
Site visual inspection records or other monitoring data (e.g. water quality, gas monitoring)	3	3	60.235
Staff training records (e.g. landfill operations, safety)	3	0	60.235
Records showing how facility meets the Class III requirements	3	3	60.300
Airport distance, floodplain, and other location restriction documentation	3	3	60.380
As-built drawings of the landfill design and use	3	3	60.235
Site closure records and notices, if applicable	3	-NA-	60.390,396

**Any individual records not present will be awarded a zero score.**

The facility owner must keep records of each item listed above in an easily accessible area, such as the city or tribal office.

TOTAL POINTS POSSIBLE	TOTAL SCORE	COMPLIANCE RATING
127	100	79 %

This year the facility rated a 79 % compliance with the sanitation and safety standards for Class III landfills in Alaska (100 out of 127 possible points).

Ratings below 80% are generally regarded as unsatisfactory. (Had the record keeping requirements been met, the facility would rate \_\_\_\_% compliance with standards for safe and sanitary solid waste management.)

SW  
8/24/09

ICM Edward B. Gray, Registered Land

Landfill Inspection

Lot 2, U.S. Survey No. 5958

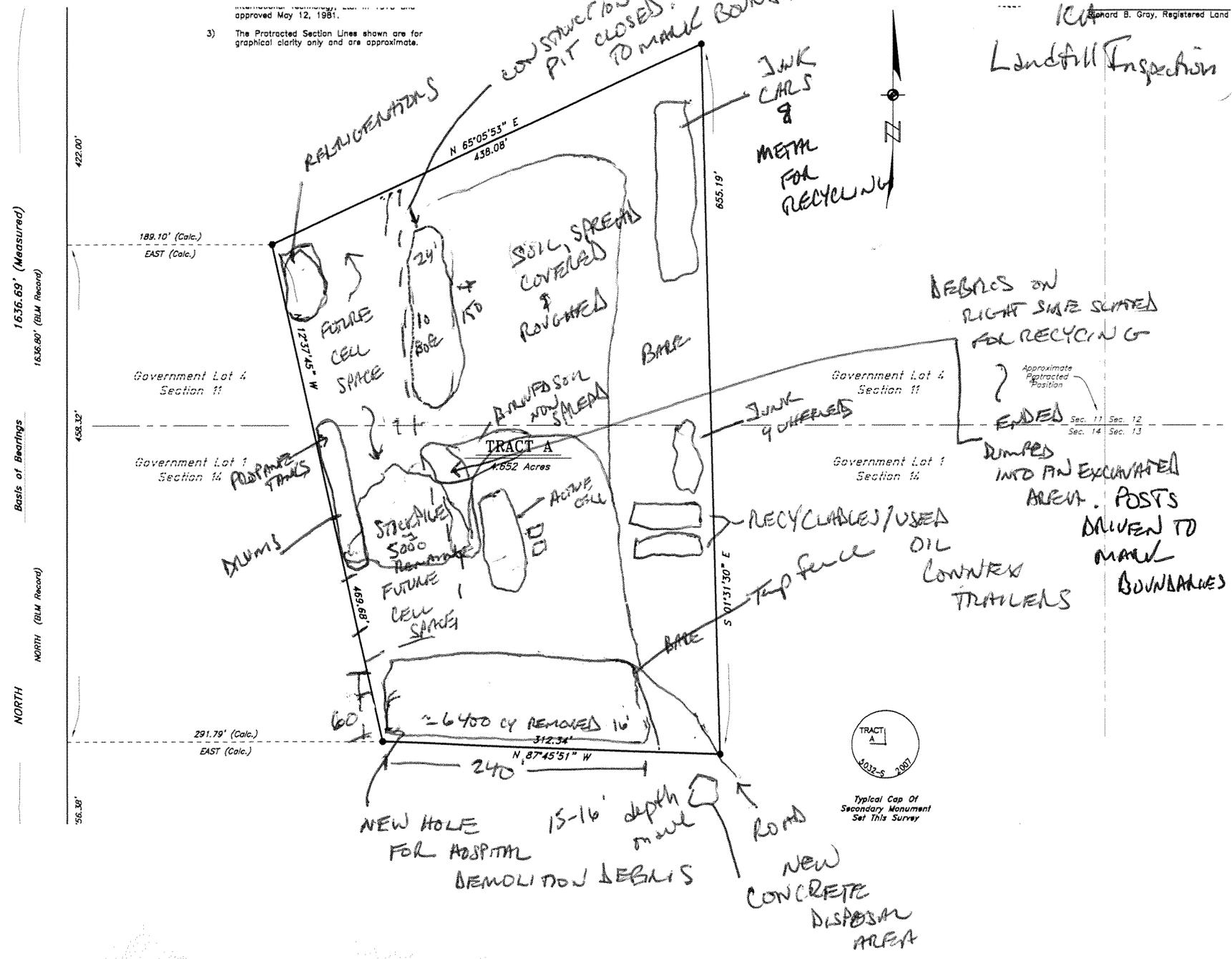




Photo 1: Looking south at the newly filled and graded section of the landfill. The area was cleared of debris, old cells were properly capped with soil and clean soil stockpiles spread. The large stockpile of soil in background is from excavated cell for upcoming hospital demolition project.



Photo 2: Looking north at filled in and graded section of the landfill. Posts shown on left center mark limits of cell recently filled and capped. Old refrigerators are shown to the left. They are waiting for Freon removal, then recycling.



Photo 3: Looking north along east side of landfill. The area was cleared of recyclables, i.e. metal and old cars, buried in a new cell and capped. Recycling the debris was not optional until the following year and the space was needed.



Photo 4: Looking west at the existing cell and burn boxes. Vandalism to the burn boxes has been an issue, with someone burning the tires to the units. The stockpile behind the cell is the newly excavated soil from the new hospital demolition cell. Burning debris is no longer an option as per ADEC. All debris must be buried.



Photo 5: Looking north at the active cell. Residents' not using the burn boxes remains an area that needs attention. The connexes holding recyclables used oil and batteries have been moved to the east side as shown.



Photo 6: Looking west along the newly excavated cell for the hospital demolition debris expected to be up to 2500 cubic yards. The cell is approximately 240 feet long by 60 feet wide (at the top) by approximately 16 feet deep. Trucks will dump debris at the top of a ramp (not shown) and the City will doze the debris in.

CLASS III ANNUAL LANDFILL FIELD INSPECTION FORM

Date of inspection 6/12/09

NAME OF LANDFILL PERMIT NUMBER:

TANANA SW3A063-12

file no. 780.15.001 facility ID

LOCATION, LANDOWNER

CITY OF TANANA

LATITUDE/LONGITUDE

65.1833 / 152.1568

WEATHER/WIND CONDITIONS

DURING INSPECTION, PRIOR WEEK

PARTLY CLOUDY 5-10 W

LANDFILL CONTACT PERSON

BEAR KETZLER

MAILING ADDRESS

P.O. Box 77249

CITY/STATE/ZIP CODE

TANANA, ALASKA 99777

PHONE NUMBER:

(907) 978-5848 Fax number:

LEAD INSPECTOR

SUSAN VOLT

Phone number

(907) 388-8650

2ND INSPECTOR

Phone number

AIRPORT DISTANCE

~ 2 MILES WEST

General Notes— operating conditions, types of waste observed, community solid waste issues, etc.

NEW CELL OPENED; OLD CLOSED. LOT DEBRIS FROM FLOOD CLEANUP. SIGNS POSTED, GATE INSTALLED, BURN UNITS OPERATING. STILL HAVING PROBLEMS WITH FULL COMPLIANCE FROM INDIVIDUALS. NOT ALL USING BURNERS.

Provide a sketch of the facility, showing roads, gates, buildings or workshops, open disposal cells, closed cells, recycle/salvage areas, and septage/sludge or asbestos disposal areas, if applicable. Also, direction(s) of nearest surface water, prevailing winds.

SEE ATTACHED

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>1. PERMIT:</b>			18 AAC 60.200
Current permit or approved plan	10	10	
Expired or no permit/plan approved	0		
<b>2. LIMITED ACCESS:</b>			60.220
Well controlled, fences and gates	5	3	
Access limited, not fully controlled	3		
Inadequate effort to control access	1		
No effort to control access	0		
<b>3. ACCESS ROADS:</b>			60.220
All weather, good shape	5	5	
Moderate conditions, alternatives	3		
Good weather only, no alternatives	1		
Roads non-existent, not maintained	0		
<b>4. SCAVENGING:</b>			60.220
Site access limited, not allowed	2	1	
Access not limited, not allowed	1		
Scavenging not controlled	0		
<b>5. BURNING WASTES:</b>			60.355
Burn boxes or cages used, attendant present; or no burning allowed	5	1	BURN BOXES NO ATTENDANT
Controlled burning in designated area, attendant present	3		
Burning controlled, no attendant	1		
Burning uncontrolled, no attendant	0		
<b>6. DEPTH TO HIGH GROUNDWATER:</b>			60.217
Base of landfill area more than 2 ft above natural ground surface or more than 10 ft from highest groundwater	10	10	
Less than 10 ft	0		
<b>7. PLACEMENT IN SURFACE WATER:</b>			60.225
No contact with water	15	10	
Intermittent contact (storms/breakup)	10		
Frequent contact	3		
Wastes placed in surface water	0		
<b>9. ANIMAL/VECTOR CONTROL:</b>			60.230
Fencing with locked gate, waste covered or incinerated, no odors	5	3	
Fencing inadequate, waste covered, animals rarely attracted, or incineration incomplete	3		
Fencing inadequate, wastes uncovered, animal problems	0		

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>10. PROCEDURES TO EXCLUDE HAZARDOUS WASTES:</b> Sign in place at entrance, lists types of wastes and PCBs prohibited No sign present, no visible regulated waste present at site Regulated hazardous waste present	5 3 0	5	60.240
<b>11. POLLUTED SOILS:</b> Soils not accepted unless they meet a clean up level allowed by regulation Polluted soils accepted that do not meet clean up levels	5 0	-NA-	60.025
<b>12. SETBACK DISTANCES:</b> Minimum 50-ft setback between property boundary and waste unless permitted Setback distance not maintained, waste at edge of property.	5 0	5	60.233
<b>13. WELLHEAD PROTECTION DISTANCE:</b> Minimum 500-ft setback from drinking water well Less than 500-ft setback	15 0	-NA-	60.040
<b>14. MEDICAL WASTES:</b> Shipped to approved facility or sterilized, decontaminated or incinerated before disposal Infectious wastes present, uncontrolled	5 0	-NA-	60.030
<b>15. DISPOSAL OF VEHICLES OR EQUIPMENT:</b> Drained of all fluids and batteries removed, doesn't attract disease vectors, not a visual nuisance Batteries, fluids, or petroleum products remain in vehicle at time of disposal, does attract disease vectors, is a nuisance	5 0	5	60.035
<b>16. LITTER:</b> Litter controlled, site cleaned up regularly Blowing litter contained by fencing, but messy No fences or containment, but some effort at clean up No effort at litter control	5 3 1 0	3	60.345

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>17. COMPACTING REFUSE:</b>			64.010
When refuse in <2-ft increments	5	0	COMPACTED EVERY MONTH or SO.
Somewhat or partially compacted (when greater than 2-ft layers)	3		
No compaction	0		
<b>18. SIZE OF WORKING FACE:</b>			60.345
Size meets requirements of permit or approved plan or as small as practicable	5	5	
Size exceeds permit or plan, but waste still in one designated area	3		
More than one trench or designated area open	1		
Dumping uncontrolled	0		
<b>19. OPERATIONAL COVER:</b>			60.345
Minimum 6" depth, frequency adequate	5	0	
Minimum 6" depth, frequency inadequate	3		
Inadequate frequency and depth	1		
No cover applied	0		
<b>20. NUISANCE CONTROL (ODORS, DUST, NOISE, ETC.):</b>			60.233
Not necessary or applied as needed	5	3	
Occasionally applied, not effective	3		
Needed but not applied	0		
<b>21. INTERMEDIATE COVER (FORMERLY USED AREAS):</b>		-NA-	60.243
Minimum of 12 inches, properly graded	5	-	
improperly graded	3		
Inadequate or no cover	0		
<b>22. FINAL COVER (CLOSED AREAS):</b>		-NA-	60.390
Compacted, minimum 2-ft depth	5	-	
Uncompacted or inadequate depth	3		
No final cover	0		
<b>23. FINAL SURFACE GRADING (CLOSED AREAS):</b>		-NA-	60.390
Proper grading without visible erosion or ponding of surface water	5	-	
Ponding or erosion present, grading inadequate,	3		
Not graded or serious ponding or erosion	0		

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>24. SITE CLOSURE:</b> Site revegetated, permanent markers established, ADEC notified <b>5</b> Site not revegetated, no markers, or ADEC not notified <b>0</b>		-NA-	60.390
<b>25. LANDS RECORD OFFICE CLOSURE NOTICE FILED:</b> Yes <b>5</b> No <b>0</b>		-NA-	60.396
<b>26. SEWAGE SLUDGE DISPOSAL (IF APPLICABLE):</b> ----- Single separate cell or trench, smaller than 4 ft wide and 12 ft deep <b>5</b> <u>AND</u> Separate cell(s) limed and immediately covered (6 inches of soil) <b>5</b> <u>AND</u> Separated from groundwater by 6 or more feet <b>5</b> (5 to 15 total points) ----- Separate cell or cells, lime, no cover <b>3</b> Separate cell or cells, not disinfected, no cover <b>2</b> Not in separate cells, access uncontrolled <b>0</b>		-NA-	60.365
<b>28. ASBESTOS DISPOSAL (IF APPLICABLE)</b> Done as required in permit conditions, records kept, waste adequately covered <b>10</b> Asbestos inadequately covered and/or records not kept <b>5</b> Asbestos disposed without a permit <b>0</b>		-NA-	60.450
<b>29. IN CASE OF DUMP FIRES, IS THERE A FIRE-FIGHTING PROCEDURE AND EQUIPMENT?</b> Excellent effort, equipment on-hand <b>3</b> Moderate effort <b>2</b> Minimal protection <b>1</b> Open burning on working face <b>0</b>			1
<b>30. RECYCLING EFFORTS</b> Active community program in place <b>2</b> Limited effort or not maintained <b>1</b> No effort at recycling <b>0</b>			2

<b>29. RECORD KEEPING REQUIREMENTS</b>		<i>SCORE</i>	<i>COMMENTS</i>
Permit application	3	3	60.235
Copy of permit or solid waste management plan	3	3	60.235
Operating plans for the site	3	3	60.235
Closure plan	3	3	60.210
Site visual inspection records or other monitoring data (e.g. water quality, gas monitoring)	3	3	60.235
Staff training records (e.g. landfill operations, safety)	3	0	60.235
Records showing how facility meets the Class III requirements	3	0	60.300
Airport distance, floodplain, and other location restriction documentation	3	3	60.380
As-built drawings of the landfill design and use	3	3	60.235
Site closure records and notices, if applicable	3	-NA-	60.390,396

**Any individual records not present will be awarded a zero score.**

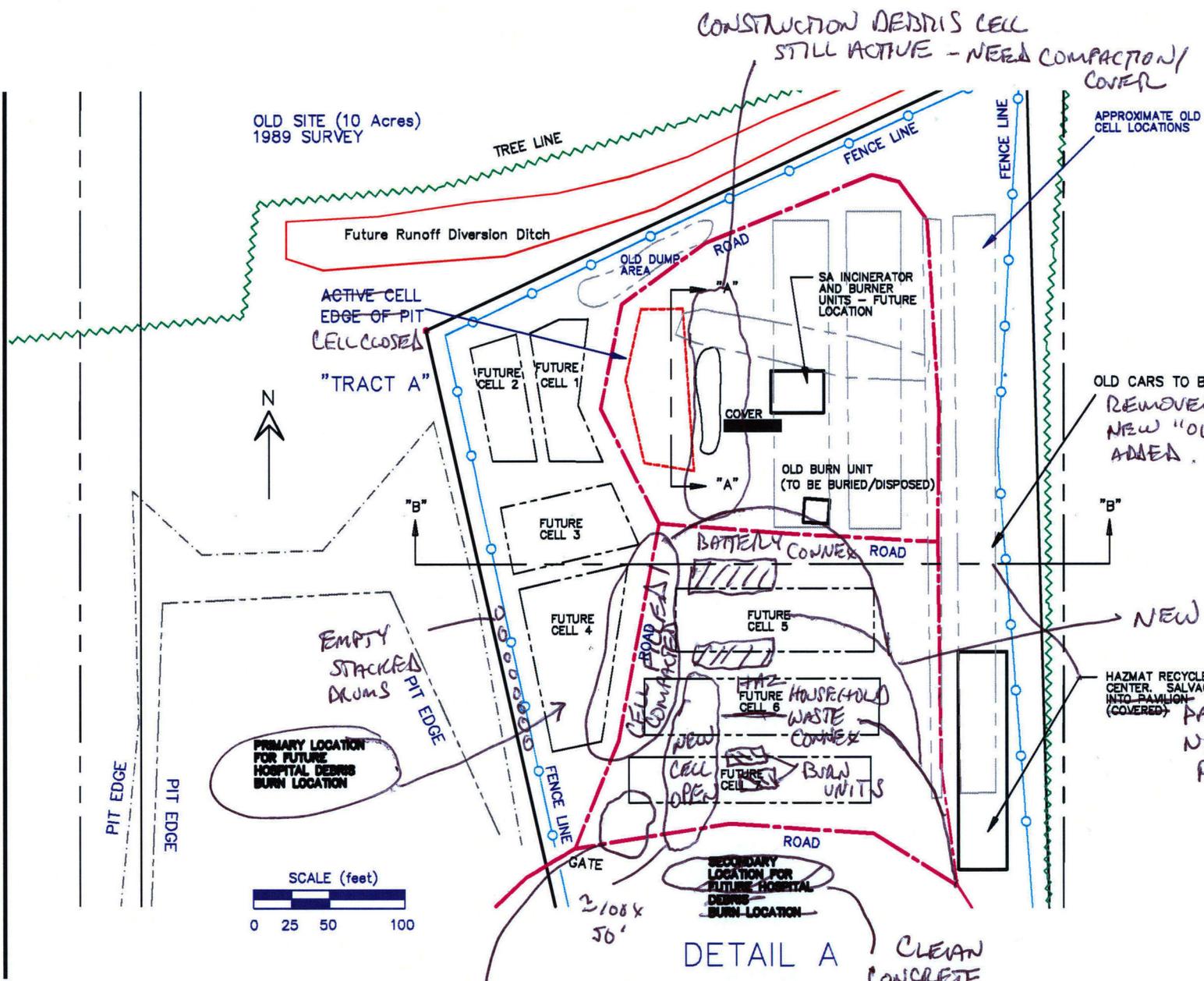
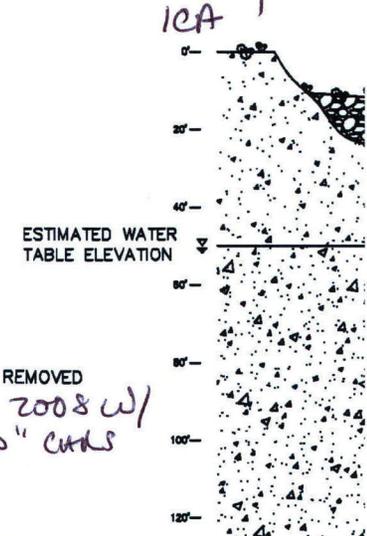
The facility owner must keep records of each item listed above in an easily accessible area, such as the city or tribal office.

TOTAL POINTS POSSIBLE	TOTAL SCORE	COMPLIANCE RATING
129	93	72.1 %

This year the facility rated a 72 % compliance with the sanitation and safety standards for Class III landfills in Alaska (93 out of 129 possible points).

Ratings below 80% are generally regarded as unsatisfactory. (Had the record keeping requirements been met, the facility would rate 77 % compliance with standards for safe and sanitary solid waste management.)

6/12/09  
 LANDFILL  
 INSPECTION  
 SUSAN VOGT  
 ICA



APPROXIMATE OLD CELL LOCATIONS

OLD CARS TO BE REMOVED  
 REMOVED 2008 W/  
 NEW "OLD" CARS  
 ADDED.

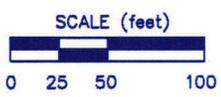
NEW ROADS/PATHS  
 SIGNS ADDED  
 PAVILION MONEY  
 NOT FUNDED AS  
 PER PAT MOORE  
 6/12/09.

DETAIL A

CLEAN  
 CONCRETE  
 DISPOSAL  
 AREA

SOIL STOCKPILE  
 MIXED W/ WASTE  
 EXCAVATED FROM OLD SHALLOW  
 DUMP.

OLD SITE (10 Acres)  
 1989 SURVEY



PIT EDGE

PIT EDGE

2108 x  
 56'

CLASS III ANNUAL LANDFILL FIELD INSPECTION FORM

Date of inspection 6/19/08

NAME OF LANDFILL  
PERMIT NUMBER:

TANANA  
SW3A063-12

file no. 780.15.001  
facility ID \_\_\_\_\_

LOCATION,  
LANDOWNER

City of Tanana

LATITUDE/LONGITUDE

65.1833 / 152.1568

WEATHER/WIND CONDITIONS DURING INSPECTION, PRIOR WEEK

Partly Cloudy ~ 65° F, 0-10 mph winds

LANDFILL CONTACT PERSON

Bea Ketzler

MAILING ADDRESS

P.O. Box 77249

CITY/STATE/ZIP CODE

Tanana, AK 99777

PHONE NUMBER:

(907) 978-5848 Fax number:

LEAD INSPECTOR

Susan Vogt

Phone number (907) 457-6767

2ND INSPECTOR

\_\_\_\_\_

Phone number (907) 388-8671

AIRPORT DISTANCE

~ 2 miles west

General Notes— operating conditions, types of waste observed, community solid waste issues, etc.

Mostly solid waste; 2 new burners purchased and at new cell. Is being used somewhat; need directions to operate etc. There are still issues with waste ending on ground and not in cell. Did put in edge along cell (made of tree log) that does improve users being able to back up closer to cell edge. See photos.

Provide a sketch of the facility, showing roads, gates, buildings or workshops, open disposal cells, closed cells, recycle/salvage areas, and septage/sludge or asbestos disposal areas, if applicable. Also, direction(s) of nearest surface water, prevailing winds.

See attached drawing and photos.

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>1. PERMIT:</b>			18 AAC 60.200
Current permit or approved plan	10	10	
Expired or no permit/plan approved	0		
<b>2. LIMITED ACCESS:</b>			60.220
Well controlled, fences and gates	5	3	New rolling gates on order. Need to tell community about hours of operation.
Access limited, not fully controlled	3		
Inadequate effort to control access	1		
No effort to control access	0		
<b>3. ACCESS ROADS:</b>			60.220
All weather, good shape	5	5	
Moderate conditions, alternatives	3		
Good weather only, no alternatives	1		
Roads non-existent, not maintained	0		
<b>4. SCAVENGING:</b>			60.220
Site access limited, not allowed	2	0	Gates still open all hours
Access not limited, not allowed	1		
Scavenging not controlled	0		
<b>5. BURNING WASTES:</b>			60.355
Burn boxes or cages used, attendant present; or no burning allowed	5	1	New burn boxes but no directions for use.
Controlled burning in designated area, attendant present	3		
Burning controlled, no attendant	1		
Burning uncontrolled, no attendant	0		
<b>6. DEPTH TO HIGH GROUNDWATER:</b>			60.217
Base of landfill area more than 2 ft above natural ground surface or more than 10 ft from highest groundwater	10	10	
Less than 10 ft	0		
<b>7. PLACEMENT IN SURFACE WATER:</b>			60.225
No contact with water	15	15	
Intermittent contact (storms/breakup)	10		
Frequent contact	3		
Wastes placed in surface water	0		
<b>9. ANIMAL/VECTOR CONTROL:</b>			60.230
Fencing with locked gate, waste covered or incinerated, no odors	5	3	See 2 & 5 above.
Fencing inadequate, waste covered, animals rarely attracted, or incineration incomplete	3		
Fencing inadequate, wastes uncovered, animal problems	0		
POSSIBLE 57		47	

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>10. PROCEDURES TO EXCLUDE HAZARDOUS WASTES:</b> Sign in place at entrance, lists types of wastes and PCBs prohibited <b>5</b> No sign present, no visible regulated waste present at site <b>3</b> Regulated hazardous waste present <b>0</b>		3	60.240 No haz waste noted, but no signs.
<b>11. POLLUTED SOILS:</b> Soils not accepted unless they meet a clean up level allowed by regulation <b>5</b> Polluted soils accepted that do not meet clean up levels <b>0</b>		-NA-	60.025
<b>12. SETBACK DISTANCES:</b> Minimum 50-ft setback between property boundary and waste unless permitted <b>5</b> Setback distance not maintained, waste at edge of property. <b>0</b>		5	60.233
<b>13. WELLHEAD PROTECTION DISTANCE:</b> Minimum 500-ft setback from drinking water well <b>15</b> Less than 500-ft setback <b>0</b>		-NA-	60.040
<b>14. MEDICAL WASTES:</b> Shipped to approved facility or sterilized, decontaminated or incinerated before disposal <b>5</b> Infectious wastes present, uncontrolled <b>0</b>		-NA-	60.030
<b>15. DISPOSAL OF VEHICLES OR EQUIPMENT:</b> Drained of all fluids and batteries removed, doesn't attract disease vectors, not a visual nuisance <b>5</b> Batteries, fluids, or petroleum products remain in vehicle at time of disposal, does attract disease vectors, is a nuisance <b>0</b>		5	60.035
<b>16. LITTER:</b> Litter controlled, site cleaned up regularly <b>5</b> Blowing litter contained by fencing, but messy <b>3</b> No fences or containment, but some effort at clean up <b>1</b> No effort at litter control <b>0</b>		3	60.345 Blowing litter still big problem.

POSSIBLE 25 | 16

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>17. COMPACTING REFUSE:</b> When refuse in <2-ft increments Somewhat or partially compacted (when greater than 2-ft layers) No compaction	<b>5</b> <b>3</b> <b>0</b>	<b>0</b>	64.010
<b>18. SIZE OF WORKING FACE:</b> Size meets requirements of permit or approved plan or as small as practicable Size exceeds permit or plan, but waste still in one designated area More than one trench or designated area open Dumping uncontrolled	<b>5</b> <b>3</b> <b>1</b> <b>0</b>	<b>1</b>	60.345 <i>There are 2 cells open. Need to close the older cell. Is being used for const. debris.</i>
<b>19. OPERATIONAL COVER:</b> Minimum 6" depth, frequency adequate Minimum 6" depth, frequency inadequate Inadequate frequency and depth No cover applied	<b>5</b> <b>3</b> <b>1</b> <b>0</b>	<b>0</b>	60.345
<b>20. NUISANCE CONTROL (ODORS, DUST, NOISE, ETC.):</b> Not necessary or applied as needed Occasionally applied, not effective Needed but not applied	<b>5</b> <b>3</b> <b>0</b>	<b>3</b>	60.233 <i>Odors noted.</i>
<b>21. INTERMEDIATE COVER (FORMERLY USED AREAS):</b> Minimum of 12 inches, properly graded improperly graded Inadequate or no cover	<b>5</b> <b>3</b> <b>0</b>	<b>-NA-</b>	60.243
<b>22. FINAL COVER (CLOSED AREAS):</b> Compacted, minimum 2-ft depth Uncompacted or inadequate depth No final cover	<b>5</b> <b>3</b> <b>0</b>	<b>-NA-</b>	60.390
<b>23. FINAL SURFACE GRADING (CLOSED AREAS):</b> Proper grading without visible erosion or ponding of surface water Ponding or erosion present, grading inadequate, Not graded or serious ponding or erosion	<b>5</b> <b>3</b> <b>0</b>	<b>-NA-</b>	60.390

POSSIBLE 20

4

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>24. SITE CLOSURE:</b> Site revegetated, permanent markers established, ADEC notified <b>5</b> Site not revegetated, no markers, or ADEC not notified <b>0</b>		-NA-	60.390
<b>25. LANDS RECORD OFFICE CLOSURE NOTICE FILED:</b> Yes <b>5</b> No <b>0</b>		-NA-	60.396
<b>26. SEWAGE SLUDGE DISPOSAL (IF APPLICABLE):</b> ----- Single separate cell or trench, smaller than 4 ft wide and 12 ft deep <b>5</b> AND Separate cell(s) lined and immediately covered (6 inches of soil) <b>5</b> AND Separated from groundwater by 6 or more feet <b>5</b> (5 to 15 total points) ----- Separate cell or cells, lime, no cover <b>3</b> Separate cell or cells, not disinfected, no cover <b>2</b> Not in separate cells, access uncontrolled <b>0</b>		-NA-	60.365
<b>28. ASBESTOS DISPOSAL (IF APPLICABLE)</b> Done as required in permit conditions, records kept, waste adequately covered <b>10</b> Asbestos inadequately covered and/or records not kept <b>5</b> Asbestos disposed without a permit <b>0</b>		-NA-	60.450
<b>29. IN CASE OF DUMP FIRES, IS THERE A FIRE-FIGHTING PROCEDURE AND EQUIPMENT?</b> Excellent effort, equipment on-hand <b>3</b> Moderate effort <b>2</b> Minimal protection <b>1</b> Open burning on working face <b>0</b>		0	No open burning but no equipment or protection.
<b>30. RECYCLING EFFORTS</b> Active community program in place <b>2</b> Limited effort or not maintained <b>1</b> No effort at recycling <b>0</b>		0	Recycling on paper but not implemented. Need structures constructed.

POSSIBLE 5

0

29. RECORD KEEPING REQUIREMENTS		SCORE	COMMENTS
Permit application	3	3	60.235
Copy of permit or solid waste management plan	3	3	60.235
Operating plans for the site	3	3	60.235
Closure plan	3	3	60.210
Site visual inspection records or other monitoring data (e.g. water quality, gas monitoring)	3	0	60.235 This is 1st inspection since permitted.
Staff training records (e.g. landfill operations, safety)	3	0	60.235 No training completed yet.
Records showing how facility meets the Class III requirements	3	0	60.390 No comprehensive binder on files
Airport distance, floodplain, and other location restriction documentation	3	3	60.380
As-built drawings of the landfill design and use	3	3	60.235
Site closure records and notices, if applicable	3	-NA-	60.390,396

Possible 27 | 18

**Any individual records not present will be awarded a zero score.**

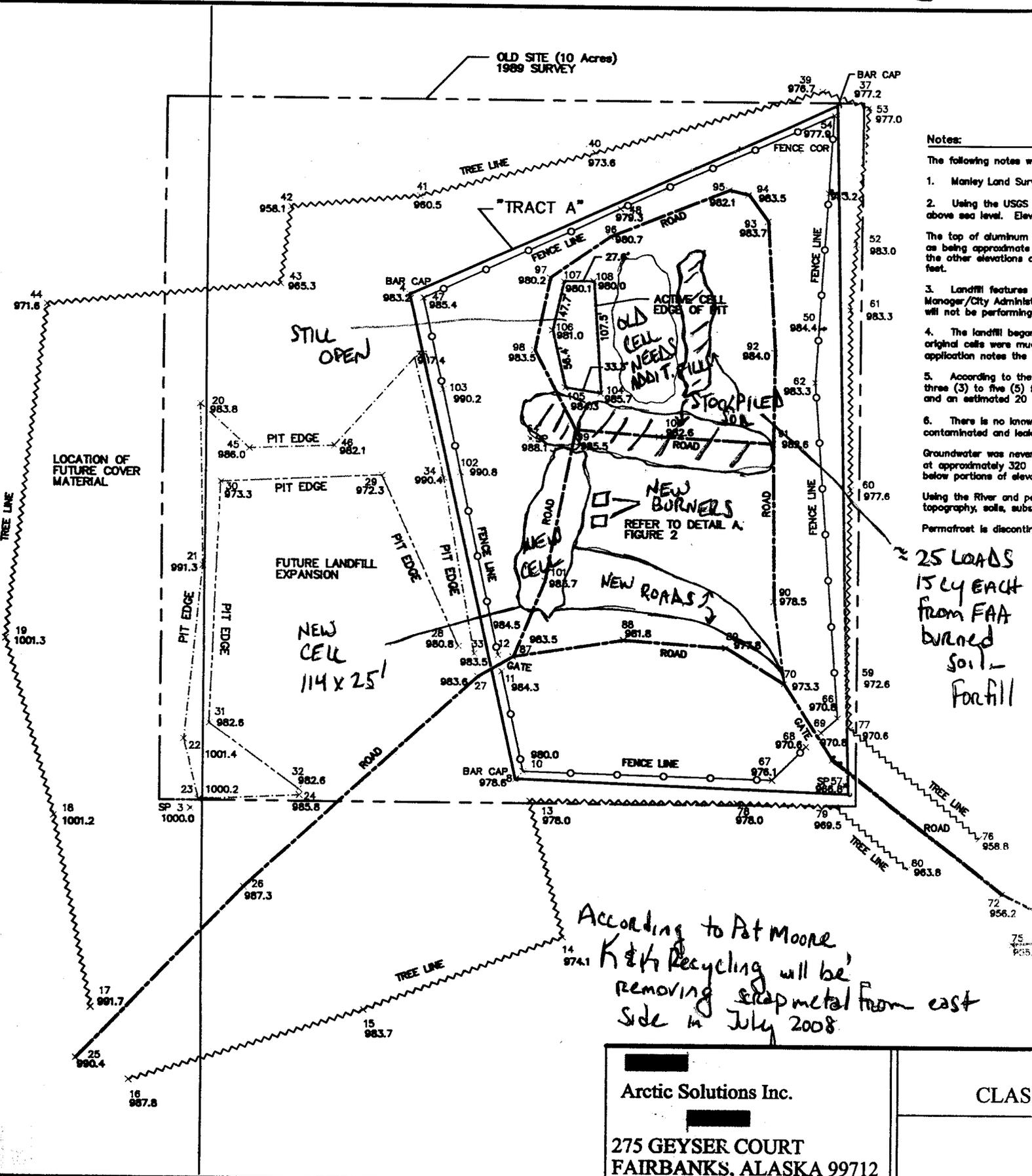
The facility owner must keep records of each item listed above in an easily accessible area, such as the city or tribal office.

TOTAL POINTS POSSIBLE	TOTAL SCORE	COMPLIANCE RATING
134	85	63%

This year the facility rated a 63 % compliance with the sanitation and safety standards for Class III landfills in Alaska (85 out of 134 possible points).

Ratings below 80% are generally regarded as unsatisfactory. (Had the record keeping requirements been met, the facility would rate \_\_\_% compliance with standards for safe and sanitary solid waste management.)

6/19/08  
 Site Inspection  
 Susan Vogt, ICA



- Notes:
1. Manley Land Survey
  2. Using the USGS Topographic map above sea level. Elevations are approximate to the other elevations on the map.
  3. Landfill features of Manley Land Survey will not be performing the original cells were much smaller application notes the details.
  4. According to the Manley Land Survey three (3) to five (5) feet and an estimated 20 percent.
  5. There is no known contamination and leaking.
- Groundwater was never at approximately 320 feet below portions of elevation. Using the River and pond topography, soils, subsurface geology, and Permafrost is discontinuous.

25 LOADS  
 15 CY EACH  
 from FAA  
 burned  
 soil -  
 Forfill

According to Pat Moore  
 K&K Recycling will be  
 removing scrap metal from east  
 side in July 2008

<p>Arctic Solutions Inc.</p> <p>275 GEYSER COURT          FAIRBANKS, ALASKA 99712</p>	<p>CLASS</p>
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Photo 1: Looking north at new cell open. New burners are seen on right.



Photo 2: Looking north at old cell – needs additional cover. Stockpiled soil from FAA post remediation treatment is shown on right. Soil will be used for cover material.



Photo 3: Looking north at older cell still open. It is being used for demolition debris from a project in town.



Photo 4: Looking northwest at fill from FAA and old cars lined along east side fence. Scrap metal is to be barged to Fairbanks for recycling this summer.



Photo 5: Looking north at edge of stockpiled soil and junk material along the east side fence. Once junk material is recycled, this area will be for future recyclables.



Photo 6: Looking east at older cell still open for construction debris.



Photo 7: Looking inside one of the burners. Users are burning trash



Photo 8: Looking north from near the entrance of the southeast fence. The drop off/recycled materials pavilion to be constructed will be in this area to the right.

# **SECTION C:**

# **BLANK FORMS**

Forms discussed in other sections; and where stated "see attached" have all been moved to this Section C.

# ***INSPECTION FORMS***

**CLASS III ANNUAL LANDFILL FIELD INSPECTION FORM**

Date of inspection
--------------------

NAME OF LANDFILL  
PERMIT NUMBER:

<i>file no.</i>	780.15.001
<i>facility ID</i>	_____

LOCATION,  
LANDOWNER

LATITUDE/LONGITUDE

WEATHER/WIND CONDITIONS DURING INSPECTION, PRIOR WEEK

LANDFILL CONTACT PERSON

MAILING ADDRESS

CITY/STATE/ZIP CODE

PHONE NUMBER:

Fax number:

LEAD INSPECTOR

Phone number

2ND INSPECTOR

Phone number

AIRPORT DISTANCE

General Notes— operating conditions, types of waste observed, community solid waste issues, etc.

Provide a sketch of the facility, showing roads, gates, buildings or workshops, open disposal cells, closed cells, recycle/salvage areas, and septage/sludge or asbestos disposal areas, if applicable. Also, direction(s) of nearest surface water, prevailing winds.

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>1. PERMIT:</b> Current permit or approved plan Expired or no permit/plan approved	<b>10</b> <b>0</b>		18 AAC 60.200
<b>2. LIMITED ACCESS:</b> Well controlled, fences and gates Access limited, not fully controlled Inadequate effort to control access No effort to control access	<b>5</b> <b>3</b> <b>1</b> <b>0</b>		60.220
<b>3. ACCESS ROADS:</b> All weather, good shape Moderate conditions, alternatives Good weather only, no alternatives Roads non-existent, not maintained	<b>5</b> <b>3</b> <b>1</b> <b>0</b>		60.220
<b>4. SCAVENGING:</b> Site access limited, not allowed Access not limited, not allowed Scavenging not controlled	<b>2</b> <b>1</b> <b>0</b>		60.220
<b>5. BURNING WASTES:</b> Burn boxes or cages used, attendant present; or no burning allowed Controlled burning in designated area, attendant present Burning controlled, no attendant Burning uncontrolled, no attendant	<b>5</b> <b>3</b> <b>1</b> <b>0</b>		60.355
<b>6. DEPTH TO HIGH GROUNDWATER:</b> Base of landfill area more than 2 ft above natural ground surface or more than 10 ft from highest groundwater Less than 10 ft	<b>10</b> <b>0</b>		60.217
<b>7. PLACEMENT IN SURFACE WATER:</b> No contact with water Intermittent contact (storms/breakup) Frequent contact Wastes placed in surface water	<b>15</b> <b>10</b> <b>3</b> <b>0</b>		60.225
<b>9. ANIMAL/VECTOR CONTROL:</b> Fencing with locked gate, waste covered or incinerated, no odors Fencing inadequate, waste covered, animals rarely attracted, or incineration incomplete Fencing inadequate, wastes uncovered, animal problems	<b>5</b> <b>3</b> <b>0</b>		60.230

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>10. PROCEDURES TO EXCLUDE HAZARDOUS WASTES:</b> Sign in place at entrance, lists types of wastes and PCBs prohibited <b>5</b> No sign present, no visible regulated waste present at site <b>3</b> Regulated hazardous waste present <b>0</b>			60.240
<b>11. POLLUTED SOILS:</b> Soils not accepted unless they meet a clean up level allowed by regulation <b>5</b> Polluted soils accepted that do not meet clean up levels <b>0</b>		-NA-	60.025
<b>12. SETBACK DISTANCES:</b> Minimum 50-ft setback between property boundary and waste unless permitted <b>5</b> Setback distance not maintained, waste at edge of property. <b>0</b>			60.233
<b>13. WELLHEAD PROTECTION DISTANCE:</b> Minimum 500-ft setback from drinking water well <b>15</b> Less than 500-ft setback <b>0</b>		-NA-	60.040
<b>14. MEDICAL WASTES:</b> Shipped to approved facility or sterilized, decontaminated or incinerated before disposal <b>5</b> Infectious wastes present, uncontrolled <b>0</b>		-NA-	60.030
<b>15. DISPOSAL OF VEHICLES OR EQUIPMENT:</b> Drained of all fluids and batteries removed, doesn't attract disease vectors, not a visual nuisance <b>5</b> Batteries, fluids, or petroleum products remain in vehicle at time of disposal, does attract disease vectors, is a nuisance <b>0</b>			60.035
<b>16. LITTER:</b> Litter controlled, site cleaned up regularly <b>5</b> Blowing litter contained by fencing, but messy <b>3</b> No fences or containment, but some effort at clean up <b>1</b> No effort at litter control <b>0</b>			60.345

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>17. COMPACTING REFUSE:</b> When refuse in <2-ft increments Somewhat or partially compacted (when greater than 2-ft layers) No compaction	<b>5</b> <b>3</b> <b>0</b>		64.010
<b>18. SIZE OF WORKING FACE:</b> Size meets requirements of permit or approved plan or as small as practicable Size exceeds permit or plan, but waste still in one designated area More than one trench or designated area open Dumping uncontrolled	<b>5</b> <b>3</b> <b>1</b> <b>0</b>		60.345
<b>19. OPERATIONAL COVER:</b> Minimum 6" depth, frequency adequate Minimum 6" depth, frequency inadequate Inadequate frequency and depth No cover applied	<b>5</b> <b>3</b> <b>1</b> <b>0</b>		60.345
<b>20. NUISANCE CONTROL (ODORS, DUST, NOISE, ETC.):</b> Not necessary or applied as needed Occasionally applied, not effective Needed but not applied	<b>5</b> <b>3</b> <b>0</b>		60.233
<b>21. INTERMEDIATE COVER (FORMERLY USED AREAS):</b> Minimum of 12 inches, properly graded improperly graded Inadequate or no cover	<b>5</b> <b>3</b> <b>0</b>	-NA-	60.243
<b>22. FINAL COVER (CLOSED AREAS):</b> Compacted, minimum 2-ft depth Uncompacted or inadequate depth No final cover	<b>5</b> <b>3</b> <b>0</b>	-NA-	60.390
<b>23. FINAL SURFACE GRADING (CLOSED AREAS):</b> Proper grading without visible erosion or ponding of surface water Ponding or erosion present, grading inadequate, Not graded or serious ponding or erosion	<b>5</b> <b>3</b> <b>0</b>	-NA-	60.390

<i>STANDARDS</i>	<i>possible points</i>	<i>SCORE</i>	<i>COMMENTS</i>
<b>24. SITE CLOSURE:</b> Site revegetated, permanent markers established, ADEC notified <b>5</b> Site not revegetated, no markers, or ADEC not notified <b>0</b>		-NA-	60.390
<b>25. LANDS RECORD OFFICE CLOSURE NOTICE FILED:</b> Yes <b>5</b> No <b>0</b>		-NA-	60.396
<b>26. SEWAGE SLUDGE DISPOSAL (IF APPLICABLE):</b> ----- Single separate cell or trench, smaller than 4 ft wide and 12 ft deep <b>5</b> <u>AND</u> Separate cell(s) limed and immediately covered (6 inches of soil) <b>5</b> <u>AND</u> Separated from groundwater by 6 or more feet <b>5</b> (5 to 15 total points) ----- Separate cell or cells, lime, no cover <b>3</b> Separate cell or cells, not disinfected, no cover <b>2</b> Not in separate cells, access uncontrolled <b>0</b>		-NA-	60.365
<b>28. ASBESTOS DISPOSAL (IF APPLICABLE)</b> Done as required in permit conditions, records kept, waste adequately covered <b>10</b> Asbestos inadequately covered and/or records not kept <b>5</b> Asbestos disposed without a permit <b>0</b>		-NA-	60.450

<b>29. IN CASE OF DUMP FIRES, IS THERE A FIRE-FIGHTING PROCEDURE AND EQUIPMENT?</b> Excellent effort, equipment on-hand <b>3</b> Moderate effort <b>2</b> Minimal protection <b>1</b> Open burning on working face <b>0</b>			
<b>30. RECYCLING EFFORTS</b> Active community program in place <b>2</b> Limited effort or not maintained <b>1</b> No effort at recycling <b>0</b>			

<b>29. RECORD KEEPING REQUIREMENTS</b>	<i>SCORE</i>	<i>COMMENTS</i>
Permit application <b>3</b>		60.235
Copy of permit or solid waste management plan <b>3</b>		60.235
Operating plans for the site <b>3</b>		60.235
Closure plan <b>3</b>		60.210
Site visual inspection records or other monitoring data (e.g. water quality, gas monitoring) <b>3</b>		60.235
Staff training records (e.g. landfill operations, safety) <b>3</b>		60.235
Records showing how facility meets the Class III requirements <b>3</b>		60.300
Airport distance, floodplain, and other location restriction documentation <b>3</b>		60.380
As-built drawings of the landfill design and use <b>3</b>		60.235
Site closure records and notices, if applicable <b>3</b>	-NA-	60.390,396

**Any individual records not present will be awarded a zero score.**

The facility owner must keep records of each item listed above in an easily accessible area, such as the city or tribal office.

<b>TOTAL POINTS POSSIBLE</b>	<b>TOTAL SCORE</b>	<b>COMPLIANCE RATING</b>
		%

This year the facility rated a \_\_\_\_% compliance with the sanitation and safety standards for Class III landfills in Alaska (\_\_\_ out of 1\_\_\_ possible points).

Ratings below 80% are generally regarded as unsatisfactory. (Had the record keeping requirements been met, the facility would rate \_\_\_\_% compliance with standards for safe and sanitary solid waste management.)

**CITY OF TANANA  
ENVIRONMENTAL SERVICES/REFUSE DISPOSAL  
QUARTERLY SITE INSPECTION**

SITE: \_\_\_\_\_ DATE: \_\_\_\_\_

STAFF & VISITORS: \_\_\_\_\_

GENERAL CONDITION: \_\_\_\_\_

Maintenance of Access Roads, Berms, Ditches, Fences, Gates: \_\_\_\_\_

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Observation (Seepage): \_\_\_\_\_

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Burn Units & Smart Ash: \_\_\_\_\_

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Drainage & Ponding Control: \_\_\_\_\_

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Litter, Dust, Vector, Bird and Animal Control: \_\_\_\_\_

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Collection/Drop Off Site Condition: \_\_\_\_\_

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Signature: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

\*\*Please be specific as to what needs further attention.

# STORMWATER VISUAL INSPECTION FORM

Outfall # _____	Photograph # _____	Date: _____
Location: _____		
Weather: air temp.: _____°C	rain: Y   N	sunny   cloudy
Outfall flow rate estimate: _____ L/sec		
Known industrial or commercial uses in drainage area?   Y   N		
Describe: _____		
<b><u>PHYSICAL OBSERVATIONS</u></b>		
<b>Odor:</b>	none   sewage   sulfide   oil   gas   rancid-sour	other: _____
<b>Color:</b>	none   yellow   brown   green   gray	other: _____
<b>Turbidity:</b>	none   cloudy   opaque	
<b>Floatables:</b>	none   petroleum sheen   sewage	other: _____ (collect sample)
<b>Deposits/stains:</b>	none   sediment   oily	describe: _____ (collect sample)
<b>Vegetation conditions:</b>	normal   excessive growth	inhibited growth
	extent: _____	
<b>Damage to outfall structures:</b>		
	identify structure: _____	
	damage:   none / concrete cracking / concrete spalling / peeling paint / corrosion	
	other damage: _____	
	extent: _____	

Source: Pitt, et. al, 1992.

## NOTES:

# ***SPILL AND LEAKS***

<b>LIST OF SIGNIFICANT SPILLS AND LEAKS</b>	<b>Worksheet</b> <b>Completed by:</b> _____ <b>Title:</b> _____ <b>Date:</b> _____
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**Directions:** Record below all significant spills and significant leaks of toxic or hazardous pollutant that have occurred at the facility in the three years prior to the effective date of the permit.

**Definitions:** Significant spills include, but are not limited to, releases of oil or hazardous substances in excess of reportable quantities.

1st Year Prior										
Date (mo/day/yr)	Spill	L e a k	Location (as indicated on site map)	Description				Response Procedure		Preventive Measure Taken
				Type of Material	Quantity	Source, If Known	Reason	Amount of Material Recovered	Material No Longer Exposed to Storm Water (True / False)	
2nd Year Prior										
Date (mo/day/yr)	Spill	L e a k	Location (as indicated on site map)	Description				Response Procedure		Preventive Measure Taken
				Type of Material	Quantity	Source, If Known	Reason	Amount of Material Recovered	Material No Longer Exposed to Storm Water (True / False)	
3rd Year Prior										
Date (mo/day/yr)	Spill	L e a k	Location (as indicated on site map)	Description				Response Procedure		Preventive Measure Taken
				Type of Material	Quantity	Source, If Known	Reason	Amount of Material Recovered	Material No Longer Exposed to Storm Water (True / False)	

Source: U.S. EPA, 1992.



ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

OIL & HAZARDOUS SUBSTANCES SPILL NOTIFICATION

ADEC SPILL #		ADEC FILE #		ADEC LC					
PERSON REPORTING		PHONE NUMBER		REPORTED HOW? Troopers    phone    fax					
DATE/ TIME OF SPILL		DATE/TIME DISCOVERED		DATE/TIME REPORTED					
LOCATION/ADDRESS		LAT.	SUBSTANCE TYPE A) CR EHS HS NC PW UNK B) CR EHS HS NC PW UNK		PRODUCT A) B)				
		LONG.							
QUANTITY SPILLED <input type="checkbox"/> gallons <input type="checkbox"/> pounds	QUANTITY CONTAINED <input type="checkbox"/> gallons <input type="checkbox"/> pounds	QUANTITY RECOVERED <input type="checkbox"/> gallons <input type="checkbox"/> pounds	QUANTITY DISPOSED <input type="checkbox"/> gallons <input type="checkbox"/> pounds						
POTENTIAL RESPONSIBLE PARTY    C-Plan Holder? YES <input type="checkbox"/> NO <input type="checkbox"/>		FACILITY TYPE							
SOURCE OF SPILL					<input type="checkbox"/> >400 GT Vessel?				
CAUSE OF SPILL (List Primary Cause first)					<input type="checkbox"/> Accident <input type="checkbox"/> Human Factors <input type="checkbox"/> Structural/Mechanical <input type="checkbox"/> Other				
CLEANUP ACTIONS									
DISPOSAL METHODS AND LOCATION									
RESOURCES AFFECTED/THREATENED (Water sources, wildlife, wells, etc.)				AIR	LAND	MARINE	FRESH	SURF. AREA AFFECTED	SURF. TYPE
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
COMMENTS									

DEC USE ONLY

SPILL NAME, IF ANY			NAMES OF DEC STAFF RESPONDING			C-PLAN MGR NOTIFIED YES <input type="checkbox"/> NO <input type="checkbox"/> _____			
DEC RESPONSE <input type="checkbox"/> phone follow-up <input type="checkbox"/> field visit <input type="checkbox"/> took report		CASELOAD CODE <input type="checkbox"/> First and Final <input type="checkbox"/> Open/No LC <input type="checkbox"/> LC assigned			CLEANUP CLOSURE ACTION <input type="checkbox"/> NFA <input type="checkbox"/> Monitoring <input type="checkbox"/> Transferred to CS or STP				
STATUS OF CASE (circle)    OPEN    CLOSED			DATE CASE CLOSED _____						
COMMENTS:									
REPORT PREPARED BY						DATE			

# ***TRAINING/ MEETINGS***

# CITY OF TANANA

P.O. Box 249  
 Tanana, Alaska 99777  
 (907) 366-7159 · Fax (907) 366-7169

## LANDFILL OPERATIONS & SAFETY TOPICS

<b>HOUSEKEEPING</b>	<b>TRENCHES &amp; EXCAVATION</b>
Egress Areas Clear	Benching & Sloping (MAX = 1.5/1)
Gate and lock operation	Entry/Egress Means (> 4 foot depth)
Signs Visible	Lateral travel to egress (less than 25 feet)
Equipment Storage	Perimeter Protection
Material Storage	Water accumulation Control
Trash Removal	Explosive Atmospheres
<b>HAZARD COMMUNICATION</b>	Heavy Equipment Location
Current Chemical Inventory	<b>FALL PROTECTION</b>
Posted MSDS	Controlled Access Zones
Container Labeling	Openings covered/protected
Use of PPE	Safety fencing
<b>PERSONAL PROTECTIVE EQUIPMENT</b>	<b>CONFINED SPACE</b>
Hard hats	
Safety Shoes	<b>CHEMICAL HAZARDS</b>
Eye Protection	Gasoline
Hearing Protection	Diesel
Appropriate Clothing	Solvents
Respiratory Protection	Metals
<b>HAND TOOLS &amp; EQUIPMENT</b>	Oil
General Tool Condition	Grease
General Tool Storage	PCBs
Monitoring Equipment	Carbon Monoxide
<b>LADDERS</b>	Compressed Gas
General Condition	Pesticides
Ladder Placement and Use	Other:
<b>ELECTRIC AND UTILITY LOCATE</b>	
Underground Utilities	<b>DISPOSAL AND RECOVERY UNITS</b>
Overhead Utilities	SW Burn Unit
Electrical	Smart Ash Incinerator
<b>ENVIRONMENT</b>	Energy Recovery Furnace
Radiation	
Biologic	<b>HEAVY EQUIPMENT OPERATION</b>
Lightning	See attached inspection checklists
Water	
Fire	<b>STORMWATER INSPECTIONS</b>
Nuisance Animals	
Unstable Surfaces	<b>SPILL RESPONSE TRAINING</b>
Cold / Heat Exposure	

**CITY OF TANANA**

P.O. Box 249

Tanana, Alaska 99777

(907) 366-7159 · Fax (907) 366-7169

**LANDFILL OPERATIONS & SAFETY MEETING SIGN-IN LOG**

Instructor: \_\_\_\_\_

Location: \_\_\_\_\_

Today's Topics:

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*Attendants please sign below.*

**Print Name/Title**

**Signature**

**Date/Time**

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## EMPLOYEE TRAINING

Worksheet Completed by: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Instructions: Describe the employee training program for your facility below. The program should, at a minimum, address spill prevention and response, good housekeeping, and material management practices. Provide a schedule for the training program and list the employees who attend the training sessions.

<b>Training Topics</b>	<b>Brief Description of Training Program/Materials (e.g., film, newsletter, course)</b>	<b>Schedule for Training (list dates)</b>	<b>Participants</b>
Spill Prevention and Response			
Good Housekeeping			
Material Management Practices			
Other Topics			

Source: U. S. EPA, 1992.

***VEHICLE  
MAINT-  
ENANCE***

<b>SAFETY INSPECTION CHECKLIST FOR CONSTRUCTION EQUIPMENT</b>				
<b>CONTRACTOR:</b>		<b>CONTRACT #:</b>		
<b>EQUIPMENT DESCRIPTION:</b>	<b>EQUIPMENT LICENSE OR NUMBER:</b>	<b>DATE OF INSPECTION:</b>		
<b>VEHICLE INSPECTIONS ( PRIOR TO SERVICE, ANNUAL and/or AFTER REPAIR)</b>				
		YES	NO	N/A
18.A.02	Service and maintenance inspection has been performed (braking systems, tires, horn, seat belts, operating controls, safety devices, and accessories) and equipment is fit for service.	—	—	—
18.A.04	Lights (equipment operated between sunset and sunrise) a. two headlights, one on each side b. one red taillight and one red/amber stoplight each side on rear c. directional signal lights each side on front and rear d. three emergency fares, reflective markers or other portable warning devices	— — — —	— — — —	— — — —
18.A.05	(5000 lbs or less) service brakes and manually operated parking brakes Service brakes on trailers and semi-trailers are controlled from the driver's seat	—	—	—
18.A.06	Every motor vehicle will have the following operative equipment: a. speedometer b. fuel gauge c. audible warning device (horn) d. windshield with adequate wipers e. defrosting and defogging device f. adequate rear view mirror or side mirrors g. cab, cab shield or other protection feature to protect driver from falling/shifting loads h. non-slip surfaces on steps i. power operated starting device	— — — — — — — — — —	— — — — — — — — — —	— — — — — — — — — —
18.A.07	Safety glass in windshield, windows and doors and in good condition	—	—	—
18.A.08	Trailers: a. towing devices inspected and proper condition b. locking device or double safety system c. safety chains or cables installed d. Power brakes are equipped with a break-away device to lock the trailer wheels	— — — —	— — — —	— — — —
18.A.10	Dump Trucks: a. equipped with holding device to prevent accidental lowering of body during maintenance/inspection b. hoist levers can be secured to prevent accidental starting or tripping c. tailgate trip handles located so the operator will be clear	— — —	— — —	— — —
18.A.11	Emergency equipment for vehicles over 1 ½ tons operated on public highways shall be per state law but not less than the following items: a. one red flag 12" square minimum and three reflective markers b. two wheel chocks for each vehicle or each unit of a combination of vehicles c. one 2A:10B:C fire extinguisher (two properly rated extinguishers are required for flammable cargos or loads)	— — —	— — —	— — —
18.A.12	Vehicle exhaust does not pose a hazard to operator or attendant or others	—	—	—
<b>REMARKS:</b> (attach additional sheets if needed)				
<b>INSPECTED/CERTIFIED BY:</b>		<b>APPROVED BY:</b>		

***INCIDENT/  
ACCIDENTS***

**CITY OF TANANA**

P.O. Box 249  
Tanana, Alaska 99777  
(907) 366-7159 · Fax (907) 366-7169

**INCIDENT/ACCIDENT REPORT**

Name of Injured \_\_\_\_\_

Address \_\_\_\_\_

Site Name and Location \_\_\_\_\_

Age \_\_\_\_\_ Sex \_\_\_\_\_

Years of Experience \_\_\_\_\_ Time at present project \_\_\_\_\_

Title/Occupation \_\_\_\_\_

Department/Company \_\_\_\_\_

Date of Accident \_\_\_\_\_ Time of Accident \_\_\_\_\_

Date accident was reported \_\_\_\_\_ Time accident was reported \_\_\_\_\_

Nature of Illness/Injury \_\_\_\_\_

Symptoms \_\_\_\_\_

Action Taken \_\_\_\_\_

Witnessed by \_\_\_\_\_

Transported by \_\_\_\_\_

Facility Treating (i.e. Hospital Name) \_\_\_\_\_

Treatment \_\_\_\_\_

Comments \_\_\_\_\_

*INCIDENT/ACCIDENT REPORT (continued)*

What was the person doing at the time of incident/accident \_\_\_\_\_

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Personal Protective Equipment Worn by Injured \_\_\_\_\_

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Cause of Incident/Accident \_\_\_\_\_

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Estimated amount of damage to equipment and/or structure (if dollar value unknown, describe damage in detail)

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Actions to prevent recurrence \_\_\_\_\_

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Additional Comments \_\_\_\_\_

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Supervisor Signature \_\_\_\_\_

Date/Time \_\_\_\_\_

***LANDFILL  
WORK***

***OTHER  
FORMS***

**CITY OF TANANA**  
P.O. Box 249  
Tanana, Alaska 99777  
(907) 366-7159 · Fax (907) 366-7169

**LANDFILL OPERATIONS AND MAINTENANCE**

**LOG NO.** \_\_\_\_\_

*Date(s) of Work:* \_\_\_\_\_

*Location of Work Within Landfill:* \_\_\_\_\_

*Type of Operations/Maintenance Performed (include who performed work):*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*Is Work Complete?*                      Yes \_\_\_\_\_                      No \_\_\_\_\_

If no, what type of additional work/follow-up is needed? Include information such as additional parts required, additional field work, inspections, etc.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*When can this additional work be expected/completed?*

\_\_\_\_\_  
\_\_\_\_\_

Please attach site sketch and photos to this work form.

\_\_\_\_\_  
**Signed by (Name and Title**

\_\_\_\_\_  
**Date**

**LANDFILL LOAD RECEIVING SHEET**

**CITY OF TANANA  
P.O. BOX 249  
TANANA, ALASKA 99777  
(907) 366-7159**

**PROJECT NAME:** \_\_\_\_\_  
**GENERATOR NAME:** \_\_\_\_\_  
**GENERATOR ADDRESS:** \_\_\_\_\_  
**TRANSPORTER NAME:** \_\_\_\_\_  
**TRANSPORTER ADDRESS:** \_\_\_\_\_  
**FORM COMPLETED BY:** \_\_\_\_\_  
**DATE LOADS RECEIVED/FORM COMPLETED:** \_\_\_\_\_

<b>LOAD 1</b>				
RECEIPT TIME	_____	CIRCLE ONE:	AM	PM
TRUCK NO.	_____			
LOAD SIZE (CUBIC YARDS)	_____	COVERED?	YES	NO
LOAD CONDITION	_____			
TRUCK CONDITION	_____			

<b>LOAD 2</b>				
RECEIPT TIME	_____	CIRCLE ONE:	AM	PM
TRUCK NO.	_____			
LOAD SIZE (CUBIC YARDS)	_____	COVERED?	YES	NO
LOAD CONDITION	_____			
TRUCK CONDITION	_____			

<b>LOAD 3</b>				
RECEIPT TIME	_____	CIRCLE ONE:	AM	PM
TRUCK NO.	_____			
LOAD SIZE (CUBIC YARDS)	_____	COVERED?	YES	NO
LOAD CONDITION	_____			
TRUCK CONDITION	_____			

<b>LOAD 4</b>				
RECEIPT TIME	_____	CIRCLE ONE:	AM	PM
TRUCK NO.	_____			
LOAD SIZE (CUBIC YARDS)	_____	COVERED?	YES	NO
LOAD CONDITION	_____			
TRUCK CONDITION	_____			

**LANDFILL LOAD RECEIVING SHEET**

**CITY OF TANANA  
P.O. BOX 249  
TANANA, ALASKA 99777  
(907) 366-7159**

**PROJECT NAME:**

**DATE LOADS RECEIVED/FORM COMPLETED:**

**LOAD 5**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 6**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 7**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 8**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 9**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LANDFILL LOAD RECEIVING SHEET**

**CITY OF TANANA  
P.O. BOX 249  
TANANA, ALASKA 99777  
(907) 366-7159**

**PROJECT NAME:**

**DATE LOADS RECEIVED/FORM COMPLETED:**

**LOAD 10**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE: AM PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED? YES NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 11**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE: AM PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED? YES NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 12**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE: AM PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED? YES NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 13**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE: AM PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED? YES NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 14**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE: AM PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED? YES NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LANDFILL LOAD RECEIVING SHEET**

**CITY OF TANANA  
P.O. BOX 249  
TANANA, ALASKA 99777  
(907) 366-7159**

**PROJECT NAME:**

**DATE LOADS RECEIVED/FORM COMPLETED:**

**LOAD 15**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 16**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 17**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 18**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 19**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LANDFILL LOAD RECEIVING SHEET**

**CITY OF TANANA  
P.O. BOX 249  
TANANA, ALASKA 99777  
(907) 366-7159**

**PROJECT NAME:** \_\_\_\_\_  
**GENERATOR NAME:** \_\_\_\_\_  
**GENERATOR ADDRESS:** \_\_\_\_\_  
**TRANSPORTER NAME:** \_\_\_\_\_  
**TRANSPORTER ADDRESS:** \_\_\_\_\_  
**FORM COMPLETED BY:** \_\_\_\_\_  
**DATE LOADS RECEIVED/FORM COMPLETED:** \_\_\_\_\_

<b>LOAD 1</b>				
RECEIPT TIME	_____	CIRCLE ONE:	AM	PM
TRUCK NO.	_____			
LOAD SIZE (CUBIC YARDS)	_____	COVERED?	YES	NO
LOAD CONDITION	_____			
TRUCK CONDITION	_____			

<b>LOAD 2</b>				
RECEIPT TIME	_____	CIRCLE ONE:	AM	PM
TRUCK NO.	_____			
LOAD SIZE (CUBIC YARDS)	_____	COVERED?	YES	NO
LOAD CONDITION	_____			
TRUCK CONDITION	_____			

<b>LOAD 3</b>				
RECEIPT TIME	_____	CIRCLE ONE:	AM	PM
TRUCK NO.	_____			
LOAD SIZE (CUBIC YARDS)	_____	COVERED?	YES	NO
LOAD CONDITION	_____			
TRUCK CONDITION	_____			

<b>LOAD 4</b>				
RECEIPT TIME	_____	CIRCLE ONE:	AM	PM
TRUCK NO.	_____			
LOAD SIZE (CUBIC YARDS)	_____	COVERED?	YES	NO
LOAD CONDITION	_____			
TRUCK CONDITION	_____			

**LANDFILL LOAD RECEIVING SHEET**

**CITY OF TANANA  
P.O. BOX 249  
TANANA, ALASKA 99777  
(907) 366-7159**

**PROJECT NAME:**

**DATE LOADS RECEIVED/FORM COMPLETED:**

**LOAD 5**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 6**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 7**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 8**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 9**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LANDFILL LOAD RECEIVING SHEET**

**CITY OF TANANA  
P.O. BOX 249  
TANANA, ALASKA 99777  
(907) 366-7159**

**PROJECT NAME:**

**DATE LOADS RECEIVED/FORM COMPLETED:**

**LOAD 10**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 11**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 12**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 13**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 14**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LANDFILL LOAD RECEIVING SHEET**

**CITY OF TANANA  
P.O. BOX 249  
TANANA, ALASKA 99777  
(907) 366-7159**

**PROJECT NAME:**

**DATE LOADS RECEIVED/FORM COMPLETED:**

**LOAD 15**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 16**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 17**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 18**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

**LOAD 19**

RECEIPT TIME \_\_\_\_\_ CIRCLE ONE:    AM    PM  
TRUCK NO. \_\_\_\_\_  
LOAD SIZE (CUBIC YARDS) \_\_\_\_\_ COVERED?    YES    NO  
LOAD CONDITION \_\_\_\_\_  
TRUCK CONDITION \_\_\_\_\_

Site: \_\_\_\_\_  
 Community: \_\_\_\_\_

Date & Time: \_\_\_\_\_

## Used Oil Collection Center (UOCC) Inspection Checklist

Street address: \_\_\_\_\_

Mailing address: \_\_\_\_\_

Phone number: \_\_\_\_\_

UOCC Contact: \_\_\_\_\_

Owner name: \_\_\_\_\_

INSPECTION ITEM	Y	N	NA	COMMENTS
Has any header information changed since last inspection?				If yes, which?
<b>Recordkeeping (keep 3 yrs) (&gt;physically check recent records)</b>				
1. Is UOCC logsheet complete (name, address, date, quantity)?				
[>>Were log sheets checked during inspection?				
2. Does the collection center collect used oil only from DIYers?				If collects from generators, is UOCC type C or D?
3. a. Are transportation records kept 3 yrs? (>>list transporters at right)				
b. Were all used oil transporters permitted by the US EPA?				
c. Does UOCC itself transport used oil in quantities of 55 gal or less?				
4. Is UOCC satisfied with transporter? (>>if not, list reasons at right)				
5. Do the transporter pickup slips show Clor-d-Tect result?				
<b>Miscellaneous</b>				
1. a. Is UOCC sign clearly posted? [note: this is a suggestion, not rule]				
b. If no, did inspector provide new sign?				
2. Does UOCC have adequate log sheets, signs, test kits, etc?				If not, list needs:
3. a. Do employees know how to evaluate oil for signs of mixing?				
b. Does UOCC know how and when to use Clor-d-Tect kits?				
4. a. Are materials needed for Spill Plan on hand? (>>list at right)				
b. Have the employees been trained on the Spill Plan?				
<b>Orphan Oil and Drums</b>				
1. a. Is orphan oil recorded on the log sheet? (if none received, mark NA)				
b. Are suspicious orphan oil loads tested immediately?				
c. Are orphan oil drums immediately reported to ADEC/PERP ? (ie. within 24 hrs)				
2. a. How many used oil drums are at the UOCC?				Full:      Partially full:      Empty:
b. Are drums a problem for the UOCC? (recommend swapping-out idea)				
<b>Spills and Containment</b>				
1. a. Is UOCC free from signs of spills (stained soil, etc.)? If no, explain.				
b. If there are spills, has UOCC committed to cleanup date? (list at right)				
2. a. Is secondary containment free from oil?				
b. " " " " " water?				
c. " " " " " debris? (specify type of debris)				
d. If not, has UOCC committed to cleanup date? (list date at right)				

# POST CLOSURE MONITORING FORM

<b>Site Name:</b>	<b>Date of Inspection:</b>
	<b>Weather:</b>
<b>State:</b>	<b>Temperature:</b>
	<b>Site Map: Attach</b>
<b>Inspection Team:</b>	<b>Note: Indicate the location of any deficiency noted below on the site map</b>
<b>ITEM</b>	<b>REMARKS</b>
<b><i>COVER SYSTEM SURFACE</i></b>	
<b>1. SETTLEMENT (LOW SPOTS)</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>2. CRACKS</b> Yes ( ) No ( ) Length: Width: Depth:	
<b>3. EROSION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>4. HOLES</b> Yes ( ) No ( ) Areal Extent: Depth: Suspected Cause (Rodent or Other):	
<b>5. VEGETATIVE COVER</b> Yes ( ) No ( ) Grass: Yes No Condition: Trees/Shrubs Yes ( ) No ( ) Size:	
<b>6. ARMORED COVER</b> Yes ( ) No ( ) Material Type: Condition:	
<b>7. BULGES</b> Yes ( ) No ( ) Areal Extent: Height: Suspected Cause (gas pressure or other):	
<b>8. WET AREAS</b> Yes ( ) No ( ) Ponding: Yes ( ) No ( ) Areal Extent: Seeps: Yes ( ) No ( ) Areal Extent: Estimated Flow Rate: Soft Subgrade: Yes ( ) No ( ) Areal Extent:	
<b>9. SLOPE INSTABILITY</b> Yes ( ) No ( ) Slides: Yes ( ) No ( ) Areal Extent: Probable Slide Interface: Suspected Cause: Exposed Cover Components:	

## **POST CLOSURE MONITORING FORM (CONT)**

<b>BENCHES</b>	
<b>1. FLOW BYPASS BENCHES</b> Yes ( ) No ( ) Description of problem:	
<b>2. BENCH BREACHED</b> Yes ( ) No ( ) Description of problem:	
<b>3. BENCH OVERTOPPED</b> Yes ( ) No ( ) Description of problem:	
<b>LETDOWN CHANNELS</b>	
<b>1. SETTLEMENT</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>2. MATERIAL DEGRADATION</b> Yes ( ) No ( ) Material Type: Areal Extent: Degree of Degradation:	
<b>3. EROSION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>4. UNDERCUTTING</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>5. OBSTRUCTIONS</b> Yes ( ) No ( ) Type: Areal Extent: Size:	
<b>6. SLOPE INSTABILITY</b> Yes ( ) No ( ) Type: Areal Extent:	
<b>COVER PENETRATIONS</b>	
<b>1. GAS VENTS</b> Yes ( ) No ( ) Active ( ) Passive ( ) Functioning: Yes ( ) No ( ) Condition: Routinely Sampled: Yes ( ) No ( )	
<b>2. GAS MONITORING PROBES</b> Yes ( ) No ( ) Functioning: Yes ( ) No ( ) Condition: Routinely Sampled: Yes ( ) No ( )	
<b>3. MONITORING WELLS</b> Yes ( ) No ( ) Functioning: Yes ( ) No ( ) Condition: Routinely Sampled: Yes ( ) No ( )	
<b>4. LEACHATE EXTRACTION WELLS</b> Yes ( ) No ( ) Functioning: Yes ( ) No ( ) Condition: Routinely Sampled: Yes ( ) No ( )	
<b>5. SETTLEMENT MONUMENTS</b> Yes ( ) No ( ) Located: Yes ( ) No ( ) Condition: Routinely Surveyed: Yes ( ) No ( )	

## POST CLOSURE MONITORING FORM (CONT)

<b>COVER DRAINAGE LAYER</b>	
<b>1. OUTLET PIPES</b> Yes ( ) No ( ) Functioning: Yes ( ) No ( ) Condition:	
<b>2. OUTLET ROCK</b> Yes ( ) No ( ) Functioning: Yes ( ) No ( ) Condition:	
<b>DETENTION/SEDIMENTATION PONDS</b>	
<b>1. SILTATION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>2. EROSION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>3. OUTLET WORKS</b> Yes ( ) No ( ) Functioning: Yes ( ) No ( ) Condition:	
<b>4. Embankment</b> Yes ( ) No ( ) Functioning: Yes No Condition:	
<b>RETAINING WALLS</b>	
<b>1. DEFORMATIONS</b> Yes ( ) No ( ) Horizontal Displacement: Vertical Displacement: Rotational Displacement:	
<b>2. DEGRADATION</b> Yes ( ) No ( ) Description of damage:	
<b>VERTICAL BARRIER WALLS</b>	
<b>1. SETTLEMENT</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>2. PERFORMANCE MONITORING</b> Yes ( ) No ( ) Type of Monitoring: Frequency: Evidence of Breaching: Yes ( ) No ( )	
<b>GROUNDWATER SYSTEMS</b>	
<b>TYPE OF SYSTEM:</b> Containment ( ) Treatment ( ) Functioning: Yes ( ) No ( ) Condition: Routinely Monitored: Yes ( ) No ( )	

## POST CLOSURE MONITORING FORM (CONT)

<b>PERIMETER DITCHES/OFF-SITE DISCHARGE</b>	
<b>1. SILTATION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>2. VEGETATION GROWTH</b> Yes ( ) No ( ) Areal Extent: Type:	
<b>3. EROSION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>4. DISCHARGE STRUCTURE</b> Yes ( ) No ( ) Functioning: Yes No Condition:	
<b>FENCING</b>	
<b>FENCING DAMAGE</b> Yes ( ) No ( ) Description of damage:	
<b>PERIMETER ROADS</b>	
<b>ROAD DAMAGE</b> Yes ( ) No ( ) Description of damage:	
<b>SITE ACCESS</b>	
<b>ACCESS RESTRICTIONS</b> Yes ( ) No ( ) Description:	
<b>GENERAL</b>	
<b>1. VANDALISM</b> Yes ( ) No ( ) Description of damage:	
<b>2. CHANGED SITE CONDITION</b> Yes ( ) No ( ) Description:	
<b>3. LAND USE CHANGE</b> Yes ( ) No ( ) Description:	
<b>INTERVIEWS</b>	
<b>1. INTERVIEW ON-SITE WORKERS</b> Yes ( ) No ( ) Problems: Suggestions: Attach report:	
<b>2. INTERVIEW NEIGHBORS</b> Yes ( ) No ( ) Problems: Suggestions: Attach report:	
<b>3. INTERVIEW LOCAL OFFICIALS</b> Yes ( ) No ( ) Problems: Suggestions: Attach report:	

## POST CLOSURE MONITORING FORM (CONT)

<b>REVIEW DOCUMENTS</b>	
<b>1. GROUNDWATER MONITORING RECORDS</b> Abnormalities: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> )	
<b>2. GAS GENERATION RECORDS</b> Abnormalities: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> )	
<b>3. SETTLEMENT MONUMENT RECORDS</b> Abnormalities: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> )	
<b>4. OPERATION AND MAINTENANCE PLAN</b> Plan in Place? Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Plan is Being Followed? Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Plan is Adequate? Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Optimization is Being Considered? Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Systems with Optimization Potential? Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> )	

# **SECTION D:**

# **CORRESPOND- ENCE**

**INDEPENDENT  
CONSULTANT  
ASSOCIATED**



269 Bias Drive #B  
Fairbanks, Alaska 99712  
(907) 457-6767  
[bias@alaska.net](mailto:bias@alaska.net)

August 27, 2009

AJ Salkoski  
Environmental Program Coordinator  
Rural Alaska Community Action Program, Inc. (RurAL CAP)  
731 East 8th Avenue  
P.O. Box 200908  
Anchorage, Alaska 99520

**RE: LANDFILL UPGRADES PROGRESS REPORT  
RurAL CAP CODE NO. 26008-00-D-2110-371  
CLASS III MUNICIPAL SOLID WASTE LANDFILL (MSWLF)  
SECTIONS 11 AND 14, TOWNSHIP 4N, RANGE 23W FAIRBANKS MERIDIAN  
CITY OF TANANA, ALASKA; ADEC FILE NO. 780.15.001**

Dear Mr Salkoski:

On behalf of the City of Tanana, Independent Consultant Associated (ICA) is providing this Progress Report to the City of Tanana Landfill Upgrades. Please refer to the ICA July 7, 2009 Scope of Work (SOW) letter to RurAL CAP requesting the reallocation of \$20,652.00 in RurAL CAP funds; Code no. 26008-00-D-2110-371.

The July 2009 SOW letter described five specific areas of improvement to the landfill the City of Tanana would implement as part of the November 28, 2007 Alaska Department of Environmental Conservation (ADEC) Solid Waste (SW) Permit No. SW3A063-12. The improvements were also in preparation for accepting debris from the old hospital compound demolition, now expected to begin in September 2009.

ICA performed a landfill inspection on August 24, 2009 to document work completed at the landfill in fulfillment of the SOW. Attachment 1 provides the August 24, 2009 inspection report with an updated site sketch showing the areas as of the inspection and current site photographs.

Below summarizes the planned areas of improvement and the actual work completed for each.

**IMPROVEMENT 1: REORGANIZE & SEGREGATE SALVAGE AREA**

The salvage yard is the length of the east side fence when entering the landfill. The City had planned to remove and reclaim stored metal items for recycling, then clearly delineate onsite and offsite salvageable items by building fences in between the areas and placing the signs at the entrance to the fenced area. The City contacted the Yukon River Intertribal Watershed Council (ITWC) to ship and recycle the removed items.

The City was unable to work out an agreement with ITWC to ship and recycle the items. The salvage yard had to be cleared in preparation for the hospital demolition trucks entering and exiting the landfill. The City decided to excavate a cell adjacent to an existing cell and bury most of the salvage items. No hazardous waste was buried. The cell was then properly capped with soil.

The remainder of the salvage material i.e., metal, four wheelers and automobiles were organized and moved to the north east end of the landfill. Connex units holding materials such as used batteries, used oil, aluminum, and used paint were moved from the center of the landfill to the cleared east side. See the August 2009 Inspection Report. Fences segregating areas have not yet been constructed as all allocated money went to labor and heavy equipment.

**IMPROVEMENT 2: MOVE DISPOSED CONCRETE DUMP AREA TO NORTH END OF THE LANDFILL**

The concrete disposal “dump” located near the south side landfill fence was moved to the southeast corner of the landfill just outside the fence boundary, on City land. The City believed this location was better suited and allowed for future landscaping on the north side.

**IMPROVEMENT 3: CONSTRUCT BURN PIT FOR ONE TIME BURNING OF HOSPITAL DEMOLITION MATERIALS**

The City was informed in late July 2009 by the Tanana Tribal Council (TTC) the hospital demolition debris consisted of many materials containing lead. The materials have to be tested using the Environmental Protection Agency (EPA) Protocol for Toxic Characteristic Leach Procedure (TCLP) to determine if the demolition stream from each lead containing material can be disposed of in a municipal landfill.

According to USKH, TTC’s consultant, all lead impacted materials discovered through investigation practical to be removed (before demolition), will be removed by TTC’s subcontractor and shipped to Oregon. The remaining materials will be considered TCLP and disposed of in a permitted landfill facility (City of Tanana Landfill) in accordance with the Indian Health Services (IHS) Contract. Materials tied to a TCLP waste stream, that passed TCLP testing cannot be separated before disposal and must be buried. This information was confirmed by Linda Demientieff of ADEC.

Because of the above information, The City had to create a new cell capable of accepting up to 2,500 cubic yards of anticipated demolition volume for burial. The burn pit was scrapped and instead the City excavated a pit along the south side of the landfill approximately 240 feet long, 60 feet wide at the surface, and averaging 16 feet in depth. See the site sketch and photos in Attachment 1.



**INDEPENDENT  
CONSULTANT  
ASSOCIATED**



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Fairbanks, Alaska 99712  
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August 5, 2009

Dennis J. Morris  
Project Manager  
USKH, Inc.  
2515 A Street  
Anchorage, Alaska 99503

**RE: LANDFILL OPERATIONS & MAINTENANCE PLAN  
TANANA (HOSPITAL) ENVIRONMENTAL REMEDIATION &  
DEMOLITION PROJECT  
CLASS III MUNICIPAL SOLID WASTE LANDFILL (MSWLF)  
ADEC SOLID WASTE PERMIT NO. SW3A063-12  
CITY OF TANANA, ALASKA**

Dear Mr Morris:

On behalf of the City of Tanana (the City), Independent Consultant Associated (ICA) is providing the City's Operations & Maintenance (O&M) Plan for disposal of debris from the Tanana Environmental Remediation and Demolition Project. Additionally, within this O&M Plan are answers to your July 31, 2009 electronic mail, following the City's response to the Tanana Tribal Council (TTC) Request for Proposal (RFP No. 002).

As described in the June 29, 2009 RFP No. 002, the City is to provide heavy equipment and support, as well as landfill services to the TTC during demolition of Hospital Building #301, Central Electric Plant Building #303, Morgue Building #306, Warehouse Building #307/309, and Paint Storage Building. This Project is expected to generate approximately 1200-1500 cubic yards (cy) of waste and is scheduled from August 15, 2009 through October 1, 2009.

As per RFP No. 002, the waste streams will consist of wood, aluminum, gypsum, metal, paper buildings materials, general building furnishings, equipment, and non regulated asbestos containing materials (acm).

The City Project Superintendent responsible for overseeing the City's day to day operations throughout the project is Mr. Patrick Moore at (907) 366-7129 and [patrick\\_moore23@hotmail.com](mailto:patrick_moore23@hotmail.com). Questions and information needed after project commencement should be directed to Mr. Moore.

This O&M Plan describes the three main duties the City will be responsible for during the Project debris disposal.

**CITY OF TANANA DUTY 1:**

**DIRECT LANDFILL DISPOSAL**

The City will control all aspects of landfill disposal from the time the disposal truck enters the landfill gate until leaving.

There are no scale facilities; all waste will be recorded on a cubic yard basis with a flat fee of \$175 cy/load regardless of whether the debris contains non-regulated acm. Dump trucks provided by the City hold approximately 10 cy. Waste will be totaled on a cy basis using the number of trucks entering the landfill with a visibly full, well contained, load.

An attendant will be at or near the gate entrance directing dump trucks and recording loads using a daily load sheet. The City Attendant is responsible for:

1. Opening and closing the landfill;
2. Greeting the driver and recording the load;
3. Noting the condition of the truck and load;
4. Directing the driver to dump the load; and,
5. Properly filling, compacting, and covering the received load.

There will be no burning of debris.

Recording the load includes noting whether the load was properly contained and covered. Drivers will initially be issued a verbal notice if the load is not properly contained and covered. A second notice will be issued in writing. A third notice calls for the City Site Superintendent to stop hauling operations until the problem is corrected.

Hospital demolition waste will be received during the hours below:

Hours of landfill operation:           Nine (9) am to 6 pm Monday through Friday.  
Alternate/additional hours available upon request to  
the Site Superintendent.

**CITY OF TANANA DUTY 2:**

**LANDFILL/CLEAN BACKFILL ROUTE DUST  
CONTROL & FILL MATERIAL LOCATION**

The City is responsible for dust control on the landfill haul route and on the clean backfill route. This includes spraying the road throughout the day as needed to prevent a dust nuisance or hazard.

Contractor drivers will be required to take precautions to prevent the generation of dust along the haul route and to ensure their loads do not cause blowing of debris or gravel from the truck.

During dust control operations to the landfill, the City driver will be responsible for noting whether demolition debris has inadvertently blown from the Contractor's load. If

debris is discovered, the Site Superintendent will notify the Contractor Project Manager immediately to remove the blown debris.

Six inch minus backfill material will be available from the Doyon pit located approximately 2.1 miles east of the hospital. The fee will be \$15 per cy gravel fill, based on the Contractor hauling the material. There are no scales at the pit to give a cost on a per ton basis.

**CITY OF TANANA DUTY 3: ATTENDING WEEKLY MEETINGS BY THE  
TANANA TRIBAL COUNCIL**

City personnel, including the Site Superintendent will attend the expected weekly meetings for this project. Copies of Attendant load sheets will be provided for review.

The City expresses its commitment to working with all parties to make this demolition project successful; as such, any comments, concerns, or questions will be addressed. Please contact Bear Ketzler, City Manager at (907) 978-5848 ([beartanana@gci.net](mailto:beartanana@gci.net)); or myself at (907) 388-8671 ([bias@alaska.net](mailto:bias@alaska.net)).

Sincerely,

*Susan L. Vogt, CPESC  
Principal Consultant*

**INDEPENDENT  
CONSULTANT  
ASSOCIATED**



269 Bias Drive #B  
Fairbanks, Alaska 99712  
(907) 457-6767  
[bias@alaska.net](mailto:bias@alaska.net)

July 7, 2009

AJ Salkoski  
Environmental Program Coordinator  
Rural Alaska Community Action Program, Inc. (RurAL CAP)  
731 East 8th Avenue  
P.O. Box 200908  
Anchorage, Alaska 99520

**RE: LANDFILL UPGRADES FUNDING REALLOCATION SCOPE OF WORK  
RurAL CAP CODE NO. 26008-00-D-2110-371  
CLASS III MUNICIPAL SOLID WASTE LANDFILL (MSWLF)  
SECTIONS 11 AND 14, TOWNSHIP 4N, RANGE 23W FAIRBANKS MERIDIAN  
CITY OF TANANA, ALASKA; ADEC FILE NO. 780.15.001**

Dear Mr Salkoski:

On behalf of the City of Tanana, Independent Consultant Associated (ICA) is submitting this Scope of Work (SOW) for the remaining RurAL CAP funds of \$20,652.00; Code no. 26008-00-D-2110-371. The remaining funds will facilitate continued upgrades to The City of Tanana Landfill.

This SOW describes five specific areas of improvement to the landfill the City of Tanana will implement as part of the November 28, 2007 Alaska Department of Environmental Conservation (ADEC) Solid Waste (SW) Permit No. SW3A063-12. These improvements will also allow the City to accommodate debris from the old hospital compound demolition which is expected to begin in August 2009.

Attachment 1 provides a site drawing showing the areas of proposed improvement. Attachment 2 provides current site photographs from an ICA June 12, 2009 inspection. Provided separately are the permit application work plans and ADEC permit with modifications. Below are the planned areas of improvement and the estimated cost for each improvement.

**IMPROVEMENT 1: REORGANIZE & SEGREGATE SALVAGE AREA**

Currently, the salvage yard is the length of the east side fence as you enter the landfill. Although, signs have been added and much "recyclables" removed offsite, new items are added daily by users and the items are not always placed where directed by signs.

The City wants to remove and reclaim stored metal items for recycling, then clearly delineate onsite and offsite salvageable items by building fences in between the areas and placing the signs at the entrance to the fenced area. Fences would be constructed using local lumber such as black spruce poles or rough cut white spruce.

Estimated costs for this improvement include labor and heavy equipment to remove items for offsite recycling, segregate remaining items, and prepare removed items for shipping and disposal/recycle. The City has already contacted the Yukon River Intertribal Watershed Council to ship and recycle the removed items.

*Improvement 1 Estimated Cost* \$ 9,652

**IMPROVEMENT 2: MOVE DISPOSED CONCRETE DUMP AREA TO NORTH END OF THE LANDFILL**

The concrete disposal “dump” is located near the south side fence of the landfill, directly in the center of the east and west side fence. This area is considered future cell space for trash disposal. The City wants to haul the concrete to the northside of the landfill in an area that is already covered by a filled cell.

Costs include labor and heavy equipment to move concrete debris.

*Improvement 2 Estimated Cost* \$ 1,500

**IMPROVEMENT 3: CONSTRUCT BURN PIT FOR ONE TIME BURNING OF HOSPITAL DEMOLITION MATERIALS**

The old City hospital demolition is scheduled to begin in August 2009. Stipulation 2 of the landfill permit approves burning of non hazardous demolition materials made of wood. The City has selected a burn pit area at the landfill located near the southwest entrance to the landfill.

To construct the pit, the city needs to clean or cover the area of trash imbedded in the soil, and construct a berm surrounding the pit, away from the working face. The berm would be made of clean fill. Clean soil would be hauled from the stockpiles located at the former City jail. This soil was removed from the boat landing as part of 2009 flood cleanup.

Costs include labor and heavy equipment for initial covering and grading of the area, then loading, hauling, and dumping stockpiles into a berm.

*Improvement 3 Estimated Cost* \$ 2,500

**IMPROVEMENT 4: LANDSCAPE AREAS OF LANDFILL THAT CONTAIN FILLED CELLS.**

As required in the landfill permit, closed cells must be covered with a minimum amount of soil cover, landscaped and then restricted to users so the landscaped areas can establish. Refer to Part 11 Landfill Closure Plan and Estimates of the landfill permit application for landscaping details.

The majority of the north side of the landfill has filled cells that are ready for final closure and landscaping. Final closure would greatly reduce the amount of residual partially imbedded trash that becomes airborne.

Soil cover for the closed cells would come from existing soil stockpiles located around the landfill and from the flood cleanup stockpiles at the former jail. Topsoil, seed, fertilizer, and security fencing would have to be purchased.

Costs include labor and heavy equipment for loading, hauling, dumping and grading soil, labor for landscaping and final grading as well as purchased materials described above. Costs also include shipping and handling those materials.

*Improvement 4 Estimated Cost* *\$ 4,500*

**IMPROVEMENT 5: COMPLETE LANDFILL INSPECTION POST  
IMPROVEMENTS AND UPDATE THE LANDFILL  
AUTOCAD DRAWING TO REFLECT CURRENT  
CONDITIONS.**

Refer to Figure 2 in Attachment 1 of the June 29, 2007 Application Addendum provided separately. Figure 2, partially copied in Attachment 1 of this letter is outdated and does not reflect the location of the cells, roads or portable recyclable storage units that have since been added. After Improvements 1 through 4 are completed, ICA will return to the landfill, complete an inspection and update the AutoCAD drawing to reflect the most current conditions and future improvements.

Costs include the inspection, drawing updates, and travel expenses.

*Improvement 5 Estimated Cost* *\$ 2,500*

The estimated cost for all five improvements is totaled at \$ 20,652.00, effectively utilizing the remainder of the grant funding. Please call me at (907) 388-8671 with questions or if you need additional information. Thank you.

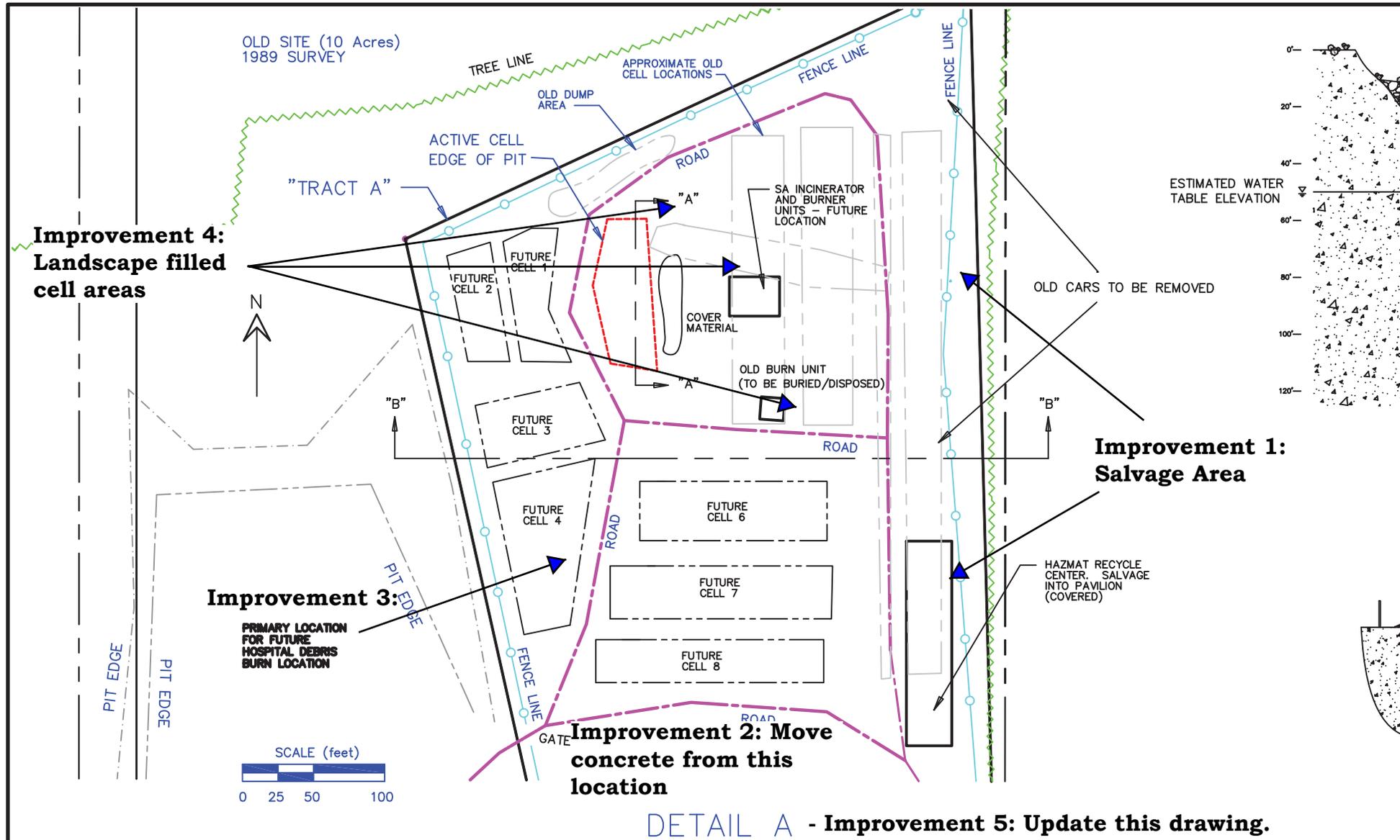
Sincerely,

*Susan L. Vogt, CPESC  
Principal Consultant*

***ATTACHMENT 1***

***SITE DRAWING***

# City of Tanana Landfill Proposed Improvements Summer/Fall 2009



Source: Figure 2 Details City of Tanana MSWLP Addendum June 2007.

***ATTACHMENT 2***

***JUNE 12, 2009 SITE INSPECTION  
PHOTOS***



Photo 1: Looking north at the old car salvage area on the east side of the landfill. These vehicles will be removed and recycled offsite as part of Improvement 1. Soil stockpiled in the picture's far left will be used for landscaping Improvement 4.



Photo 2: Looking west at the area where The City wants to build the burn pit. This area will be covered with fresh fill and soil berms added where needed. A burn cage may be constructed in the center to facilitate burning.



Photo 3: Looking southwest at concrete disposal area of the landfill. Improvement 2 would move this concrete to the north end of the landfill where cells were already filled. Improvement 5 would denote changes to the landfill since 2007 such as removal of the road (now where burn unit and active cell are shown).



Photo 4: Looking east at one of the new salvage area signs. Under Improvement 1, this area along the entire east side fence would be cleaned, reorganized and segregated.

## Susan L. Vogt

---

**From:** Demientieff, Linda W (DEC) [linda.demientieff@alaska.gov]  
**Sent:** Tuesday, July 07, 2009 2:34 PM  
**To:** Susan L. Vogt  
**Subject:** RE: Tanana Class III Permit No. SW3A063-12, ADEC File Number: 780.15.001

Also just one more thing? Please make sure that the wood is clean and the burning does not include asbestos or lead base paint. I just want to make sure I'm clear on this. Thanks.

---

**From:** Susan L. Vogt [mailto:bias@alaska.net]  
**Sent:** Tuesday, July 07, 2009 10:23 AM  
**To:** Demientieff, Linda W (DEC)  
**Subject:** RE: Tanana Class III Permit No. SW3A063-12, ADEC File Number: 780.15.001

Hi Linda,

I guess I should have read more closely the permit I have in my possession! The tribe owns the land west of the landfill, not the City so I am not sure if that is the reason. We are still working out the details of the whole project, so will let you know.

Thanks

Susan

*Susan L. Vogt, CPESC  
Principal Consultant  
Independent Consultant Associated  
269 Bias Drive #B  
Fairbanks, Alaska 99712  
(907) 388-8671  
[bias@alaska.net](mailto:bias@alaska.net)*

---

**From:** Demientieff, Linda W (DEC) [mailto:linda.demientieff@alaska.gov]  
**Sent:** Tuesday, July 07, 2009 10:04 AM  
**To:** Susan L. Vogt  
**Subject:** RE: Tanana Class III Permit No. SW3A063-12, ADEC File Number: 780.15.001

Good morning Susan, I'm sending you a copy of the permit we issued to Tanana. Look under "Stipulations" 2<sup>nd</sup> paragraph. That will allow a burn to take place within the landfill boundaries. Just a reminder to make sure that there is someone in attendance at all times during a burn. Also that the burn occurs away from the working face because municipal waste should not be burned with the C&D waste. Also, I was just wondering, wouldn't that deep excavated area adjacent to the landfill be a better place to burn. I was just thinking that it was excavated below grade and would make an excellent place to burn. Let me know if you have further questions.

---

**From:** Susan L. Vogt [mailto:bias@alaska.net]  
**Sent:** Monday, July 06, 2009 2:49 PM  
**To:** Demientieff, Linda W (DEC)  
**Subject:** RE: Tanana Class III Permit No. SW3A063-12, ADEC File Number: 780.15.001

Hi Linda,

The City of Tanana hospital demolition project is beginning to gear up. Bear told me you will be allowing one time burning to take place inside the landfill of non hazardous wooden construction debris. Can you confirm please?

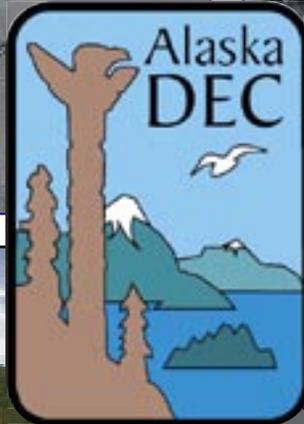
Thanks,

**SECTION E:**

**ADEC SOLID  
WASTE  
PROCEDURES  
MANUAL**

# Solid Waste Procedures Manual

for Municipal Class III  
Solid Waste Landfills



February 2006

It is the policy of the State to conserve, improve and protect its natural resources and environment. To control water, land and air pollution in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well being.

Alaska Department of Environmental Conservation Mission



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# “We are committed to protecting public health and the environment through ensuring effective solid waste management.”

Kim Stricklan, P.E. DEC Solid Waste Program Manager

Solid waste management in rural Alaska communities can be challenging. With limited resources, many landfills are not operated in a way that is protective of human health or the environment. The purpose of this manual is to provide tools and information that will allow communities to more safely and effectively operate their landfills. This manual includes a list of Best Management Practices, or BMPs, to assist landfill owners and operators.

These BMPs were developed to make it easy for small, rural landfills throughout Alaska to be operated within the laws of the state. The Alaska Department of Environmental Conservation (ADEC) suggests that the owner and/or operator also read and retain a copy of Title 18, Chapter 60, of the Alaska Administrative Code (18 AAC 60). Following the practices listed in this manual will enable the facility to operate safely and will result in a landfill that minimizes negative impacts on community residents and the environment.

Throughout the manual, this list of BMPs is organized in a way that guidelines are located at the beginning of each section for easy reference. The guidelines are followed by paragraphs containing more information about each bulleted BMP. Because local conditions vary for each landfill in Alaska, the BMPs in this document are general. Landfill owners and/or operators can get more information or have questions answered about site-specific conditions or practices by contacting any ADEC Solid Waste office. Contact information for each office is included in Section 1.6.

For some Class III landfills, it may not be possible to apply all of the operational BMPs at one time. In such cases, the owner/operator should prioritize the BMPs based on which ones will have the most immediate impact at the landfill and then apply as many of the highest priority BMPs as possible. Over time, additional BMPs should be applied as resources and experience allow. The point goal is to do what you can when you can to minimize the risks to your community.



Excluded from this map are:

- Metlakatla Reservation
- Abandoned or Seasonal Villages and Stations
- All Permitted Class I & II Landfills
- Transfer Stations

### Class III Sized Villages and Permits Tons per Day Based on 7 lbs./person/day

#### Population (tons/day): Villages in Category

- 2 - 100 (0 to 0.5 tons): 67 Villages
- 101 - 200 (0.5 to 1 tons): 43 Villages
- 201 - 300 (1 to 1.5 tons): 25 Villages
- 301 - 400 (1.5 to 2 tons): 20 Villages
- 401 - 500 (2 to 2.5 tons): 11 Villages
- 501 - 600 (2.5 to 3 tons): 14 Villages
- 601 - 700 (3 to 3.5 tons): 8 Villages
- 701 - 800 (3.5 to 4 tons): 10 Villages
- 801 - 900 (4 to 4.5 tons): 6 Villages
- 901 - 1000 (4.5 to 5 tons): 1 Villages
- 1001 - 4000 (5 to 20 tons): 5 Villages

- Major State Roadways
- Major Rivers



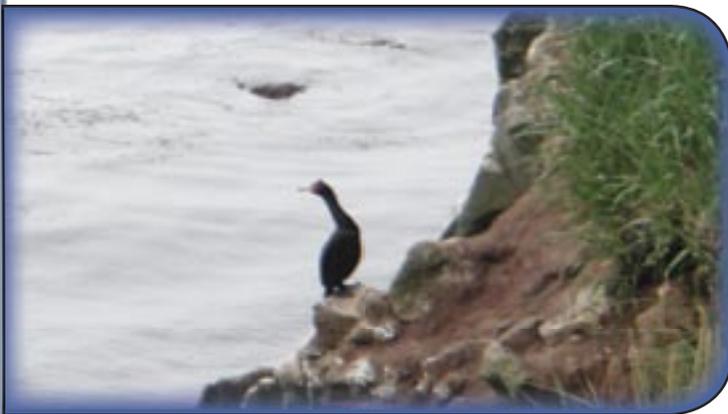
The places on this map represent villages with Class III permits or with unpermitted dumps

There are 211 towns and villages which represent 62,813 people as of the 2000 Census

The mean population for this group is 298

## *Acronyms and Abbreviations*

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
BLM	Bureau of Land Management
BMP	Best Management Practice
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
IGAP	Indian General Assistance Program
MSW	Municipal Solid Waste
MSWLF	Municipal Solid Waste Landfill
Non-RACM	Non-Regulated Asbestos Containing Material
RACM	Regulated Asbestos Containing Material
USACE	United States Army Corps of Engineers



**18 AAC 60** – Alaska’s Solid waste management regulations.

**Anadromous fish** – A type of fish that spends its adult life at sea but returns to the upper reaches of a river to spawn (e.g. salmon).

**Area-fill Landfill** – A landfill in which municipal solid waste is disposed at or above ground level.

**Class III Landfill** – A municipal solid waste landfill that accepts, for disposal, less than 5 tons of municipal solid waste per day, or less than 1 ton per day of ash from incinerated municipal waste.

**Competent Bedrock** – Solid rock underlying soil, sand, clay, gravel, and loose material on the earth’s surface.

**Disease Vector** - An organism that carries disease-causing microorganisms from one organism to another, and can include insects, rodents and other small mammals, birds and vermin.

**Fish Processing Waste** - Skin, shells, bone and entrails that are produced during commercial fish processing activities. Fish processing waste does not include such materials produced by community members when cleaning individual or subsistence fish and shellfish harvest.

**Impaired Water Body** - A water body too polluted to support its designated or existing uses under the Clean Water Act.

**Industrial waste** - Waste produced directly by major manufacturing and resource development industrial activities, such as oil and gas industry drilling waste, timber industry wood waste, tailings and similar waste from the mining industry.

**Leachate** – A solution of water and dissolved or suspended particles of waste matter that is created within the waste. It is created when water flows through waste, or otherwise comes into contact with the waste.

**Pathogen** – A microorganism, such as a bacterium or fungus, that has the capacity to cause disease under normal conditions.

**Trench-and-fill Landfill** – a landfill in which municipal solid waste is placed in a trench, dug with equipment, and buried.

**White Goods** - Household-sized appliances such as refrigerators, stoves, dehumidifiers, air conditioners and washing machines.

**Working Face** – The active part of the landfill where solid waste is placed for disposal. It is the physical location within the landfill boundary where day-to-day operations occur.



### **1.0 Best Management Practices for Class III Landfills**

#### **1.1 Introduction**

The owner or operator of a Class III Municipal Solid Waste Landfill (MSWLF) should operate the landfill according to the Best Management Practices (BMPs) listed in this section. These BMPs address locating or siting new landfills, design requirement for new landfills, how to safely operate a new or existing landfill, and how to properly close a landfill after its useful life.



### 1.2 Locating/Siting New Landfills

- i. The landfill must be more than 500 feet from a drinking water well head or more than 200 feet from a surface drinking water source.
- ii. The landfill should not be placed in a tidal area, wetland, or surface water body.
- iii. The landfill should be located at least 1,000 feet from a river or the ocean, if possible.
- iv. The landfill should be more than 5,000 feet from an airport unless a waiver is obtained from the Federal Aviation Administration (FAA).
- v. The landfill should be more than 500 feet from residential areas, schools, and day care centers and located downwind of the community based on the prevailing wind direction.
- vi. The landowner must give permission to construct and operate the landfill on his/her land.



## 1.2 Locating/Siting New Landfills

### Drinking Water



**i. Distance between the landfill and a drinking water source** is necessary to reduce the chance of contaminating the drinking water. There are many things in municipal solid waste landfills that can contaminate drinking water. The greater the distance between the landfill and a drinking water source, the less chance there is for contamination to occur. This is especially important in places where the groundwater is close to the ground surface.



### Wetlands

**ii. Landfills can be a hazard to wetlands and waterbodies.**

When solid waste comes into contact with water, leachate is created. Leachate is a mixture of water and dissolved or suspended particles of waste matter. Leachate is created within the waste and can contain several hazardous chemicals or contaminants. Please note that water in a landfill that does not come into contact with waste is not leachate. When leachate enters a water body, it poses a risk to aquatic life in the water body. For this reason it is important that landfills are located away from wetlands, tidal areas, or surface waterbodies. Special effort should be made to prevent the formation of leachate in the landfill.

### Birds vs. Airplane

Birds are a serious hazard to aviation. A bird or a flock of birds that suddenly rises from a runway or nearby landfill may collide with incoming or departing aircraft and cause the aircraft to crash, possibly resulting in the loss of human life. Bird collision with aircraft is commonly known as “bird strike.” Damage caused to aircraft usually results from collision of one or more birds with the engines and/or fuselage. Although most bird strikes do not result in crashes, they do involve expensive structural and mechanical damage to aircraft. The incidence of this situation in Alaska makes bird strike a serious problem for Bush communities.



## 1.2 Locating/Siting New Landfills



**Erosion**



iii. **Landfills located close to the ocean**, or on the bend of a river, can be subject to coastal or riverbank erosion, which has the potential to wash the solid waste from the landfill and into the ocean or river. Therefore, it is important to locate landfills as far as possible from erosional areas.



**Airport Location**



iv. **Airports** Regulations require that the landfill owner/operator must notify the FAA if a landfill will be located less than 5,000 feet from an airport. You must notify FAA because birds are attracted to exposed waste and when birds are close to an airport they can become a safety hazard to airplanes. FAA must be aware of nearby landfills so they can determine whether the landfill will affect air traffic into and out of your community.

## 1.2 Locating/Siting New Landfills



**v. Landfills have the potential to generate dust, odor and windblown litter,** For the safety and welfare of the community's residents a landfill should be placed more than 500 feet from any residential area, day care center, or school. As a general rule, the farther the landfill is from the community, the better. This will help to reduce the number of complaints about odor, dust, litter, etc. from the community residents.

**vi. If the landfill operator does not own the land** on which the landfill is or will be located, they must get written permission from the landowner to build and operate the landfill on that property. The landowner must be made aware that the landfill will become a permanent part of the legal description of the property. ADEC cannot authorize a landfill if the landowner has not consented to using the land for the landfill.



### Waste Generation Rates



*7 lbs. per person per day*

### 1.3 Designing New Landfills

- i. The landfill should have a maximum area of 5 acres and a minimum 20-year capacity.
- ii. The landfill should conform to the area's topography & landscape.
- iii. Slopes should be graded to prevent erosion.
- iv. The landfill should not be visible from roadway.
- v. Trenches, culverts, berms and grading should be used to prevent water from flowing through the waste or ponding on the site.
- vi. Place signs at the facility telling people: 1) where waste disposal is allowed; 2) what items are prohibited; 3) that open burning on the ground is prohibited; and 4) how to contact the landfill operator.
- vii. If the community does not have a domestic wastewater system, a separate area should be designated for disposal of honey buckets and septage that is away from the solid waste disposal area.
- viii. Wild animals are attracted to landfills. Fences and landfill cover should be implemented to reduce this nuisance.



## 1.3 Designing New Landfills



i. - The **5-acre landfill size** limit is specified as it will prevent a community from becoming overwhelmed by an overly-large landfill, but will provide a landfill that is able to accommodate waste generated in the community for at least 20 years. Approximately 2 acres are needed to accommodate the solid waste generated in a community of 350 people for 20 years.

### **Waste Generation Calculation**

*Rural Example:*

Assumed waste generation rate:  
- 7 lbs. per person per day

$7 \text{ lbs./day} \times 365 \text{ days/year} \times 100 \text{ people} =$   
**255,500 lbs./year**

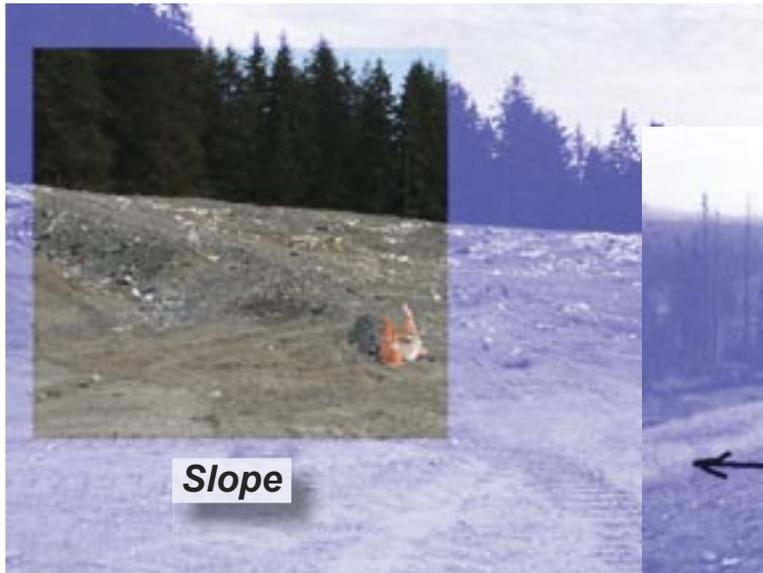
$255,500 \text{ lbs.} \times 1 \text{ ton}/2000 \text{ lbs. waste}$   
 $= 127.75 \text{ tons}$

*A community of 100 people generates approximately **127.75 tons per year of garbage.***



ii. - **The landfill should be designed with the lay of the land in mind.** The design should use the slopes, contours, depth of permafrost, etc. to create a layout that will not restrict year round access or hinder operation and maintenance of the landfill.

## 1.3 Designing New Landfills



iii. - All **sloped areas should be designed to prevent erosion** and to allow for the free flow of water away from the landfill. Slopes may also be used to prevent ponding on the landfill and prevent water from flowing through the municipal solid waste. Trenches, culverts, and berms may be required to keep water out of the waste. Berms can be made of haybales, soil, or other suitable material. See Section 1.4 below for information about water in the landfill.



iv. - If possible, we recommend that the **landfill is not visible from the roadway**. Distance between the landfill and road, along with trees, vegetation, fencing or other barriers, will decrease public exposure to nuisances such as dust, noise, and odor and also minimizes unauthorized traffic entering the landfill.

## 1.3 Designing New Landfills



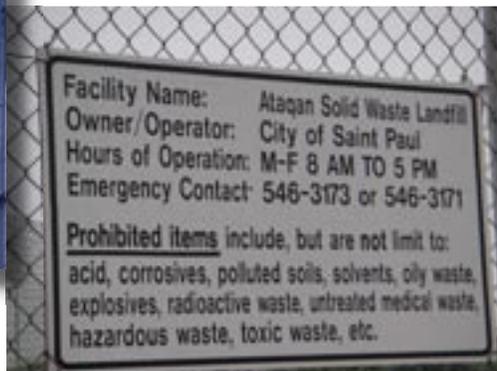
**Berms**

v. - **Trenches, Culverts and Berms** are effective ways to prevent water from entering the landfill. The best way to prevent the formation of leachate is to prevent as much water as possible from coming into contact with the waste or from entering the landfill. This can be achieved by:

1. Diverting surface water or storm water around the landfill through the use of ditches, trenches, or pipes.
2. Building the landfill slightly higher at one end so storm water runs off;
3. Clearing snow out of the landfill before it melts; and
4. Burying waste above the groundwater table and not putting waste into surface water.



**Signs**



vi. - **Post Signs** at the facility that let landfill users know how to contact the person that is managing the landfill, where the municipal solid waste should be placed, what items are prohibited from the landfill, and that open burning on the ground is not allowed at the landfill. Items that your community may want to prohibit include hazardous waste, liquids, and vehicle batteries. Polluted soil and drums containing liquids are prohibited at Class III landfills by regulation. Recreational activities such as target shooting should also be

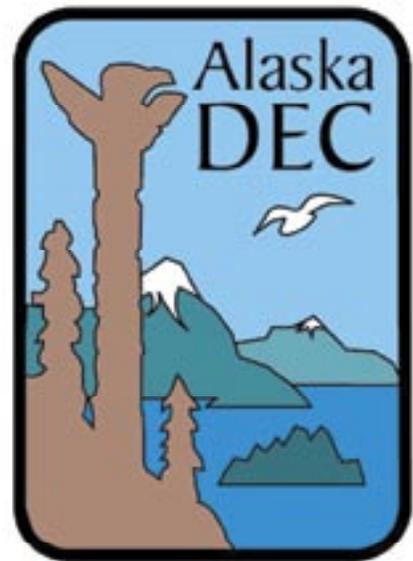
## 1.3 Designing New Landfills



**Honeybucket Lagoon**



vii. - If possible, a **separate disposal area should be created at the landfill for septage** and/or honey bucket waste. This will make it easier to cover the septage or honey bucket waste without having to cover the entire active part of the landfill. It will also reduce the possibility of exposure to potential disease from contact with exposed septage (see Section 1.4 for more information).



### Class III Landfill Entrance Sign

Kenai Peninsula Borough  
**Port Graham Landfill**

**Disposal of the Following is Prohibited:**

Hazardous Waste - Oil-Solvents - Batteries - Pesticides  
Liquid Waste - Seafood Processing Waste- Paint  
Infectious Waste - Septage/Sewage - Explosives  
No Burning or Hot Ashes

**Follow all Signs**

**Place Waste in Appropriate Disposal Location  
(Burn Box, Dumpsters, Operating Trench or  
Inert Waste Stockpile)**

Thank you for observing site rules  
Emergency Phone: XXX-XXXX

ADEC Permit Number: 000-BA000



### 1.3 Designing New Landfills



#### **Disease Vectors**



viii. - **Wild Animals** are not only a nuisance in the landfill, but can track disease into your community. Landfills have the potential to attract wild animals and insects, which could become disease vectors. A fence around the landfill and regularly covering the municipal solid waste will greatly reduce the number of animals in the landfill.



## **1.4 Operating guidelines for Class III Landfills**

prohibited at the landfill.

### **1.4 Operating guidelines for Class III Landfills**

- i. Use a “trench and fill” technique where possible. Area fill landfills should be used only where conditions do not allow disposal of waste below the natural ground surface.**
- ii. Restrict burning to burn barrels, burn boxes, or incinerators. Burning must not be conducted when the Bureau of Land Management (BLM), Alaska Fire Service fire danger outlook is high or extreme.**
- iii. Keep prohibited items out of the landfill (regulated hazardous waste, drums with liquid, industrial waste).**
- iv. Keep water out of the landfill to prevent leachate. Use grading, berms, or ditches to direct run-on and run-off water away from the landfill and to keep water away from the disposed waste.**
- v. Compact the working face as often as possible to keep it as small as practical, and cover the waste as necessary to control litter, disease vectors such as insects, animal attraction, and to protect human health and the environment.**
- vi. Stockpile cover material, if available, near the working face.**
- vii. Dust disposed animal carcasses with lime and cover immediately.**
- viii. Dispose of honey bucket waste and septage in a separate trench away from the solid waste disposal area. Add lime to the honey bucket waste or septage. Cover with at least two feet of soil when the trench is nearly full.**
- ix. Gather scattered and windblown litter and place it in the working face at least once in the spring and once in the fall.**
- x. Inspect the landfill on a monthly basis. The owner or operator should do the inspection.**
- xi. Record the location of the individual cells or trenches as they are filled with wastes and covered, and keep a record of the location in the file.**
- xii. Do not accept demolition wastes from large construction/demolition projects, such as school or utility construction or renovation projects at the landfill.**

## 1.4 Operating guidelines for Class III Landfills



### Trench & Fill



i. – Wherever it is possible, **ADEC recommends using the trench and fill technique** at small landfills because the method generates cover material and allows waste to be covered more frequently. However, the trench and fill system requires digging equipment (a Bobcat or small excavator) that might not be available in some communities. At a trench and fill landfill, trenches are dug several feet deep and many feet long. The depth of the trench will depend on what type of heavy equipment is available in the community and the depth to groundwater. Waste is then placed directly into the trench and periodically compacted and covered as the trench is filled. When the trench is almost full, the remaining soil excavated from the trench is used as final cover for the trench. A new trench is then dug and the process is repeated. Do not use the trench and fill technique if permafrost or groundwater is encountered. If a trench and fill system is not possible, an area fill system can be used.

In an **area fill landfill**, waste is placed above ground in a specific part of the landfill and covered with soil or other suitable material when necessary. This results in a landfill that is slightly higher in elevation than the ground it is built on. One way to build an area fill landfill is to build a berm at one end of the landfill and then compact the waste against the berm as it is put in the landfill until the top surface is slightly below the top of the berm (see Figure 1) and then cover the municipal solid waste with at least 24 inches of soil. The final surface should be slightly higher than the level of the adjacent berm when the waste is covered.

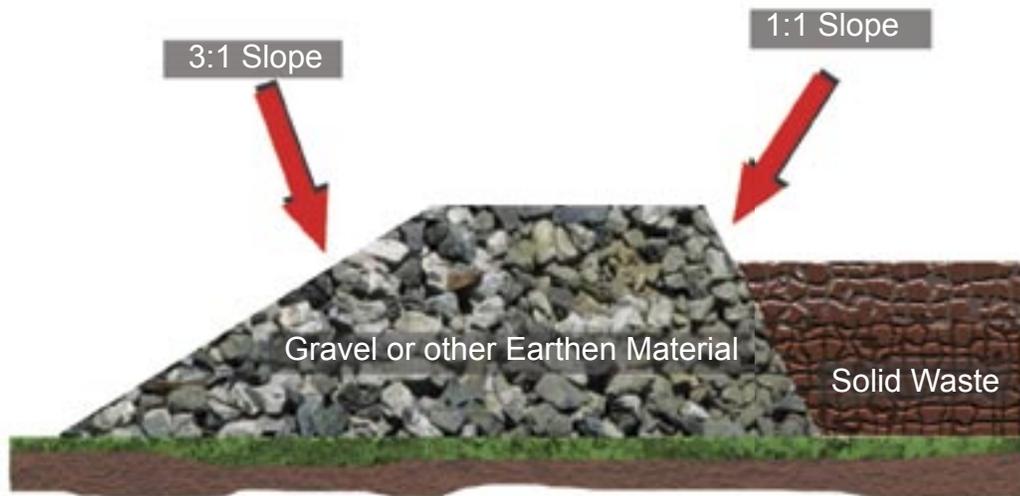


Figure 1 - Landfill Berm Design.

## 1.4 Operating guidelines for Class III Landfills



**Burn Boxes**



ii. - **Burning municipal solid waste** prior to disposal greatly reduces the volume of waste that needs to be landfilled and extends the useful life of the landfill. It also reduces animal attraction, odor, and the potential to create leachate. Uncontrolled and uncontained open burning on the ground, however, is greatly discouraged at all landfills because it can endanger the community and environment. Open burning of municipal solid waste on the ground, especially rubber and plastics, creates toxic smoke that is both a health hazard and a nuisance. **ANY BURNING AT A LANDFILL MUST BE CONTAINED AND CONTROLLED.** Burning should be restricted to burn barrels, burn boxes or other containers designed for that purpose and must be observed and monitored by an attendant. The burn box or container should be located in an area of the facility where waste has not been deposited and a 50-foot perimeter must be cleared to the mineral soil completely around the burning container. Many large wildfires in Alaska have been started by uncontrolled burning of municipal solid waste at small landfills and the 50-foot cleared area will protect against this. A guidance document and fact sheet with more information related to burning at landfills are available online at the ADEC Solid Waste Program website or by calling an ADEC Solid Waste Program office. Burning may only be conducted at landfills if the Fire Danger Outlook is not high or extreme. The Fire Danger Outlook can be found at <http://firewx.arh.noaa.gov>.



**Prohibited Items**

iii. - In addition to **hazardous wastes** and bulk liquids that are prohibited by the solid waste regulations, the owner/operator of a landfill can prohibit the disposal of specific wastes in the landfill. Items that are commonly prohibited include lead-acid batteries, used motor oil, and used anti-freeze. Collection areas should be provided for any prohibited wastes so that these wastes can be shipped to appropriate disposal or recycling facilities. Signs should be placed at the entrance to the landfill to direct people to the collection sites. Information regarding resources that are available for transporting these wastes out of your community can be obtained through your local IGAP worker or by contacting the EPA .

## 1.4 Operating guidelines for Class III Landfills



**Leachate**



iv. - **Water that mixes with waste can form leachate** that poses a risk to public health and the environment. Leachate is a mixture of water and dissolved or suspended particles of waste matter that is created within the waste. Leachate can be toxic, contaminating drinking water sources or large bodies of water, and can become a breeding ground for insects and bacteria that can lead to disease. Water can come into contact with waste in several ways, including:

1. locating a landfill on melting permafrost;
2. locating a landfill too close to or in surface water;
3. not removing snow from the landfill before the spring melt;
4. not providing drainage features to allow water to leave the landfill;
5. not covering waste so that precipitation falls directly on exposed waste; and
6. burying waste in contact with groundwater.

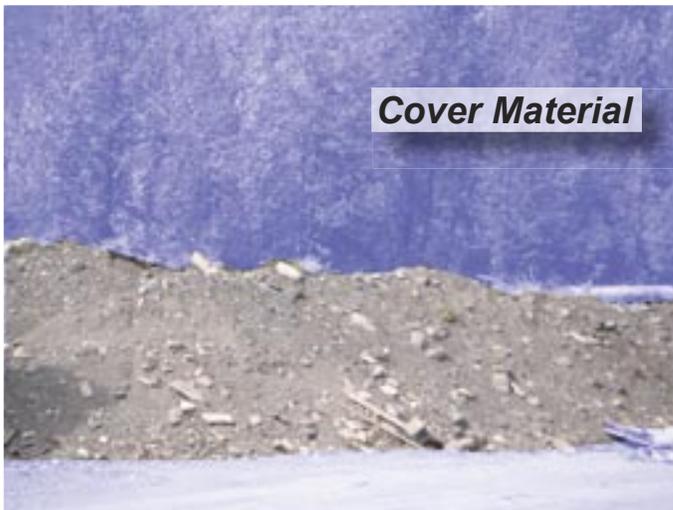
The best way to prevent the formation of leachate is to prevent as much water as possible from coming into contact with the waste or from entering the landfill. This can be achieved by:

1. diverting surface water or storm water around the landfill through the use of ditches, trenches, or pipes;
2. building the landfill slightly higher at one end so storm water runs off;
3. clearing snow out of the landfill before it melts; and
4. burying waste above the groundwater table and not putting waste into surface water.

## 1.4 Operating guidelines for Class III Landfills



v. - **Covering of waste** shall occur as often as possible. This would also be a good time to pick up litter around the landfill and place it in the working face before covering the waste. If possible, the waste should be compacted using a bulldozer before it is covered. Compacting can be achieved by driving over the waste 4 to 5 times with a bulldozer or other heavy equipment. Compacting greatly increases the amount of municipal solid waste that can be placed in a landfill, but it might not be possible at all landfills due to a lack of proper equipment or site conditions. However, compacting may not be necessary at landfills where the municipal solid waste is burned.



vi. – Native soil makes the best **landfill cover** for small landfills. Other materials such as gravel or tarps may also be used as cover if it is not practical to use soil. When the landfill operator is covering and compacting the waste, ADEC recommends stockpiling soil for the next time the waste needs to be covered. Compacting and covering the waste allows a community to keep their landfill under control, it limits the amount of exposed municipal solid waste, and should be done as often as possible.

### *Roles and Responsibilities of the Landfill Operator*

- Collection
- Waste Screening
- Operations & Maintenance
- Controlling Burning
- Permitting/Compliance
- Operator Safety
- Public Safety
- Equipment Maintenance
- Seasonal Planning and Preparation
- Recordkeeping

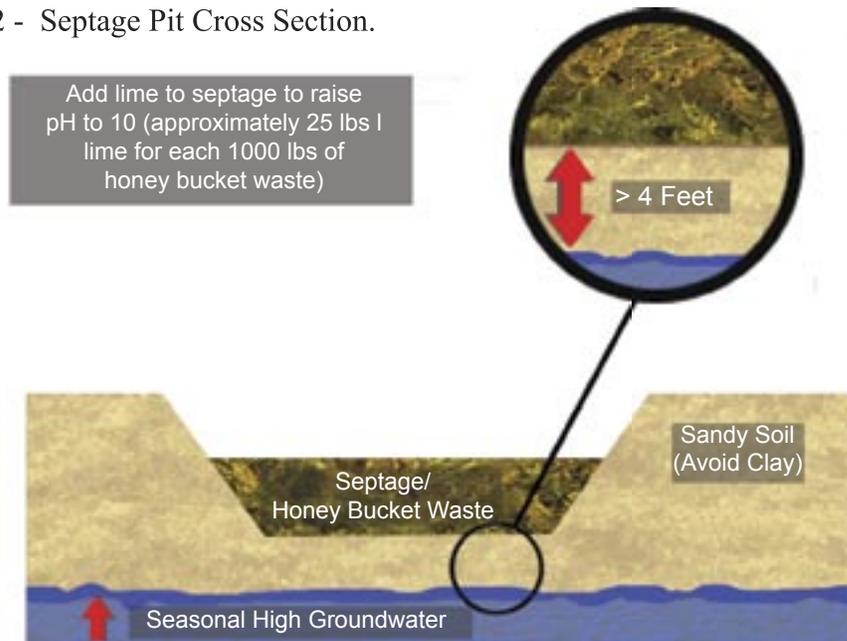


## 1.4 Operating guidelines for Class III Landfills



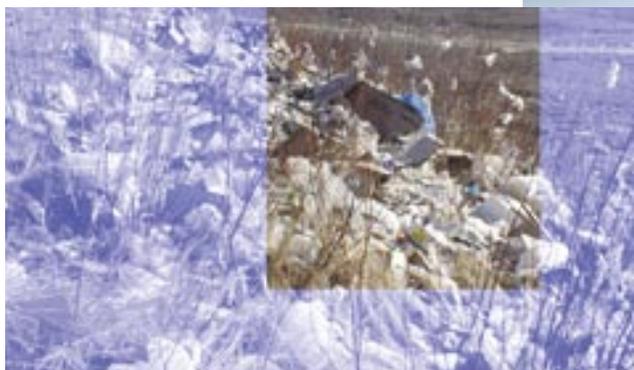
vii. - It is a good practice to take proper care of **dead animals**. Animal carcasses should be dusted with lime and buried with at least 6 inches of soil within 24 hours. This practice will prevent insect infestation, reduce odor, and should decrease the attraction of wildlife to the landfill.

Figure 2 - Septage Pit Cross Section.



viii. - **Honey buckets and septage** must not be disposed of along with the municipal solid waste. Dispose of honey buckets and septage in a separate area of the facility and, if possible, in a trench. Ideally, the trench should be dug in sandy soil, so the liquids put into the trench will percolate into the soil. There should not be any significant ponding in the trench. Remember, any exposed honey bucket waste or septage has a great potential to attract disease vectors that affect the health of the community residents. Lime should be added to the honey bucket waste at the rate of approximately 25 pounds of lime for every 1,000 pounds of honey bucket waste.

## 1.4 Operating guidelines for Class III Landfills



**Windblown Litter**



ix. – **Windblown litter** from the landfill should be picked up at least once in the spring and once in the fall, and will need to be done much more frequently in windy areas. Although landfill staff can normally handle this duty, additional help may be needed after severe wind storms. Additional litter control strategies are possible and ADEC Solid Waste Program staff can help you determine your options based on the resources available at your landfill.



**Annual Inspection**

x. - The **landfill should be inspected** once a month. The operator/manager will check for evidence of open burning on the ground, disposal of prohibited wastes, ponded water, water in the waste, wastes placed in the wrong area, or other violations of the Best Management Practices (BMPs). The operator/manager should also make a note of damaged areas that need to be repaired. Keeping complete inspection records and other records is a good practice for all landfills. A sample inspection form is included in the appendix of this manual.

### *Types of Solid Waste*

#### **General Waste**

- Household refuse
- Commercial refuse
- Construction/demolition
- Ash from burning

#### **Special Wastes**

- Refrigerators
- Scrap metal
- Animal & Seafood
- Junk vehicles
- Lead-acid batteries
- Tires
- Sewage solids
- Used oil
- Medical waste
- Asbestos

## 1.4 Operating guidelines for Class III Landfills

### Closed Out Cells



xii. – As the individual trenches or cells are filled with waste and closed out, the operator/manager should keep track of the **location of these trenches or cells on a site map**. Those locations become a part of the land records as a way to inform future land users. Waste location records also help keep the community aware of how much space they have left in the landfill and prevent excavating into old trenches.



xii. – ADEC recommends prohibiting wastes from **large construction/demolition projects (C & D Debris)** to avoid using up a large amount of landfill space for a one-time project. The owner or operator is ultimately responsible for the waste in the landfill, they have the right to reject any type of waste. The company that is doing the construction or demolition project can either get authorization from the ADEC to develop a separate, one-time use landfill for the construction/demolition waste or can transport the waste to an authorized landfill that can accept the waste. Note that landowner permission is required to develop the one-time use landfill.

### 1.5 Closing a Landfill

- i. Collect litter and place it in the working face.
- ii. Cover the total area of the landfill with 24 inches of final cover material.
- iii. Grade the site to encourage storm water run-off.
- iv. Spread seed and fertilizer over the entire area or install a protective cover that will prevent erosion.
- v. Notify ADEC that the landfill is closed.
- vi. Survey the location of the landfill and record this with the State Recorder's Office.
- vii. Inspect the closed landfill annually for signs of erosion, exposed waste, and water ponding for five years after closure.



## 1.5 Closing a Landfill



i. – The first step when permanently closing a landfill is to **pick up all scattered litter** in the area and place it in the working face. All uncovered waste in the landfill should be consolidated in one place and, if possible, compacted.

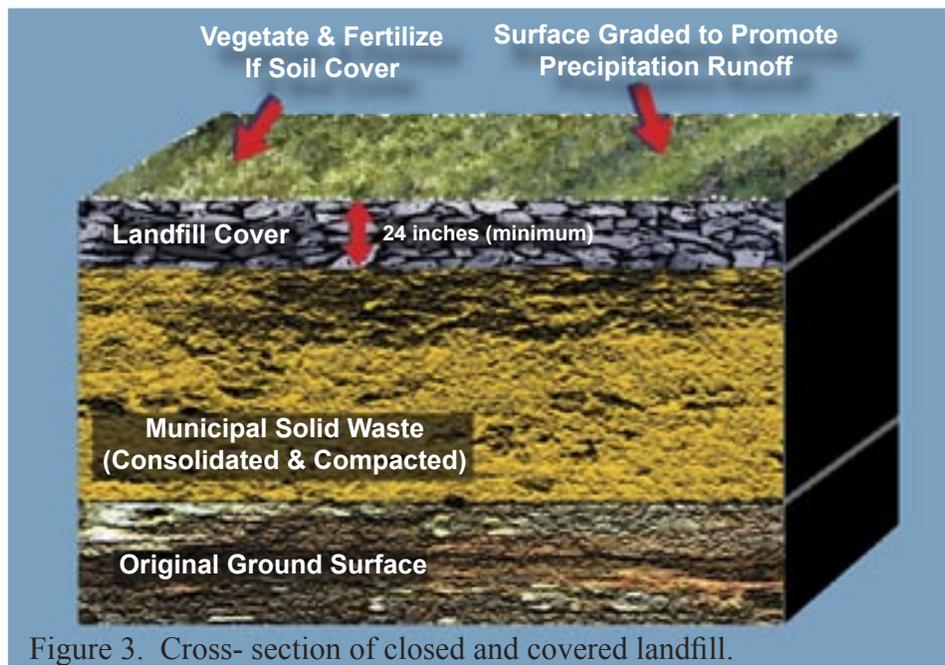


Figure 3. Cross- section of closed and covered landfill.

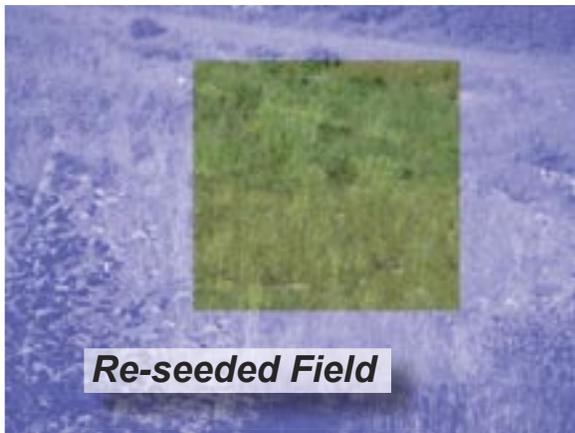
ii. - After the waste is consolidated, **cover every part of the landfill** that received waste with 24 inches of soil or gravel.

## 1.5 Closing a Landfill



**Grade Cover**

iii. - **Grade the Cover** to promote drainage off of the landfill cover and away from the landfill. A 1% to 3% grade is all that is needed.



**Re-seeded Field**

iv. - **Apply Seed and Fertilizer** if the final cover is soil. Post signs at the closed landfill to indicate that the landfill is closed and give the location of the new disposal site to prevent future dumping of wastes at the closed site.



### Solid Waste Landfill vs. Dump

What is the difference?

#### **Solid Waste Landfill -**

Designed and operated in a manner such that there is no reasonable probability of adverse effects on public health or the environment from the disposal of solid waste at the facility.



#### **Dump -**

Not in compliance with regulations.  
Operating without a permit



## 1.5 Closing a Landfill



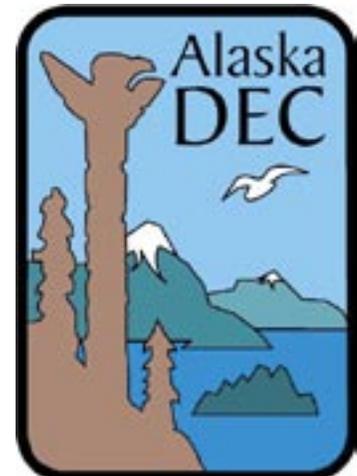
v. – The **location of the waste disposal area at the landfill should be marked on the ground** with permanent markers or monuments. Markers can be cut-off metal fence posts or rebar, installed at the landfill corners, or some other permanent fixture to show the boundaries of the landfill. Care should be taken so that markers do not protrude out of the ground, causing a vehicle or tripping hazard. The owner or operator shall record at the State Recorder's Office a notation on the deed showing the location of the closed landfill. ADEC staff can assist with the proper contact information for the State Recorder's Office. A copy of the notation shall be sent to ADEC along with a letter stating that the landfill is closed



### *Class III Landfill*

- > 50 miles by road from a Class I
- < 1 ton per day of ash from incinerated solid waste; or
- < 5 tons per day of municipal solid waste

vi. – Once the landfill is permanently closed the owner or operator shall **inspect the area annually and keep the inspection records throughout the five year post-closure period**. During these inspections the owner or operator should note any erosion, ponded water, exposed waste, or depressions. If any problems are discovered during annual inspections, these problems should be corrected. The closure and repairs are extremely important for the community to prevent future public health, safety, and environmental problems that may arise from an improperly maintained landfill. The inspections shall continue for five years after closure, after which the owner/operator should write to ADEC and request that the facility be retired. Photographs and post-closure monitoring records should be included with the request.



## 1.6 Contacts for More Information

### 1.6 Contacts for More Information

Solid Waste Program Staff are available for technical assistance at the following locations, or on the ADEC website <http://www.dec.state.ak.us/eh/sw/index.htm>. Please contact ADEC for any questions or comments.

Office Location	Contact Information
<b>Anchorage</b>	555 Cordova St. Anchorage, Alaska 99501 (907) 269-7642
<b>Fairbanks</b>	610 University Ave. Fairbanks, Alaska 99709 (907) 451-2174
<b>Juneau</b>	410 Willoughby Ave., Suite 303 Juneau, Alaska 99801 (907) 465-5318
<b>Soldotna</b>	43335 K-Beach Road, Suite 11 Soldotna, Alaska 99669 (907) 262-5210 x249



## **2.0 Additional Best Management Practices**

### **2.0 Additional Best Management Practices for Class III Landfills in Communities with Additional Risk Factors from the Environment.**

#### **2.1 Introduction**

Many communities with a landfill in rural Alaska that meet the criteria of 18 AAC 60.300(c)(3) as a Class III MSWLF may have additional risk factors associated with their community landfill based on the location of the landfill or the type of waste accepted at the landfill. Risk factors include landfills located near fish and bird habitat, landfills located on or near permafrost, floodplains, wetlands, and landfills located in an area with shallow groundwater, or accepting fish processing or honey bucket waste. The following sections describe the additional BMPs to address landfills in high risk areas.

Please note that a community landfill that serves a population of more than 1,500 people generates more than 5 tons of solid waste each day and therefore exceeds the limits of a class III landfill. As a result, such a community must submit a permit application for a Class I or Class II municipal solid waste landfill.



## 2.2 Landfill Management Near Fish Habitat

### 2.2 Landfill Management Near Fish Habitat

Landfills located less than 200 feet from water bodies that provide habitat for fish may cause damage to fish, fish habitat and subsistence users. There are three main impacts that can occur.

1. Silt: uncontrolled surface water run-off from landfills can increase silt build-up in clear-running streams or lakes. This silt can cover fish eggs and negatively impact fish requiring clear-running water.
2. Oxygen Depletion: Landfill leachate has a very high oxygen demand and depletes oxygen in water. Leachates enter water bodies from surface or sub-surface flow and results in fish kills.
3. Toxins and Hazardous Chemicals: Leachate can contain high concentrations of hazardous and toxic chemicals that are ingested and/or absorbed by fish. These chemicals are harmful for the fish and also harmful to those that consume the fish.

To help prevent these effects, landfills should be located more than 200 feet from water bodies containing fish. If this is not an option, landfill owners/operators should design or operate the landfill using one or more of the following BMPs.

- Permanently cover all waste previously disposed of within 200 feet of fish habitat and change facility operations such that all future waste disposal is greater than 200 feet from fish habitat;
- Burn or incinerate all household municipal solid waste, especially food wastes, in a burn box, burn cage, burn barrel, or incinerator. Do not burn waste in an open pile on the ground. Burning waste will greatly decrease the probability of leachate generation;
- Construct berms, drainage ditches, or diversion ditches to control surface water run-off from the landfill. These structures should redirect surface water runoff in a way that it has to travel a greater distance before reaching water bodies with fish habitat. Silty surface water run-off should not be allowed to flow directly into water bodies. If necessary, a settling pond should be constructed to allow silt to settle out of run-off water before discharging to a water body; or,
- Submit a plan to ADEC that will reduce the impact of the landfill on fish habitat.



## 2.3 Landfill Management near Bird Habitat

### 2.3 Landfill Management Near Bird Habitat

Landfills located less than 1,000 feet from nesting habitat for migratory birds, raptors and endangered bird species may cause environmental impacts to these species by concentrating predators that may feed on these birds and their eggs. Additionally, exposing raptors (such as eagles) to solid waste can be harmful to their health. To help prevent these effects, owners/operators of landfills located less than 1,000 feet from nesting habitat for these birds should operate their landfill using one of the following BMPs:

- Choose an alternative landfill location where the waste disposal boundary is at least 1,000 feet from bird habitat;
- Burn or incinerate all household municipal solid waste, especially food wastes, in a burn box, burn cage, burn barrels, or incinerator. Do not burn waste in an open pile on the ground. Burning waste will greatly decrease the attraction of predators, such as foxes, to the landfill and also decrease the attraction to eagles and other scavenging birds;
- Use a trench-and-fill system at the facility, if possible. A trench-and-fill system will reduce the amount of uncovered waste available to predators and birds, and will generate cover material that can be used to cover waste more frequently;
- For area fill facilities, cover waste one time per month, or more often as necessary, to minimize the attraction of predators, such as foxes; or,
- Submit a plan to ADEC describing an alternative proposal that will reduce the impact of the landfill on bird habitat.



**Bird Habitat**



## 2.4 Management for Landfills on Permafrost

### 2.4 Management for Landfills on Permafrost

Landfills located on permafrost may cause melting of the underlying permafrost and the formation of thaw ponds. Melting permafrost, or an increase in depth of the active freeze/thaw layer of ground, is usually the result of stripping the insulation layer (vegetation and soil), excavation below ground level into the permafrost layer, or placing thin layers of gravel that absorb and transfer heat without enough depth to insulate the ground. The owner/operator of a landfill located on permafrost must design or operate the landfill using one of the following BMPs:

- For communities in areas of discontinuous permafrost, choose a landfill location that is not underlain by permafrost;
- Build the landfill above ground level using berms to contain the waste. Do not excavate into the ground or strip off or remove the insulating soil and vegetation. Place waste directly on top of the ground and cover with soil or gravel. As an alternative use a soil or gravel pad at least 12 inches thick as the base of the landfill; or,
- Submit a plan to ADEC that allows for waste disposal at a site while ensuring that the permafrost does not melt.

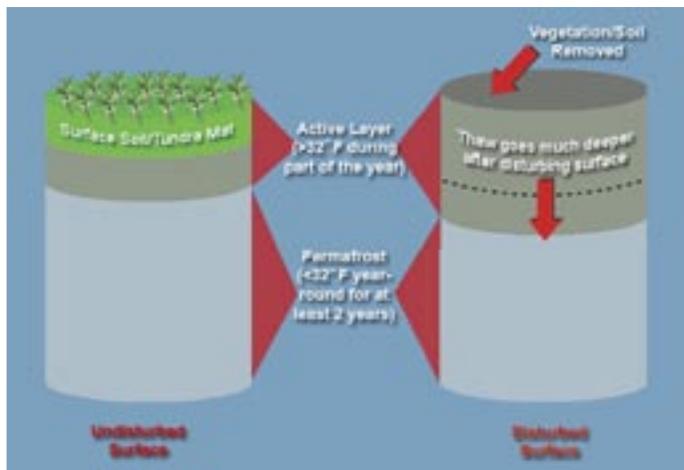


Figure 4. Typical effect of removing or disturbing surface soil and vegetation in permafrost area.

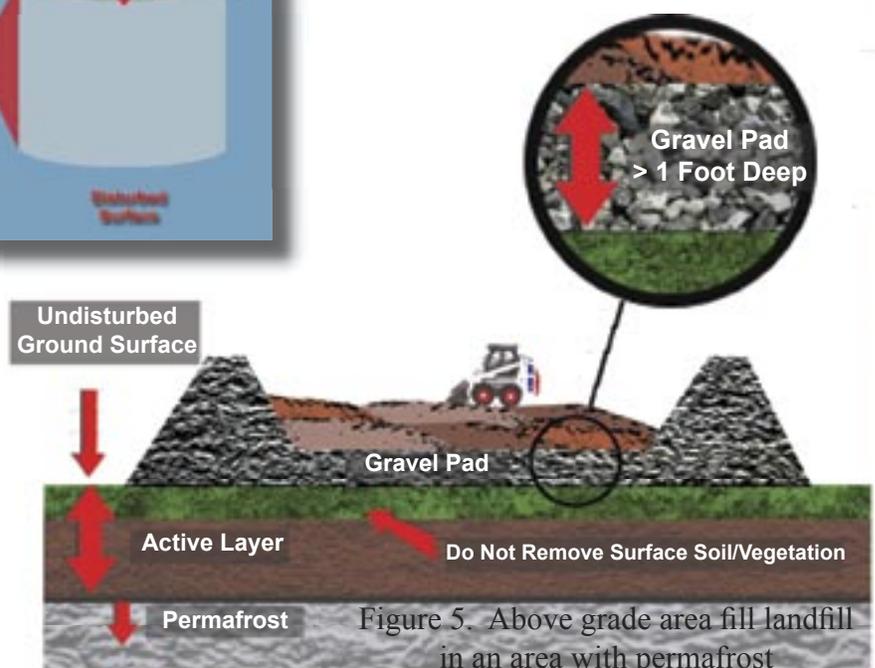
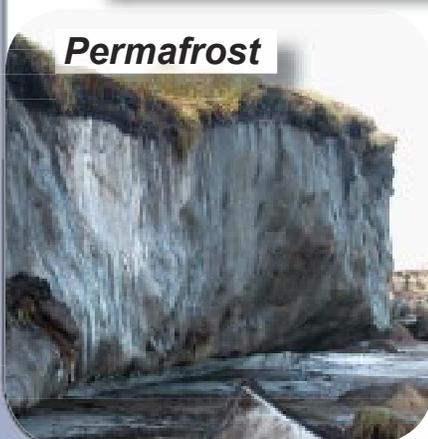


Figure 5. Above grade area fill landfill in an area with permafrost

## 2.5 Management for Landfills in Floodplains

### 2.5 Management for Landfills in Floodplains

Landfills located in floodplains may be subject to occasional flooding, causing erosion and washout of waste from the landfill. To help prevent these effects, the owner or operator of a landfill located in a floodplain can use one of the following BMPs:

- Choose an alternative landfill location outside of the floodplain;
- Construct berms or dikes around the landfill, especially on the upstream side, to help prevent erosion or washout of the waste. Berms or dikes should be higher than the predicted high water level for the largest flood. Berms and dikes should have side slopes of 3:1 (3 feet horizontal to 1 foot vertical) on their exterior slope (See Figure 1). Side slopes may need to be armored with large rock, sometimes called rip rap. The berms should protect the landfill from erosion and waste washout, but should not impede the flow of water or otherwise contribute to ponding at the landfill. Contact ADEC for assistance; or,
- Submit a plan to ADEC describing an alternative proposal that will ensure that the landfill structures and waste will not wash out during a flood.



## 2.6 Management for Landfills in Wetlands

### 2.6 Management for Landfills in Wetlands

Landfills should not be located in wetlands unless there is no practical alternative. Owners or operators of landfills located in wetlands must contact the United States Army Corps of Engineers (USACE) in Anchorage at (907) 753-2712 to determine if a permit is necessary to allow filling of the wetland. A landfill located in or near a wetland may cause environmental damage to sensitive plants and/or animals. This location may lead to having surface water in the landfill, and may contaminate water in wetlands that drain into rivers or lakes. To help prevent these impacts, the owner or operator must design or operate the landfill using one of the following BMPs:

- Choose an alternative landfill location that is located at least 100 feet outside of the boundary of the wetland;
- If possible, alter existing landfill operations such that waste disposal activities do not occur within 100 feet of the boundary of the wetland;
- If the landfill is located within 100 feet of the boundary of a wetland, solid waste must be deposited above the natural ground surface. Do not use a trench-and-fill landfill design. Build dikes or berms above ground level and deposit waste above grade. A gravel pad may be necessary to keep water out of the disposed waste. Berms or dikes should be built to prevent surface water from flowing into the solid waste disposal area. Contact ADEC for assistance in choosing the best methods to operate a landfill in wetlands; or,
- Submit a plan to ADEC describing an alternative proposal that ensures that the landfill will not adversely affect the wetland.



## 2.7 Landfill Management Near Shallow Groundwater

### 2.7 Landfill Management Near Shallow Groundwater

Landfill locations where the bottom of the waste is less than 10 feet above the groundwater have an increased potential to cause groundwater pollution due to leachate entering the groundwater. Leachate can be a very high-strength liquid that contains high concentrations of pollutants. These pollutants can contaminate groundwater and therefore adversely affect people that drink or otherwise use the groundwater. To prevent these effects, owners and operators of landfills less than 10 feet above groundwater must design and operate their landfill using one of the following BMPs:

- Choose an alternative landfill location where the groundwater depth is greater than 10 feet below the proposed base of the landfill;
- Build the landfill at least two feet above ground level. The base or pad of the landfill can be constructed using gravel or other inert material. Berms or dikes can be used to contain solid waste. Do not use a trench-and-fill landfill design;
- Burn or incinerate all household municipal solid waste, especially food wastes, in a burn box, burn cage, burn barrels, or incinerator. Do not burn waste in an open pile on the ground. Burning waste will greatly decrease the probability of leachate generation with resulting impacts to groundwater; or,
- Submit a plan to ADEC describing an alternative proposal for landfill design or operation that will ensure that groundwater is protected.

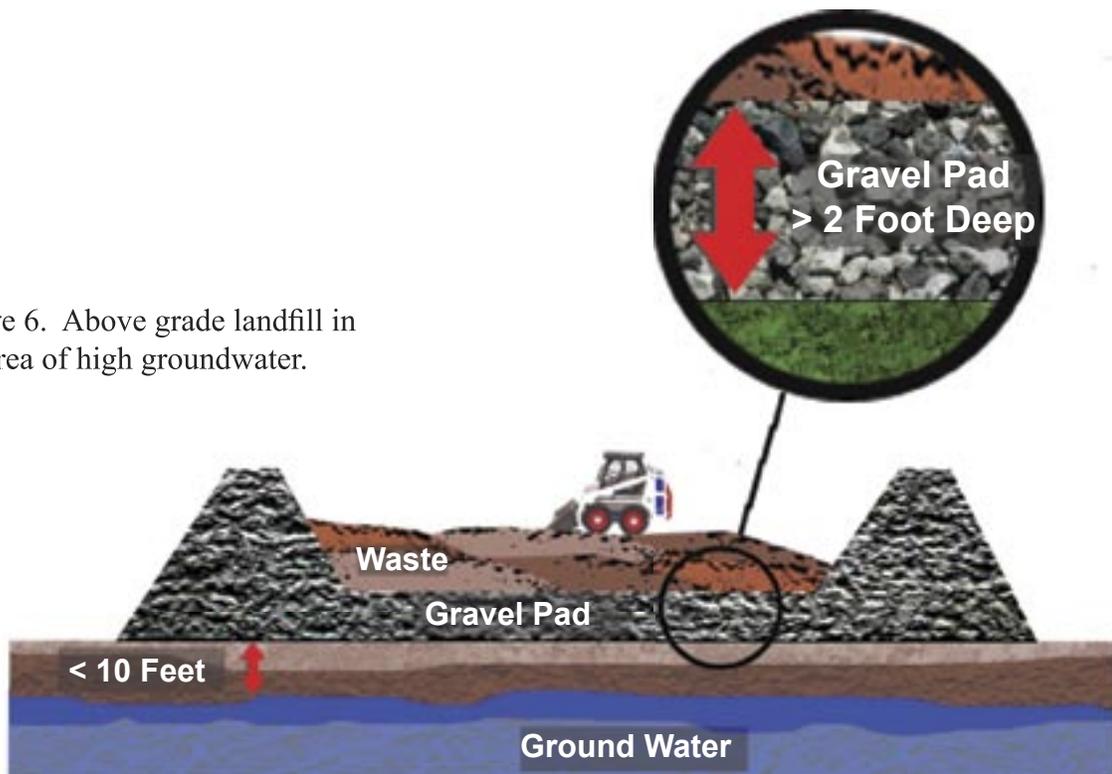


Figure 6. Above grade landfill in area of high groundwater.

## 2.8 Landfill Management in Locations with High Surface Run-off Erosion Potential

### 2.8 Landfill Management in Locations with High Surface Run-off Erosion Potential

Landfills located on hillsides or other sloped areas, particularly in areas with significant rainfall events or large seasonal snowpacks, have an increased risk for surface erosion. Owners/operators of landfills with high surface run-off erosion potential must design or operate their landfill using one of the following BMPs:

- Choose an alternative landfill location in a relatively flat area or in a location where surface water run-off is not likely to affect the landfill. A location at a relatively high elevation, such as on top of a hill, will be less affected by the erosion effects of surface water runoff than a facility at the bottom of the hill;
- Construct diversion ditches or berms to direct surface water run-off around the landfill and make sure that the side slopes of berms, waste disposal areas, and other structures in the landfill are no steeper than 3:1 (3 feet horizontal to 1 foot vertical). Plant vegetation, or other erosion protection, on the side slopes of berms and inactive areas of the landfill. Vegetate closed areas of the landfill as soon as practical; or,
- Submit a plan to ADEC describing an alternative proposal for landfill design or operation that will minimize the potential for erosion from surface water runoff.



Figure 7. Use of gravel berm and ditches to control surface water in high surface erosion areas.

## 2.9 Fish Processing Waste Management

### 2.9 Fish Processing Waste Management

Some coastal or river communities may be asked to accept commercial fish processing waste for disposal in the community landfill. Processors may request surface disposal when discharge of waste to the ocean is not allowed, or if processing equipment required for water disposal is broken. Owners or operators of landfills have only two options regarding commercial fish processing waste:

- If the decision is made to accept commercial fish processing waste, the waste must be disposed of in a separate area or trench away from the regular disposal area and must be covered with 6 inches of soil or gravel following each disposal; or,
- If the first option is not possible, the owner or operator must refuse to accept the commercial fish processing waste.



### **Fish Processing Waste**



## 2.10 Septage/Honey Bucket Waste Management

### 2.10 Septage/Honey Bucket Waste Management



Owners or operators of landfills accepting septage/honey bucket waste for disposal should design and operate their landfill using one of the following BMPs:

- Prepare a trench away from the regular disposal area. DO NOT dispose of honey bucket waste with the regular waste. Dispose of honey bucket waste directly in the trench. Place a layer of lime over the honey bucket waste to control odor, reduce pathogens, and reduce the attraction of disease vectors. The following parameters should be followed:
  - Construct and fill one septage trench at a time;
  - Maintain at least 4 feet of vertical separation between the bottom of the trench and seasonal high groundwater;
  - Construct the trench in sandy soil to promote percolation of the liquids into the soil
  - Add lime to the septage, 25 lb of lime for every 1000 lbs of honey bucket waste
  - Ensure the septage does not overflow the trench, and the septage is less than 4 feet deep in thickness.
- Submit a plan to ADEC describing an alternative proposal for honey bucket waste management. The proposal must address management of environmental issues associated with honey bucket waste, including odor management, liquid waste management, pathogen reduction and vector attraction reduction.

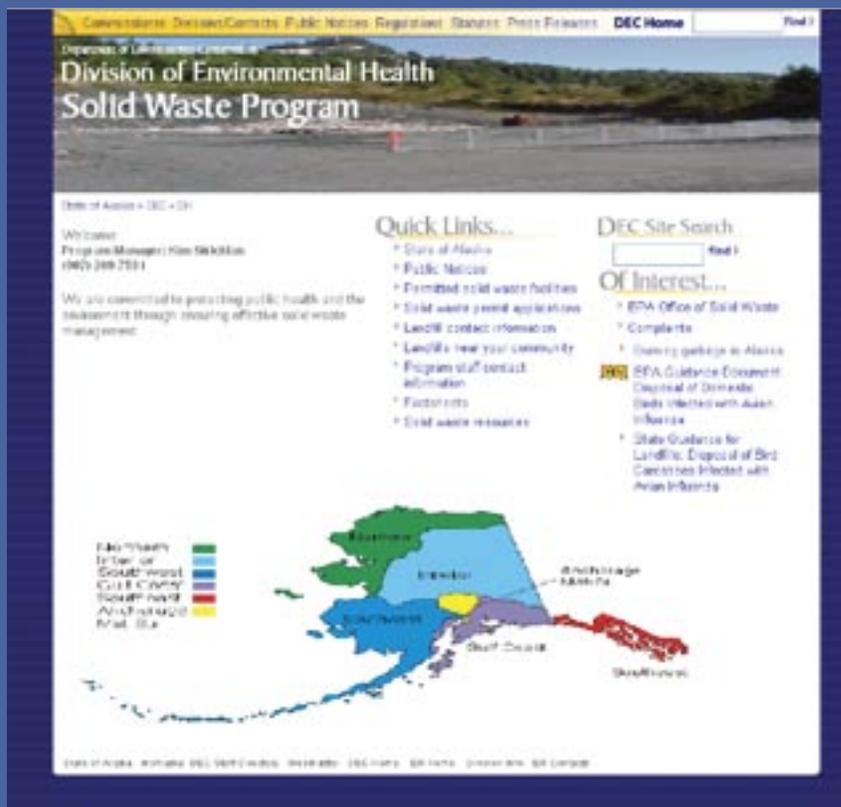


Figure 8 - Septage Pit cross section.

### 3.0 Appendices

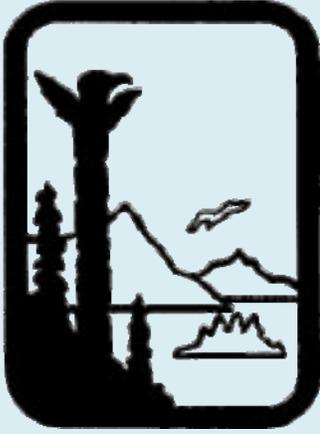
The following forms are included as appendices to this manual:

1. Fact Sheet, "Tips for Solid Waste Management in Rural Alaska"
2. Fact Sheet, "Open Burning of Solid Waste at Class III Municipal Solid Waste Landfill"
3. Fact Sheet, "Guidelines for Proper Disposal of Construction and Demolition Debris in Rural Alaska"
4. DEC Inspection Strategy for Class III Landfills
5. Sample Visual Inspection Form



Visit our Website

<http://www.dec.state.ak.us/eh/sw/index.htm>



**Alaska Department  
of Environmental  
Conservation**

**Division of  
Environmental  
Health**

**Solid Waste  
Management  
Program Offices**

[www.dec.state.ak.us/eh/sw](http://www.dec.state.ak.us/eh/sw)

**Juneau Office:**

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Suite 105

Juneau, AK 99801

(907) 465-5160

FAX (907) 465-5362

**Anchorage Office:**

555 Cordova Street

Anchorage, AK 99501

(907) 269-7802

FAX (907) 269-7600

**Fairbanks Office:**

610 University Ave

Fairbanks, AK 99709

(907) 451-2108

FAX (907) 451-2188

## Tips for Solid Waste Management in Rural Alaska

January 2007

There are many ways to reduce the amount of waste that goes to the landfill. Here are some waste reduction suggestions:

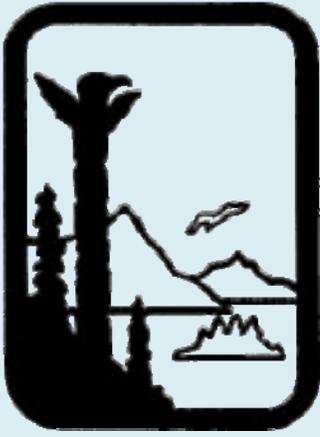
**Cardboard/packaging material** - These materials can be burned in a burn box or burn barrel, but should be burned as soon as possible to ensure material is dry when ignited. Stores, city or tribal offices, clinics, and schools seem to produce the most cardboard wastes. If they do not burn their own cardboard boxes or paper wastes, they could be charged an additional fee to cover the handling of the excess waste. Please note that any burning of cardboard waste must be **CONTAINED** and **CONTROLLED**. This means using a burn box, burn barrel, or burn cage, and the fire must be attended at all times.

**Plastic** - You can reduce the volume by cutting containers into smaller pieces. Plastic packing materials should also be cut to avoid harm to wildlife. As an example, the plastic packing for a 6-pack of canned beverages should be cut into smaller pieces, so they do not get stuck around the neck of any birds or smaller animals. Do not burn any plastics, as they contain chemicals that cause toxic smoke which is harmful to people and the environment.

**Plastic Bags** - Plastic grocery bags are handy and can be reused in many ways. When discarded they become a nuisance to the environment and wildlife. Some rural communities have written ordinances to ban plastic grocery bags in their communities.

**Aluminum cans** - Almost every community has a can collection program and is taking advantage of the Alaskans for Litter Prevention and Recycling (ALPAR) program, which helps communities fly their recycled cans to Anchorage for recycling. ALPAR can be reached at P.O. Box 200393, Anchorage, Alaska 99520. Phone number: 1-907-274-8023, email: [alpar@gci.net](mailto:alpar@gci.net).

**Household Hazardous Wastes (HHW)** - The State of Alaska does not have a HHW program. HHW should not be accepted at Class III landfills because these rural landfills are not lined and cannot contain any liquids that might go into the landfill. Some communities have HHW programs to prevent these items from going into the landfill. More information can be found on the Solid Waste Alaska Network (SWAN); <http://www.ccthita-swan.org/main/index.cfm> or 1-800-344-1432, ext. 7184. Other contacts are the Environmental Protection Agency (<http://www.epa.gov/>) and the Yukon River Inter-Tribal Watershed Council (YRITWC) <http://www.yritwc.com/> or 1-907-258-3337.



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## Open Burning in Rural Alaska

January 2007

Open burning is defined as any burning where smoke is emitted directly into the air, instead of passing through a smoke stack or vent. This includes burning piles on the ground, in barrels, or inside of large open bins or containers.

If done properly, open burning can be a good way to help manage waste.

Advantages of open burning include:

- Burning reduces the volume of waste that must be disposed of
- Ash is less attractive to animals than raw garbage
- Ash does not require cover to prevent litter, odor, and leachate formation
- Burning creates an inert ash that is less reactive and safer to dispose of
- Proper burning minimizes air and water pollution

However, if done improperly, open burning can cause serious problems. Poorly managed burning can smolder, creating more smoke and air pollution. It can also leave unburned waste in the ash. Unattended burns can start wildfires.

Landfills in Alaska may NOT conduct open burning directly on the ground. However, most Class III landfills may conduct open burning using burn cages, burn barrels, or burn boxes, where burning is contained and off the ground.

The amount of pollution produced by open burning depends on completeness of combustion, in other words, how much of the material is burnt to ash. Whenever there is smoke, there is incomplete combustion. The Alaska Department of Environmental Conservation (DEC) encourages landfills to use good open burning practices to reduce smoke, air pollution, and unburned waste.

### Good Open Burning Practices

- Open burning is most effective with clean, dry materials such as wood and paper. Household garbage is typically 20%-30% water. Tarping, covering, and frequent burning will help prevent additional moisture from collecting in the waste.
- Non-combustible waste should be separated out as much as possible. This includes glass, metal, and other items that will not burn.
- All prohibited or hazardous wastes must be separated out before burning. This includes batteries, household chemicals, oil, and other hazardous materials.



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## Construction and Demolition Debris in Rural Alaska

January 2007

Construction and demolition (C&D) debris is waste that is generated during the construction or demolition of a structure. This typically includes wood, bricks, rubble, dry wall, roofing materials, tiles, insulation, and concrete. The material is generally inert (unlikely to cause pollution or environmental damage). The contractor, construction company, or agency that generates the waste is responsible for ensuring that the waste is properly disposed of in a permitted landfill.

C&D waste is bulky and takes up large amounts of space in landfills. Landfills are not required to accept this material – to increase the life of the landfill rural villages should consider requiring alternative disposal options.

Communities may choose to enact local ordinances to ensure that large amounts of C&D waste are not deposited in the landfill, or that appropriate fees are collected to cover the costs of disposing of large amounts of waste.

### C&D Disposal Options

- The landfill may agree to accept the waste, and can charge the waste generator for disposal.
- The landfill may agree to accept the waste in exchange for assistance at the landfill, equipment use, or other in-kind services in the community.
- If the landfill will not accept the C&D waste, the construction company or contractor may pay to have the material backhauled by barge or airplane to a larger community with C&D disposal facilities.
- If the landfill will not accept the C&D waste, the contractor may apply to the Alaska Department of Environmental Conservation (DEC) for a One-Time disposal permit for the C&D waste. This permit would allow the waste to be buried in a safe manner, in a separate location from the community landfill. The construction company is responsible for ensuring proper burial and management of the C&D landfill.

### C&D Ordinances

A rural community has the authority to protect its environment by enacting ordinances to deal with C&D waste disposal. An ordinance will help prevent contractors from leaving the waste, improperly disposing of it, or filling up the local landfill with C&D waste.

The ordinance should specify how C&D waste must be handled, and establish any fees or requirements. The ordinance may also require the contractor to develop a plan to dispose of the waste before work on the project may begin.

### **DEC Inspection Strategy for Class III Landfills**

The objective of a Class III landfill inspection is to evaluate how effectively a landfill is operated and to assist the facility operator in identifying any improvements that can be made to better protect the community and the environment.

#### **Notification for an Inspection**

The Solid Waste Program will generally notify the owner or operator of a landfill about one month prior to an inspection. This helps to ensure that key people from the facility can make it to the inspection. It is most advantageous if the operator accompanies the inspector during the inspection.

#### **Types of inspections**

- **Site Visit:** In the case of a complaint or event that implies a potential violation, a facility may ask that an inspector come to the facility to observe or evaluate a single issue. If the ADEC Solid Waste Coordinator for the area determines that an impromptu site visit is necessary, an inspector will visit the site. This type of visit does not count as an official inspection and is not followed by a formal report.
- **Full inspection:** This includes a complete evaluation of compliance with the regulations and permit conditions. This is intended as a thorough evaluation of the strengths and weaknesses of the facility and always includes both a checklist and a formal report.

#### **Determining Which Class III Landfills Are Inspected or Visited**

Landfill inspections and the frequency of the inspections depend on a number of different factors. As a general rule, Class III landfills that are required to have a permit will be inspected more frequently than those that are authorized by regulation. However, other factors that will be considered include:

- **Population** – The greater the population, the greater the likelihood for an annual inspection.
- **Risk** – The higher the risk a landfill poses to a community and the environment, the greater the likelihood for an inspection.
- **Complaint** – Some inspections will be triggered by complaints. The nature and authenticity of the complaint will determine if an inspection is warranted.
- **Request** – Sometimes a community will request a site visit. Such requests are subject to the approval of the ADEC Solid Waste Program Coordinator as the program budget allows.

#### **What to Expect from an Inspection**

A Class III Inspection Checklist will be used to help guide the inspection. To better understand what types of questions are to be expected during the inspection, the Solid Waste Program suggests that the operator obtain a copy of the “checklist” and review the document prior to the inspection. For a copy of a Class III Inspection Checklist, please contact your area Solid Waste office, or locate the checklist on the web at: <http://www.dec.state.ak.us/eh/sw/index.htm>.

The inspection includes both a visit to the landfill site and a review of facility records in the landfill office.

The inspector will plan the general order of the inspection and may also set up meetings with other interested parties such as site neighbors. The entire inspection process takes approximately two to three hours.

# **SECTION F:**

## **6/27/07 PERMIT ADDENDUM & 5/3/07 PERMIT APPLICATION**

### **PART 1 THROUGH PART 8**



## Arctic Solutions Inc.



June 29, 2007

Ms. Linda Demientieff  
Environmental Program Specialist II  
Alaska Department of Environmental Conservation  
Division of Environmental Health  
Solid Waste Program  
610 University Avenue  
Fairbanks, Alaska 99709-3643

**Re: APPLICATION ADDENDUM FOR A CLASS III MUNICIPAL SOLID WASTE LANDFILL PERMIT  
SECTIONS 11 AND 14, TOWNSHIP 4N, RANGE 23W FAIRBANKS MERIDIAN  
CITY OF TANANA, ALASKA; ADEC FILE NO. 780.15.001**

Dear Ms. Demientieff:

On behalf of the City of Tanana ("The City"), Arctic Solutions Inc. (Arctic Solutions) presents this Addendum in response to Alaska Department of Environmental Conservation (ADEC) comments on The City Class III Municipal Solid Waste Landfill (MSWLF) Permit application dated May 3, 2007.

Attachment 1 presents design drawings of the landfill. These drawings were completed using information from a May 2007 survey performed by Manley Land Surveyors, Inc.; and, research information previously presented in the May 3, 2007, application. Attachment 2 presents U.S. Federal Emergency Management Agency (FEMA) records of Tanana and a Revised Quarterly Inspection Form. Attachment 3 presents ADEC's February 2006 Solid Waste Procedures Manual for Municipal Class III Solid Waste Landfills. The City will use as a guide for the current and future expanded areas of the landfill.

Based on the May 2007 survey The City landfill actively uses a 4.7 acre fenced parcel now called Tract A. Refer to Sheet 1 of 1 in Attachment 1 titled 'A Plat of Tanana Landfill Subdivision Creating Tract A'. The 4.7 acre active landfill size replaces the estimated six (6) acre number given in the May permit application. The new calculated life of the current 4.7 acre landfill is approximately 17 years at current usage and population.

This assumes the amount of waste disposed per day remains the same (approximately 0.25 tons/day, seven (7) days a week) and the population of 300 remains constant. Seventeen years replaces the 51 years calculated in Appendix E Part 8 Response Item No. 4 in the May 3, 2007 permit application. The active landfill life will be recalculated again after the landfill expansion has been completed and a permit addendum submitted.

As stated in the May 2007 permit application, Tozitna Limited (surface estate) and Doyon Ltd. (subsurface estate) own the land, part of the original 10 acre parcel surveyed by Manley Land Surveyors in 1989. See Figure 1 in Attachment 1 for the outline of the original 10 acre parcel.

The City is pursuing landownership from Tozitna and Doyon through the Alaska Native Claims Settlement Act (ANCSA) 14(c)(3) reconveyance of the landfill property and surrounding acreage for future expansion; and The City is working with Indian Health Services (IHS) to secure funding for

upgrading the existing portion and expanding the landfill onto additional acres located west of the landfill. A permit Addendum for the expansion will be filed with ADEC at that time.

Below are the ADEC comments on the May 3, 2007, Class III permit application and The City responses. The responses are numbered the same as the ADEC comments received.

*COMMENT 1: Is the landfill located in 100 year floodplain?*

RESPONSE 1: Review of the FEMA Issued Flood Maps on their Map Service Center showed no maps available for The City of Tanana Yukon-Koyukuk region. During a June 27, 2007 site visit, Arctic Solutions noted a high water mark sign located approximately five (5) feet above the ground surface in front of the Tanana Post Office and store. This building is located approximately 70 to 90 feet from the river embankment.

The USGS Tanana (A-5) Alaska Quadrangle presented in Appendix C of the May permit application shows the location of the Post Office and store at approximately 200 feet above sea level. As stated in the permit application, the landfill was plotted at approximately 320 feet above sea level on a south facing slope approximately 1,052 feet north of the Yukon River. At an estimated 120 feet higher elevation, the landfill is not expected to be within the Coastal Zone of Alaska.

*COMMENT 2: Shooting is prohibited in a landfill. For the safety of the operator, users of the landfill and prevention of spilling of Freon and other hazardous wastes, shooting should not be allowed in or near the landfill.*

RESPONSE 2: Shooting was never permitted inside the fenced landfill. Target practice outside the gate west of the landfill ceased as of mid-May 2007 after Brice, Inc. began excavation of soil for the new airport road. The excavation area is slated to become the expanded landfill that will also be fenced. Signs will be posted in the expanded area stating shooting is strictly prohibited. The City Council is currently looking for a new location for residents' target practice.

*COMMENT 3: There are no design drawings attached to the application. A set of drawings for the proposed construction of the landfill and the proposed closure of the landfill will need to be part of the application. The designs should include the sequence in which the future cells will be used, and the fences and gates to be used to enclose the landfill, intermediate cover of cells, side views of proposed cells, all previous and existing cells, property boundaries, ditches, culverts, equipment storage area, contaminated soils storage area, location of burnbox, storage of cover material, And... cross sections that show planned excavations before waste cell construction, roads, ditches, trenches, and berms in the landfill facility, depth to ground water from the lowest point of the landfill cell. Should demonstrate that waste will be at least 10 feet above groundwater.*

RESPONSE 3: Design drawings (Sheet 1 of 1, Figure 1 and Figure 2) are presented in Attachment 1. At the time of the May 3, 2007, application submittal, a survey had not been completed therefore design drawings submitted were either hand or computer sketches. Information from these sketches as well as text from the application was placed on the new survey drawings. As stated in the May 2007 permit application, soil and groundwater information is inferred due to lack of boring or well logs. No deep subsurface investigations have been completed at the site due to financial constraints and there are no monitoring or drinking water wells near the landfill.

*COMMENT 4: Signs should be posted in the landfill and are usually a part of the design drawings. Signs should be placed to show contact numbers in case of emergency, owners of the landfill, list of prohibited wastes, prohibiting shooting and recreational activities within the landfill, where salvage wastes should be placed, where wastes should be placed, and where to take wastes that are not accepted at landfill.*

**RESPONSE 4:** Sign information is included on the design drawings. Sign information was also included in the May 2007 permit application text – Refer to Part 9 Response Item Nos. 2, 3 and 4 in Appendix F of the application. Additionally, existing landfill signs were shown on Photo 2 in Appendix A of the May 2007 permit application.

**COMMENT 5:** *The language for Operations should be more direct. The language used is passive, therefore not giving direction to the operator. Compacting and Covering is an essential part of operations. You will find a new Operations Manual in the State website under Solid Waste. It's called Solid Waste Procedures Manual. It is the best management practices that ADEC will establish as the guidelines for all Class III landfill. Class III permit applications should mirror the manual to stay in compliance with the new regulations.*

**RESPONSE 5** ADEC's Solid Waste Procedures Manual is included in Attachment 3 and will be referred to during Operator training. Direct language on proper procedures for maintenance personnel will come during training sessions using forms provided in the May permit application Appendix F Part 9 Operations Plan. As initial training of personnel is completed, a complete Operations Manual will be constructed. Landfill cover instructions are given in Part 9 Response Item Nos. 1 and 2 in Appendix F.

Because cover and compaction is currently completed only at the end of a cell's life cycle, it will be up to The City to enforce an increased regiment of compaction and cover by maintenance personnel. As noted in the May 2007 permit application, the amount of solid waste to compact and cover will be greatly reduced once the incinerator and burn units are on line. Refer to Part 9 in Appendix F of the permit application.

**COMMENT 6:** *Visual monitoring should include condition of access roads, berms, ditches, fences, gates, and ponding and erosion.*

**RESPONSE 6:** Concurred. The above mentioned areas are already included for monitoring in the quarterly and annual inspections forms presented in the May 2007 permit application Appendix F Part 9 Operations Plan. Additionally, a revised Quarterly Inspection Form is included in Attachment 2 that includes the specific items mentioned in comment 6 replacing and superseding the Quarterly form in the May 2007 permit Application.

**COMMENT 7** *The application should also list the types of wastes that will be accepted in the landfill and what wastes will be prohibited. :*

**RESPONSE 7:** See Figure 2 in Attachment 1 under Notes. Prohibited and accepted items were discussed in Appendix F Part 9 Response Item No. 3 and in the manufacturer's specifications of the Smart Ash and Solid Waste Burner unit also in Appendix F..

Please contact me directly at (907) 457-6767 or [bias@alaska.net](mailto:bias@alaska.net) if you have any questions or need additional information. I look forward to hearing from you.

Sincerely,



Susan L. Vogt  
Project Manager  
Arctic Solutions Inc.

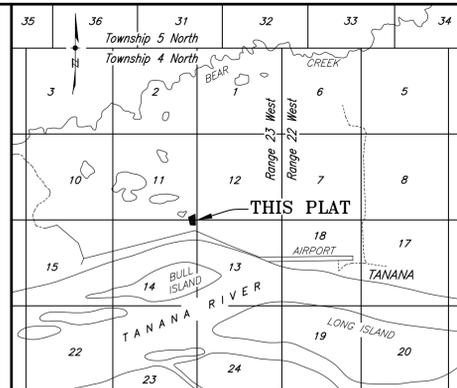
cc: Bear Ketzler, Tanana Administrator/City Manager

***ATTACHMENT 1***

***SHEET 1 OF 1 A PLAT OF TANANA LANDFILL  
SUBDIVISION***

***DRAWING 1 SITE MAP OF THE TANANA  
LANDFILL***

***DRAWING 2 DETAIL A & DETAIL B***



Vicinity Map  
USGS TANANA A-5 SCALE: 1 INCH = 1 MILE



**Surveyor's Certificate**  
 I hereby certify that I am registered and licensed to practice land surveying in the State of Alaska, that this plat represents a survey made by me or under my direct supervision, that the monuments shown hereon actually exist as described, and that all dimensions and other details are correct.  
 Date \_\_\_\_\_ Registration No. 5032-S  
 Richard B. Gray, Registered Land Surveyor

**Certificate of Ownership**  
 I, the undersigned, hereby certify that Tozitna, Limited is the owner of Tanana Landfill Subdivision as shown and described hereon. Tozitna, Limited hereby adopts this plan of subdivision with our free consent.

Signature & Title of Authorized Official \_\_\_\_\_ Date \_\_\_\_\_  
 Tozitna, Limited  
 P.O. Box 77129, Tanana, Alaska 99777

**Notary's Acknowledgment**  
 Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by \_\_\_\_\_  
 Authorized Official, Tozitna, Limited

Notary for the State of Alaska  
 My commission expires \_\_\_\_\_

**Platting Authority**  
**Certificate of Approval**  
 I, hereby certify that Tanana Landfill Subdivision, as shown and described hereon, has been found to comply with the City of Tanana requirements and that said plat has been approved by the City of Tanana Platting Authority on \_\_\_\_\_  
 Signature of Authorized Official \_\_\_\_\_ Date \_\_\_\_\_  
 Printed Name & Title of Authorized Official \_\_\_\_\_

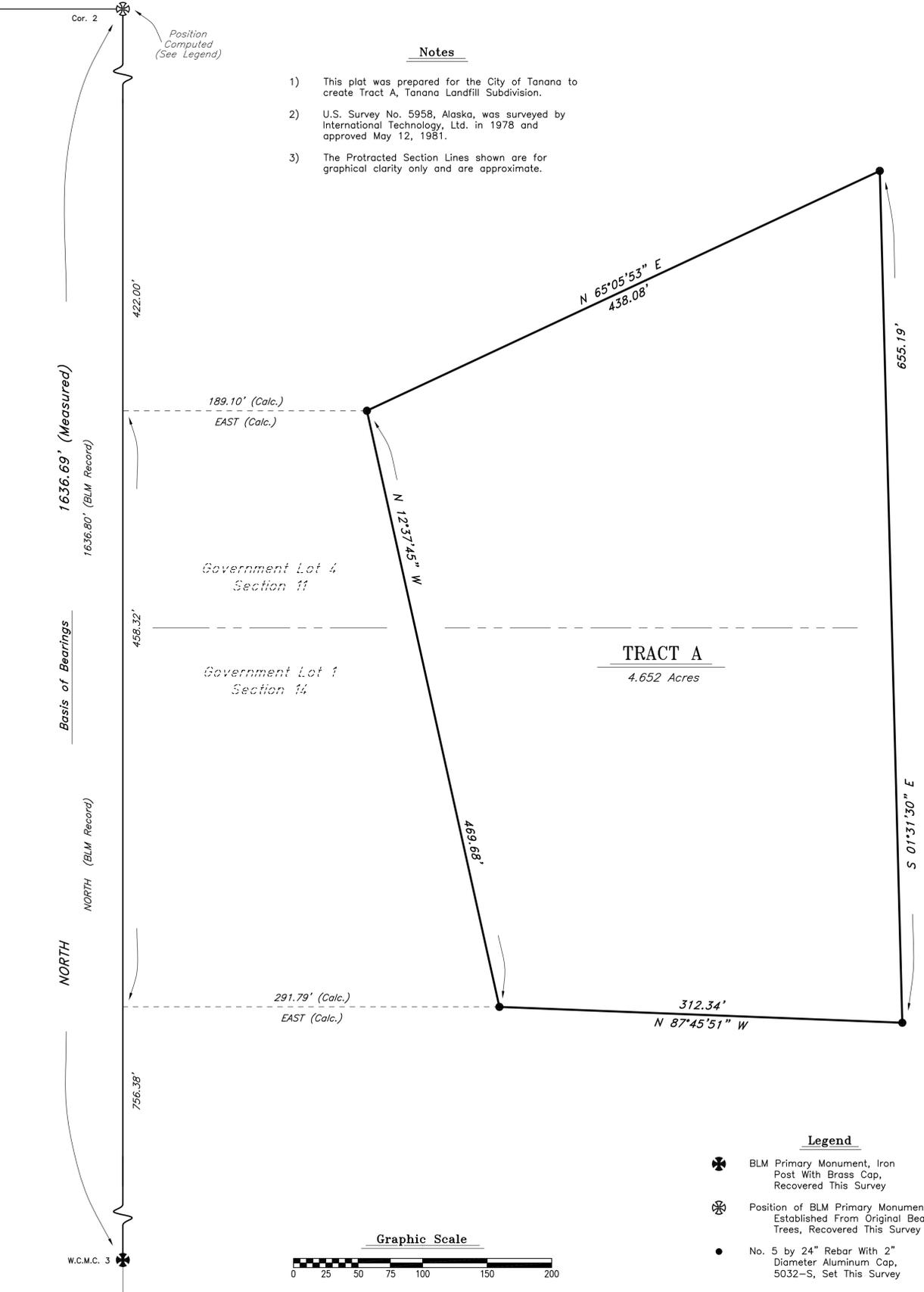
**Tax Certificate**  
 This subdivision lies outside of any taxing authority, at the time of filing.

FT. GIBBON RECORDING DISTRICT  
 DATE OF SURVEY: Beginning May 18, 2007 Ending May 19, 2007  
 NAME OF SURVEYOR: Manley Land Surveyors, Inc.  
 P.O. Box 69  
 Manley Hot Springs, Alaska 99756  
 (907) 672-3632

A Plat of  
**TANANA LANDFILL SUBDIVISION**  
 Creating Tract A  
 The Subdivision of a Portion of  
 Interim Conveyance No. 1091  
 Situated Within: Unsurveyed Sections 11 and 14,  
 Township 4 North, Range 23 West,  
 Fairbanks Meridian, Alaska  
 Containing 4.65 Acres  
 Located Within: Tanana, Alaska  
 Owned By: Tozitna, Limited  
 P.O. Box 77129, Tanana, Alaska 99777

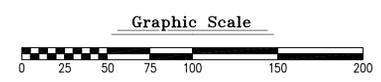
DRAWN BY: ermg CHECKED: RBG SCALE: AS SHOWN SHEET NO.: 1 OF 1  
 DATE: May 22, 2007

- Notes**
- 1) This plat was prepared for the City of Tanana to create Tract A, Tanana Landfill Subdivision.
  - 2) U.S. Survey No. 5958, Alaska, was surveyed by International Technology, Ltd. in 1978 and approved May 12, 1981.
  - 3) The Protracted Section Lines shown are for graphical clarity only and are approximate.

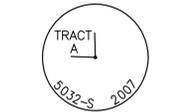


Lot 4, U.S. Survey No. 5958

Basis of Bearings  
 NORTH (BLM Record)  
 1636.80' (BLM Record)  
 1636.69' (Measured)



- Legend**
- ✦ BLM Primary Monument, Iron Post With Brass Cap, Recovered This Survey
  - ⊗ Position of BLM Primary Monument Established From Original Bearing Trees, Recovered This Survey
  - No. 5 by 24" Rebar With 2" Diameter Aluminum Cap, 5032-S, Set This Survey



Typical Cap of Secondary Monument Set This Survey

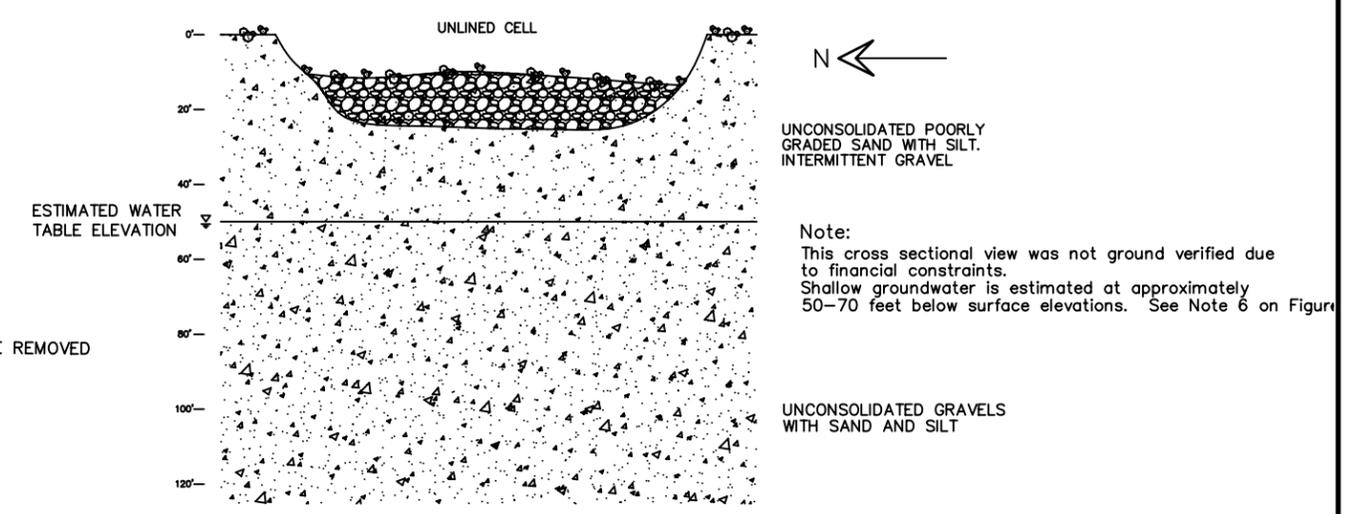
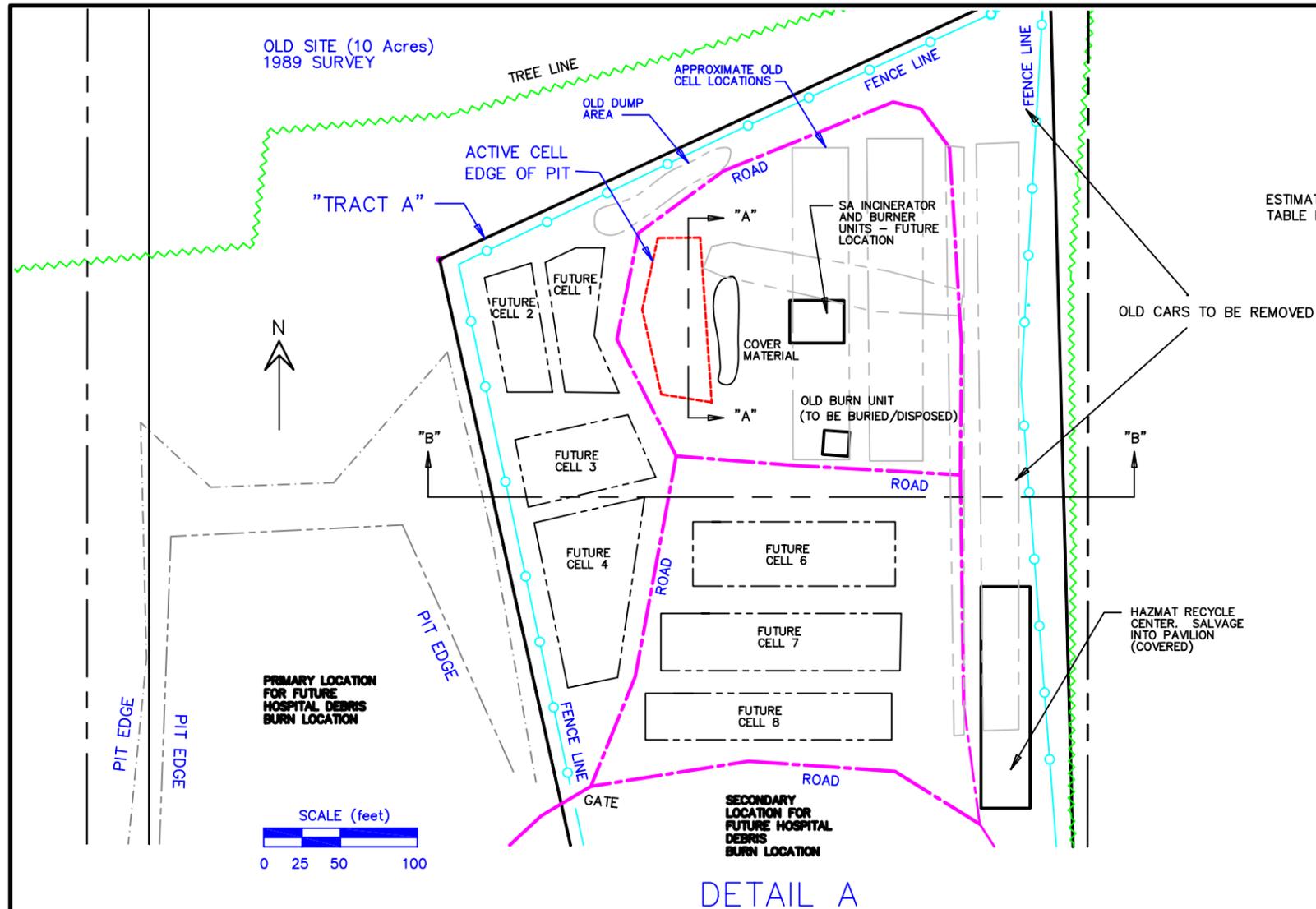


Recovered BLM Monument Cap

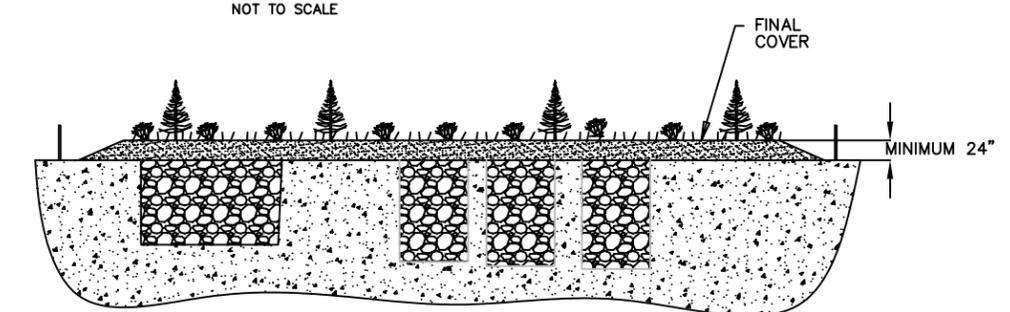
Government Lot 4 Section 11  
 Government Lot 1 Section 14  
 Sec. 11 Sec. 12  
 Sec. 14 Sec. 13  
 Approximate Protracted Position

**TRACT A**  
 4.652 Acres





SECTION "A-A" DETAIL B NOT TO SCALE



SECTION "B-B" FINAL CLOSURE DETAIL C NOT TO SCALE

NOTES FOR THE CLOSURE PLAN DESIGN

- As required by 18 AAC 60.385, final cover depth will be a minimum 24 inches above grade at time of cover. Cover material will be collected using existing heavy equipment to excavate and spread cover. Soil will be roughed greater than 12 inches deep with tracks perpendicular to the slope to minimize erosion and allow faster germination and growth. Seeding will occur immediately following with quick growing grass such as ryegrass. Seedlings and saplings may also be transplanted from the surrounding areas and replanted onsite. Fertilizer will be added as per manufacturer's recommendations.
- The anticipated future use of the landfill site is to become naturally re-vegetated moose browse and grouse habitat. There is no expected building or other type of construction to take place on the former landfill. Since the site will be initially vegetated with grasses and a few trees, grasses may prevent shrub and tree species from occupying the site for a period of time.
- The surrounding site consists of mixed stands with paper birch and aspen dominating. Typical understory shrubs are willow, alder, prickly rose and high bush cranberry.
- The gated fence will remain continually locked to prevent resident access. Warning signs will be posted at the gates to deter vandalism or disturbance.

Notes:

- the future Hazardous Waste Collection/Drop-off pavilion on this drawing will be for residents to place their non-solid waste for disposal. City Maintenance will collect pavilion waste and either take it to the downtown City Maintenance Building for disposal in the Black Gold 200 Energy Recovery Furnace or dispose it onsite in the Smart Ash Incinerator.

Any hazardous waste that will not be accepted in The City such as lead acid batteries, polychlorinated biphenyls (PCBs), glycol liquid waste and friable asbestos will continue to be removed by barge for proper disposal. Current handmade signs on gate entrances will be replaced with new professional permanent signs.

Signs will be placed at the pavilion to direct users on placement location. The City may place a bulletin board at the pavilion where important information, such as emergency numbers is placed (see Appendix F Part 9 in the May 3, 2007 Permit application for The City's Spill Response and Emergency Response Plans). Most residents already use the existing burn unit and separate out oily wastes from other solid wastes.

During construction of the hazardous waste collection pavilion, a second or attached pavilion will be constructed to allow residents to leave salvageable material in a safe place away from traffic and under cover.

- The City is proposing access hours from 7 am to 8 pm in the spring and summer and 9 am to 6:30 pm in the fall and winter. Signs will be prominently posted on the gates and during those hours, the gates will be open. The City does not have the funding available to hire a full time attendant so the landfill will be as is today - relying on users to dispose wastes properly. Any waste left outside the gate will be disposed of by City Maintenance responsible for opening and closing the landfill.

Arctic Solutions Inc.  
275 GEYSER COURT  
FAIRBANKS, ALASKA 99712

"TRACT A" CITY OF TANANA LANDFILL DETAILS A, B, AND C  
CLASS III MUNICIPAL SOLID WASTE LANDFILL APPLICATION

SECTIONS 11 AND 14, T4N, R23W, FAIRBANKS MERIDIAN  
TANANA, ALASKA

DATE  
JUNE 2007

MSWLF Permit

FIGURE  
2

***ATTACHMENT 2***

***FEMA DOCUMENTATION***

***REVISED QUARTERLY SITE INSPECTION FORM***



FEMA

Map Service Center

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## FEMA Issued Flood Maps

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**County :** YUKON-KOYUKUK

**Community :** TANANA/CITY

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\* designates unincorporated areas

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**STATE OF ALASKA  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
410 WILLOUGHBY AVENUE, SUITE 303  
JUNEAU, ALASKA 99801-1795**

**APPLICATION FOR A CLASS III MUNICIPAL SOLID WASTE LANDFILL PERMIT**

**Introduction**

This packet of information contains the forms and lists the requirements needed to complete a permit application for a small municipal landfill. If you intend to construct a landfill to accept and dispose of waste generated by a village or camp (less than 1,000 people) you must complete these materials and gain approval from the state before burying any waste at your site. If you intend to operate a larger municipal landfill, or do not plan to accept municipal waste, you may still need to apply for a permit, but this is not the correct application package for you. The Department of Environmental Conservation (DEC) Solid Waste Program is available to help you determine whether you need a permit and if so, what kind of permit.

Our regulation (18 AAC 60.205) requires most permit applicants to demonstrate the need for a solid waste disposal facility. The process of preparing a solid waste management plan under this regulation is intended to help permit applicants determine how much waste, if any, should be treated or disposed. In some cases, solid waste managers have found shipping waste elsewhere for recycling or disposal is less expensive than building a new landfill. If you have gotten approval for your solid waste management plan or you are exempt from this requirement under 18 AAC. 60.205(b) you may continue with the permit application process. Otherwise, you should stop working on the permit application and do the solid waste management plan. If you submit a permit application for new facility without first getting approval for your solid waste management plan we will rule your application incomplete.

The following is a list of items that must be completed in order for DEC to begin processing your permit application.

- |  |   |
|--|---|
| 1. Cover letter                              | 7. Waiver requests and justification                            |
| 2. Contact information                       | 8. Calculations, data and legal documents                       |
| 3. Waste handling and processing information | 9. Operations plan  |
| 4. Signatures and certifications             | 10. Monitoring plan   |
| 5. Area maps                                 | 11. Closure plan with cost estimate                             |
| 6. Construction drawings and specifications  | 12. Check or money order to cover permit application review fee |

Please check carefully to make sure that your permit application package is complete before submitting it to the department. We strongly suggest that you prepare a draft application, come up with a list of questions for us, and then schedule a pre-application meeting with the office that will be reviewing your application materials. You may contact program staff at the department's three main offices, in Anchorage, Juneau and Fairbanks. The office addresses are listed on the back page of this packet.



## Arctic Solutions Inc.



May 3, 2007

Ms. Linda Demientieff  
Environmental Program Specialist II  
Alaska Department of Environmental Conservation  
Division of Environmental Health  
Solid Waste Program  
610 University Avenue  
Fairbanks, Alaska 99709-3643

**Re: APPLICATION FOR A CLASS III MUNICIPAL SOLID WASTE LANDFILL PERMIT  
SECTIONS 11 AND 14, TOWNSHIP 4N, RANGE 23W FAIRBANKS MERIDIAN  
CITY OF TANANA, ALASKA; ADEC FILE NO. 780.15.001**

Dear Ms. Demientieff:

On behalf of the City of Tanana ("The City"), Arctic Solutions Inc. (Arctic Solutions) is pleased to present this application packet for operating a Class III Municipal Solid Waste Landfill (MSWLF) Permit under Alaska Department of Environmental Conservation (ADEC) 18 AAC 60.200 and 60.300. This application supersedes and replaces a The City submitted MSWLF permit application in 1987 that eventually was withdrawn.

This cover letter satisfies Part 1 of the application. The entire application packet including Parts 2 through 11 are presented in the following appendices:

- Appendix A: City of Tanana Ordinance and Zoning Compliance Letter  
1987 State of Alaska Permit Review Memos  
Tanana Weather and Climate Data  
Historical Landfill Photographs
- Appendix B: Class III MSWLF Completed Application Including:  
Part 2 Contact Information;  
Part 3 Waste Handling and Processing Information; and,  
Part 4 Signatures and Certification.
- Appendix C: Part 5 Area Maps  
Part 6 Construction Drawings and Specifications
- Appendix D: Part 7 Waiver Requests and Justification
- Appendix E: Part 8 Calculations, Data and Legal Documents
- Appendix F: Part 9 Operations Plan
- Appendix G: Part 10 Monitoring Plan
- Appendix H: Part 11 Closure Plan with Cost Estimate

Part 12, the application review fee is submitted separately.

Mr. Alfred "Bear" Ketzler is Tanana's Administrator/City Manager. Mr. Ketzler is the point of contact for this application and can be reached at Post Office (P.O.) Box 249, Tanana, Alaska 99777, (907) 978-5848.

## CITY OF TANANA LOCATION, PHYSICAL DESCRIPTION AND LANDFILL HISTORY

The City is located in Interior Alaska, approximately two (2) miles west of the junction of the Tanana and Yukon Rivers; 110 air miles west of Fairbanks, Alaska. The City encompasses 11.6 square (sq.) miles of land and 4.0 sq. miles of water. The present City population is approximately 271 to 300 persons with an estimated 100 additional seasonal workers. The population includes the Tribal Village of Tanana.

Weather and climate data are presented in Appendix A. Tanana experiences a continental climate with temperature extremes. Daily maximum temperatures during July range from 64 to 70 degrees Fahrenheit (°F), daily minimum temperatures in January range from -14 to -48 °F. Annual average precipitation is 13 inches with 50 inches of snowfall. The Yukon River is ice-free from mid-May through mid-October.

The City operates the existing landfill on a 10-acre parcel located approximately 1.1 road miles west of the Tanana Airport, in Sections 11 and 14, Township 4N, Range 23W Fairbanks Meridian. Maps and drawings are presented in Appendix C. Using a US Census Bureau web browser, the landfill latitude and longitude coordinates of the landfill were calculated at 65.1808190 latitude and -152.153552 longitude.

The City landfill actively uses approximately six (6) acres of the 10 acre parcel. This active portion is fenced. The City is working with Indian Health Services (IHS) to secure funding for upgrading the existing portion and expanding the landfill onto the remaining acres.

The City landfill is located on land owned by Tozitna Limited (surface estate) and Doyon Ltd. (subsurface estate). Appendix E presents the legal documents for the property. In a May 2, 2007 meeting with The City, representatives of Doyon and Tozitna agreed to provide written approval for land use after a scheduled May 2007 survey is completed. In addition, it was agreed by all parties to begin land reconveyance to the City through the Alaska Native Claims Settlement Act (ANCSA) 14(c)(3). Land reconveyance will be for the existing 10 acre parcel and surrounding acreage for future use.

The lowest portion of the active landfill is located approximately 1,052 feet north of the Yukon River and approximately 320 feet above sea level on a south facing slope. Permafrost is discontinuous in the area and has not been encountered during past digging of disposal trenches down to 25 feet below surface elevations.

The site drainage patterns follow contours in a southerly direction toward the Yukon River. The sources of runoff are from snowmelt and rainfall. The surrounding area is gently rolling hills with upland mixed forest stands on south facing slopes intermingled with low-lying poorly drained black spruce stands.

According to ADEC files, the landfill has been at its current location since the mid 1970's. Prior to the current facility, a dump was located on the Yukon River bank and subsequently on (formerly) airport land located west of the existing landfill. Photos presented in Appendix A show the landfill in 1981, 1999 and today. Refer to Appendix C for maps and drawings. When the current site was cleared, upland drainage was diverted around the landfill by grading and berming soil. ADEC files show The City has been improving and upgrading the existing location since the landfill's inception.

## APPLICATION REQUIREMENTS

As required in Part 1 of the application, this facility meets the requirements of 18 AAC 60.300 (a) (3) Class III MSWLF in that it is not connected by road to a Class I MSWLF; and, the landfill accepts for disposal:

- (B) less than five (5) tons daily of municipal solid waste, based on an annual average and [The City] is not located in a place;
  - (i) where public access is restricted, including restrictions on the right to move to [The City] and reside there.

The City does not have a formal Solid Waste Management Plan (SWMP). In December 2006 The City submitted a grant proposal to the US Department of Agriculture for a Solid Waste Management Plan Feasibility Study grant. Although The City was not successful in securing the grant, they are pursuing other monetary grants as they become available.

Arctic Solutions submitted a letter dated February 9, 2007 on behalf of The City to ADEC requesting a waiver to the SWMP. ADEC granted the request in a letter dated March 12, 2007. Both letters are provided in Appendix D.

The City developed and implemented a Recycle and Oil Recovery Program in 2006 including securing grants for a Black Gold 200 Energy Recovery Furnace and a Smart Ash Incinerator; and, pursuing funding for two Solid Waste Burn Units. The City will operate the SW Burn Units at the landfill to reduce the volume of solids entering the landfill. The new units will replace the existing inefficient handmade burn unit onsite.

The City will operate the Black Gold Furnace and Smart Ash Incinerator at The City Power Plant to dispose used oil and other similar wastes. In addition to reducing hazards from oil contaminated liquids and solids, the Power Plant is expected to use the energy produced to offset the amount the diesel fuel required. Details of the Recycle and Oil Recovery Program are provided in Appendix F.

The City is planning on upgrading and expanding the landfill into the remaining portion of the 10 acre parcel immediately west of the landfill fence. This area was excavated in the past and is currently used as a shooting range due to high sidewalls located north and west.

Brice, Inc. (Brice) of Fairbanks has recently completed soil analysis in this expansion area. Refer to Appendix E for the soils report. Brice expects to use this soil to construct an Alaska Department of Transportation (DOT) approved road to bypass north of The City airport. Any soil not approved for the new road will be stockpiled at the landfill for future cover.

Part of the expansion will provide deposition of the debris from the hospital compound demolition expected to begin this Summer 2007. Due to the immense size of the demolition (nine (9) buildings), a large burn pit will be placed in area Brice excavated for fill so that any burnable debris (i.e. wood) can be 'incinerated' before placing in trench cells. This is the only proposed open burning expected to take place in the future.

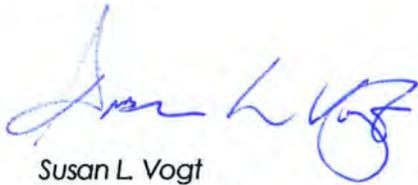
Hospital demolition debris disposed in the landfill will not include friable asbestos or other hazardous materials. Non-friable asbestos such as roof shingles and floor tiles, and materials containing lead will be bagged and buried in the landfill. Bagged non-friable asbestos and lead materials from the upcoming demolition of the Noel Wien building at the Tanana Airport will also be placed in the landfill.

The contractors demolishing the hospital compound and Noel Wien Building (Brice and R&D Environmental of Fairbanks, respectively) will be responsible for properly disposing all friable asbestos and hazardous materials in the Fairbanks landfill or at other licensed disposal facilities.

The information required in Parts 2 through 11 of the MSWLF application is provided in the attached appendices. Narratives are included where needed to answer questions in the application. Part 12, the application fee is submitted separately.

Please contact me directly at (907) 457-6767 or [bias@alaska.net](mailto:bias@alaska.net) if you have any questions or need additional information. I look forward to hearing from you.

*Sincerely,*



Susan L. Vogt  
Project Manager  
Arctic Solutions Inc.

cc: Bear Ketzler, Tanana Administrator/City Manager  
Doug Buteyn, ADEC Environmental Program Manager I

***APPENDIX A***

***CITY OF TANANA ORDINANCE & ZONING  
COMPLIANCE LETTER***

***1987 STATE OF ALASKA PERMIT REVIEW  
MEMOS***

***TANANA WEATHER & CLIMATE DATA***

***HISTORICAL LANDFILL PHOTOGRAPHS***

## CITY OF TANANA

P.O. Box 249  
Tanana, Alaska 99777  
(907) 366-7159 • Fax (907) 366-7169

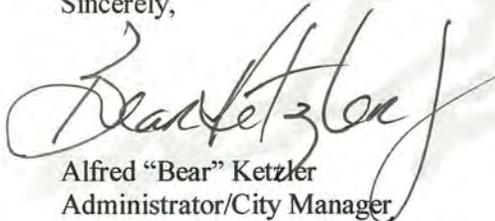
February 26, 2007

Ms. Linda Demientieff  
The Alaska Department of Environmental Conservation  
Division of Environmental Health  
Solid Waste Management Program Office  
610 University Avenue  
Fairbanks, Alaska 99709

Dear Ms. Demientieff:

On behalf of the City of Tanana, Alaska, I hereby certify that the Tanana Landfill is in compliance with all local ordinances and zoning requirements. I am unaware of any coastal zone management plans or regulations that are applicable to this site, located approximately 1,400 feet from the Tanana River and approximately 320 feet above sea level.

Sincerely,



Alfred "Bear" Ketzler  
Administrator/City Manager

# MEMORANDUM

State of Alaska

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS AND  
OUTDOOR RECREATION

Larry Dietrick  
TO: Department of Environmental Conservation  
P.O. Box 1601  
Fairbanks, Alaska 99707

DATE:

August 19, 1987

FILE NO:

3130-2R (DEC)

TELEPHONE NO:

762-2626

FROM: *J. E. Bittner*  
Judith E. Bittner  
State Historic Preservation Officer

SUBJECT:

Solid Waste Permit  
Application  
8731-BA011  
Tanana Landfill

We have reviewed the referenced project for conflicts with cultural resources per 36 CFR 800. We do not believe that the proposed project will impact any resources on or eligible to the National Register of Historic Places. This assessment is based on an examination of our records of currently known resources and cultural resource surveys. Since the available data on cultural resources statewide is by no means complete, we request that the following become a stipulation on any license, permit, or contract issued on the project:

Should cultural or paleontological resources be discovered as a result of this activity, we request that work which would disturb such resources be stopped, and that the State Historic Preservation Office be contacted immediately (762-2622).

GD:clk

RECEIVED

AUG 24 1987

DEPT. OF ENVIRONMENTAL  
CONSERVATION  
NRO

# MEMORANDUM

## State of Alaska Department of Transportation & Public Facilities

RECEIVED

TO: Doug Lowery  
Dept. of Environmental Conservation  
P.O. Box 1601  
Fairbanks, AK 99707-1601

FROM: *David M. Druce FOR*  
Jonathan A. Widdis  
Manager, CIP Planning  
Northern Region

DATE: August 21, 1987

FILE NO: d/52 *AUG 24 1987*

TELEPHONE NO: 474-2427 *DEPT OF ENVIRONMENTAL CONSERVATION*

SUBJECT: Solid Waste Permit *NBO*  
Application 8731-BA011  
City of Tanana Landfill

We have reviewed the Solid Waste Permit Application from the City of Tanana for a landfill and offer the following comments:

- 1) The landfill site appears to be within less than one mile of the Tanana Airport. According to Federal Aviation Administration (FAA) regulations, landfill sites cannot be located within one mile of an airport without FAA approval.
- 2) Because of the above referenced FAA regulations, the DOT&PF cannot concur in the issuance of a solid waste permit until we have been advised of FAA's approval of the landfill location.
- 3) The FAA contact, address and phone number are:

Mr. Russell Hathaway  
Manager, Airports Division  
Federal Aviation Administration  
701 "C" Street, Box 14  
Anchorage, AK 99513  
Telephone: 271-5438

DWT:ap

cc: Shirley Horn, Right-of-Way Agent, Airports, Northern Region  
Mike Tinker, Environmental Coordinator, Northern Region

*1/27/88*

*Harold Hillam called. He has measured and driven the road from the airport to landfill site and says it is at least 1.1 miles apart.*

# TANANA FAA AIRPORT, ALASKA

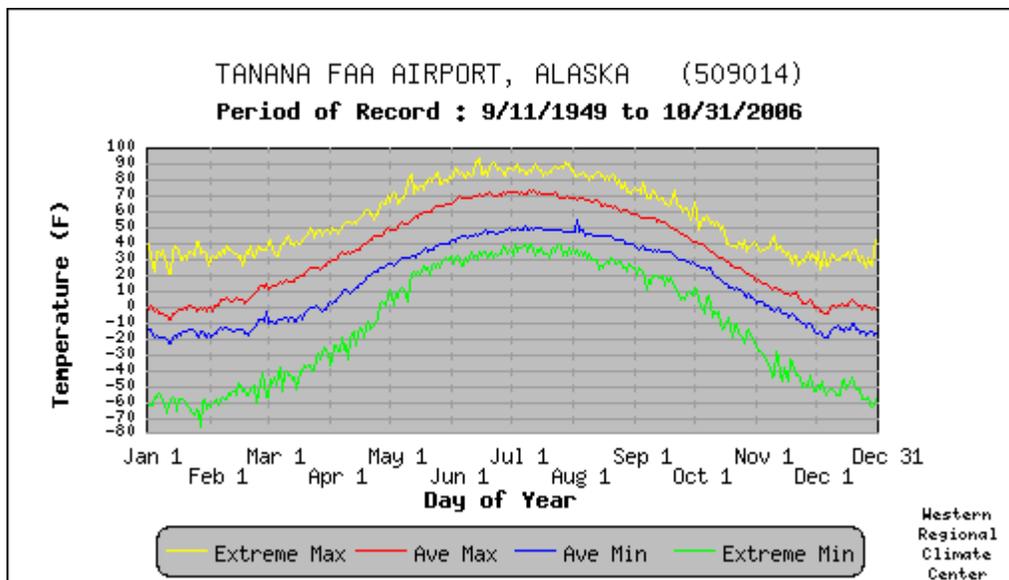
## NCDC 1971-2000 Monthly Normals

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Monthly
Mean Max. Temperature (F)	-2.6	4.5	19.5	38.4	58.4	70.0	72.1	65.1	51.9	28.8	8.8	0.6	34.6
Highest Mean Max. Temperature (F)	19.1	19.4	30.8	47.8	65.3	74.5	76.3	73.4	58.0	36.7	24.1	13.4	76.3
Year Highest Occurred	1981	1997	1981	1998	1995	1991	1993	1977	1974	1987	1979	1985	1993
Lowest Mean Max. Temperature (F)	-23.6	-14.1	6.1	26.6	48.5	62.9	63.3	58.6	40.8	20.9	-2.3	-18.4	-23.6
Year Lowest Occurred	1989	1990	1972	1971	1992	1978	1981	1983	1992	1982	1989	1980	1989
Mean Temperature (F)	-9.9	-4.7	7.9	26.9	46.8	58.6	61.4	55.4	43.6	22.4	2.2	-6.5	25.3
Highest Mean Temperature (F)	13.5	12.4	22.4	37.7	51.9	61.5	64.2	61.6	48.9	31.5	19.3	6.9	64.2
Year Highest Occurred	1981	1997	1981	1998	1981	1997	1975	1977	1995	1979	1979	1985	1975
Lowest Mean Temperature (F)	-31.5	-25.8	-7.1	15.4	38.1	54.4	56.3	49.6	32.4	12.7	-8.1	-24.0	-31.5
Year Lowest Occurred	1971	1990	1972	1985	1992	1978	2000	2000	1992	1996	1989	1980	1971
Mean Min. Temperature (F)	-17.1	-13.9	-3.7	15.4	35.2	47.1	50.6	45.6	35.2	15.9	-4.4	-13.5	16.0
Highest Mean Min. Temperature (F)	7.8	5.3	14.0	27.6	38.8	50.1	53.8	50.4	40.8	27.3	14.4	0.4	53.8
Year Highest Occurred	1981	1997	1981	1998	1981	1971	1975	1994	1995	1979	1979	1986	1975
Lowest Mean Min. Temperature (F)	-40.9	-37.5	-20.3	0.6	27.7	43.5	45.7	40.3	23.9	2.3	-15.1	-29.7	-40.9
Year Lowest Occurred	1971	1990	1972	1985	1992	2000	2000	2000	1992	1996	1973	1980	1971
Mean Precipitation (in.)	0.53	0.48	0.50	0.32	0.51	1.47	2.17	2.51	1.68	0.86	0.64	0.69	12.36
Highest Precipitation (in.)	2.48	1.92	2.24	1.75	1.05	2.68	5.55	4.85	5.33	1.68	1.53	2.15	5.55
Year Highest Occurred	1993	1989	1985	1979	1988	1999	1998	1994	1993	1972	1979	1990	1998
Lowest Precipitation (in.)	0.00	0.00	0.00	0.00	0.00	0.07	0.37	0.90	0.05	0.15	0.07	0.00	0.00
Year Lowest Occurred	2000	2000	1983	2000	1974	1991	1988	1976	1984	1998	1991	1995	2000
Heating Degree Days (F)	2323.	1953.	1772.	1143.	564.	199.	131.	311.	645.	1322.	1887.	2216.	14466.
Cooling Degree Days (F)	0.	0.	0.	0.	0.	5.	17.	11.	0.	0.	0.	0.	33.

Western Regional Climate Center, [wrcc@dri.edu](mailto:wrcc@dri.edu)

# TANANA FAA AIRPORT, ALASKA

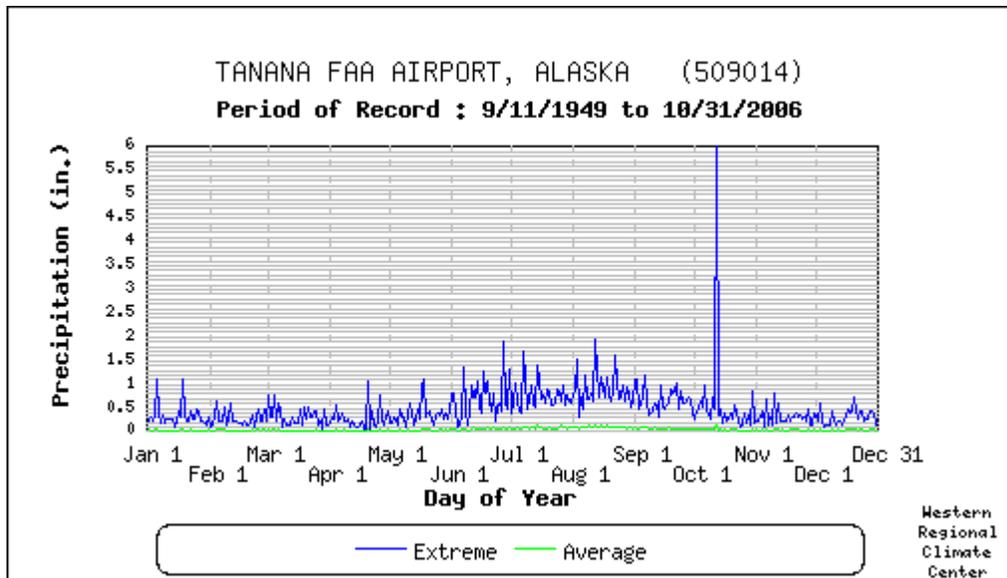
## POR - Daily Temperature Averages and Extremes



- - Extreme Max. is the maximum of all daily maximum temperatures recorded for the day of the year.
- - Ave. Max. is the average of all daily maximum temperatures recorded for the day of the year.
- - Ave. Min. is the average of all daily minimum temperatures recorded for the day of the year.
- - Extreme Min. is the minimum of all daily minimum temperatures recorded for the day of the year.

# TANANA FAA AIRPORT, ALASKA

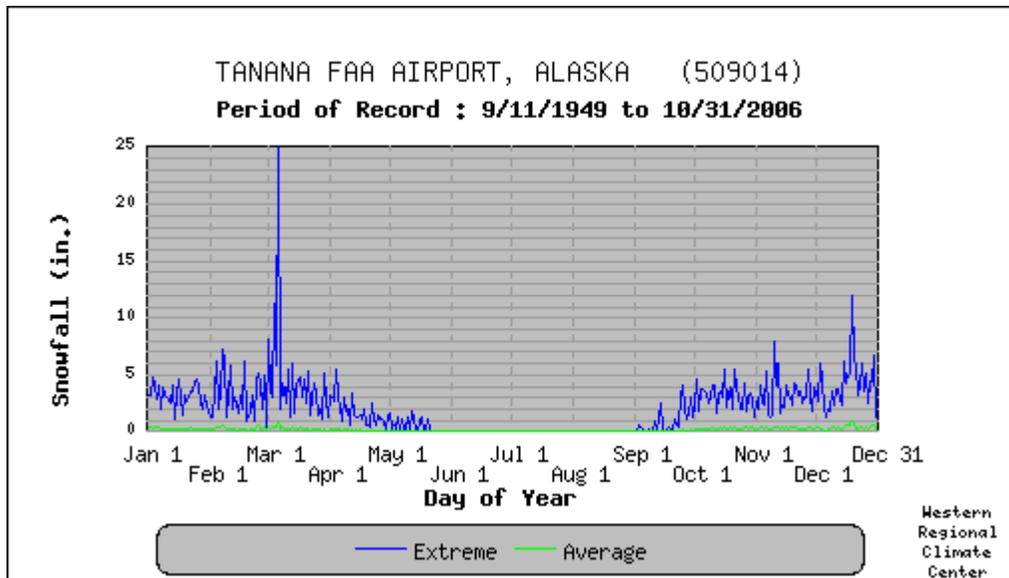
## POR - Daily Precipitation Average and Extreme



- - Extreme is the greatest daily precipitation recorded for the day of the year.
- - Average is the average of all daily precipitation recorded for the day of the year.

# TANANA FAA AIRPORT, ALASKA

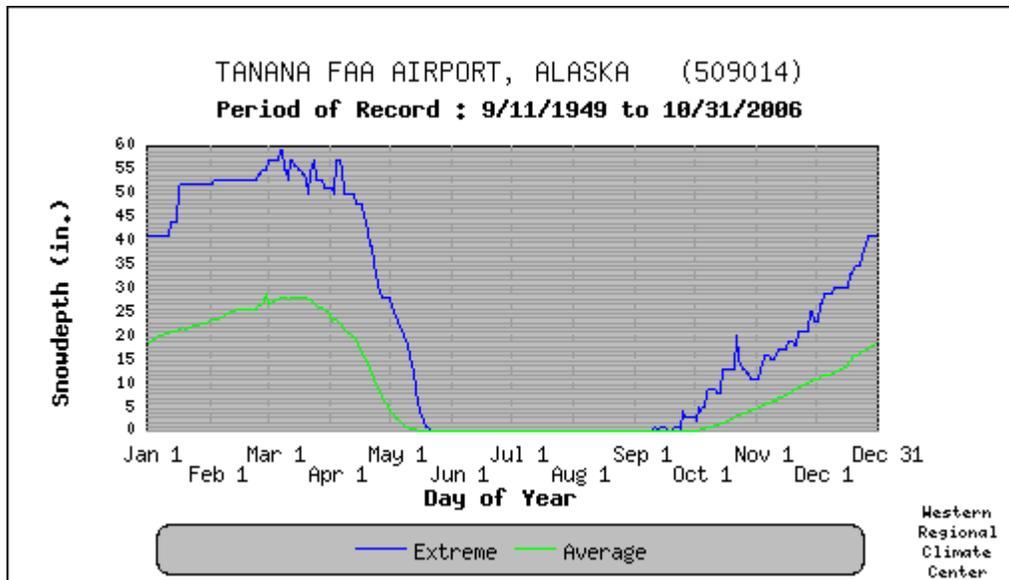
## POR - Daily Snowfall Average and Extreme



-  - Extreme is the greatest daily snowfall recorded for the day of the year.
-  - Average is the average of all daily snowfall recorded for the day of the year.

# TANANA FAA AIRPORT, ALASKA

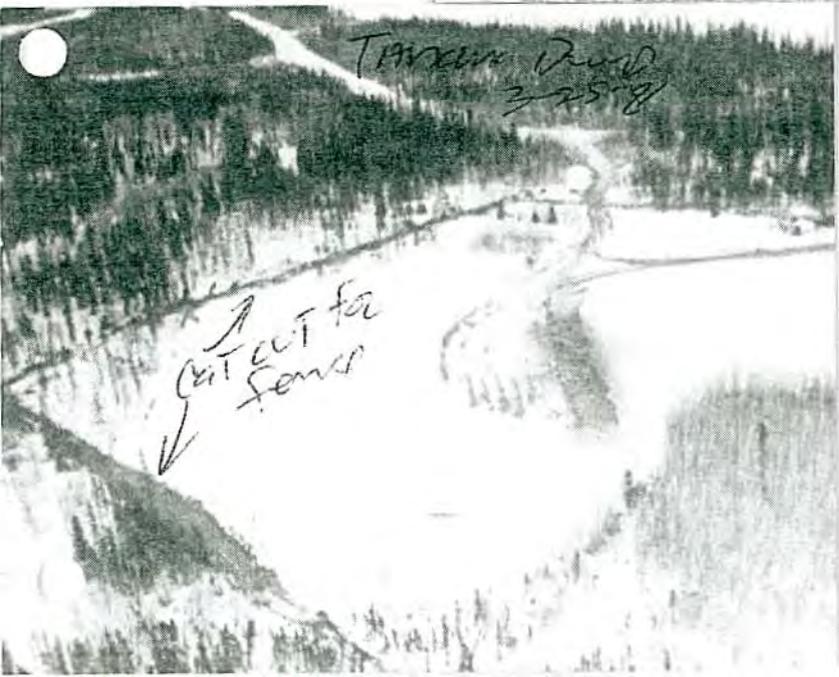
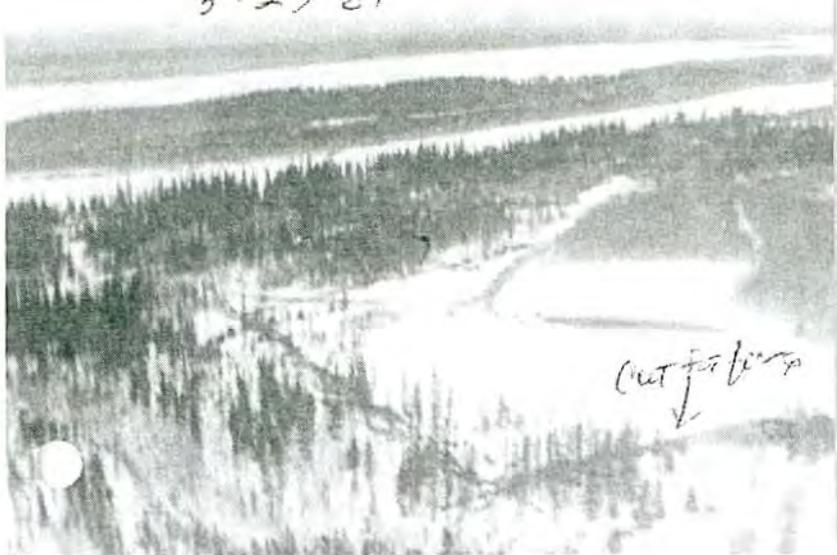
## POR - Daily Snowdepth Average and Extreme



● - Extreme is the greatest daily snowdepth recorded for the day of the year.

● - Average is the average of all daily snowdepth recorded for the day of the year.

5-27-21







SOURCE: ADEC AUGUST 9, 1999 INSPECTION DETAILED IN THE SEPT 9, 1999 INSPECTION REPORT



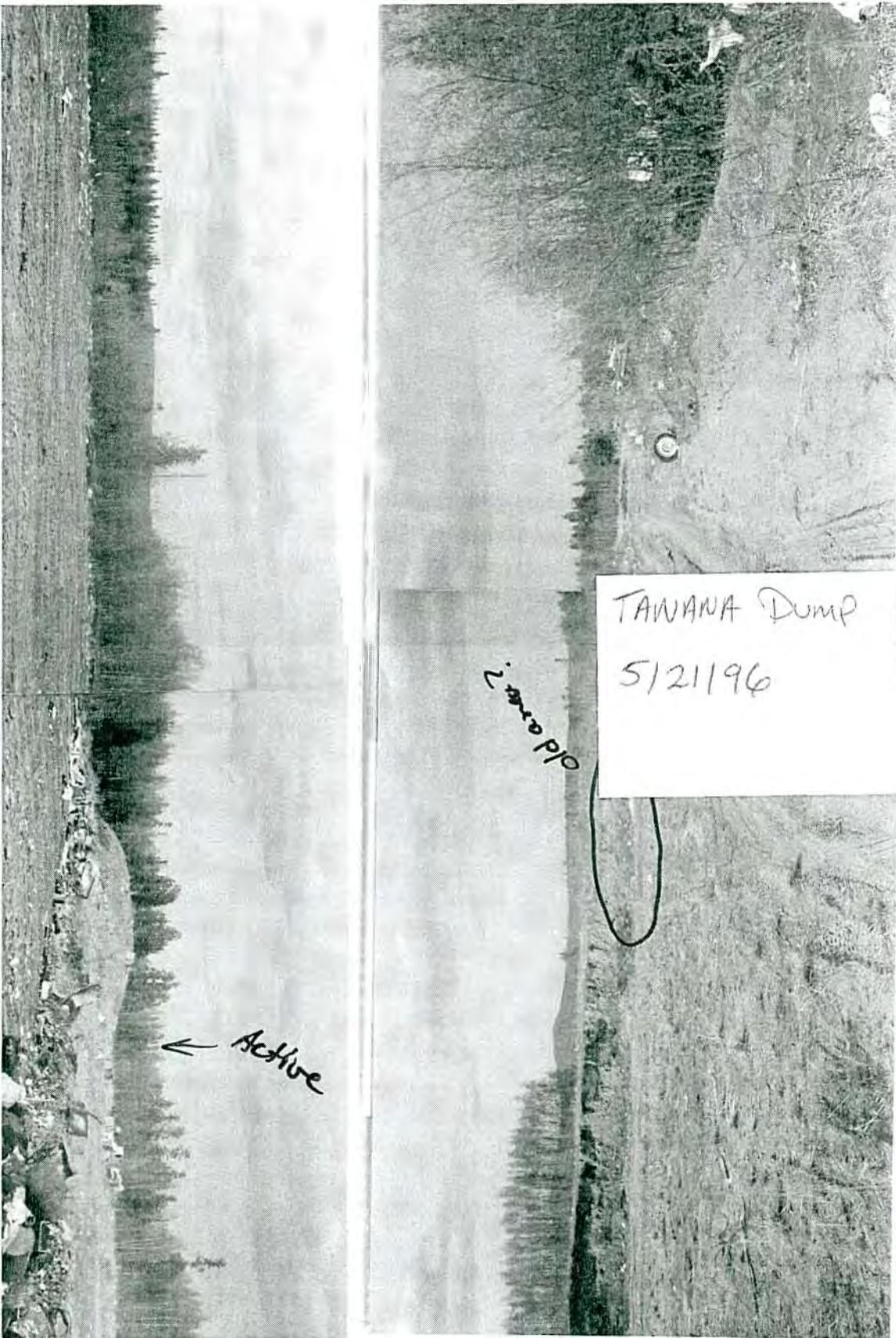


NEW  
Area of  
Expansion

5122196

Disposal area

Tanara Dump



TAWANA Dump

5/21/96

Old dump

← Active

SOURCE: ADEC INSPECTION REPORT DATED JUNE 10 1996





Photo 1: Looking north toward the west end gate of the City of Tanana Landfill.



Photo 2: Close up of the west end landfill gate and signs.



Photo 3: Looking northwest at the handmade burn unit. The scrap metal and old junk cars are located in the background along the east side fence.



Photo 4: Looking north at the active trench cell.



Photo 5: Looking south at the active trench cell. The future cell locations in the active landfill are right of the active cell.



Photo 6: Looking west toward the west boundary fence. Surface trash from wind is caught on the fence.



Photo 7: Looking north toward the small lake.



Photo 8: Standing in shooting range and future expansion area. Brice will excavate suitable soil from here for the airport road. The site will then be used to burn hospital demolition debris, and later for future landfill trench cells.

## ***APPENDIX B***

### ***CLASS III MSWLF COMPLETED APPLICATION INCLUDING:***

#### ***PART 2 CONTRACT INFORMATION***

#### ***PART 3 WASTE HANDLING AND PROCESSING INFORMATION***

#### ***PART 4 SIGNATURES AND CERTIFICATION***

## **Part One: Cover letter**

The cover letter must include

1. A statement indicating you wish to operate a class III municipal landfill, with evidence showing the proposed facility meets the requirements for that type of facility in 18 AAC 60.300(c);
2. A paragraph explaining when your solid waste management plan was approved and by whom, or an explanation of why you think the requirements of 18 AAC 60.205 are not applicable;
3. A general description of the site topography, geology, climate, and surface and groundwater hydrology present; and
4. A statement that you are aware of all applicable local ordinances, zoning requirements, and if appropriate, the Alaska Coastal Zone Management Program requirements of 6 AAC 50.

**Part Two: Contact information**

? Applicant's name City of Tanana  
Contact name Alfred Ketzler, Administrator/City Manager  
Mailing address P.O. Box 249  
City/State/Zip Tanana, Alaska 99777  
Telephone Number (907) 366-7159 FAX Number (907) 366-7169  
Email Address \_\_\_\_\_

? Type of entity (e.g. individual, partnership, corporation) City  
State of incorporation or registration \_\_\_\_\_  
Alaska business license number \_\_\_\_\_  
IRS tax identification number, or social security number (if individual) \_\_\_\_\_

? Facility owner's name same as above  
Mailing address \_\_\_\_\_  
City/State/Zip \_\_\_\_\_  
Telephone Number \_\_\_\_\_ FAX Number \_\_\_\_\_

? Landowner's name \*\* Tozitna, Limited (surface estate), Attn. Cheryl Wright, General Manager  
Mailing address P.O. Box 129  
City/State/Zip Tanana, Alaska 99777  
Telephone Number (907) 366-7255 FAX Number (907) 366-7122

? Operator's name John Huntington, City Maintenance/Equipment Operator  
Mailing address \_\_\_\_\_  
City/State/Zip \_\_\_\_\_  
Telephone Number (907) 366-7151 FAX Number \_\_\_\_\_

? Agent (if any) name Pat Moore, Special Project Coordinator  
Mailing address same as above  
City/State/Zip \_\_\_\_\_  
Telephone Number (907) 366-7129 FAX Number \_\_\_\_\_

\*\* Doyon, Ltd. (subsurface estate),  
Attn. Norm Phillips, Jr.  
Natural Resources Department  
1 Doyon Place  
Suite 300  
Fairbanks, Alaska 99701  
(907) 459-2000

### Part Three: Waste handling and processing information

List the amounts of the various wastes you expect to be receiving at the site:

<u>Waste type</u>	<u>Quantity in tons/yr</u>
Municipal Solid waste	91
Inert or C&D waste _____	_____
Asbestos (RACM)	_____
Sewage Solids or Biosolids	_____
Industrial waste or polluted soil	_____
Other _____	_____
Other _____	_____
Other _____	_____

What pre-disposal processing will be used, if any:

- |                       |                                     |                |                                     |                                |
|-----------------------|-------------------------------------|----------------|-------------------------------------|--------------------------------|
| Incineration (Future) | <input checked="" type="checkbox"/> | Open burning * | <input checked="" type="checkbox"/> | *For hospital demolition only. |
| Burn box              | <input checked="" type="checkbox"/> | Composting     | <input type="checkbox"/>            |                                |
| Salvage/Reuse         | <input checked="" type="checkbox"/> | Other          | <input checked="" type="checkbox"/> |                                |
| Baling/Compacting     | <input type="checkbox"/>            |                |                                     |                                |

If "Other", please describe

The City has received and is pursuing additional grant money for purchase of a Black Gold 200 Energy Recovery Furnace, a Smart Ash Incinerator and a Solid Waste Burn Unit. The purchases should be completed by this summer and online by the Fall 2007. Refer to Appendix F Part 9 Operations Plan for details.

Types of waste accepted for treatment or storage only (e.g. scrap metal, used oil, household hazardous waste):

Scrap metal from vehicles. Used oil will be burned in the energy recovery unit. Household haz. waste will be collected and shipped to Fairbanks for disposal at the Fairbanks landfill.

Describe your proposed method of handling any wastes that will be accepted on site but not disposed of in the landfill. Attach a separate sheet if needed:

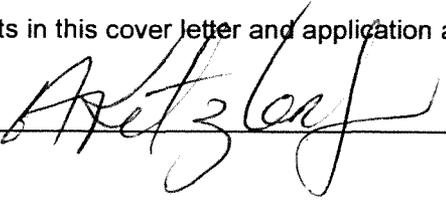
See Appendix F Part 9 Operations Plan. As stated above, household haz waste will be dropped off at landfill and shipped at necessary intervals to Fairbanks for disposal.

## Part Four: Signatures and certifications

The applicant must sign the application cover letter and this form.

I, Alfred Ketzler, Administrator/City Manager, certify under penalty of perjury, that all of the  
(PRINT OR TYPE NAME HERE)

information and exhibits in this cover letter and application are true, accurate, and complete.

Applicant's signature  Date 5 / 3 / 2007  
Month Day Year

**18 AAC 15.030. Signing the Applications.** All permits or applications submitted for approval must be signed as follows:

1. In the case of corporations, the signature must be that of a principal executive officer, or an officer no lower than the level of vice president or his/her duly authorized representative. The representative must be responsible for the overall management of the project or operation;
2. In the case of a partnership, by a general partner;
3. In the case of sole proprietorship, by the proprietor, and
4. In the case of a municipal, state, federal, or other public entity, by either a principal executive officer, ranking elected official, or duly authorized employee.

### Submitting an Application:

Submit your completed and signed application to the Solid Waste Program in the department's office nearest your facility (see list of DEC's three main offices on the last page of this packet.)

**Part Twelve: Check or money order to cover permit application review fee.**

**Permit application review fee required by 18 AAC 60.700 Table I-2.**

The Alaska Department of Environmental Conservation  
Division of Environmental Health  
Solid Waste Management Program Offices  
<http://www.state.ak.us/dec/home.htm>  
E-Mail: [Solid\\_Waste@dec.state.ak.us](mailto:Solid_Waste@dec.state.ak.us)

410 Willoughby Avenue, Suite 303  
Juneau, AK 99801-1795  
(907) 465-5350  
FAX (907) 465-5164

555 Cordova Street  
Anchorage, AK 99501  
(907) 269-7500  
FAX (907) 269-7655

610 University Avenue  
Fairbanks, AK 99709  
(907) 451-2360  
FAX (907) 451-2187

# *APPENDIX C*

## *PART 5 AREA MAPS*

## *PART 6 CONSTRUCTION DRAWINGS AND SPECIFICATIONS*

## Part Five: Area maps.

Please submit maps, drawings and/or aerial photos of appropriate scale (a scale of 1" = 200' works for some facilities) showing:

1. Property boundaries
2. Location of all planned disposal areas
3. Fences and gates around the facility
4. Access roads
5. Equipment storage locations
6. Depth to groundwater, direction and velocity of flow
7. Areas previously used for waste disposal
8. Storage area for cover material
9. Locations of monitoring devices
10. Salvage storage area.
11. Surface water bodies and streams
12. Surface water control devices such as trenches, or berms

Please make sure to show:

1. Waste disposal limits will be no closer than 500 feet from a drinking water well 18 AAC 60.040
2. The highest measured groundwater table level at locations around the site 18 AAC 60.217
3. Any potential for surface water to enter the site from upgradient areas 18 AAC 60.225(c) during a rainstorm (note; this does not apply to villages)
4. The limits of any permafrost in the area 18 AAC 60.227
5. Waste disposal will be at least 50' from the property line 18 AAC 60.233
6. Bird attractants will be far enough from airports 18 AAC 60.305
7. The site is not in a floodplain 18 AAC 60.310
8. The location of wetlands near the facility 18 AAC 60.315
9. Any unstable ground at the facility 18 AAC 60.320(b)
10. Please include notes and a list of sources checked to locate information for 2,4,7,8, and 9 above.

*Note: Some landfills get flooded from time to time by streams during breakup or from rainstorms. If this is a problem at your site you should install barriers or ditches to divert the incoming water. If the landfill is over permafrost you must show us that there are no alternative locations without permafrost. If the landfill is in a wetland then you must show that there are no alternative sites available*

## **Part Six: Construction Drawings and Specifications.**

At a minimum the drawings and specifications must include the following plan view drawings with contour lines showing every two feet of vertical elevation change, or the smallest practical interval for:

- ? the existing site conditions
- ? any planned excavations before liner construction
- ? final site grades after the landfill reaches capacity
- ? roads and ditches

All of the above features must also be displayed on cross-section drawings along with the highest measured surface of the groundwater table.

## PARTS 5 AND 6: AREA MAPS, CONSTRUCTION DRAWINGS AND SPECIFICATIONS

The only scaled drawing available is the attached 1989 Boundary Survey. During review of ADEC files, a hand sketch of the landfill with the perimeter fence measurements was found but it was not dated. It is The City's intention to do a detail drawing of the 10 acre parcel beginning this summer as part of the landfill expansion and ANCSA land reconveyance.

Manley Land Surveyors, Inc. is scheduled to complete a professional survey beginning mid May 2007. The corner boundary survey markers will be located; and, existing landfill features such as the perimeter fence, gates, berms, site grades, and open cells will be surveyed and mapped. The City will submit the survey drawing and legal property documentation to ADEC upon completion.

To comply with this application, Arctic Solutions has drawn an existing site map using the ADEC aerial photo contaminated webmap as a base (see attached). Landfill features were added using information collected from existing hand sketches of the site (also included) and interviews with the Tanana Manager/City Administrator Bear Ketzler.

Arctic Solutions has ground verified this information during a visual site inspection completed on May 2, 2007. Exact locations and dimensions of old disposal cells may never be verified without intrusive investigation. Due to the expense, The City will not be performing this type of investigation, unless otherwise directed and funding becomes available.

TANANA (A-5) QUADRANGLE

ALASKA

1:63 360 SERIES (TOPOGRAPHIC)

(TANANA B)

ANANA B-5)

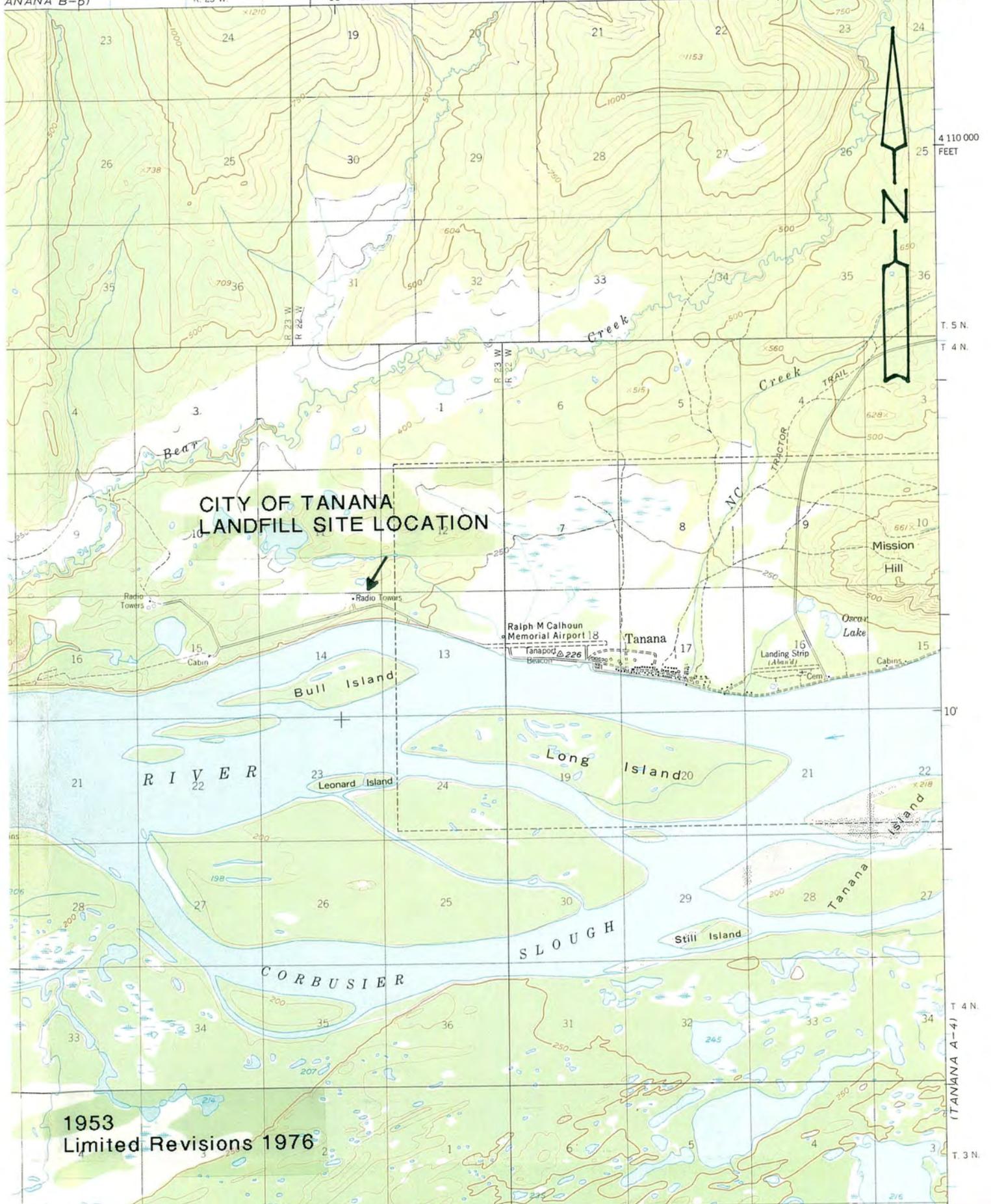
R. 23 W.

10' R. 22 W.

800 000 FEET

152°00'

65°15'



1953  
Limited Revisions 1976

(TANANA A-4)  
T. 4 N.  
T. 3 N.

# TOWNSHIP 4N RANGE 23W OF THE FAIRBANKS MERIDIAN, ALASKA

## LEGEND

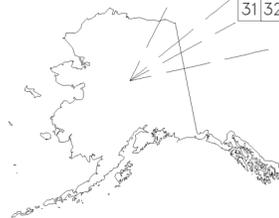
### BASE INFORMATION

- HYDROGRAPHY
- SURVEY LINE
- SURVEY LOT LINE
- TOWNSHIP/SECTION GRID
- 1/4 SECTION LINE
- HIGHWAY
- ROAD
- TRAIL
- RAILROAD
- ELECTRICAL POWER LINE
- TELEPHONE LINE
- PIPELINE
- AIRPORT/LANDING STRIP
- HORIZONTAL CONTROL
- CONTROL MONUMENT

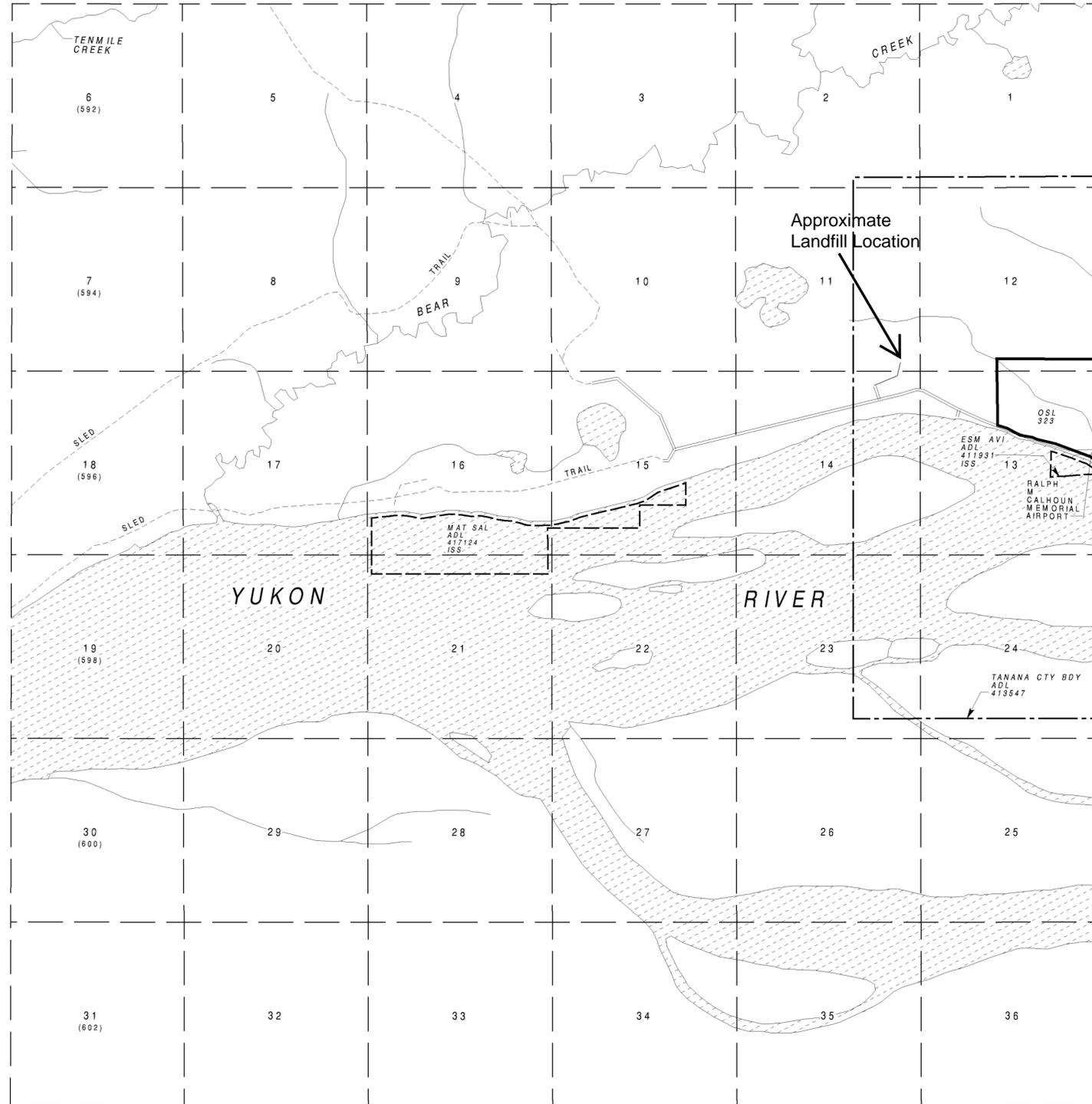
### STATUS INFORMATION

- TITLE
- BOUNDARY
- CLASSIFICATION
- DISPOSAL
- MUNICIPAL
- RESTRICTION
- FEDERAL ACTION
- MENTAL HEALTH TRUST
- LIMITS OF ACTION
- NAVIGATIONAL AID
- CABIN PERMIT
- TRAPPING CABIN PERMIT
- TRESPASS LOCATION
- SURFACE WATER RIGHTS**
- APPLICATION
- PERMIT
- CERTIFICATE
- SUB-SURFACE WATER RIGHTS**
- APPLICATION
- PERMIT
- CERTIFICATE
- IN-STREAM FLOW RESERVATION**
- APPLICATION
- CERTIFICATE
- DAM, WEIR, BARRIER**
- APPLICATION
- PERMIT
- CERTIFICATE

### VICINITY MAP



6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36



## STATUS PLAT

THE STATE OWNS ALL LAND UNDER WATERS THAT ARE NAVIGABLE-IN-FACT, ARE SUBJECT TO THE EBB AND FLOW OF THE TIDES, OR ARE RIPARIAN OR LITTORAL TO UPLANDS OWNED BY THE STATE.

BASED ON:

COORDINATES:  
ALASKA STATE PLANE ZONE 5  
SE CORNER OF TOWNSHIP:  
X 789486.645  
Y 4069641.727  
LAT 65 07 23.371 N  
LONG 152 07 14.187 W

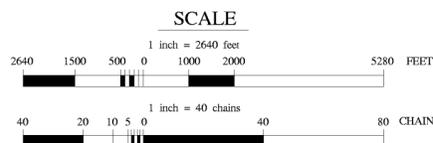
HYDROGRAPHY:  
USGS TANANA (A5) REVISED BY BLM  
FROM AERIAL HIGH ALTITUDE PHOTOGRAPHY 1978-1985

LAND NET:  
BLM PROTRACTION DIAGRAM FS-11; APPROVED 03/28/1960

OTHER ACTIONS AFFECTING DISPOSAL OR USE OF STATE LANDS:  
SEE THE LAS CASEFILE OR ORIGINAL SOURCE DOCUMENTS FOR ADDITIONAL INFORMATION:

ENTIRELY WIN FORT GIBBON RECORDING DISTRICT  
ADL 413547, CITY OF TANANA, CORPORATE BOUNDARY PER ORDER OF INCORPORATION DATED 10/11/1969

**GRAPHIC ILLUSTRATION ONLY.**  
SOURCE DOCUMENTS REMAIN THE OFFICIAL RECORD.  
CONSULT LAND ADMINISTRATION SYSTEM (LAS)  
CASEFILE FOR ADDITIONAL INFORMATION.



**ATTENTION STATUS PLAT USERS:** ON THIS PLAT, ALL STATUS LINES CLOSE FOR ACTIONS THAT EXTEND INTO ADJACENT TOWNSHIPS; THIS INCLUDES STATUS LINES SUCH AS DISPOSAL, MUNICIPAL, TITLE CLASSIFICATION, ETC. PLEASE REFER TO ADJACENT TOWNSHIPS OR LAS TO DETERMINE IF ACTIONS EXTEND BEYOND THE BOUNDARIES SHOWN ON THIS PLAT. REMEMBER TITLE, CLASSIFICATION, AND RESTRICTION LINES ALWAYS CLOSE ON ALL PLATS.

	A PRODUCT OF THE STATE OF ALASKA DEPARTMENT OF NATURAL RESOURCES LAND RECORDS INFORMATION SECTION	SP
	PLAT CURRENT TO 09/20/2005, REFER TO THE DNR STATUS PLAT TRACKING SYSTEM (NP45/NP62) FOR OTHER PENDING ACTIONS ON THIS TOWNSHIP/PLAT  CHECKED BY: TIERI MOODY	TWP 4N RNG 23W FM



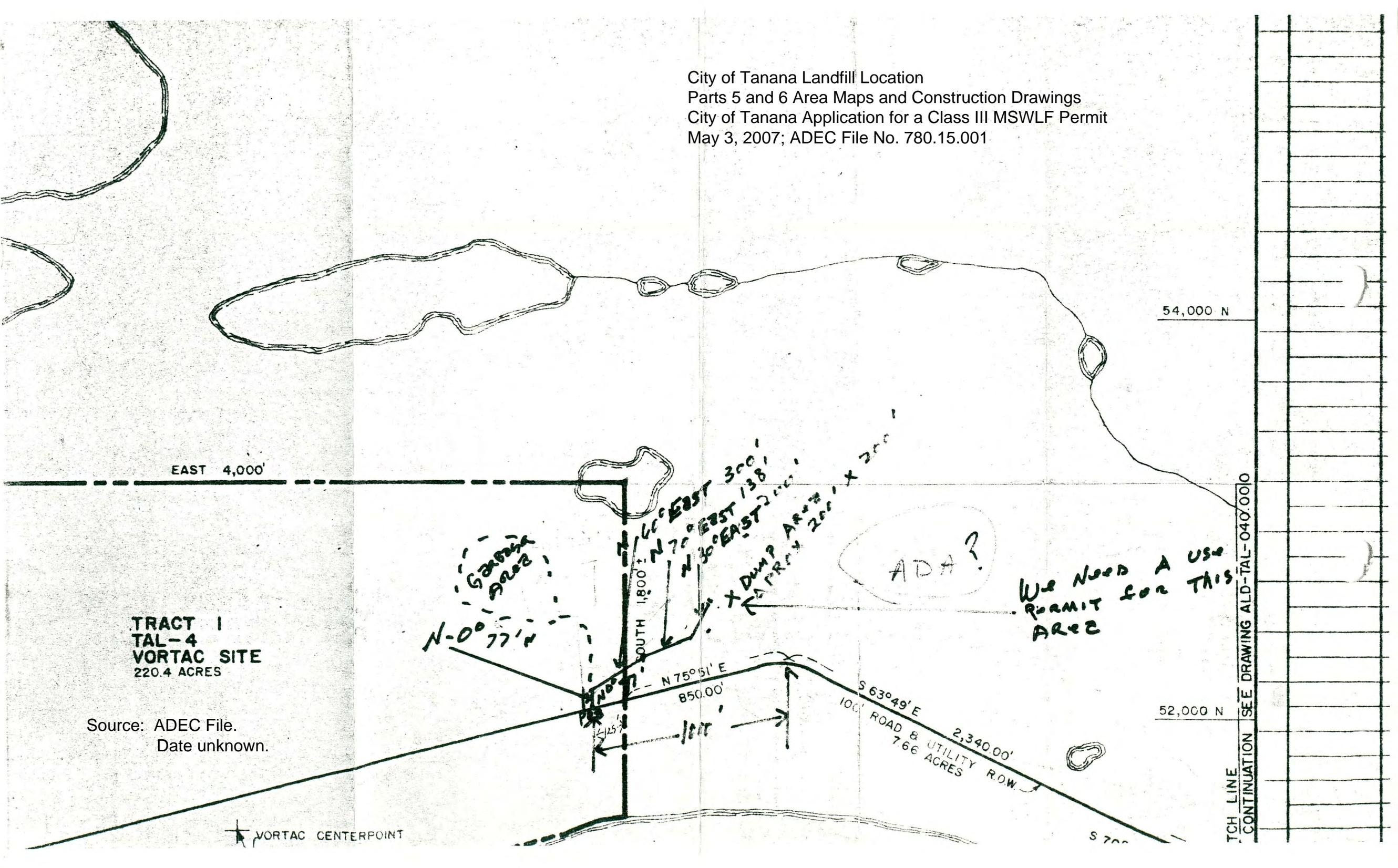
**Landfill Notes:**

1. Groundwater > 60 feet below surface elevations.
2. No known permafrost.

Air Photo Source: ADEC Contaminated Webmap. Date and Scale Unknown.  
 Site visually verified by Arctic Solutions Inc. on May 2, 2007

**Past, Present and Future Tanana Landfill**  
**Parts 5 and 6 Area Maps and Construction Drawings**  
**City of Tanana Application for a Class III MSWLF Permit**  
**May 3, 2007 ADEC File No. 780.15.001**

City of Tanana Landfill Location  
 Parts 5 and 6 Area Maps and Construction Drawings  
 City of Tanana Application for a Class III MSWLF Permit  
 May 3, 2007; ADEC File No. 780.15.001



TRACT I  
 TAL-4  
 VORTAC SITE  
 220.4 ACRES

Source: ADEC File.  
 Date unknown.

VORTAC CENTERPOINT

54,000 N

EAST 4,000'

52,000 N

TCH LINE  
 CONTINUATION SEE DRAWING AID-TAL-040.0010

We Need A Use  
 Permit for this  
 Area

ADA?

DUMP AREA  
 200' x 300'

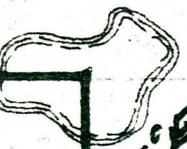
GAS AREA

100' ROAD & UTILITY R.O.W.  
 7.66 ACRES

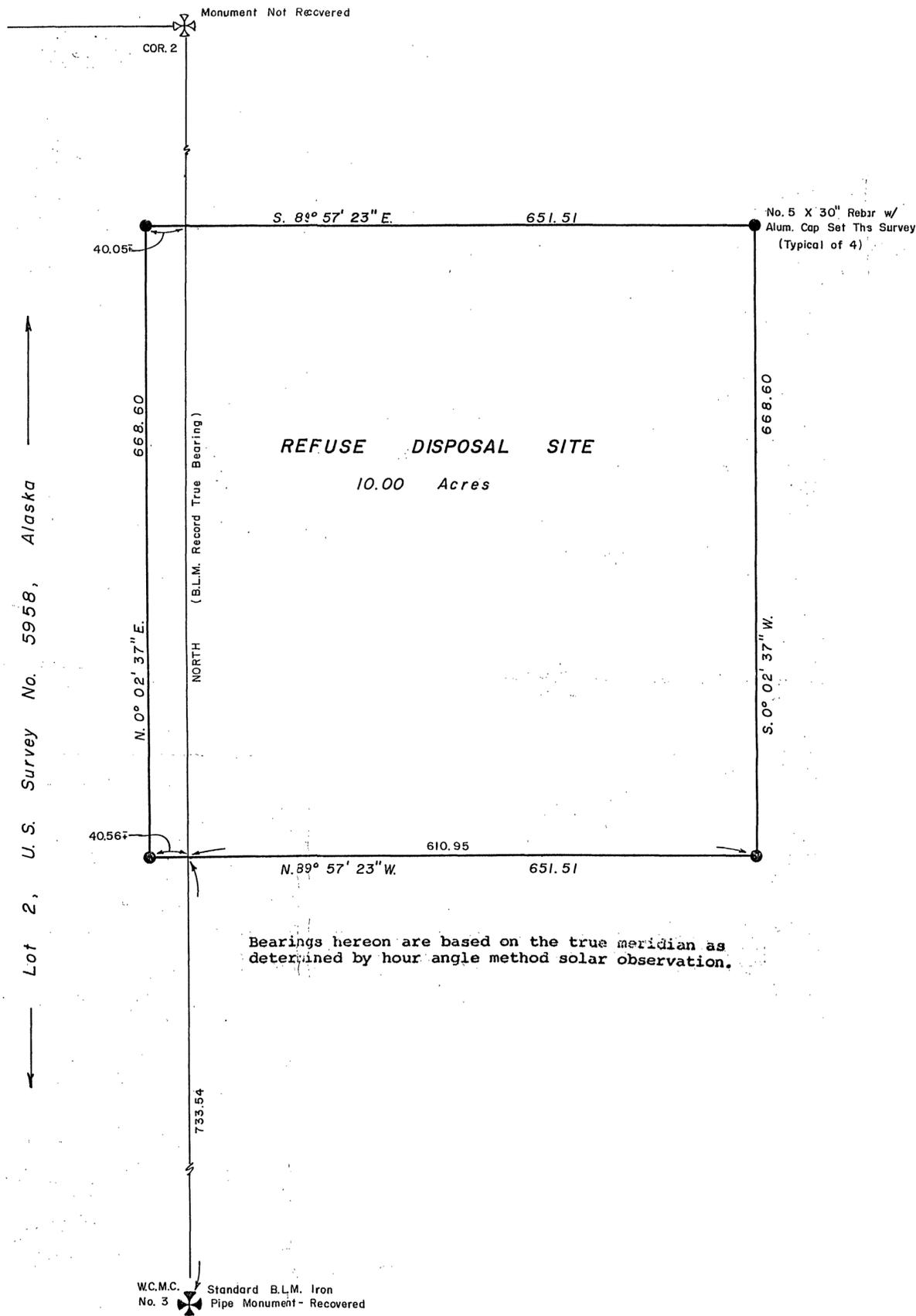
SOUTH 1,800'

N 75° 51' E  
 850.00'

N 66° EAST 300'  
 N 70° EAST 138'  
 N 30° EAST 200'



S 700'



Lot 2, U.S. Survey No. 5958, Alaska

**REFUSE DISPOSAL SITE**  
10.00 Acres

Bearings hereon are based on the true meridian as determined by hour angle method solar observation.

DESCRIPTION

A parcel of land situated within and adjoining U.S. Survey No. 5958, Alaska, located near Tanana, Alaska, and being more particularly described as follows:

Commencing at the Witness Corner to Meander Corner No. 3, U.S. Survey No. 5958, Alaska;

Thence northerly, along the East line of said U.S. Survey a distance of 733.54 feet to the true point of beginning of the herein described parcel of land;

Thence S. 89° 57' 23" E. a distance of 610.95 feet to a No. 5 Rebar with aluminum cap (5032-S);

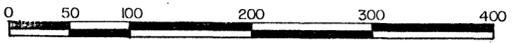
Thence N. 00° 02' 37" E. a distance of 668.60 feet to a No. 5 Rebar with aluminum cap (5032-S);

Thence N. 89° 57' 23" W. a distance of 651.51 feet to a No. 5 Rebar with aluminum cap (5032-S);

Thence S. 00° 02' 37" W. a distance of 668.60 feet to a No. 5 Rebar with aluminum cap (5032-S);

Thence S. 89° 57' 23" E. a distance of 40.56 feet, more or less, to the true point of beginning of the herein described parcel of land, said point being on the East line of said U.S. Survey No. 5958.

The above described parcel of land comprising 10.00 acres, more or less, and being subject to reservations, restrictions, and easements of record, if any.



DATE OF SURVEY Beginning 13 AUG. 1989 Ending 14 AUG. 1989	NAME OF SURVEYOR Manley Land Surveyors, Inc. GENERAL DELIVERY MANLEY HOT SPRINGS, ALASKA 99756
---	---

**CITY OF TANANA  
REFUSE DISPOSAL SITE  
BOUNDARY SURVEY**

SITUATED WITHIN AND ADJOINING LOT  
2, U.S. SURVEY NO. 5958, ALASKA

DRAWN BY R. Gray	PREPARED FOR: CITY OF TANANA
DATE 8-20-89	P.O. BOX 249
SCALE 1" = 100'	TANANA, ALASKA 99777

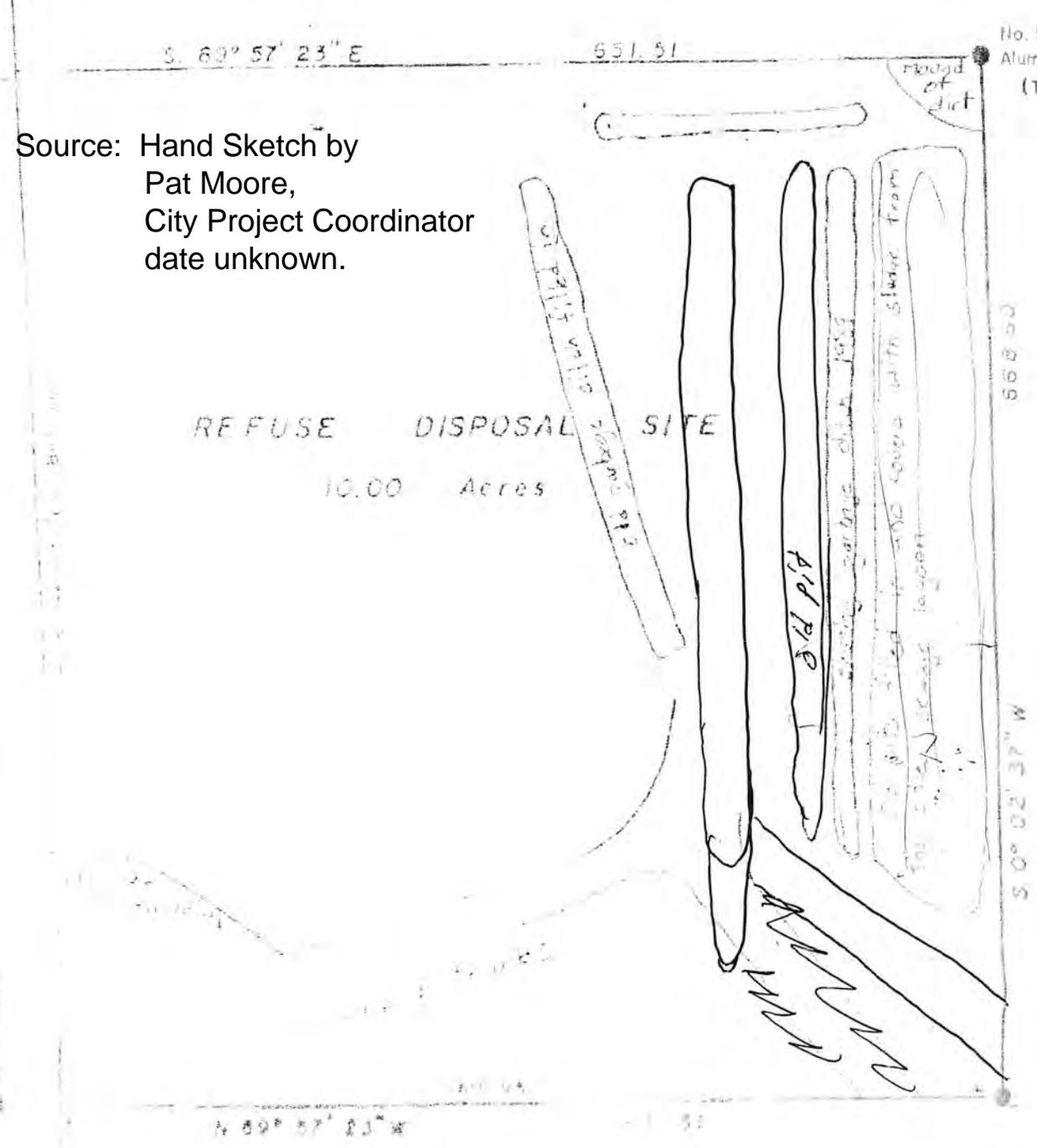
I hereby certify that I am properly registered and licensed to practice land surveying in the State of Alaska, that this plat represents a survey made by me or under my direct supervision, that the monuments shown hereon actually exist as described, and that all dimensions and other details are correct.

Date 20 AUG. 1989 Registration No. L.S. 503  
*Richard B. Gray*  
Richard B. Gray, Registered Land Surveyor



Historic City of Tanana Landfill Layout  
 Appendix C Parts 5 and 6 Area Maps and Construction Drawings  
 City of Tanana Application for a Class III MSWLF Permit  
 Sections 11 and 14, Township 4N, Range 23W Fairbanks  
 Meridian; ADEC File No. 780.15.001

Source: Hand Sketch by  
 Pat Moore,  
 City Project Coordinator  
 date unknown.



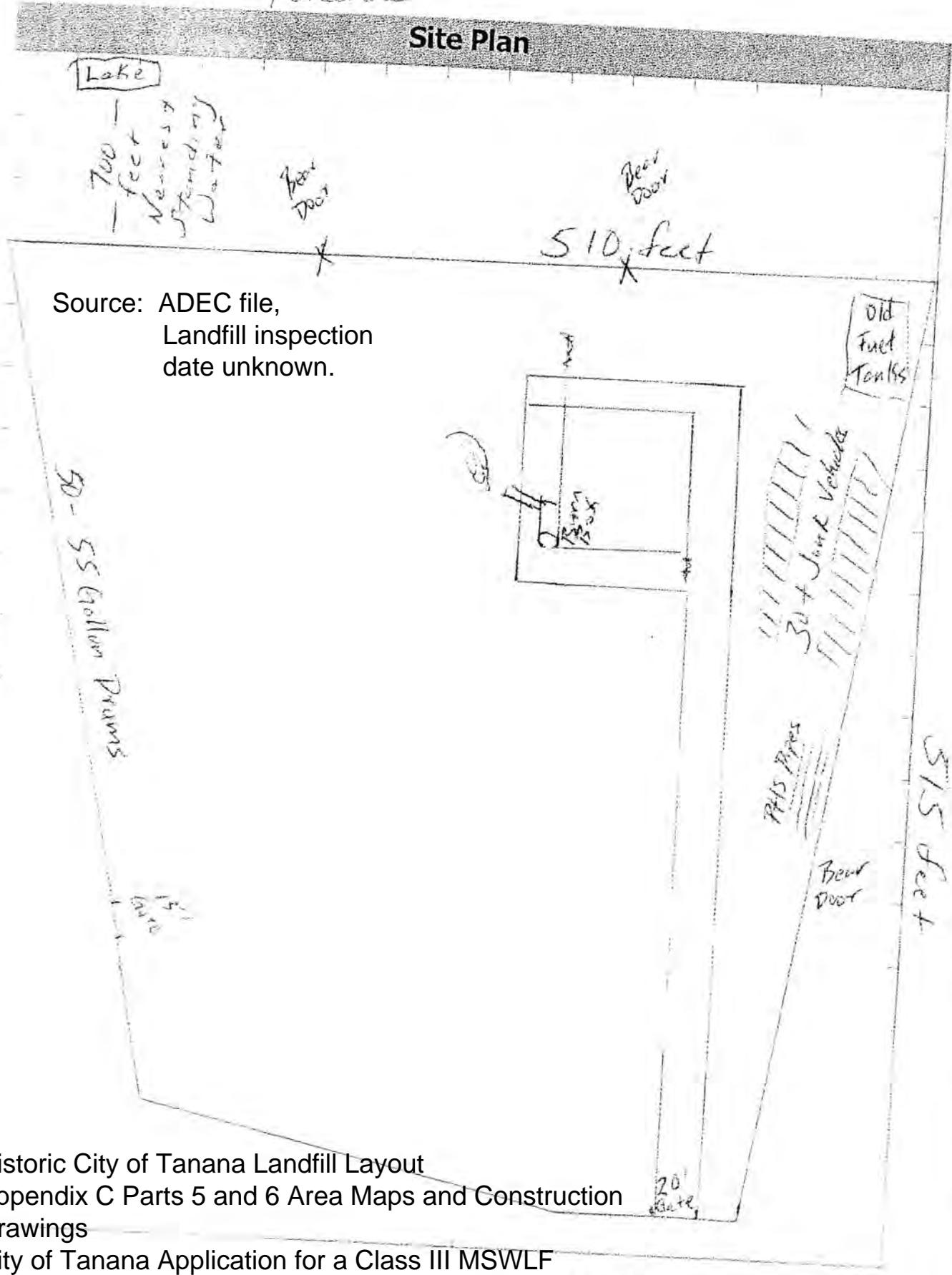
No. 5 X 30" R  
 Alum. Cap Set  
 (Typical of 4

Bearings hereon are based on the true meridian as determined by hour angle method solar observation.

NP

Tanana

# Site Plan



Source: ADEC file,  
Landfill inspection  
date unknown.

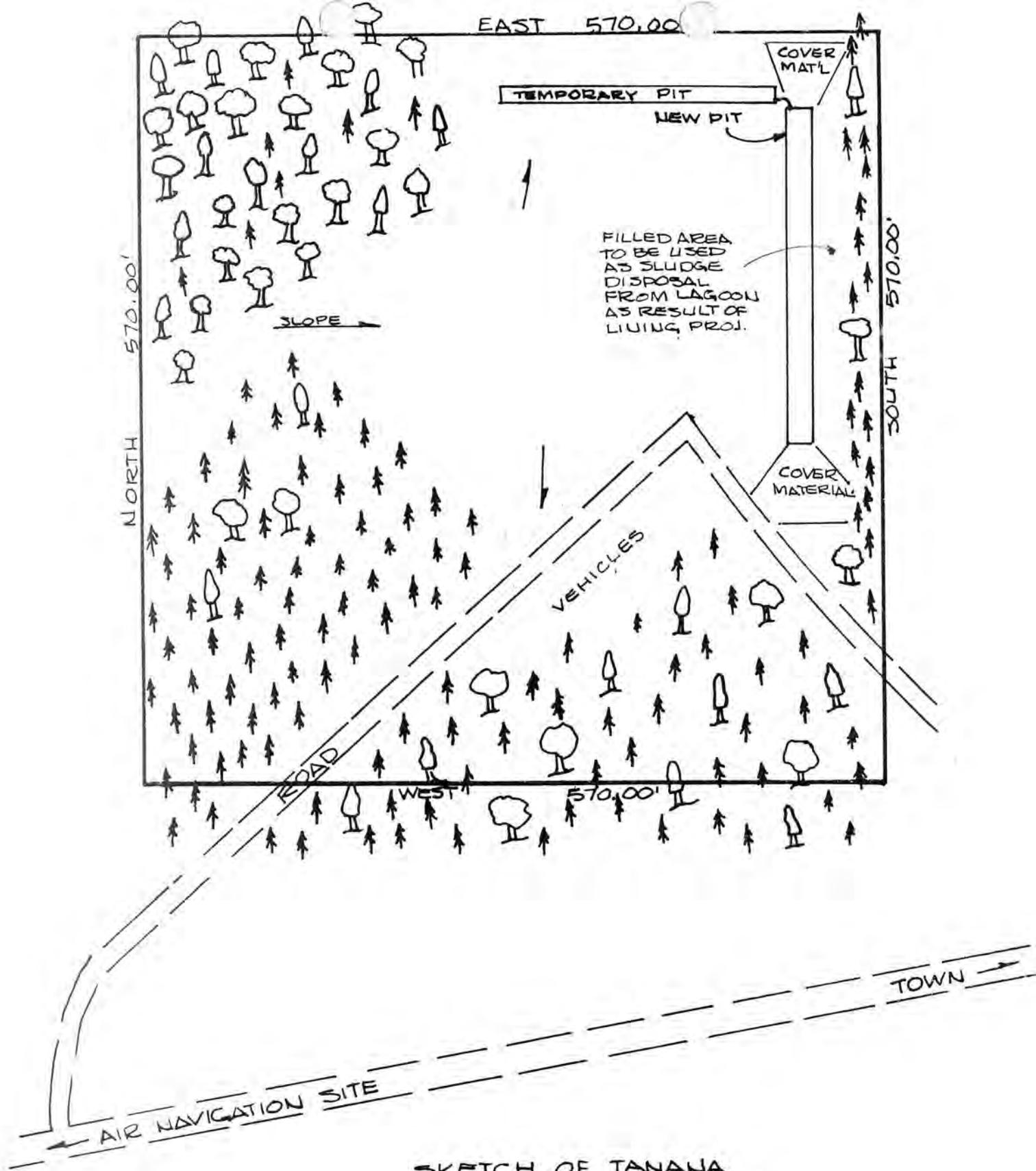
460

Historic City of Tanana Landfill Layout  
Appendix C Parts 5 and 6 Area Maps and Construction  
Drawings

City of Tanana Application for a Class III MSWLF  
Permit

Sections 11 and 14, Township 4N, Range 23W  
Fairbanks Meridian; ADEC File No. 780.15.001

90 feet



SKETCH OF TANANA  
REFUSE DISPOSAL AREA  
N.T.S.

Source: ADEC File, 1987 Permit Application.

Exhibit B

# *APPENDIX D*

## *PART 7 WAIVER REQUEST AND JUSTIFICATION*

## **Part Seven: Waiver requests.**

If an applicant wishes to be exempt from any of the regulations in 18 AAC 60 or get a waiver this is the place to ask. The regulations provide for a number of exemptions and waivers, but usually require some sort of demonstration by the applicant and prior approval from DEC. The following is a list of regulations that specifically allow for flexibility in our regulations:

- ? 18 AAC 60.025(b) polluted soil
- ? 18 AAC 60.205(b) planning
- ? 18 AAC 60.228 freeze back landfills
- ? 18 AAC 60.315 wetlands

There is also a waiver in 18 AAC 60.900 allowing the department to grant an exemption from any of the regulations.

Permit applicants must list all regulations you would like the department to waive, and provide justification for each request as specified in the regulations.



## Arctic Solutions Inc.



February 9, 2007

Ms. Linda Demientieff  
Environmental Program Specialist II  
Alaska Department of Environmental Conservation  
Division of Environmental Health  
Solid Waste Program  
610 University Avenue  
Fairbanks, Alaska 99709-3643

**Re: SOLID WASTE MANAGEMENT PLAN WAIVER REQUEST FOR THE CITY OF TANANA,  
ALASKA; ADEC FILE NO. 780.15.001**

Dear Ms. Demientieff:

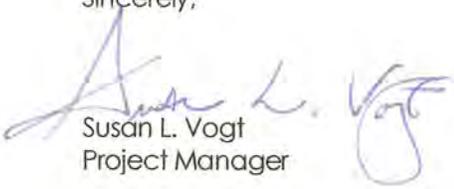
On behalf of the City of Tanana, Arctic Solutions Inc. (Arctic Solutions) is requesting the Alaska Department of Environmental Conservation (ADEC) grant a waiver to the Solid Waste Management Plan (SWMP) requirement in 18 Alaska Administrative Code (AAC) 60.205 Solid Waste Management Planning.

The City of Tanana contracted Arctic Solutions to assist in acquiring a Class III Municipal Solid Waste Landfill (MSWLF) Permit under 18 AAC 60.200 for their existing landfill approximately 1.1 miles west of the Tanana Airport. Mr. Bear Ketzler Tanana's Administrator/City Manager, Post Office Box 249, Tanana, Alaska 99777, is the point of contact and can be reached at (907) 978-5848.

The City of Tanana believes the waiver should be granted because 1) the landfill has been in use since the late 1970s; and, 2) much of the information required in the SWMP will be provided in the Application for a Class III MSWLF Permit.

Please contact me directly at (907) 457-6767 or [bias@alaska.net](mailto:bias@alaska.net) if you have any questions or need additional information. I look forward to hearing from you.

Sincerely,



Susan L. Vogt  
Project Manager

cc: Bear Ketzler, Tanana Administrator/City Manager  
Doug Buteyn, ADEC Environmental Program Manager I

# STATE OF ALASKA

**DEPT. OF ENVIRONMENTAL CONSERVATION  
DIVISION OF ENVIRONMENTAL HEALTH  
SOLID WASTE AND PESTICIDES PROGRAM**

**SARAH H. PALIN, GOVERNOR**

610 University Avenue  
Fairbanks, Alaska 99709  
PHONE: (907) 451-2108  
FAX: (907) 451-2188  
<http://www.dec.state.ak.us/>

March 12, 2007

**Certified Mail #7006 2760 0005 6037 0232  
Return Receipt Requested**

File Number: 780.15.001

Susan Vogt, Project Manager  
Arctic Solutions Inc.  
275 Geyser Court  
Fairbanks, Alaska 99712

**Re: Solid Waste Management Plan Waiver for the City of Tanana**

Dear Ms. Vogt;

This is in response to your request received on February 16<sup>th</sup>, 2007. You requested a waiver to the Solid Waste Management Plan (SWMP) requirement in Title 18, Chapter 60 of the Alaska Administrative Code (18 AAC 60.205).

Although, Alaska Department of Environmental Conservation (ADEC) does value the planning process that goes into a management plan, we do not want it to deter a community from receiving its Class III Solid Waste Landfill Permit. Therefore, we grant your request to waiver the SWMP requirement.

We hope that Tanana will develop a SWMP for its own use to guide the operators in making waste management decisions. Please do not hesitate in contacting Linda Demientieff if you should have any comments or questions. She can be reached at (907) 451-2174 or by email at [linda\\_demientieff@dec.state.ak.us](mailto:linda_demientieff@dec.state.ak.us).

Sincerely,



Douglas Buteyn  
Northern/Southeastern Program Coordinator

# ***APPENDIX E***

## ***PART 8 CALCULATIONS DATA AND LEGAL DOCUMENTS***

## **Part Eight: Calculations data and legal documents.**

In this part the applicant must submit backup technical and legal documentation to verify claims and assumptions made in other parts of the permit application. The following is a list of the kinds of information that must be submitted under this part.

1. If you used computer programs to model complex information such as groundwater flows or if you ran any other kind of computer program, please include printouts showing the inputs, assumptions, and outputs from the computer model. Also please include information on where we can get a copy of the program.
2. If applicable, an explanation of how each compliance point for the surface water monitoring system sometimes required under 18 AAC 60.810(b) was selected. Survey data and associated maps must be included in this part.
3. Well logs, soil boring logs, or any other data used to evaluate subsurface conditions at the site for the purposes of monitoring well placement or to evaluate the load bearing capacity of the soils.
4. Information and calculations used to estimate the operational life of the facility.
5. A copy of the deed or another legal document that identifies the landowner, and a copy of any lease agreement that is relevant to the proposed activity, or a written statement signed by the landowner and notarized, showing that the landowner consents to the proposed landfill.

*Note: If the applicant is not the owner of the proposed MSWLF disposal site, attach proof that the owner has received a formal notice fully describing the proposed activity. Include a copy of a lease agreement which is specific to the proposed activity, or a written statement of consent signed by the landowner and notarized.*

6. A legal description of property, with meridian, range, township and section, and informal location indicators such as mileposts, landmarks, distance and direction from nearest community.
7. If the proposed operation is in, or might affect, the Coastal Zone of Alaska, you must also complete and submit a coastal project questionnaire (6 AAC 50.070).

## PART 8: CALCULATIONS DATA AND LEGAL DOCUMENTS

The following numbered answers are in the same sequence as the questions in Part 8 of the application.

1. There is no computer program modeling for this site. There is no known groundwater information for this site. A review of ADEC contaminated and leaking underground storage (LUST) sites (attached) shows most sites within downtown Tanana and no sites within the vicinity of the landfill.

According to Mr. Ketzler, City Administrator/Manager, groundwater was never encountered during cell excavation, with depths to 25 feet below surface elevations. Groundwater flow direction under the landfill is assumed to follow the surface contours south, southwest toward the Yukon River.

The north end of landfill is located at the top of south facing gently rolling upland slope consisting of mixed forest stands. A small lake approximately 700 feet north of the site is at the bottom of the north side of the slope with typical vegetation consisting of black spruce bog. Air photos of the site show what appears to be a small creek north of the site probably flowing west from the lake east then south toward the Tanana. The creek was not ground checked during the May 2, 2007 visit.

2. The most recent ADEC inspection of the landfill in 1999 noted intermittent surface water appears to collect in the disposal trench. The inspection also noted inadequate surface water control with runoff draining from upland of the site. Upgrading existing berms and diversion ditches away from landfill were recommended. There was no indication surface water in contact with waste migrates offsite.

During the May 2, 2007 site visit, the site was dry. The site appeared adequately graded; puddling and water found in the trenches during site visits may have originated from heavy rainfall. Berms that were constructed around the landfill during original land clearing were no longer visible under heavy vegetative growth.

The City will be replacing/upgrading berms around the landfill perimeter where needed during the 2007 summer landfill expansion/upgrade. It is expected any offsite surface water runoff into the trench will be minimized or eliminated after the upgrade. As part of the operational and monitoring plans to be instituted with this permit (see Appendix G), visual inspection for surface water runoff will be completed during scheduled inspections.

In the future as funding becomes available, The City will be completing and implementing a Storm Water Pollution Prevention Plan (SWPPP) to comply with Environmental Protection Agency (EPA) regulations.

3. There are no known monitoring wells onsite or within the site's immediate vicinity.

Site geology was taken from the Geologic Map of Alaska compiled by H.M. Beikman in cooperation with State of Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys (1980). The landfill site was first plotted on the United States Geological Survey (USGS) Tanana (A-5) Quadrangle topographic map (scale 1:63,360 series limited revisions 1976); then located on the Beikman geologic map by comparing latitude and longitude, the City of Tanana, and the distance from the confluence of the Yukon and Tanana Rivers. Geology was not field checked.

The site was plotted to lie on Stratified Sedimentary Quaternary deposits consisting of alluvial, glacial, lake, eolian, beach, and volcanic deposits; includes the marine Bootlegger Cove Clay. The map noted that Quaternary deposits were only shown where bedrock was completely obscured.

Permafrost is discontinuous in the area and has not been encountered during past digging of disposal trenches (down to a maximum of 25 feet below surface elevations), although seasonal frost has been encountered.

Recently, soil data was gathered by Brice in the landfill expansion area (current shooting range) adjacent to the active landfill today. Soil data was collected to determine suitability of material for a road in town. According to the Shannon & Wilson, Inc. March 26, 2007 report (attached), all four (4) samples collected showed poorly graded (range of sizes with some intermediate size missing) sand with silt.

Mr. Marcus Trivette, Brice Project Engineer noted all four samples were collected at less than five (5) feet below surface elevations which ranged from 0 on the south end of the slope to 20 feet below the north and west end. Five feet was the deepest sample collected due to seasonal frost. No other known soil data exists for this area. Mr. Ketzler indicated he noted loess silt to be the predominant soil type observed down to 25 feet below surface elevation.

4. The operational life of the 10 acre landfill was calculated to be approximately 51 years at current usage and population.

There is no actual hard data on the amount of waste generated by the City's population. The City is expected to complete a detailed household survey with a waste volume/type analysis once funding has been secured for a SWMP.

Mr. Ketzler stated In the 30 years of operation, approximately a third or three (3) acres has been filled to capacity of seven (7) or eight (8) usable acres.

Assuming the amount of waste disposed per day remains the same (approximately 0.25 tons/day, seven (7) days a week) and the population of 300 remains constant, it is estimated the remaining 5 acres will be filled in approximately 51 years:

$$8 \text{ acres} - 3 \text{ acres} = 5 \text{ acres remaining.}$$

$$5 \text{ acres} / 3 \text{ acres} = 1.7$$

$$1.7 \times 30 \text{ years} = 51 \text{ years.}$$

This number is considered conservative because of the following:

The population has steadily decreased in the past 30 years from a high of 750 in 1985-1986 to approximately 271 to 300 persons with an estimated 100 additional seasonal workers today. Although the 1987 ADEC MSWLF permit application stated approximately 0.3 tons per day were disposed in the landfill, the accuracy of the figure is unknown.

The length of time to fill may also be increased due to the increased excavation area and depth of each trench/cell. Previous ADEC records indicate the trench depths were less than eight (8) feet. The 1987 permit application notes the depth of the trench/cell was 10 feet with a 12 foot face. According to Mr. Ketzler, during excavation of the most recent trench, a portion of an old trench was encountered. The old trench was only

approximately three (3) to five (5) feet in depth. In the past few years trench cells have been excavated to approximately 120 feet long by 30 to 60 feet wide by 20 plus feet deep.

The amount of waste disposed in the landfill is expected to decrease after the full implementation of the Energy Recovery Furnace, Smart Ash Incinerator and two Solid Waste Burn Units.

5. Legal documents are attached. The 10-acre parcel is owned by Tozitna Limited (surface estate) and Doyon Ltd. (subsurface estate). Notarized letters from Tozitna and Doyon authorizing the City of Tanana use of this land as a landfill will be forwarded to ADEC as soon as the professional survey is completed, expected in June 2007.

The City is also pursuing the ANCSA 14(c)(3) reconveyance of the landfill property and surrounding acreage for future expansion. See attached April 2007 letters to and from the City to the US Department of the Interior.

6. See the attached survey drawing with legal description.
7. Using the USGS Tanana (A-5) Alaska Quadrangle (presented in Appendix C), the landfill was plotted at approximately 320 feet above sea level. This site is not expected to affect the Coastal Zone of Alaska.



Instructions

CS Webmap

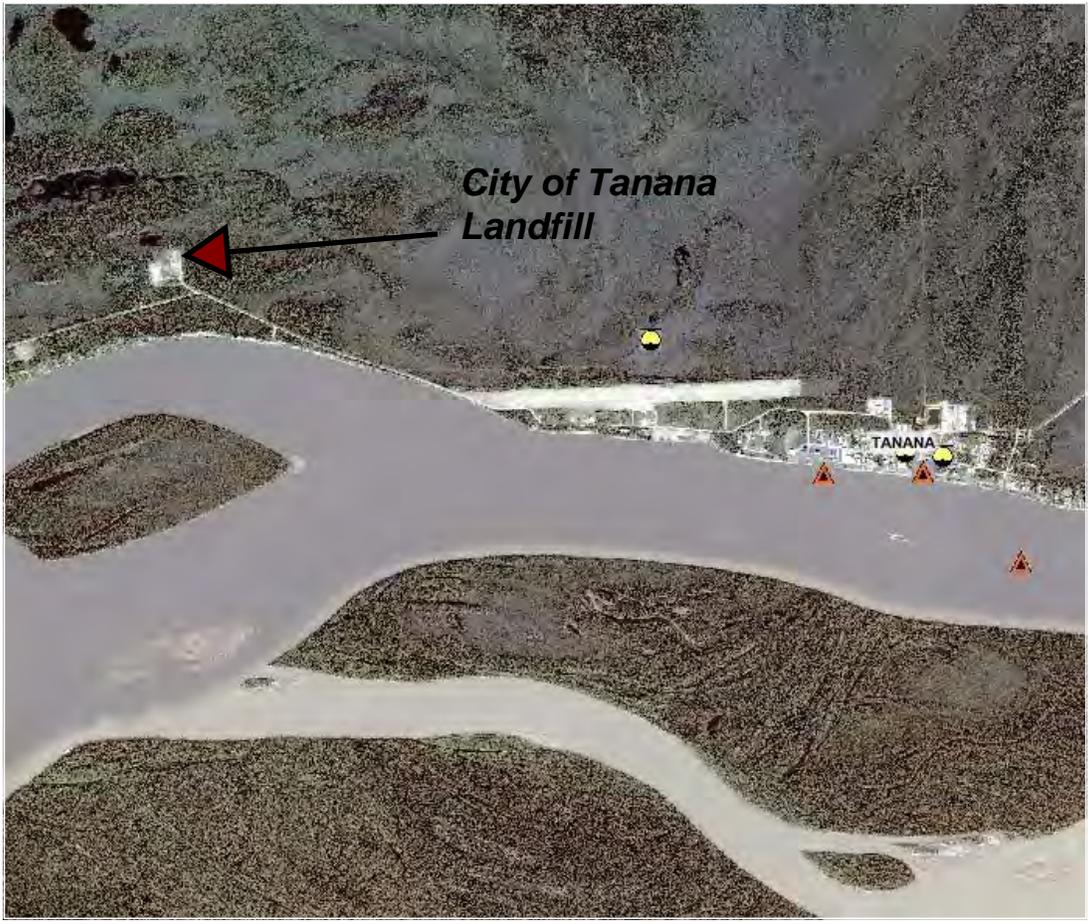
Layers

Legend

Buffering

-  LUST Conditionally Closed
-  CSites Conditionally Closed
-  Contaminated Sites
-  LUST Sites
- Air Photos
- Quads (1:63,360)

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	



City of Tanana  
Landfill

Distance Mode

Segment:

Total:

Units: Km

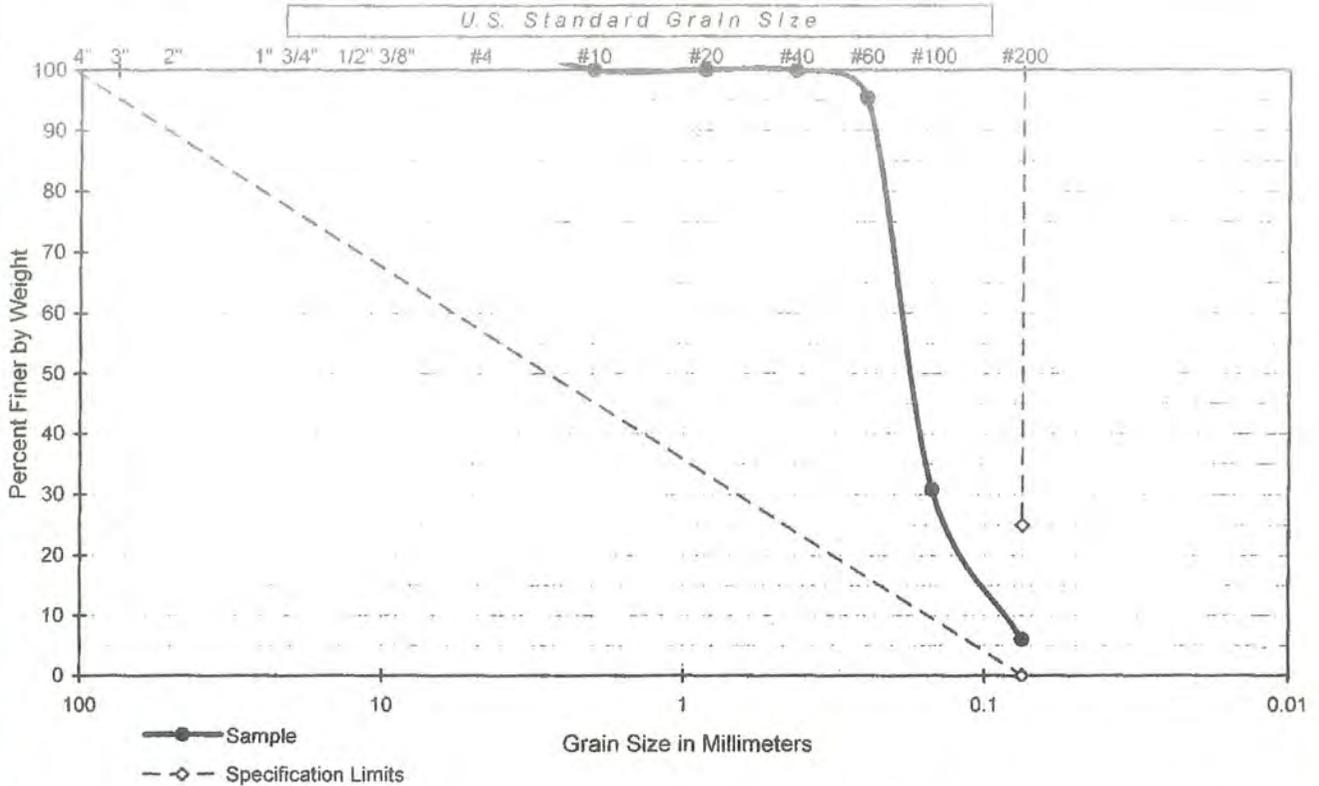
No Records

City of Tanana Landfill  
 Surrounding ADEC LUST/  
 Contaminated Sites Figure  
 Part 8 Calculations Data & Legal  
 Documents  
 Application for a Class III Municipal  
 Solid Waste Landfill Permit  
 Sections 11 & 14, T 4N, R 23W  
 Fairbanks Meridian  
 ADEC File No. 780.15.001

<http://www.map.dec.state.ak.us/spar/csmmap/Default.aspx>

3/22/2007

**GRAIN SIZE DISTRIBUTION**



Sample Description/Classification:  
**Poorly graded sand with silt (SP-SM)**

Sample Location:  
**N. Wall**

Client Data:  
 Address: **Brice Inc.**  
**P.O. Box 70668**  
**Fairbanks, Alaska 99707**

Client Sample ID: **N. Wall**  
 P.O. Number:

Date Sampled: **3/21/2007**  
 Date Received: **3/21/2007**

Reviewed by: \_\_\_\_\_

Sieve Size	Percent Passing by Weight	Specification Limits	
		Minimum	Maximum
>6"			
4"			
3"			
2.5"			
2"			
1.5"			
1"			
3/4"			
1/2"			
3/8"			
#4			
#10	100		
#20	100		
#40	100		
#60	95		
#100	31		
#200	6.1	0	25

**GRAIN SIZE DISTRIBUTION**

C136/C117

Project: **2007 Material Checks**

S&W Sample Identification: **2290-1**



2355 Hill Road, Fairbanks, Alaska 99709-5244  
 Phone: (907) 479-0600 Fax: (907) 479-5691

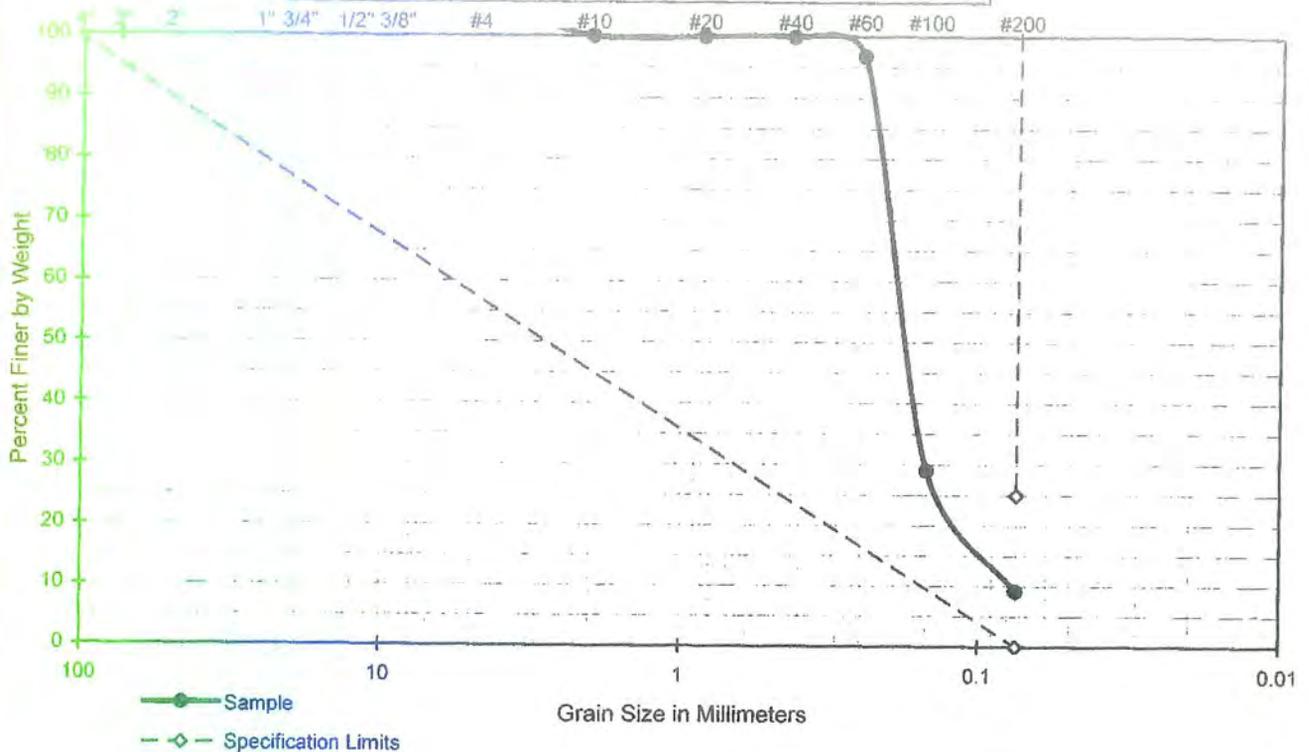
March 26, 2007

31-1-08729-001



### GRAIN SIZE DISTRIBUTION

U.S. Standard Grain Size



Sample Description/Classification:  
**Poorly graded sand with silt (SP-SM)**

Sample Location:  
**Floor**

Client Data:  
Address: **Brice Inc.**  
**P.O. Box 70668**  
**Fairbanks, Alaska 99707**

Client Sample ID: **Floor**  
P.O. Number:

Date Sampled: **3/21/2007**

Date Received: **3/21/2007**

Reviewed by: \_\_\_\_\_

Sieve Size	Percent Passing by Weight	Specification Limits	
		Minimum	Maximum
>6"			
4"			
3"			
2.5"			
2"			
1.5"			
1"			
3/4"			
1/2"			
3/8"			
#4			
#10	100		
#20	100		
#40	100		
#60	97		
#100	29	0	25
#200	9.2	0	25

### GRAIN SIZE DISTRIBUTION

C136/C117

Project: **2007 Material Checks**

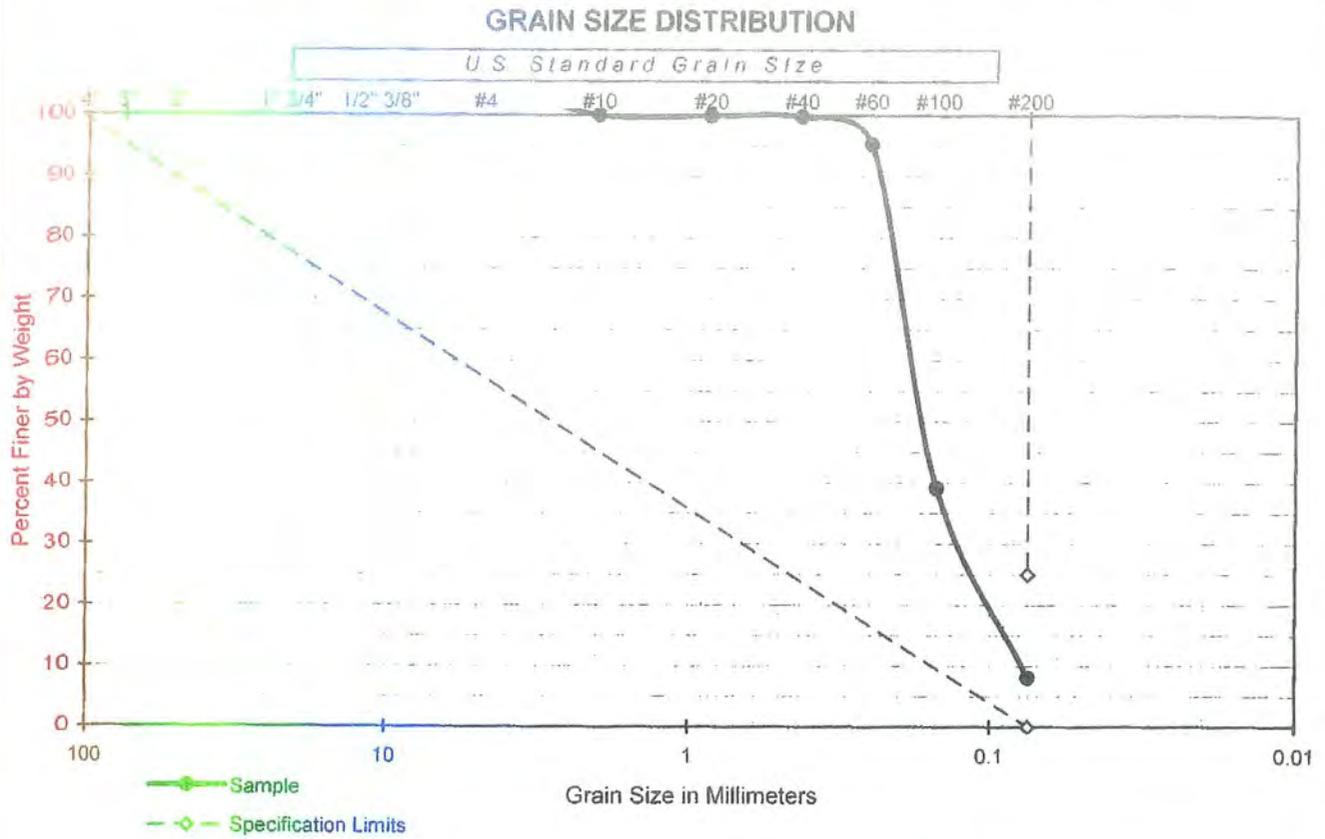
S&W Sample Identification: **2290-3**



2355 Hill Road, Fairbanks, Alaska 99709-5244  
Phone: (907) 479-0600 Fax: (907) 479-5691

March 26, 2007

31-1-08729-001



Susan Voigt



All samples taken @ less than 5' depth.

Hope this helps.

- MT

**CITY OF TANANA**  
P.O. Box 249  
Tanana, Alaska 99777  
(907) 366-7159 • Fax (907) 366-7169

March 19, 2007

Ms. Cheryl Wright  
General Manager  
Tozitna, Limited  
P.O. Box 129  
Tanana, Alaska 99777

Dear Ms. Wright:

The City of Tanana ("The City") is applying to the Alaska Department of Environmental Conservation (ADEC) for a Class III Municipal Solid Waste Landfill (MSWLF) Permit at the existing landfill facility west of The City. Tozitna, Limited owns the landfill surface estate as described in the unsigned City of Tanana Resolution 92-01 and shown on the survey drawing presented in Attachment 1. Attachment 2 presents the Interim Conveyance (No. 1091) of this land from the US Bureau of Land Management (BLM) to Tozitna, Limited.

The City is providing this letter as proof that Tozitna, Limited as the owner has received formal notice that The City has been using this land for its refuse disposal since the mid 1970s.

To comply with the ADEC permit, The City requests Tozitna, Limited prepare a written statement of consent signed and notarized to The City for use of this land. Please call me at (907) 978-5848 in Fairbanks or (907) 366-7159 in Tanana if you have any questions.

Sincerely,



Alfred "Bear" Ketzler  
Administrator/City Manager

# CITY OF TANANA

P.O. Box 249  
Tanana, Alaska 99777  
(907) 366-7159 • Fax (907) 366-7169

March 19, 2007

Mr. Norm Phillips, Jr.  
Natural Resource Department  
Doyon, Ltd  
1 Doyon Place  
Suite 300  
Fairbanks, Alaska 99701

Dear Mr. Phillips, Jr.:

The City of Tanana ("The City") is applying to the Alaska Department of Environmental Conservation (ADEC) for a Class III Municipal Solid Waste Landfill (MSWLF) Permit at the existing landfill facility west of The City. Doyon, Ltd. owns the landfill subsurface estate as described in the unsigned City of Tanana Resolution 92-01 and shown on the survey drawing presented in Attachment 1. Attachment 2 presents the Interim Conveyance (No. 1091) of this land from the US Bureau of Land Management (BLM) to Doyon, Ltd.

The City is providing this letter as proof that Doyon, Ltd. as the subsurface owner has received formal notice that The City has been using this land for its refuse disposal since the mid 1970s.

To comply with the ADEC permit, The City requests Doyon, Ltd. prepare a written statement of consent signed and notarized to The City for use of this land as a landfill. Please call me at (907) 978-5848 in Fairbanks or (907) 366-7159 in Tanana if you have any questions.

Sincerely,



Alfred "Bear" Ketzler  
Administrator/City Manager

**ATTACHMENT 1:**

**TANANA RESOLUTION 92-01**

**CITY OF TANANA REFUSE  
DISPOSAL SITE BOUNDARY SURVEY**

COPY

CITY OF TANANA PLANNING AND ZONING COMMISSION  
RESOLUTION 92 - 01

A Resolution approving the platting of the Refuse Disposal Site

WHEREAS: The City of Tanana has submitted a plat of the Tanana Refuse Disposal Site, and

WHEREAS: Tozitna, Limited, the owner of said property; is in concurrence with the plat,

NOW, THEREFORE, BE IT RESOLVED: That the Plat described as the City of Tanana Refuse Disposal Site, and described as follows:

A parcel of land situated within and adjoining U. S. Survey No. 5958, Alaska, located near Tanana, Alaska and being more particularly described as follows:

Commencing at the Witness Corner to Meander Corner No. 3, U.S. Survey No 5958, Alaska;

Thence northerly, along the East line of said U.S. Survey a distance of 733.54 feet to the true point of beginning of the herein described parcel of land;

Thence S.89 57'23"E. a distance of 610.95 feet to a No. 5 rebar with aluminum cap (5032-S);

Thence N.00 02'37"E. a distance of 688.60 feet to a No. 5 rebar with aluminum cap (5032-S);

Thence N.89 57'23"W. a distance of 651.51 feet to a No. 5 rebar with aluminum cap (5032-S);

Thence S.00 02'37"W. a distance of 668.60 feet to a No. 5 rebar with aluminum cap (5032-S);

Thence S.89 57'23"E. a distance of 40.56 feet, more or less, to the true beginning of the herein described parcel of land, said point being on the East line of said U.S. Survey No. 5958.

The above described parcel of land comprising 10.00 acres, more or less, and being subject to reservations, restrictions, and easements of record, if any.

be approved.

CITY OF TANANA PLANNING AND ZONING COMMISSION  
ADOPTED THIS \_\_\_\_\_ DAY OF JULY, 1991.

\_\_\_\_\_  
PRESIDING OFFICER

\_\_\_\_\_  
DATE

ATTEND:

CITY CLERK

**ATTACHMENT 2:**

**INTERIM CONVEYANCE 1090**

F-14944-B

BOOK 0007 PAGE 636

INTERIM CONVEYANCE

WHEREAS

Tozitna, Limited

is entitled to a conveyance pursuant to Secs. 14(a) and 22(j) of the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1613(a), 1621(j), of the surface estate in the following-described lands:

U.S. Survey No. 5958, Alaska, lot 2, in the vicinity of Tanana, Alaska, excluding the following-described lands:

Beginning at corner No. 1 of lot 2, U.S. Survey No. 5958 proceed approximately S. 49°31' E., 2,700 ft., more or less, to the center of the VORTAC antenna, thence S. 31°30' W., approximately 770 ft. to corner No. 1, a point on the line of mean high water on the right bank of the Yukon River.

From corner No. 1 by metes and bounds,

N. 45° W., 490 ft., to corner No. 2; North, 621.32 ft., to corner No. 3; N. 45° E., 621.32 ft., to corner No. 4; East, 621.32 ft., to corner No. 5; S. 45° E., 621.32 ft., to corner No. 6; South, approximately 590 ft., to corner No. 7, a point on the line of mean high water, on the right bank of the Yukon River; Southwesterly, approximately 1,200 ft., with meanders, along the right bank of the Yukon River, to corner No. 1, the point of beginning.

Containing approximately 186 acres.

Interim Conveyance No. \_\_\_\_\_

1090

Date \_\_\_\_\_

JUL 6 1985

F-14944-B

INTERIM CONVEYANCE

WHEREAS

DOYON, LIMITED  
211 First Avenue  
Doyon, Limited  
Fairbanks, Alaska 99701 ATT. RESOURCE DEPT.

is entitled to a conveyance pursuant to Secs. 14(f) and 22(j) of the Alaska Native Claims Settlement Act of December 18, 1971, 43 U.S.C. 1601, 1613(f), 1621(j), of the subsurface estate reserved to the United States in the hereinbelow identified interim conveyance of the surface estate in the following-described lands:

Interim Conveyance No. 1090

U.S. Survey No. 5958, Alaska, lot 2, in the vicinity of Tanana, Alaska, excluding the following-described lands:

Beginning at corner No. 1 of lot 2, U.S. Survey No. 5958 proceed approximately S. 49°31' E., 2,700 ft., more or less, to the center of the VORTAC antenna, thence S. 31°30' W., approximately 770 ft. to corner No. 1, a point on the line of mean high water on the right bank of the Yukon River.

FROM CORNER No. 1 by metes and bounds,

N. 45° W., 490 ft., to corner No. 2; North, 621.32 ft., to corner No. 3; N. 45° E., 621.32 ft., to corner No. 4; East, 621.32 ft., to corner No. 5; S. 45° E., 621.32 ft., to corner No. 6; South, approximately 590 ft., to corner No. 7, a point on the line of mean high water, on the right bank of the Yukon River; Southwesterly, approximately 1,200 ft., with meanders, along the right bank of the Yukon River, to corner No. 1, the point of beginning.

Containing approximately 186 acres.

Interim Conveyance No. 1091

Date SEP 16 1981

**CITY OF TANANA**

P.O. Box 249  
Tanana, Alaska 99777  
(907) 366-7159 • Fax (907) 366-7169

April 10, 2007

Faxed to: Allan Breitzman 907-271-4193  
Keith Jost 907-269-4524

Allan Breitzman, ANCSA 14(c) Specialist  
and Townsite Trustee  
Bureau of Land Management  
Alaska State Office  
222 West 7<sup>th</sup> Avenue, #13  
Anchorage, Alaska 99513

Dear Mr. Breitzman:

The City of Tanana has hired Bartz Englishhoe and Associates to assist the City with ANCSA 14(c)(3) reconveyances. Mr. Englishhoe will be in contact with you and Keith Jost concerning 14(c)(3) materials and maps your offices may have for Tanana.

During a recent village meeting the option of conveying village corporation lands to the local tribal government under ANCSA 14(c)(3) was discussed. Is this a legal option under ANCSA 14(c)(3).

Sincerely,



Al "Bear" Ketzler, Jr.  
City Manager

cc: Keith Jost, Natural Resources Specialist III  
Division of Community Advocacy  
Alaska Department of Commerce, Community  
And Economic Development  
550 West 7<sup>th</sup> Avenue, Suite 1770  
Anchorage, Alaska 99501-3510



# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

Alaska State Office  
222 West Seventh Avenue, #13  
Anchorage, Alaska 99513-7504  
<http://www.blm.gov/ak>



9600 (927)  
ANCSA 14(c)  
TANANA

April 11, 2007

Al Ketzler, Jr., City Manager  
City of Tanana  
P.O. Box 249  
Tanana, AK 99777

Dear Mr. Ketzler,

I received a fax of your letter today indicating that the City of Tanana has hired Bartz Englishoe and Associates to assist the City with ANCSA 14(c)(3) reconveyances. He has been in contact with me regarding past efforts and I will continue to work with Mr. Englishoe regarding Tanana's future efforts.

You also asked me a question about the local tribal government's eligibility for title to 14(c)(3) lands. The local tribal government is not eligible for conveyances of land from the Corporation under Section 14(c)(3) of ANCSA. The law indicates that 14(c)(3) conveyances shall go to "...any Municipal Corporation in the Native village or to the State in trust" in the absence of a Municipal Corporation. Tanana has a municipal corporation so they are the only appropriate recipient of ANCSA 14(c)(3) conveyances.

If you have any additional questions, I can be reached at 271-5606 or 440-5788.

Sincerely,

Allan J. Breitzman  
ANCSA 14(c) Specialist

Cc: Bartz Englishoe and Associates

**SECTION G:**

**PERMIT  
APPLICATION  
PART 9 –  
LANDFILL  
OPERATIONS  
PLAN**

# *APPENDIX F*

## *PART 9 OPERATIONS PLAN*

## **Part Nine: Operations plan.**

The operating plan must include a detailed explanation of how the site operator will use waste to build the landfill while controlling waste stability, public access, litter, pests, enforcing the waste acceptance policies, and minimizing the introduction of moisture. The plan components are:

1. Phased development plan: The overall plan for the construction of landfill development phases must be clearly shown on the site maps along with a quality assurance plan to make sure the workers onsite follow the plan;
2. Daily waste placement plan: A thorough description (with diagrams) of the daily waste placement methods to be used including a description of how the operational cover will be placed, and a disclosure of where the operational cover material will be obtained, and stored along with a quality assurance plan to make sure the workers onsite follow the plan;
3. Waste acceptance: certain hazardous wastes, liquids, and other undesirable waste materials must not be placed in a landfill. The operating plan must include a waste acceptance policy along with a plan to publicize and enforce the policy;
4. Access control plan including the proposed hours of operation, and a drawing of any gates or fences to be used. This plan must also contain policies about activities at the landfill such as salvaging and target practice;
5. A plan for the control of animals such as bears birds or rodents, and other disease vectors such as flies along with a quality assurance plan to make sure the workers onsite follow the plan;
6. Litter control, a plan for minimizing litter through careful waste handling, litter control measures such as fencing, and the frequency of litter collection operations;
7. A surface water management plan to meet the requirements of 18 AAC 60.225(d);
8. Operator training and safety including a list of safety and other professional training courses that each landfill staff member will attend, a list of safety equipment to be kept on site, and a discussion of emergency procedures for events such as fire or an injury at the site; and
9. A description of the operating record as required in 18 AAC 60.235 and 18 AAC 60.380, including who is responsible for the recordkeeping and the location where the records are to be kept.

## PART 9 OPERATIONS PLAN

The following numbered answers are in the same sequence as the questions in Part 9 of the application.

There is one Utility Manager, Mr. Pat Moore, and five (5) part time support staff to operate all City functions, including the landfill. There is also a full time City Maintenance/Equipment Operator, Mr. John Huntington who uses the support staff when needed.

The City employs a mechanic for all City equipment that in addition for use at the landfill is used on roads, the airport, and construction projects. The City has the following inventory of heavy equipment that is used or will be available for use to complete long term operations and maintenance at the landfill:

- ✓ 460 Volvo excavator (110,000 lbs.);
- ✓ 320 Samson excavator (72,000 lbs.);
- ✓ 680 Case loader backhoe (25,000 lbs.);
- ✓ 670A John Deere grader (30,000 lbs.);
- ✓ John Deere 3 yard bucket front end loader (28,000 lbs.);
- ✓ John Deere 35 horsepower garden tractor with rototiller and grass cutter attachments (6,500 lbs);
- ✓ 2,000-gallon capacity water truck;
- ✓ 1,800-gallon capacity fuel truck; and,
- ✓ Two fire trucks and one 1,200-gallon water capacity four-wheel drive pick-up truck for 11 volunteer firefighters.

The City's landfill is free to the general public. Only commercial users are charged. Currently the City spends approximately \$3,000 to \$5,000 a year on landfill maintenance and upkeep. The City is proposing to increase its commercial disposal fee to \$40 per ton. Refer to the attached Business Plan Worksheet and Projection of Expenses, as well as the City's November 7, 2006 proposal for new disposal and recovery units for additional information.

1. Since the landfill has been in operation since the mid 1970's there has been no written phased development plan. The landfill began digging cells in the east portion of the property and has gradually moved west as the cells are completely filled. Due to equipment restrictions, original cells were much shallower than today.

Today cell construction is approximately 120 feet long by 30 to 60 feet wide by 20 plus feet deep and oriented north to south. The cell is sloped to allow access out in the event of emergency. Excavated soil is bermed around one side of the cell to be used as future cover material.

Refer to Appendix C Parts 5 and 6 for construction drawings and details. At the end of 2006 Mr. Ketzler estimated there is enough room in the active fenced landfill for two (2) to four (4) additional disposal cells.

At this time, compaction and cover are only completed at the end of a cell's life cycle. When waste is within approximately five (5) to 10 feet of the ground surface, the cell is prepped for closure. To reduce the need for soil cover and to provide compaction, The City disposes crushed vehicles (after removing hazardous materials) across the top of the trash prior to covering. Soil cover is then deposited over the vehicles to surface elevations. Compaction is completed using a front end loader and excavator.

Several ADEC inspections over the years have noted compaction and cover must be completed in the trenches on a regular basis, with approximately six (6) inches of soil and several runs over the waste with a dozer. The City is looking to incorporating compaction and cover of the open trench waste, possibly at least once per month during the spring and summer months. Cover will be taken from the excavated material stockpiled adjacent to the cell.

Concurrently, The City contracts with Mr. Duncan McMartin, a Fairbanks sole proprietor and expert operator, to excavate a new cell. To better control surface water runoff into the trench, Mr. McMartin will be briefed on runoff diversion/prevention practices instituted at the landfill as part of storm water management. Refer to Part 10 storm water design drawings and fact sheet in Appendix G.

There is no comprehensive Quality Assurance (QA) Plan. As part of this permit, The City is instituting inspection and training records to be completed by landfill personnel as part of QA procedures. Attached are some of the forms to be used (as is or modified to conform to City needs) for recordkeeping permit compliance. As time and money allows The City will complete and adopt a formal QA plan.

2. Daily waste placement is completed by City residents and commercial users. There is no landfill attendant on duty. Waste placement is completed by users backing to the trench cell open at the time, and hand disposing waste into the trench. Approximately once every two weeks City Maintenance completes an onsite sweep using a front end loader and properly disposes misplaced waste into the trench.

As part of the upgrades expected to begin in Summer 2007, one or both of the SW Burn Units will be operational and the existing unit retired. Daily waste placement would still be completed by residents and commercial users. The units will be fired, emptied and maintained by City Maintenance. Refer to the attached manufacturer specifications for details on operation. Before the units are in full operation, the public will be instructed via public meeting(s) and/or public notice(s) on general disposal instruction. Additionally, signs will be placed at the landfill to direct users on proper disposal.

In general, the upper waste receiving chamber can hold up to five (5) cubic yards (cy) of waste before needing firing. The more efficient waste is put into the chamber, the more it can hold. Five (5) cy is approximately six (6) to 6.5 tons of waste. With current daily waste at estimated at 0.25 tons per day, it is calculated each unit will have to be fired approximately every 20 to 22 days. City Maintenance will be responsible for firing the burners and disposing of the residual ash in the trench cell.

With this expected firing frequency, the current bi-weekly maintenance work at the landfill is expected to be sufficient, especially with operation of the second unit. During the first few months of operation, City Maintenance will check the burners on a more frequent basis to determine capacity and disposal frequency. This will be accomplished during opening/closing of the landfill gate (see access control below).

3. The City uses public notices, hearings and workshops to educate resident and commercial users of what waste is accepted and not accepted at the landfill. Users typically placed used oil, other liquid wastes (such as glycol) and hydrocarbon soaked solid waste in drums and placed them down at the barge for offsite disposal. Car batteries were also disposed in a similar manner. Because of a lack of drum labeling however, barge companies were reluctant to accept the wastes for fear of non compliance with the waste disposal companies. Waste drums at the barge still exist today.

In the fall of 2006, The City completed its Recycle and Oil Recovery Program and held a public meeting to educate the residents on the program and to request resident assistance with program compliance. The City of Tanana November 2006 signed resolution and Mission and draft Strategic Plans are attached. Goals outlined in the plans include improving the landfill, improving energy efficiency and conservation of the natural environment.

To make compliance with this program easier, The City is going to construct a Hazardous Waste Collection/Drop-off pavilion at the landfill for residents to place their non-solid waste for disposal. City Maintenance will then collect pavilion waste and either take it to the downtown City Maintenance Building for disposal in the Black Gold 200 Energy Recovery Furnace or dispose it onsite in the Smart Ash Incinerator. Manufacturer specifications on the Smart Ash incinerator and Energy Recovery Furnace are attached. Depending on the quantity of hydrocarbon and other hazardous waste, a second Energy Recovery Furnace may be purchased in the future.

Any hazardous waste that can not be disposed in The City will continue to be removed by barge for proper disposal. Signs will be placed at the pavilion to direct users what wastes go where. The City may place a bulletin board at the pavilion where important information, such as emergency numbers is placed.

Compliance with the Recycle and Oil Recovery Program is expected to be high. The City has already completed a resident pledge meeting on the program as well as requested assistance from The City utility Toogha, Inc., the Tanana Tribal Council and the Tanana Chiefs Conference to implement and assist in ongoing program operations.

Additionally, because residents will not be expected to deposit wastes at any other location beside the landfill, high compliance is expected. Most residents already use the existing burn unit and separate out oily wastes from other solid wastes. With education on the incentive to save money with this new program, The City believes it will not require residents to significantly change their habits.

If visual and formal inspections show resident compliance not adequate, The City plans to first institute additional educational hearings and public notices. The Tanana Tribe employs an Environmental Specialist, Ms. Kathleen Zuray, who will assist in public education. Enforcement through fines, fees or other means may be implemented if education does not prove sufficient. The City's full time police officer would be employed to assist enforcement.

4. Landfill access control is not enforced currently. Although the site is fenced and gated, the gates are open 24 hours a day, in effect allowing residents and wildlife to enter and exit at will. As part of landfill upgrades beginning this summer, hours of operation will be proposed to residents and a resolution passed as to when the gates will be open for access.

The City is proposing access hours from 7 am to 8 pm in the spring and summer and 9 am to 6:30 pm in the fall and winter. Signs will be prominently posted on the gates and during those hours, the gates will be open.

The City does not have the funding available to hire a full time attendant so the landfill will be as is today – relying on users to dispose wastes properly. Any waste left outside the gate will be disposed of by City Maintenance responsible for opening and closing the landfill; however, residents are going to be strongly encouraged to dispose during operating hours. Education and possible enforcement will be completed as discussed above.

During construction of the hazardous waste collection pavilion, a second or attached pavilion will be constructed to allow residents to leave salvageable material in a safe place away from traffic and under cover. Currently large salvageable material is left on the ground adjacent to the east side fence.

Target practice is currently held outside the gate and is not an issue. The City may address this when the landfill expansion into the adjacent acreage begins. The expanded landfill is also slated to be fenced and gated.

5. Animal control problems are expected to be reduced significantly once the Smart Ash incinerator and the SW burn units are operational. Having the gates locked during off hours is also expected to decrease the likelihood of large animals entering and scavenging for food. Smaller animals and birds, as well as insects are expected to be greatly reduced once the units are operational; mostly ash will be disposed in the cells. Any overflow solid waste disposed in the landfill will be covered in ash from the units reducing odors.
6. Litter control should improve due to increased burning and cell covering. During the May 2, 2007, litter was noted to still be a problem. Ash dust will be minimized by periodic spraying using the water truck. Care will be taken to avoid soaking or puddling in the trench.
7. As discussed above, better surface water management engineering controls will be constructed in the form of diversion dikes or swales where needed; and better berm placement around the trench. To better control surface water runoff into the trench, the construction trench contractor, Mr. McMartin will be briefed on runoff diversion/prevention practices instituted at the landfill as part of storm water management. Refer to Part 10 storm water design drawings and fact sheet.

To control large ponding within landfill, clean backfill may be added in low-lying areas with sloping toward the vegetated perimeter. Mr. McMartin will also be directed to add and compact soil to the non-bermed sides of the trench to form gentle slopes away from the trench. This should minimize ponding and drainage into the trench.

Beginning this summer if funds are available, permanently closed areas of the landfill may be deposited with final cover, graded and seeded to begin re-vegetation. These areas will be blocked from landfill traffic by placing temporary construction fencing and warning signs to prevent disturbance. The closed re-vegetated areas will assist in absorbing storm water runoff within the landfill from the areas with bare soil. See Part 10 in Appendix H for the Closure Plan guide The City is intending to use for permanent closure guidance.

8. Refer to attached forms The City will be using to institute written Operator inspections and training for designated employees. Training includes: landfill operations and safety meeting topics and sign in logs; safety equipment inspection checklists; spill response procedures training; spill tracking forms; Incident and Accident Report forms; and The City of Tanana employee Emergency Response Plan.

Initial training and inspections are scheduled to be taught by Arctic Solutions with emphasis on training The City Administrator and City Maintenance Operator to complete reoccurring training and recordkeeping.

Two types of formal landfill inspections will be instituted: quarterly and annually. Refer to the attached inspection sheets The City will be using.

9. Operating records of inspections, training and monitoring will be kept at The City Administrator's office in Tanana. The City Maintenance Operator will be responsible for ensuring all written records are submitted to the City Administrator. The Maintenance Operator will keep a copy of maintenance employees' training records at the Maintenance Building office.

**TANANA, ALASKA**

**WHERE TWO**

**RIVERS MEET**

**AND**

**OPPORTUNITIES**

**AWAIT**

## **Tanana Mission Statement**

**The people of Tanana desire to work together to preserve and enhance their community and further the knowledge of traditional cultural values. Through cooperative work, the community of Tanana will create economic opportunities benefiting Tanana residents, improve public facilities, housing and roads while managing the resources of Tanana in a sustainable manner.**

## **Description of Community Values**

### **Respect for individual rights and freedom**

The citizens of Tanana have a strong sense of individual freedom and the rights of individuals as long as they do not interfere with the freedom of others.

### **Awareness and pride in the long history of Tanana**

Tanana has a long cultural history that extends thousands of years back in time. This rich cultural history is viewed with pride by local residents.

### **Community, family, elders and youth**

People know and care about each other in Tanana. There is a deep concern for family, elders and youth that extends toward working together to make Tanana a better place to live.

### **Acknowledgement of Traditional Culture**

The people of Tanana value the traditional culture and subsistence life style. Elders want to pass their knowledge on to Tanana's youth and teach them how to live successfully from the abundant natural resources that surround Tanana. The people of Tanana have a deep respect for the land, its resources and the feelings of freedom that is felt from living off the land.

### **Community Respect and Responsibility**

Tanana residents feel a strong respect for one another and feel a sense of community that is missing in large urban areas. People know one another and care about the future of Tanana.

### **Community Assets**

Tanana has a wealth of economic opportunities; it offers excellent investment opportunities and is located in a strategic location at the confluence of the Tanana and Yukon River.

## **GOALS AND OBJECTIVES OF TANANA**

### **GOAL 1**

**Reduce the high cost of fuel oil and/or energy to heat private and public buildings.**

#### **Objectives:**

Assist local residents and local governing units reduce the cost of heating buildings through alternative energy.

Submit federal and state grant applications for funding of alternative heating energy uses.

Work toward increasing local employment through the use of alternative energy.

### **GOAL 2**

**Develop a teen center.**

#### **Objectives:**

Research federal, state and private foundation funding sources for building a teen center for Tanana's youth.

Assist Tanana's youth in developing programs to be used in teen center for healthy activities.

Develop the type of vocational/technical training programs To train Tanana's youth thereby enabling them to secure employment in the future.

### **GOAL 3**

**Develop plans for a new multi purpose community hall.**

#### **Objectives:**

Research federal and state funding opportunities to build a new multi purpose community center for Tanana that will meet state and federal building codes.

Plan and develop programs for local elders and youth that would utilize this community building in a positive, constructive manner.

Build the community center with an approved DEC kitchen with adequate male and female bathrooms and running water.

#### **GOAL 4**

#### **Build new energy efficient houses in Tanana.**

##### **Objectives:**

Replace older inefficient housing units with newer energy efficient homes.

Increase the number of multi housing units that can be rented to young couples just getting started.

Upgrade local housing units so they meet state and federal electrical, plumbing and safety codes.

Increase the supply of energy efficient housing units in Tanana.

#### **GOAL 5**

#### **Develop a community tourism program as a means of creating local employment opportunities.**

##### **Objectives:**

Complete a local inventory assessment of potential tourist attractions that could be developed to attract tourists on a regular basis to Tanana.

Assist in local planning efforts to develop small cottage industries for elders and other local residents to produce crafts and souvenirs that could create income.

Engage youth in researching Tanana's local contribution to the Alaska Native Land Claims Act of 1972 for printing a booklet and postcards that could be sold locally.

Start proceedings to enter on the National Registry the building that hosted the historic land claims meetings in Tanana in 1962.

#### **GOAL 6**

#### **Develop alternatives to the City owned liquor store for residents to vote on.**

##### **Objectives:**

Maintain greater control over sales of liquor in Tanana by the city so as to reduce alcoholism in Tanana.

Consider as one alternative development of a bar & grill that would provide a social place for people to congregate and would control drinking strictly to the bar's premises.

**GOAL 7**

**Improve Tanana's roads.**

**Objectives:**

Work with Tozitna Limited to obtain land to develop roads in Tanana.

Secure funding to improve Tanana's roads to reduce dust, eliminate pot holes and create a better, well organized transportation system within the community.

**GOAL 8**

**Install more street lights.**

**Objectives:**

Install more street lights along Front Street and on other streets.

Make Tanana's streets easier to travel on at night.

**GOAL 9**

**Improve the land fill/city dump**

**Objectives:**

Initiate a 2% tax on local residents to have trash hauled to the local dump site.

Keep the land fill/city dump covered in order to keep control of what is put into the land fill.

Pick up trash on a regular basis around the community to keep Tanana looking good

Cut brush along the streets to beautify Tanana.

**GOAL 10**

**The City of Tanana and the Tanana Tribal Council work closer together on community projects.**

**Objectives:**

Increase federal and state funding opportunities by gaining greater co-operation between the City and the Tribal Council on local projects.

Reduce competition and increase cooperation between the two governing bodies so as to benefit Tanana residents.

**GOAL 11      Develop an airport terminal facility.**

**Objectives:**

Plans for an airport terminal should be developed

Modernize and upgrade travel to Tanana by allowing passengers and freight to be unloaded safely inside a terminal facility.

Seek state and federal funding opportunities to build such an airport terminal facility.

**GOAL 12      Promote community awareness and programs regarding drug and alcohol abuse.**

**Objectives:**

Reduce drug and alcohol abuse in Tanana.

Work as a community to develop healthy alternatives to using alcohol and drugs.

**GOAL 13.      Preserve and improve Tanana's natural environment.**

**Objectives:**

Establish more outdoor trails for community and tourist use.

Clean up and improve local picnic/park sites for local use.

Keep our water safe from contamination.

**GOAL 14.      Develop vocational training programs to meet the needs of the gold mining industry.**

**Objectives:**

Create job opportunities for local residents at the proposed Doyon gold mine site and develop local services to supply the gold mine through Tanana.

Work closely with Doyon to maximize the benefits to Tanana in this development.

### IMPLEMENTATION SCHEDULE

<b>Goal</b>	<b>Objective</b>	<b>Responsible Party</b>	<b>Time frame</b>
<b># 1</b>	<b>Reduce cost of energy</b>	<b>City of Tanana</b>	<b>Started 2006 - on going</b>
<b># 2</b>	<b>Develop teen center</b>	<b>City and Tribal Council</b>	<b>Begin 2007</b>
<b># 3</b>	<b>Plan for multi purpose community center</b>	<b>City and Tribal Council</b>	<b>Begin 2007</b>
<b>#4</b>	<b>Build new housing units</b>	<b>City and Tribal Council</b>	<b>Begin 2007</b>
<b># 5</b>	<b>Develop tourism program</b>	<b>City and Tribal Council</b>	<b>Started 2006 – on going</b>
<b># 6</b>	<b>Alternatives to City owned liquor store</b>	<b>City</b>	<b>Begin 2007</b>
<b># 7</b>	<b>Improve roads</b>	<b>City and Tribal Council</b>	<b>Begun 2007 – on going</b>
<b># 8</b>	<b>Install more street lights</b>	<b>City and Tribal Council</b>	<b>Begin 2007</b>
<b># 9</b>	<b>Improve land fill</b>	<b>City and Tribal Council</b>	<b>Begin 2007</b>
<b># 10</b>	<b>More cooperation between City and Tribal Council</b>	<b>City and Tribal Council</b>	<b>Started 2007 – on going</b>
<b># 11</b>	<b>Develop airport terminal facility</b>	<b>City</b>	<b>Begin 2007</b>
<b># 12</b>	<b>Drug and Alcohol Abuse awareness</b>	<b>City and Tribal Council</b>	<b>Begin 2007</b>
<b># 13</b>	<b>Preserve and improve Tanana's natural environment</b>	<b>City and Tribal Council</b>	<b>Begin 2007 on going</b>
<b># 14</b>	<b>Create vocational training programs for gold mine</b>	<b>City and Tribal Council</b>	<b>Begin 2007</b>

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**BUSINESS PLAN WORKSHEET  
&  
PROJECTION OF EXPENSES  
ADDITIONAL INFORMATION**

The city's landfill is a free service to the general public. Only commercial user is charged a fee. The city spends about \$3000 to \$5000 a year in developing new landfill site and that includes the bi-weekly clean up with city's machinery to make sure that all the trash is inside the hole. This help's with birds control as well as keeping bears and other animals away. A large incinerator will greatly help to reduce the amount of trash that ends up in the landfill hole. The final results being much less ware on machinery and less labor and fuel costs.

The used oil burners will be looked at by the community as added service by the City with little or no cost to the public. The main goal is to reduce and prevent future oil spills locally or it ending in the land fill or worst yet, ending up in our river system. The dual benefit is that we get almost free heat from this unit when needed.

The city employs a mechanic for all our equipment used for the airport, roads, landfill maintenance as well as local construction. We also have maintenance staff of our school buildings and teachers housing as well as the fire hall, maintenance shop, jail, policeman apt. and ect. We have a local utility manager with two support staff on the payroll. We expect to see a cost savings of over \$7000 or more by using these technologies.

It's very hard for us to put numbers of the projection of expenses for varies reasons. The main ones are our budgets can go up or down by as much as 30% from year to year and we plan on what we do based on what's in the bank to ensure that major over expenditures don't set us back.

We will ensure that we will take good care of this equipment but more importantly is that we'll use it to the best of the community ability because it will save us a lot of money.

## 6. Narrative

**History of Community:** Tanana is located in Interior Alaska, about two miles west of the junction of the Tanana and Yukon Rivers, 130 air miles west of Fairbanks.

Tanana encompasses 11.6 sq. miles of land and 4.0 sq. miles of water.

The current population is approximately 271 persons, with an additional 100 seasonal workers during summer months. According to the 2000 census, two-thirds of the full time jobs in Tanana are with the city, school district or native council. There are a number of positions with local businesses and services. BLM firefighting, trapping, construction work and commercial fishing are important seasonal cash sources.

**Goal of recycling project:** The goals of the City of Tanana's *Recycling and Energy Recovery Program* is to reduce energy fuel costs to the community, to reduce waste tonnage going into the landfill, and to develop recycling systems that can be run and maintained by community residents. All of these conservation measures in combination could result in significant annual monetary savings to the community. Using waste oil to heat the city maintenance shop could save up to \$10,000 annually. If the city can reduce its hazardous liquid waste in the landfill, and reduce household waste, the landfill will have more room available for commercial waste. Currently, the City has only two cells left in the landfill. Otherwise, a new landfill will have to be constructed. Increasing commercial waste @ \$40.00 a ton will net the City up to \$5,000 in revenue. All of the measures will also result in a cleaner, safer environment for the community.

The City of Tanana proposes to purchase a Black Gold Fuel Recovery Furnace, a Smart Ash Incinerator, and a Solid Waste Burn Unit. These purchases will allow the City to begin on-site energy recovery from used oil and burn other waste liquids that are present. The City will own, operate, and maintain the recovery unit and incinerator as part of its "Recycling Center Program". The City will partner with the Native Council's Environmental Technician to coordinate the waste oil recovery and recycling program with local residents. The City Utility Manager will operate and maintain the used Oil Collection Center as well as the Incinerator. Savings are estimated to be \$7,350 annually.

### **Description of how community will work together with requested equipment:**

In order to accomplish its recycling and waste oil recovery goals, the City of Tanana has partnered with the Tribal Council to coordinate resident awareness and advocacy necessary for the household recycling program, and encourage the safe collection of waste oils and liquids for energy production. The Tribal Council Environmental Specialist will be the main contact for the community outreach program. The City will contribute the services of its Utility Manager to operate the recycling program at the landfill and the waste oil recovery collection and furnace. The local Utility Company has also agreed to donate its waste oil to the City for energy production.

#7

City of Tanana  
Community Plan

The Community of Tanana is now the process of updating the Community plan since it has not been updated from late 1998.

We are now in the second phase of this update and our next community meeting is scheduled for the 14<sup>th</sup> of Nov 06. A day before the due date of this application.

In our second phase work, we are ranking the community priorities to update to current needs and cross off our past successes or completed projects.

We didn't want to send you an unfinished community plan but we can get a copy to Denali Commission just after the Thanksgiving holiday season.

Also, we hope to receive some support from IHS (Indian Health Service) to update our waste management plan and to upscale our landfill site to a DEC Tier III.

This will allow us look at better options at our efforts to clean up the old Hospital Site of its environmental (major) problems with some cost control and suitable options.

**Project Schedule:**

March	Form team with Tribal Environmental Spec. and City to announce "Waste Oil Recovery Program, and the Household Waste Recycle Program	City Manager, Tribal Council Chair, and city and tribal council staff.
	Purchase Waste Heat Furnace	City Mgr/City Special Projects Director
	Purchase Smart Ash Incinerator	City Mgr/Special Projects Director
	Purchase Solid Waste Burn Unit	City Mgr/City Special Projects Director
April	Installation of Recovery Furnace in Maintenance Building	Special Projects Director, Utility Manager
	Begin Waste Oil Collection from Utility Company and Begin Waste Oil Collection Program with community. One community workshop held.	Utility Manager Tribal Environmental Specialist
May	Start site work at the landfill for Solid Waste Burn Unit placement	Utility Mgr, Special Project Director, Tribal Env. Specialist.
June	Smart Ash Incinerator operational at the landfill.	Utility Mgr, Special Project Director, Tribal Env. Specialist.
	City moves first set of existing waste drums (at the dock area) to the landfill to begin disposal.	City Mgr. Utility Mgr.
	Community Notice and Awareness Program operational. Community workshop on using the Solid Waste Burn Unit completed.	City Mgr, Tribal Env. Specialist, Utility Mgr.
	Solid Waste Burn Unit delivered to Tanana	Spec. Project Mgr/Utility Mgr.
July	Solid Waste Burn Unit operational at the landfill	Utility Mgr.
August	City completes the removal of all waste drums from the city dock area and the processing of liquid waste with the Smart Ash Incinerator.	
October	The community is evaluating the impacts of the Waste Oil Recovery program and is considering purchase of a second Waste Oil Recovery Furnace.	

**Business Plan - Required for Denali Commission Funding**

Use this as pages 4 and 5 of the proposal.

This worksheet will demonstrate the projected income of the facility and its ability to pay operation and maintenance expenses. Communities are strongly encouraged to attach a more complete business plan, if there is one available.

**BUSINESS PLAN WORKSHEET    FY 2006    RFP #2**

Community (or communities) Served by Solid Waste Facility	TANANNA, ALASKA
Total Population of Communities Served	281 - 350
Solid Waste Management Organization	CITY OF TANANNA
Solid Waste Manager	CHARLIE CAMPBELL, UTILITY MGR
Worksheet prepared by (name and title)	BEAR KETZLER - CITY MANAGER

**PROJECTION OF REVENUES**

	Tons per Day	X	Days per Year	=	Cycles per Year	X	Charge Per Ton	=	Revenue per Year
Household (MSW) (no charge)		X		=	-	X	-0-	=	-0-
Construction Waste	1.5 tons (seasonal)	X		=	125	X	40.00	=	5,000
Appliances, etc. (2 per month)	2 per month	X		=		X	-0-	=	-0-
<b>TOTAL ESTIMATED REVENUE PER YEAR (sum of all revenues)</b>									<b>5,000</b>

### PROJECTION OF EXPENSES

LABOR	Hours per Day	Days per Year	Hours per Year	Rate per Hour	Cost per Year
Payroll	4	250	1000	18.00	18,000
Payroll Taxes	Estimate by multiplying Labor Cost per Year times .08.				1440.00

Allready  
PACO  
Sewer &  
REVENUE

FUEL	Cost per Unit	Units per Year	=
Electricity (unit = <u>.73</u> per KW) <i>retail price local</i>			
Fuel Oil (unit = <u>4.58</u> per gal) <i>fuel recovery savings using Black gold</i>		10,000 plus	

Accounting Costs	Attach a separate detailed description of your estimate. <i>We have fulltime City Clerk</i>	= 0
Insurance	Attach a separate detailed description of your estimate. <i>(1970 + 43,000)</i>	= 450.00
Equipment Maintenance	Attach a separate detailed description of your estimate. <i>Already have city maint.</i>	= 0
Building Maintenance	Attach a separate detailed description of your estimate. <i>worker on hand</i>	= 0

DEPRECIATION OF EQUIPMENT	NUMBER	COST	USEFUL LIFE	=
<i>RECOVERY FURNACE = \$7,785.00</i>	1	7,885	25	= 315.40
<i>INVERTER TOR BURN UNIT = \$3,881.00</i>	1	3,881	25	= 155.24
	1	21,500	25	= 860.00

**TOTAL ESTIMATED REVENUES per YEAR (sum of all revenues) =**

**TOTAL ESTIMATED EXPENSES per YEAR (sum of all expenses) =**

**INCOME OR LOSS per YEAR (sum of all revenues - sum of all expenses) =**

If Revenues are not projected to cover Expenses, attach a separate description of the source of funding that is or will be used to keep the facility in operation and properly maintained.



**Workers' Compensation  
DETAIL REPORT**

FY2006

Thursday, August 03, 2006

**Workers' Compensation - Scheduled Payroll**

<b>Tanana</b>					
CODE	DESCRIPTION	# VOL	PAYROLL	RATE	CONTRIBUTION
7704-V	Fire Fighters/EMS and Volunteers	11	\$0	\$7.76	\$1,707
7720	Police Officers/Public Safety/VPSO	0	\$31,600	\$4.29	\$1,356
8810	Clerical/Professional Employees	0	\$70,850	\$1.16	\$822
9410	General Municipal Employees	0	\$60,200	\$3.91	\$2,354

**Workers' Compensation Contribution Calculation**

Total Payroll	\$162,650	WC Variable	\$0
WC Experience Modifier	1.00	Base WC Contribution	\$6,239
Employee Federal ID #	92-0068214	WC Broker Fee	\$0
		<b>Total WC Contribution</b>	<b>\$6,239</b>

WC Note:



Thursday, Aug

Mobile Eq

**Tanana**

ME# ME Ychr

0 Yes 1981  
0 Yes 1982

Mobile Eq

Mobile Equip





Anchorage: 807 G Street, Suite 356, Anchorage, Alaska 99501 (907) 258-2625 Fax: (907) 279-3615

Juneau: 217 Second Street, Suite 200 Juneau, Alaska 99801 (907) 586-3222 Fax: (907) 463-5480

### CERTIFICATE OF COVERAGE

8/17/2006

Policy# GP2007 - 94

**Certificate Holder:**

State of Alaska DOT & PF, Leasing Office  
2301 Peger Road  
Fairbanks AK 99709

Term of Certificate: 07/01/06 to 07/01/07

Annual Re-issue: Yes

**Re: City of Tanana - ADA 71487**

Please be advised that Tanana, along with 199 other Alaska municipalities and school districts, is a member of the Alaska Municipal League Joint Insurance Association, Inc. (AMLJIA), and participates in the self-insured and loss-pooling programs checked below, which are administered by the AMLJIA for those municipalities and school districts:

Coverage:	Limits:	Deductible:
<input checked="" type="checkbox"/> Automobile Liability	\$3000000 Per Occurrence	\$5000
<input checked="" type="checkbox"/> Employers' Liability	\$2.5 Million Per Occurrence	\$0
<input checked="" type="checkbox"/> General Liability	\$3000000 Per Occurrence	\$5000
<input checked="" type="checkbox"/> Workers' Compensation	Statutory Benefits	\$0

**CANCELLATION:**

Should the above described coverage be canceled before the expiration date thereof, the AMLJIA will endeavor to mail 30 days written notice to the above named Certificate Holder, but failure to mail such notice shall impose NO obligation or liability of any kind upon the AMLJIA.

Pamela Epps  
Deputy Director  
cc: City of Tanana

11:39 AM  
 08/03/06  
 Accrual Basis

**CITY OF TANANA**  
**Profit & Loss**  
 July 2005 through June 2006

Jul '05 - Jun 06

Ordinary Income/Expense  
 Income

40000 · Grant Revenue	15,521.65
40610 · FEDERAL PAYMENT IN LIEU OF TAX	35,725.63
40150 · Contract Revenue (Airport Contract Revenue)	48,000.00
40400 · Rental income	8,520.00
40500 · Equipment Rental	112,592.50
40600 · Sales Tax	22,295.45
40701 · Liquor sales	290,228.59
40803 · Interest Income	98.14
40860 · Check Cashing Fee	6,761.60
40870 · Dump Fee	260.00
40800 · Miscellaneous Income	3,592.00
4999 · Uncategorized Income	240.40

Total Income

543,835.96

- 300.00

Gross Profit

543,835.96

Expense

60000 · Payroll	142,321.50
60001 · Payroll (overtime)	3,969.83
60010 · Payroll Tax	10,098.54
60015 · Employee Benefit	11,377.76
60030 · Contract Labor	958.07
60021 · Insurance	41,535.91
60050 · Training	180.00
60090 · Travel	
60507 · Perdiem	547.76
60090 · Travel - Other	10,076.21

Total 60090 · Travel

10,623.97

60210 · Materials

2,217.31

60305 · Equipment

60310 · Equipment Repair	2,748.80
60330 · Equipment rental	395.00
60305 · Equipment - Other	70,000.00

Total 60305 · Equipment

73,143.80

60315 · Maintenance

Equipment Repair	630.00
60315 · Maintenance - Other	1,440.63

Total 60315 · Maintenance

2,070.63

60400 · Vehicle Expense

60405 · Vehicle Fuel	1,781.84
60400 · Vehicle Expense - Other	1,908.02

Total 60400 · Vehicle Expense

3,689.86

60505 · Freight

28,583.48

60610 · Street Lights

5,633.05

60614 · Facility Expense

60605 - Electricity	
60606 · Public Safety Apt (Cop Apt)	943.89
60605 - Electricity - Other	8,812.32

Total 60605 - Electricity

9,756.21

60615 - Heat

37,199.88

60614 · Facility Expense - Other

1,543.54

Total 60614 · Facility Expense

48,499.63

60621 · Water Utility Payment

4,606.50

60710 · Supplies

60711 · Liquor	5,008.25
60710 · Supplies - Other	146,277.98

Total 60710 · Supplies

151,286.23

20767  
 20540 - 24,000

← 112,592.50  
 22,295.45  
 290,228.59 50,000

11:39 AM  
08/03/06  
Accrual Basis

**CITY OF TANANA**  
**Profit & Loss**  
July 2005 through June 2006

	<u>Jul '05 - Jun 06</u>
60715 · Postage	188.52
60720 · Legal	2,000.00
60725 · Audit	11,885.00
60730 · Computer Costs	730.71
60712 · Theft loss	100.00
60713 · Finance Charge	
NSF checks	-309.50
60714 · Bank charges	1,994.76
60713 · Finance Charge - Other	117.94
<b>Total 60713 · Finance Charge</b>	<b>1,803.20</b>
60735 · Telephone	5,274.31
60850 · Permits	4,759.53
69000 · Miscellaneous Expense	631.68
6999 · Uncategorized Expenses	1,088.40
<b>Total Expense</b>	<b>569,257.42</b>
<b>Net Ordinary Income</b>	<b>-25,421.46</b>
<b>Net Income</b>	<b>-25,421.46</b>

**CITY OF TANANA**  
P.O. Box 249  
Tanana, Alaska 99777  
(907) 366-7159 • Fax (907) 366-7169

November 7, 2006

Denali Commission  
Attn: Solid Waste Program Manager  
510 "I" Street, Suite 410  
Anchorage, Alaska 9950

Dear Ms Roberts:

The City of Tanana is pleased to submit a proposal for funding of a Black Gold 200 Energy Recovery Furnace, a Smart Ash Incinerator, and a Solid Waste Burn Unit. This equipment is vital to the community's effort to recycle hazardous waste, reduce waste volume, and reduce fuel costs.

All of the strategies in Tanana's *Recycle and Oil Recovery Program* have proven track records of success in other remote rural communities in Alaska. The community is facing rapidly escalating energy costs, and this proposal is an effort to reduce costs and dispose of Tanana's waste oil in a safe, efficient and convenient way.

If you have any questions regarding the proposal, please feel free to contact me at: (907) 366-7159 or (907) 978-5848 (cell). On behalf of the residents of Tanana, thank you for your consideration of our proposal.

Sincerely,

  
Bear Ketzler

Administrator/City Manager

## **Table of Contents**

1. IRS Information Form
2. Application for Funding
3. Funding Readiness Questions
4. Equipment Descriptions
  - a. Black Gold Recovery Furnace
  - b. Smart Ash Incinerator
  - c. Solid Waste Burn Unit
5. Business Plan Worksheets
6. Narrative
7. Community Plan ( N/A ) *SEE UPDATE*
8. Proof of ownership of landfill ( Plat, and City Resolution )
9. Community Map with location of landfill
10. Support letters:
11.
  - a. City of Tanana Resolution
  - b. Tribal Council Letter of Support
12. Letter of Support, Tanana Chiefs Conference, Environmental Technician
13. Petition with signatures
14. OMB Circulars A-133, OMB Circular A-102, OMB Circular A-87

Use this as page 1 of the proposal.

### III. APPLICATION FOR FUNDING

FY 2006 RFP #2

Date Received by Denali Commission: \_\_\_\_\_ IRS Clearance Received: \_\_\_\_\_ Number of pages in Original \_\_\_\_\_

#### Applicant Information

Legal Name of Applicant Organization: _____
Community Population: <u>281</u> winter <u>381</u> summer
Tax Identification Number: <u>92-0068214</u> DUNS # <u>002288140</u>
Mailing Address: <u>P.O. Box 249</u> <u>TANANA, AK 99777</u>

#### Contacts for this Proposal:

Community Contact (name): <u>BEAR KETZLER</u> <u>CITY MANAGER</u>	Phone: <u>907-366-7159</u> Fax: <u>907-978-5848</u>	Email: _____
Is your organization a unit of government? No <input checked="" type="radio"/> City <input type="radio"/> Borough		
Are you a tribal organization? Yes <input type="radio"/> No <input checked="" type="radio"/> Are you a 501(c) organization? Yes <input type="radio"/> No <input checked="" type="radio"/>		

#### Proposal Information:

Provide a 2-3 sentence summary of your request: The City of Tanana proposes to purchase a Black Gold Fuel Recovery Furnace, a Smart Ash Incinerator, and a Solid Waste Burn Unit. The Tribal Council Envir. Tech. will coordinate the education program. The City Utility Mgr. will maintain the used Oil Collection Center and incinerator. This project will reduce fuel costs, reduce waste tonnage at the landfill, and is a recycling system that can be maintained locally.	
Amount Requested: \$ <u>33,149.00</u>	Local Funding Commitment: \$ <u>18,998.00</u>
Total Annual Organization Budget: \$ <u>331,950.00</u>	
Target Start Date: <u>MARCH 2007</u>	Target Completion Date: <u>AUGUST 2007</u>

#### Authorization:

Name of Authorized Representative of Community: <u>Bear Ketzler Jr</u>	Title: <u>CITY MANAGER</u>	
Phone: <u>3667159</u>	Fax: <u>3667169</u>	Email: <u>ANNE.GUTHRIE102@16TANAK.COM</u>
Signature of Authorized Representative: <u>BEAR KETZLER JR</u>	Date: <u>7 NOV 06</u>	

Use this as page 2 of the proposal.



Denali Commission  
510 L Street, Suite 410 Anchorage,  
AK 99501 907.271.1414 tel  
907.271.1415 fax 888.480.4321 toll  
free www.denali.gov

**Authorization to Request Federal Tax Information  
All Applicants Must Complete This Form**

We hereby authorize Krag Johnsen, Chief Operating Officer of the Denali Commission (Commission), to obtain information from the Internal Revenue Service (IRS) concerning our federal tax returns for the tax Forms(s) 940, 941, 945, 720 and information return Forms W-3, W-2, 1096, and 1099 for all tax periods from 01/01/1998 to 12/31/2007. The following information may be released by the IRS to the Commission provided the request is made to the IRS within 60 days of our signature and date of this authorization.

**[check all relevant boxes below]**

- Whether we are currently in compliance with federal Employment and Excise tax filing requirements.
- Whether we have failed to file Employment/Excise tax returns for which returns are currently due.
- Whether we have failed to file Information returns (Forms W-3, W-2, 1096, 1099) and Civil Penalties are due.
- Whether notices of Federal Tax Liens have been filed against us in any recording District.
- Whether we currently have a formal payment arrangement for any amounts owed to the IRS.
- The amounts of any currently outstanding balance due whether or not secured by any recorded Notice of Federal Tax Lien.

Specific use not recorded on Centralized Authorization File (CAF).

I certify I have the authority to execute this form with respect to the tax matters/periods covered.

X Krag Johnsen City Manager  
 Signature and Title Name (Please Print)  
City of Tanana List all EINs used by Applying Entity  
 Taxpayers Name P.O. Box 249 99777 92-0068214  
 Taxpayers Address  
TANANA, AK  
 Date 3/20/06

**REPLY**

**Deemed Compliant by IRS**

- Taxpayer is in compliance with federal employment and/or excise tax filing requirements.
- Taxpayer is in compliance with Federal Tax Deposit requirements.
- No recorded Notice of Federal Tax Lien against the above taxpayer(s) has been located.
- Taxpayer owes federal taxes Years/Periods: \_\_\_\_\_ Amount: \_\_\_\_\_  
but has a payment agreement and is current with the schedule of payments due

**Deemed Non-compliant by IRS**

- Taxpayer owes federal taxes Years/Periods: \_\_\_\_\_ Amount: \_\_\_\_\_  
and has no payment agreement
- Notice(s) of Federal Tax Lien Recorded: District \_\_\_\_\_ State: \_\_\_\_\_

Lien Tax Years/Periods: \_\_\_\_\_ Balance Due: \_\_\_\_\_  
 Federal Tax Lien(s) may be released for payment of: \$ \_\_\_\_\_ by \_\_\_\_\_  
 Taxpayer has not filed for the following information returns for the following tax periods: \_\_\_\_\_

**FOR INTERNAL REVENUE SERVICE:** \_\_\_\_\_  
Title: \_\_\_\_\_

## FUNDING READINESS QUESTIONS

**TABLE 1: Description of Capital Funds**

Capital Budget Category	Denali Commission Fund Request	Local cash or In-Kind Value (Justify in-kind value on a separate attachment)	Other Funds	Source of "Other Funds"
Materials	\$	\$ 1,500.00	\$	\$
Equipment	\$ 31,166.00	\$	\$	\$
Freight	\$ 1,983.00	\$	\$	\$
Project Management	-----	\$ 17,498.00	\$	\$
Administration	-----	\$	\$	\$
Other (identify):	\$	\$	\$	\$
Totals	\$ 33,149.00	\$ 18,998.00	\$	\$

### 1. Size and equipment needed for the Tanana Recycling Project

#### 1. Black Gold 200 Series Furnace- recycling waste oil into heat

As part of the Recycling Program, the Oil Recovery Center will begin to replace heating oil with waste oil starting in July 1, 2007. The City will install a *Black Gold 200* 200,000 BTU furnace in the City maintenance facility June 2007. The unit is expected to be operational by July 1, 2007. The Oil Recycling Program will start collecting waste oil in spring 2007. Waste oil will be collected by the City maintenance operator. The program is expected to generate 2132 gallons of used oil (41 gallons per week x 52 weeks) in the first year of operation. The Utility Company in Tanana has agreed to give the City waste oil from its operations. (Pers comm. City Manager). Fuel savings to the City are estimated to be \$7,350. (1 gallon of waste oil is figured at the current City rate of \$3.50/gal) Over a ten year period, the City could realize a savings of \$73,500.

According to other small rural communities that have used the Black Gold waste oil furnace for several years, the furnace has worked well. The 200 series model the City will purchase was recommended by the Yukon River Intertribal Watershed Council. The unit meets EPA and UL listings, and has a 3 year warranty (Unit specifications attached).

#### 2. Smart Ash Incinerator – reducing other liquids and lowering volume of backhaul

The City also proposes to purchase a portable Smart Ash Incinerator to dispose of combustibles other than oil. (List of Burnables- attached). The Smart Ash Incinerator

is a mobile unit that can be safely housed on City grounds and operated by City staff. at the landfill. The incinerator will dispose of liquids, reduce backhaul and costs of removing such liquids from the City, and is part of the community's recycle program. The Tribal Council Environmental Technician will oversee the community education and awareness for the recycle program.

**3. Solid Waste Burn Unit- reducing volume of waste and extending the life of the landfill.**

The City will build a drive over ramp at the landfill and install a portable trailer mounted Solid Waste Burn Unit. This option is expected to reduce volume of household waste and extend the life of the landfill. Users of the landfill burn unit will manually put household waste into the Solid Waste unit. City maintenance operator will oversee operation of the burn unit. The City will realize a considerable reduction of waste into the landfill.

2. The key to Tanana's Recycling Program, is the ability of the City to utilize environmental staff from the Tribal Council, and maintenance staff from the city to coordinate the waste oil collection program, the household facility user program, and to maintain the energy recovery furnace operation. Together these recycling efforts will result in a reduction of landfill use, lower fuel costs to the City, and a safer community. The ability of Tanana to manage its waste efficiently means it will have more space available to store construction waste which will produce revenue for the City.

**3. Local Contribution to the proposal, other funding partners, and status of other funds/grants.**

Due to the rapid increase in energy costs, the City of Tanana is under extremely tight budget constraints. The contribution of its partners is critical to leverage funds for the capital grant to acquire recycling equipment.

City contribution: The City of Tanana will utilize its Utility Manager and its Special Projects Director to implement the Recycling program at the landfill and the waste oil recovery program.

Material Costs: \$1,500- the City will contribute materials/wiring to install the furnace.

Labor Costs: \$ 10,010.00 - the City will contribute the services of the Special Projects Director, to oversee installation of the furnace, and the Utility Manager to oversee the operation of the Incinerator and the Solid Waste Burn Unit.

Utility Manager 17.50/hr x 5 hrs wk -operation of Fuel Recovery Unit = \$4,550

Utility Manager \$17.50/hr x 2 hrs wk- operation of Incinerator = \$1,820

Utility Manager \$17.50/hr x 4 hrs wk- operation of Waste Burn Unit = \$3,640

Special Project Director will oversee installation of all three units.

Tribal Council Contribution: The Tribal Council plays a vital role in community education and awareness of how to manage and dispose of hazardous and non hazardous wastes.

Labor Costs: \$ 7,488.00 - The Tribal Council will contribute costs of its Environmental Specialist to conduct the community awareness and education program about the Oil Recovery Center Program and the landfill household waste program.

**4. Discuss any planned in-kind contributions. Are there any commitments by State, Federal, or public agencies which will impact this project?**

The Recycling Program is one of the steps the City of Tanana is taking to clean up waste sites in the village and recycle waste products on site in order to lower costs for roads maintenance, landfill use, and fuel.

In addition to the Recycling Program, Tanana is working with the Indian Health Service to clean up and reclaim the old hospital site. In fall 2007, the City held a number of community meetings with federal agencies to discuss community options for clean up and reuse of the site. To date, the City has hired an Administrator that is proactive in dealing with solid and hazardous waste issues. The current landfill cell is being covered and a new one is to be installed adjacent to the old one. The landfill site plan is also being updated with the help from the Environmental Technician from Tanana Chiefs Conference. These efforts will reduce the amount of weight in the items that were backhauled and coordinated by the EPA-IGAP personnel and the YRITWC. The city has applied for a planning grant to assist the community in evaluating options for mitigation and reuse of the old hospital site. Evaluation of the installation of the on-site fuel recovery unit could also be used when planning new community facilities. All of these mitigation efforts reinforce the efforts the City and community are taking to reuse waste products and lower energy/fuel costs.

**5. Cost estimates:**

	Item	Cost	Freight	
1	Black Gold Furnace	\$ 7,785.00	\$520	
2	Smart Ash Incinerator	\$ 3,881.00	\$413	
3	Solid Waste Burn Unit	\$21,500. 00	\$1050	
	TOTAL	\$33,166.00	\$1983	\$35, 149.00

**1. Black Gold 200 Series Furnace**

The City of Tanana selected the Black Gold unit because of the ability of the furnace to dispose of waste oil as well as heat the city maintenance shop. The unit is a turn-key system which includes everything except the flue. The system has a good reputation in Alaskan communities and the system is UL-listed, exceeds EPA and NFPA requirements, and the hot filter cleans and preheats oil for efficient safe, clean burning. The unit also comes with a built-in air compressor, so no shop air is needed. The straight-through heat exchanger is designed so that the total surface can be easily cleaned. The system uses crankcase oils, used ATF, and No 2 fuel oil, automatic operation- no manual adjustment

needed and no air pollution when fuel's viscosity changes. The Exhaust Air quality emits zero ppm hydrocarbons and zero percent carbon monoxide, providing clean air protection and no exposure to cancer causing hydrocarbons.

Cost: The cost estimate was provided by Nuera Corporation. The cost of the Model 200 Furnace ( 200,000 BTU) is \$ 5,698.00 The City has chosen the 250 gallon workbench tank with furnace stand \$ 1,198.00, and the plumbing and hardware package and tank gauge, \$ 94.00, plus 695 for flue materials, for a total price of \$7,685.00 Shipping to Fairbanks @840 lbs is \$270.00 for a total to Fairbanks of \$7,955.00. Shipping on Crowley to Tanana (.15 lb City rate) is \$ 350.00.

## **2. Smart Ash Incinerator**

The Smart Ash Incinerator is a mobile unit that will allow the City to safely store and operate the unit. The unit has been used in many rural communities (over 375 units operating in the State of Alaska). The Smart Ash is safe, efficient and has a convenient disposal option which eliminates worry over long-term and second person contamination liabilities. The unit is easy to assemble and comes with a complete set of assembly and operating instructions. The unique design eliminates smoke and traps fly ash making it a sensible disposal option. There is no residue- 100% of the oil soaked waste is reduced to 3% ash.

Cost: The cost estimate provided by Spill Shield International for the Smart Ash Cyclonic Barrel Burner is: Smart Ash-model 100A \$3,040.00, drum required for operation: \$83.95. Estimated freight to Fairbanks from Anchorage is \$75.00 via Carlyle Transportation. Estimated freight to Tanana via Crowley is \$338.00.

## **3. Solid Waste Burn Unit**

The Solid Waste Burn Unit is made in Tok Alaska. One unit in the Village of Manley has been in operation since 2000. The unit is extremely easy to move on-site, easy to load and clean out and is extremely durable. The remaining ash does not attract bears to the landfill and because of the ease of use the unit will be efficient.

Cost: The unit cost is \$21,500. The burner unit will burn a variety of household waste and it is estimated to reduce the volume going into the landfill by over 75%. Estimated freight from Tok to Nenana is \$350.00, and by barge to Tanana via Crowley is \$650.00.

-----Original Message-----

From: Kris Harms [mailto:spillshield@ak.net]  
Sent: Thursday, November 02, 2006 11:04 AM  
To: rpatten@acsalaska.net  
Subject: SMART ASH INCINERATOR

Renee,

Pricing on the Smart Ash Cyclonic Barrel Burner is as follows:

Smart Ash-model 100A	\$3,050.00 ea
Drum required for operation	83.95 ea

These prices are FOB Anchorage, AK

Estimated freight to Fairbanks, AK is \$50.00 to \$75.00 via Carlile Transportation.

If you have any further questions please feel free to contact me via e-mail or the number below.

Regards,

Kris Harms  
Spill Shield International  
(907) 561-6033

**Resolution # 07-07  
City of Tanana**

**WHEREAS** The City of Tanana understands that the waste oil recovery furnace is a necessary component of the *Community Oil Recovery Center Program*; and

**WHEREAS** a waste oil recovery furnace will contribute to lowering energy costs to the community, will reduce waste products into the landfill, and will provide the community with a safe, and reliable way to recycle waste products;

**NOW THEREFORE BE IT RESOLVED THAT** on the 9<sup>th</sup> day of November, the City Council approved the application to the Denali Commission for the purchase and operation of a waste oil recovery furnace

Donna May Bolger  
City Council President

11-9-06  
Date

David K. Koffler  
City Administrator/Manager

11-9<sup>th</sup>-06  
Date

# TANANA TRIBAL COUNCIL

(907) 366-7160  
Fax (907) 366-7195

Post Office Box 130  
Tanana, Alaska 99777

November 7, 2006

Denali Commission  
Attn: Solid Waste Program Manager  
510 "I" Street, Suite 410  
Anchorage, Alaska 9950

Dear Ms Roberts:

The Tribal Council of Tanana is pleased to partner with the City of Tanana's *Recycling and Oil Recovery Program* and application to the Denali Commission. The Council will provide the services of its Environmental Specialist, who will coordinate the awareness and education recycling program in the community. The Environmental Specialist will provide information to households regarding the oil collection, type of waste products to be collected, and ways households can recycle household waste at the landfill.

The Council and City partnership is a good coordination of services that will result in lower energy costs to tribal members, while also providing a clean, and safe environment for our children.

Sincerely,

*Louis Huntington*  
*Chair person (Tribal)*

**TOOGHA, INC.**  
**PO BOX 190**  
**TANANA, ALASKA 99777**  
**(907) 366 – 7177**  
*“Providing clean, affordable water for Tanana”*

November 9, 2006

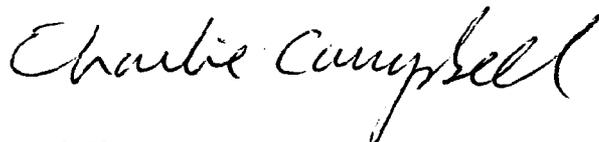
Denali Commission  
Solid Waste Program Manager  
510 “T” Street, Suite 410  
Anchorage, AK.

Dear Ms. Roberts,

On behalf of Toogha Incorporated, the local water and sewer utility for the community of Tanana, Alaska, I would like to add our support for the City of Tanana and the Tanana Tribal Council’s funding proposal to the Denali Commission to provide a recycling and oil recovery program for our community.

The project works towards creating a safe way to dispose of solid wastes and waste oil that are generated here in Tanana, with the added benefit of recovering some economic benefit from the wastes and disposing of them in a way that also saves real dollars within the community—all to the good. I would like to encourage the commission to fund this project, and we thank you for your consideration of Tanana for this project.

Sincerely,



Charlie Campbell  
Manager, Toogha Incorporated



**TANANA CHIEFS CONFERENCE**  
Health Services – Office of Environmental Health

1867 Airport Way, Suite 215

Fairbanks, AK 99701

(907) 452-8251

Fax: 459-3989

Toll Free in Alaska 1-800-478-7822

November 7, 2006

Denali Commission  
Attn: Solid Waste Program Manager  
510 "I" Street, Suite 410  
Anchorage, Alaska 9950

Dear Ms Roberts:

Tanana Chief Conference Environmental Unit is pleased to whole heartedly support the City of Tanana's proposal for funding from your organization for reducing and reusing used oil that is in the community. With funds obtained from FY 2006 RFP # 2 program the city of Tanana wishes to purchase two used oil burners which are the Black Gold Energy Recovery Furnace and Smart Ash Incinerator to use in Tanana's *Oil Recovery Center Program*. If funded, the energy recovery furnace and incinerator will provide much needed relief to a community that has faced steeply rising energy costs.

This proposal represents a strong positive move by the community of Tanana to reduce the its high energy costs, and to lower waste costs in a manner that is sustainable within the community. The savings to the community is money that will remain in the community and with it, the community satisfaction of keeping Tanana self reliant.

On behalf of Tanana Chiefs Conference, I hope you will seriously consider this worthy proposal.

Sincerely,

Gerald Sam  
Environmental Technician  
Tanana Chiefs Conference

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**Our Vision**

Healthy People Across Generations

**Our Mission**

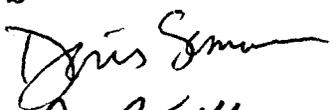
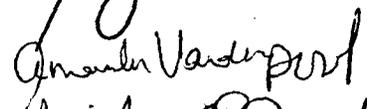
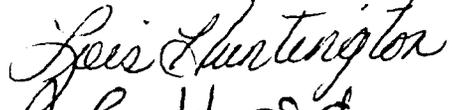
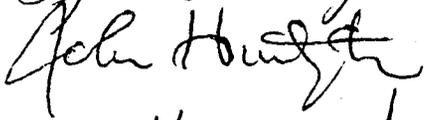
TCC Health Services, in partnership with those we serve, promotes and enhances spiritual, physical, mental and emotional wellness through education, prevention and the delivery of quality services.

City Office

## FY 2006 RFP # 2

### RECYCLING EQUIPMENT Materials Sorting, Storage & Backhaul

" We the community members of Tanana, Alaska pledge to use this opportunity from the Denali Commission to improve our local separation of solid waste in order to recycle usable materials by removing them from our community land and waters."

<u>Name ( Signature)</u>	<u>Name (Printed)</u>	<u>Community</u>
	Dorothy Jordan	Tanana
Mary Edwin	MARY EDWIN	Tanana
	Stephanie Marks	Tanana
	Doris Sommer	Tanana
	Judy E. Moore	Tanana Ak
	Amanda Vanderpoort	Tanana, AK
	Michael Andon	Tanana, AK
	Donna M Filger	Box 166 TANANA AK 99777
	CHARLES ERHART	P.O. Box 263 Tanana AK 99777
	Lois Huntington	P.O. Box 209 Tanana, AK 99777
	John Huntington	P.O. Box 209 TANANA 99777
	Cynthia Erickson	Tanana

**FY 2006 RFP # 2**

**RECYCLING EQUIPMENT  
Materials Sorting, Storage & Backhaul**

" We the community members of Tanana, Alaska pledge to use this opportunity from the Denali Commission to improve our local separation of solid waste in order to recycle usable materials by removing them from our community land and waters."

<u>Name ( Signature)</u>	<u>Name (Printed)</u>	<u>Community</u>
<i>Charles Campbell</i>	C.S. CAMPBELL	TANANA
<i>Martin E. Scharf</i>	MARTIN E. SCHARF	TANANA
<i>Ruth Althoff</i>	Ruth Althoff	TANANA
<i>Harris Hyslop</i>		Tanana
<i>Dean Ketter</i>	Dean Ketter	Fbk./TANANA
<i>Bill Sam</i>	Bill Sam	Tanana
<i>Raymond Albert</i>	Ray Albert	TANANA
<i>Rudy Sommer</i>	Rudy Sommer	Tanana
<i>Dale Erickson</i>	Dale Erickson	TANANA

**FY 2006 RFP # 2**

**RECYCLING EQUIPMENT  
Materials Sorting, Storage & Backhaul**

" We the community members of Tanana, Alaska pledge to use this opportunity from the Denali Commission to improve our local separation of solid waste in order to recycle usable materials by removing them from our community land and waters."

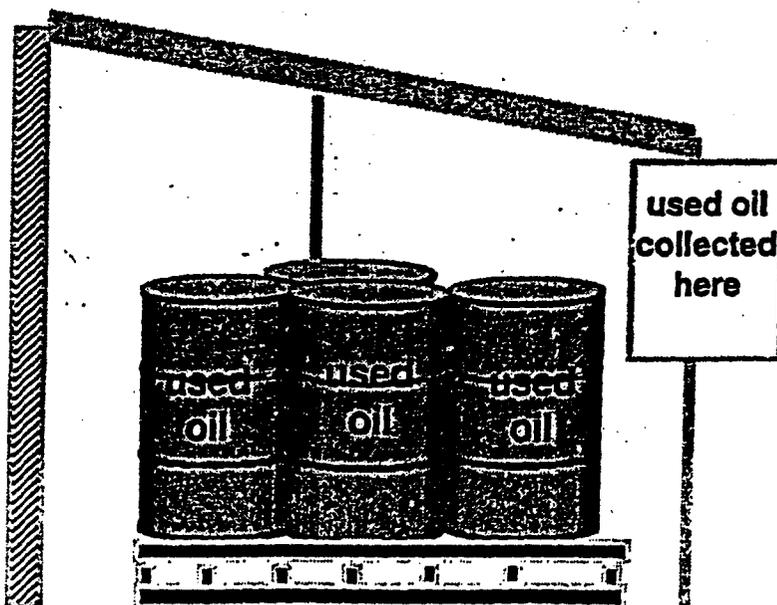
<u>Name (Signature)</u>	<u>Name (Printed)</u>	<u>Community</u>
<i>James G. Roberts</i>	James G Roberts	TANANA
<i>Cynthia K Roberts</i>	Cynthia K Roberts	TANANA
<i>Arla Stickman</i>	Arla Stickman	Tanana
<i>Vernon Stickman</i>	Vernon Stickman	Tanana
<i>Anne Guthrie</i>	ANNE GUTHRIE	Tanana
<i>Albert H. Guthrie</i>	Albert Guthrie	Tanana
<i>Ada Albert</i>	Ada Albert	Tanana
<i>Bob Winer</i>	Bob Winer	Tanana
<i>Miranda Wiehl</i>	MIRANDA WIEHL	TANANA
<i>Phyllis Erhart</i>	Phyllis Erhart	Tanana
<i>Andrew Long</i>	Andrew Long	Tanana
<i>April D Folger</i>	April D Folger	Tanana
<i>Tom Roberts</i>	Tom Roberts	" "
<i>Patsy Star</i>	Patsy Star	Tanana

AK 571120

Christine A Echart	Christine Echart	Tanana
Roger Albert	ROGER ALBERT	Tanana
George Robute	George Roberts	Tanana
Dave Sanders	Dave Sanders	Tanana
Annie Vanderpool	Annie Vanderpool	Tanana
Allen J. Starr	Allen JAY STARR	Tanana
Corinna Moore	Corinna Moore	Tanana
<del>William Albert</del>	WILLIAM ALBERT	TANANA
Faith M. Peters	Faith M. Peters	Tanana
Christopher Grant	Chris Grant	Tanana
Edwina R. Starr	Edwina R. Starr	Tanana
Thelma R. Starr	Thelma R. Starr	Tanana
Emily Pitt	Ginny Doctor	Tanana
Francis E Roberts	Francis E Roberts	Tanana
Earl F. Theroux	Earl F. Theroux	TANANA
Shirley Nicholia	Shirley Nicholia	Tanana
Brenda J. Foley	<u>Matt Dameron</u>	TAL - Holt Wood
Lance Cole		TAL
Melton Nicholia		
Adele Grant	Adele Grant	Tanana
Jo Ann Sam	JO ANN SAM	Tanana
Jean Howard	SUSAN E Howard	TANANA
Edward A. Elia	EDWARD ELIA	TANANA
Uda Jordan	Ada Jordan	Tanana
Christopher J. Grant	Christopher J. Grant	Tanana

# Community Collection and Storage of Used Oil

- **A central location site** will be needed for collection so that all community members will have access to the drop-off site. Make sure that there are enough containers to meet the needs of the community. Keep other waste products separate and well marked, and do not mix them.
- **LABEL all containers with the words "used oil"** so that other wastes are not mixed with the oil. If mixed with other wastes, used oil cannot be burned and will make disposal a lot more difficult.
- **When storing used oil**, use clean containers and inspect them for leakage. Make sure all containers have a lid or top to reduce accidental spills. Any spills need to be cleaned up to avoid soil or water contamination. When possible, store containers inside to protect them from weather.
- **If outside**, prevent children from playing around the covered containers by surrounding the area with a fence. Be prepared to contain any spills by having the area lined with plastic and using a soil barrier wall around the site. Having the containers off the ground, such as on a pallet, will prevent a metal container bottom from rusting as quickly, and can make a leak more evident.



# **Solid Waste Burn Unit**

Portable trailer and skid mounted  
Directions and Precautions for use

pg. 1 of 3

## **Overview:**

The primary purpose of this Unit is to contain and reduce the volume of household trash. There are possible secondary benefits such as; a) reduced spreading of disease by scavengers, b) converting some components of trash into safer materials, c) lessen wildfire potential and d) keeping dangerous waste items away from people and animals. However no claim, by the manufacturer, is made beyond the primary purpose of this Unit, i.e., to reduce the volume of household trash loaded.

## **Limitations:**

Not intended for paints, solvents, old tires, batteries, liquid septic, or petroleum waste. These and other materials classified as hazardous should be disposed of in an authorized manner.

## **Use:**

Waste, 'household trash' is loaded, (Never load or open door of a 'Hot' or 'Burning' Unit), by the user of the Sanitary Landfill facility into the upper portion of the Unit through the top hinged door from the loading platform. Attempts should be made to deposit the waste towards the rear of the inside of the Unit upon the interior grating to accommodate more material. The loading platform has handrails for ease and safety to use when stepping up the stairs and to prevent accidental falls off of the loading deck, (portable model only). The user will typically drive up to the Unit (or onto the platform of the skid-mounted model), and unload their vehicle of trash onto the platform or directly into the upper chamber. After loading, the front door is then closed to prevent scavenger animals such as Ravens or Seagulls from entering for lunch. The users of the facility are not to ignite the contents. For safety reasons, the job of lighting the waste content is reserved for the facility operator only! A sanitary landfill is a hazardous environment for children and/or adults who are not fully safety informed or cautious. There are potentials for explosions or burn injuries near or inside the Unit. There are potentials for falls from the platform steps if one does not use the handrail. There are potentials for cuts from sharp metal or broken glass, and numerous other hazards around machines and landfill sites. For this reason it is advised that children not be allowed to visit the landfill unaccompanied by adult supervision, and that strict **do not play** rules, on or around this Burn Unit, be enforced by both the parents of the children and by the facility manager.

## **Responsibilities:**

The facility manager or agency should see to it that information regarding safety and duties of the Unit users and the maintenance operator are either posted on or near the facility, verbally told to each user and operator, or written out as instructions and given to all concerned. There may be unique conditions presenting dangers associated with your site and particular operating methods of this Unit which can not be foreseen. Thus it may be good to evaluate your site conditions and individual operating methods on a periodic basis to ensure safety for users and staff.

# **Solid Waste Burn Unit**

Portable trailer and skid mounted  
Directions and Precautions for use

pg. 2 of 3

## **Maintenance:**

The maintenance operator's duties include inspection and igniting the waste load, cleaning out the ashes, ensuring structural integrity of the Unit assembly, and performing preventative maintenance procedures. The above duties are necessary to provide for the safe operation and to lengthen the useful life of the Unit. Protective face shield, dust mask, and clothing should be worn when appropriate.

1. Igniting the waste load-(Wear Protective gear including eye and/or face shield, leather work gloves and boots, and cotton outerwear coveralls or nomex type work clothes such as what firefighters wear, [synthetic type clothing such as nylon or imitation leathers should never be worn as work clothes, due to the hazards of exacerbating and fueling fire accidents] ). The operator should inspect the load first before ignition to ensure that volatile fumes are not present. This Burn Unit is not designed to burn volatiles such as gasoline, solvents, or other flammable liquids. However, because of the chance that a user of the facility may inadvertently put such flammables in the chamber, it is imperative that the maintenance operator ensure that it is safe to ignite. If the presence of volatiles, are detected through visual inspection or by smell, then remedial action must be taken. If a small amount of engine oil is present, such as from a car oil change, i.e., less than 1 1/2 gallons, then it should be safe to light while wearing protective gear as described above. But if any gasoline fumes, fuel or paint containers, or solvents are detected this constitutes a danger which could cause an explosion or flash fire flame front to shoot out of the front door into the face of the operator with a possible serious resulting injury. Thus the operator must not light the Unit until the hazards are either removed, or concentrated fumes allowed to dissipate by removing the liquid soaked trash from the unit or by opening the doors of the Unit until all fumes are dispersed and volatiles evaporated. The trash fuel load in the upper chamber should not exceed 85% or be less than 50% to help support a more complete combustion of the contents. All vehicles, personnel, and flammables should be at least 50 feet away from the Unit while it is being burned. After lighting with a match or a propane wand, (such as a 'weed burner' or soldering torch), the door is closed and latched and the burn cycle will begin. The burn cycle typically consists of a 4 hour burn with another 4 hour cool down. Thus if the Unit is lit each evening after the sanitary facility is closed for the day, by the next morning the Burn Unit will be ready and safe for loading again.

2. Clean out the ashes and debris when 20% accumulation is built up in the bottom of the lower compartment, (wear dust mask). Procedure for clean-out; Unlatch rear door (portable model) then back up the Burn Unit to the landfill trench so that approximately 2 to 3 feet of the rear is overhanging the trench bank. Unlock the Burn Box from the frame, remove pin and remove the lower clean-out door. Pick up the Unit into the tip-up position and secure if ash load is out of balance. The operator will then get up on the platform and push out the ash using the clean-out rod supplied. Reverse procedure and lock Unit into the down position.

# **Solid Waste Burn Unit**

Portable trailer and skid mounted  
Directions and Precautions for use

pg. 3 of 3

3. Structural integrity inspection of the Burn Unit components will insure proper and safe operation. As a consequence of the extreme operating parameters (high temperatures, exposure to the elements, and nature of the diverse materials burned) daily attention and inspection (and repair if warranted) must be focused on the following items:

- All welded seams, for separation and welded brackets, for distortion or stress failure.
- All safety pins and latches for wear or distortion.
- Hinges on pivot assembly, rear door, and loading door for proper attachment and freedom of movement.
- Platform steps, grating and handrails for distortions and proper attachment.

Repair any damage immediately to prevent tripping and other hazards to the users of the facility.

4. Preventative Maintenance procedures; Paint entire Burn Unit box with barbeque stove black paint once each year, (3 quarts paint mixed with one quart paint thinner. This paint can be purchased at most hardware stores or stores that sell wood stoves). Take extra caution before attempting to reposition Unit because rough handling, applying side loads, or dragging platform over rough uneven ground could damage the undercarriage. Replace interior rack grating when excessive distortion or burn through occurs, (common pipe stock of same diameter can be used). Clean ashes and debris often to prevent compaction and/or an inordinate amount of work to do at one time. In other words, it is much easier to clean the lower chamber out often, rather than to let it fill up completely. To prevent a catastrophic spill of the entire Unit and platform into the pit, ensure that the tips of the skids or frame do not extend more than 8 inches past the pit rim and that the integrity of the supporting earth under the Unit is sufficient to bear the weight.

### **Allocating use times:**

The Unit should be ignited at least 12 hours before it is ready for loading by the users of the landfill facility. Thus the maintenance operator should ignite the trash load at the end of the hours of operation of the landfill for that day to ensure that users coming in the following day are not loading a Unit while it is still burning or hot.

### **Guarantee:**

Materials and workmanship guaranteed for 6 months after delivery date. If repairs or replacement of parts are needed for safe and proper operation within this period, the Manufacturer, at his option, will repair or replace item at his facility at no charge. The Manufacturer will deliver repaired Unit to same location as per original delivery agreement when purchased. Delivery of Unit to Manufacturer's facility will be the responsibility of the purchaser. All other repairs on site or after 6 months will be at a negotiated fee.

**Manufacturer:** Tok Welding and Fabrication, HC 63 Box 1313A Tok, Ak. 99780  
ph 907-590-7363 fx 775-307-1620  
em info@alaskanstoves.com web: alaskanstoves.com

## **Solid Waste Burn Unit Description**

pg. 1 of 4

Portable trailer mounted and skid mounted

Tok Welding and Fabrication  
Martin C. Marshall  
HC 63 Box 1313A  
Tok, Alaska 99780

ph. (907)883-5055 cell (907)590-7363  
fx. (775)307-1620  
e-mail christokmarshall@hotmail.com  
website: alaskanstoves.com

### **Location of Units in Alaska:**

One Unit in the Village of Manley in operation since early '00. One Unit located in the Village of Beaver delivered in the fall of '00. One Unit in the Village of Ekuk, and one Unit in the Village of Igiugig delivered in 2002. For the 2004 season there are 4 Units ordered and currently in production, two destined for Kodiak and two for the interior.

### **Description:**

The Unit has two chambers; an upper waste receiving chamber approx. 6 cubic yards and a lower ash chamber approx. 3 cubic yards. There is one large loading door 34" dia. (Larger models have double hinged loading doors) and a lower door accessing the ash chamber to facilitate clean-out. The rear dump door is hinged at the top and spans the diameter of the Unit and is held in the closed position by gravity. There are screened intakes on both sides of the Unit body. The combustion air inlets are located just under the grating which separates the interior chambers. The exhaust stack is bolted on the top of the Unit. There is a skid platform extending under the burn box and out the front which acts both as the Unit support and loading deck. The loading deck is incorporated with skid resistant grating for the facility user loading trash into the upper chamber and a diamond plating drive over pad, where vehicles are positioned for unloading. The skid and portable Units are self contained requiring no logistical transfer stations, cement pads or other permanent structures. The portable Burn Unit assembly is smaller than the skid mounted Unit by design for easy maneuverability.

### **Weight and Dimensions: (approximate due to changes and improvements)**

Weight of the skid mounted Unit is approximately ~~5000#~~ 6000#

The skid platform measures 66" wide 8" high and 23' long.

The burn box structure is 69" in Dia. and 12' long.

Overall assembled skid Unit;

- 13.5 foot high (with the 7 1/2 foot tall exhaust stack bolted on)
- 25 foot long (with the burn box mounted on skid platform)
- 75 inch wide (accounting for air intakes mounted on sides)

Weight of the portable model Unit is approximately ~~5000#~~ 4000#

The overall trailer platform is 80" wide, 19'6" long and 16' tall (with the 7 1/2' stack bolted on).

The burn box structure is 4 1/2' dia. by 10' long. With the burn box on the trailer platform it extends the overall length by 2 foot accounting for the mounted overhang.

(Note: for fly in applications it may be possible to accomodate reduced aircraft loading

requirements by building a Unit in sections. One customer could not get an aircraft to fly in the full size skid mounted Unit. Since the Unit was already built, we did not have the opportunity to explore options of sections. He elected to barge it. Although reduced sections is a possibility for future needs, I have not designed or fabricated one such yet. On both the skid mounted and trailer mounted Units there is a deck platform extending out front. This acts both as a loading dock and as a stability feature to counter balance the burn box extending a bit past the rear of the platform. Without promises, I may be able to fabricate a Unit so that the deck platform could ship separately and bolt up on site. This complexity would add weight and cost but could be an option.)

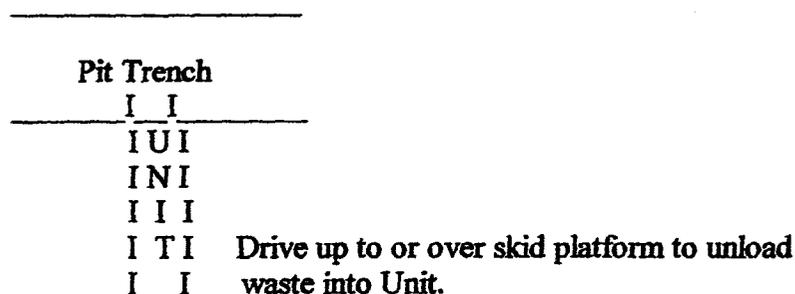
**Transportation and Setup:**

Entire skid mounted Unit will arrive assembled and ready for operation except for the bolt on exhaust stack which is stored inside Unit for shipment. The stack is easily bolted on top to the respective collar using common tools and the supplied bolts. A temporary hitch tongue is bolted onto the skid platform along with a set of dolly axles underneath the entire Unit for shipment. A 3/4 ton pickup with a 2 inch ball can transport entire Unit along the road system without permits (a temporary trip license tag may be required as the Unit itself will become in effect, a trailer). A deposit of \$800 is charged for the dollies and temporary tounge if the Unit must be barged to a remote location. It may be cheaper for the purchaser to simply buy the dollies and tounge set for the \$800 rather than pay the price of backhaul.

The portable model Unit arrives ready for use except for the bolt on stack stored inside.

**Site Preparation and Positioning:**

Normal landfill sites are compatible with the use and operation of the Burn Units. Level and cleared ground at the site extending away from the landfill pit approximately 75 foot is required. The Unit is pushed on the skids into position at the pit edge using a small track vehicle or bucket loader. Approximately 8" of the rear skid platform will extend over the pit rim. The integrity of the earth under the Unit must be sufficient to bear the weight without caving in (very sandy soils would be an unsuitable site location).



**Operation:**

Resident facility user:

Users of the landfill facility position vehicle upon or beside drive over ramp on the diamond plated skid platform. Household waste is then manually put into the upper chamber through the large upper diameter loading door. Attempts should be made to

deposit waste towards the rear of the chamber to accommodate more material. When the upper chamber is approximately 60% to 80% filled the Unit is ready for 'firing'.

**Maintenance operator:**

The facility maintenance operator will then visually inspect the load to ensure that it is properly prepared for firing, i.e., no concentrated volatile fumes, waste load properly positioned to the rear of the chamber, vehicles and flammable items positioned 50' away from Unit. When ready the facility operator will light the household waste using a match or propane wand (such as a weed burner) through the loading chamber door. The burn cycle will need no further supervision. The actual burn will be three to four hours with a three to four hour cool down. Thus, if ignited at the end of the hours of operation for that day, the Unit will be ready for loading the following morning.

**Clean out:**

The maintenance operator would determine when to clean out the Unit. Normally when 30% ash accumulation in lower chamber is evidenced. The time periods between clean-outs will vary depending on usage and maintenance operator discretion. Clean-out may be necessary in as little as two weeks of operation or as long as every two months for infrequent usage. The clean-out procedure is outlined in the three page handout 'Directions and precautions for use'. Briefly, the clean-out procedure is a one man operation. The Burn Box portion of the Unit is manually cranked up and pinned into position. The rear clean-out door is now automatically in the opened position. The front lower door is removed by the maintenance operator. Using the 'Ash Removal Rod' supplied with the Unit, the ash load is pushed out the rear door into the pit. The Burn Box is then lowered down into the normal position and locked, the lower ash chamber door replaced, and the Unit is now in the ready condition to start a new operating sequence.

**Periodic Maintenance and Item Replacement Schedule:**

Visual inspection of the Unit by the maintenance operator before each firing is required. Areas to inspect are welded seams and brackets for cracks or distortion; latching mechanisms and pins for excessive wear or distortion and freedom of movement for all doors and hinges. Replace the bolt in 'rack' separating the two chambers should burn through or excessive distortion necessitate (common pipe stock is used). Repair or replace all damaged items prior to use for the safety of all concerned.

**Waste Residue:**

The waste ash is not attractive to scavengers and the Unit is Bear resistant. Tin cans often become friable and glass can melt into a glob. [It is anticipated that most medical waste will be made harmless if added after Unit comes up to temperature (specific study for specific items are warranted, no wholesale claim as to the safe disposal of medical waste herein is made). It is not recommended to open the door of a burning Unit due to the possibility of a pressurized can exploding, or a flash fire flame front shooting out of the front door due to the in-rush of oxygen. If one wants to explore (and pay for) modifications for a safety type side loading door which would accommodate a small amount of medical waste to be strategically placed into the hottest burning section of the Unit, I would be happy to work with them.]

**Limitations:**

Designed to reduce the volume of household trash; Not intended for paints solvents, petroleum waste, liquid septage, old tires, or batteries. These and other materials classified as hazardous should be disposed of in an authorized manner.

**Costs:**

skid mounted Unit.  
portable trailer mounted Unit



An operating instruction manual is supplied with each Unit. It is not anticipated that additional operating instructions/training will be required. Telephone instructions and clarifications will be available on an as contacted basis free of charge. Field instruction will be offered for a 2 hour period by the Manufacturer on delivery, if delivered by the manufacturer.

**Care:**

It is anticipated that most repair and replacement will be done locally. There are no special tools or obscure parts necessitating the Manufacturer to supply. Paint the burn box portion of the Unit once each year with barbeque stove black paint. When moving the Unit make careful planning and preparation a priority. Side loads may damage the undercarriage, thus do not pull from the side to reposition. When repositioning, skid the Unit forward in long gentle arcs and then push it straight back to the pit rim. When backing the portable model, there should always be a backup man in communication with the driver to prevent a spill of the entire Unit into the landfill.

~~rpatten@acsalaska.net~~

**From:** Chris Marshall [christokmarshall@hotmail.com]  
**Sent:** Friday, November 03, 2006 2:23 AM  
**To:** ~~rpatten@acsalaska.net~~  
**Subject:** RE: Solid Waste Burn Unit

Hi R Patten,

The portable is \$215000 and the larger skid mounted is \$23500. My Web-site is alaskanstoves.com which will have more info on it.

Thank for your inquiry, If I can be of further help please do not hesitate to contact me. I'm in Poland at the moment but will be back in the U.S. at the end of the month.

>From: "~~rpatten@acsalaska.net~~"  
>To: <christokmarshall@hotmail.com>  
>Subject: Solid Waste Burn Unit  
>Date: Wed, 1 Nov 2006 14:31:51 -0900  
>  
>Hello:  
>  
>  
>  
>Would it be possible to forward a current price list for the Solid  
>Waste Burn Unit - skid mounted Unit and the portable trailer mounted Unit.  
>  
>Please email the price list to rpatten@acsalaska.net. Thank you very much.  
>  
>  
>  
>  
>

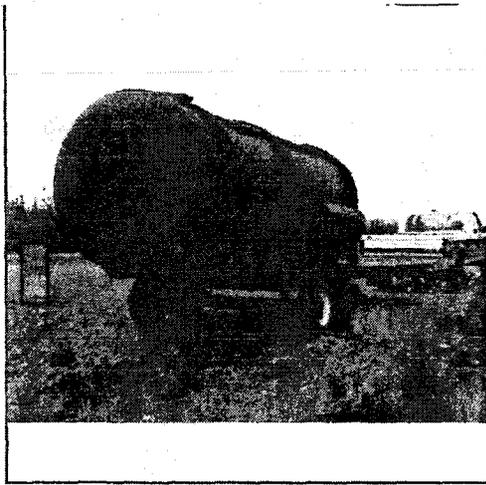
Try Search Survival Kits: Fix up your home and better handle your cash with Live Search!  
<http://imagine-windowslive.com/search/kits/default.aspx?kit=improve&locale=en-US&source=hmtagline>



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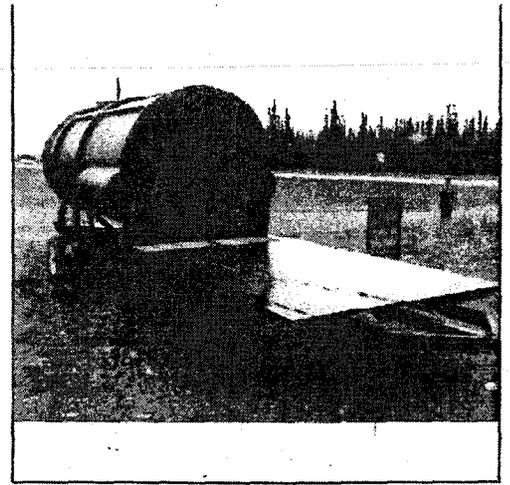
Skid Mounted

Tipped



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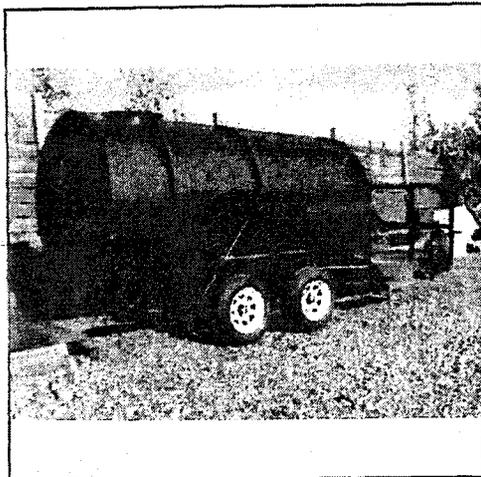
Skid



c:\my documents\front deck.jpg

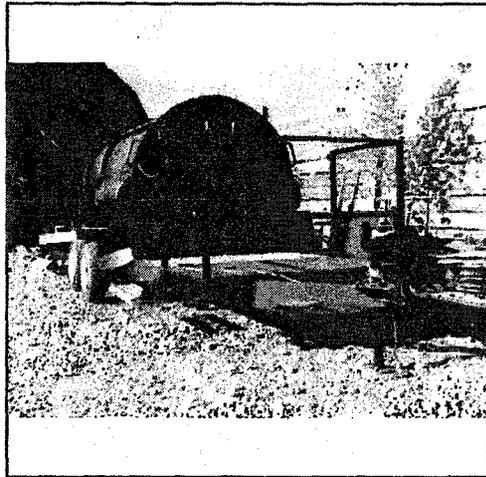
Skid

skid platform mounted on temporary 2 axle dolly for transportation only



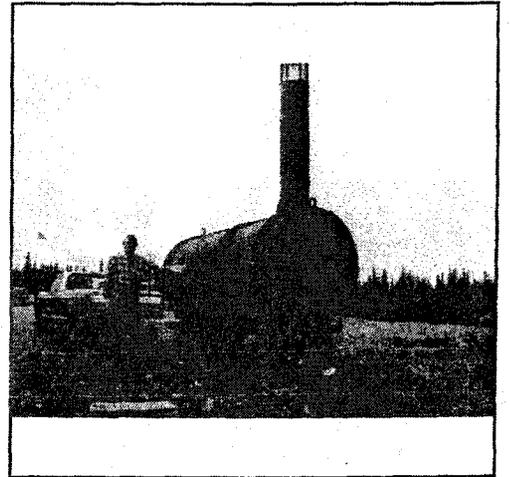
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Trailer



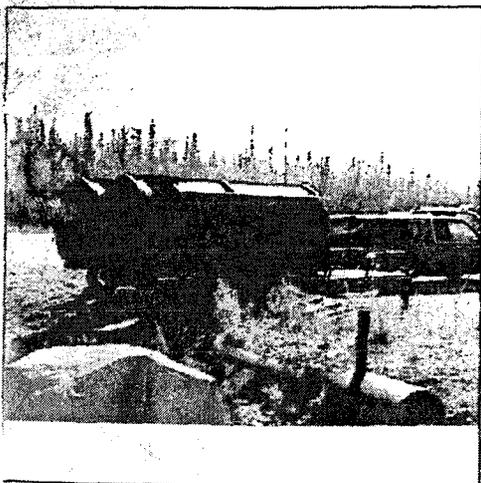
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Trailer



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Trailer



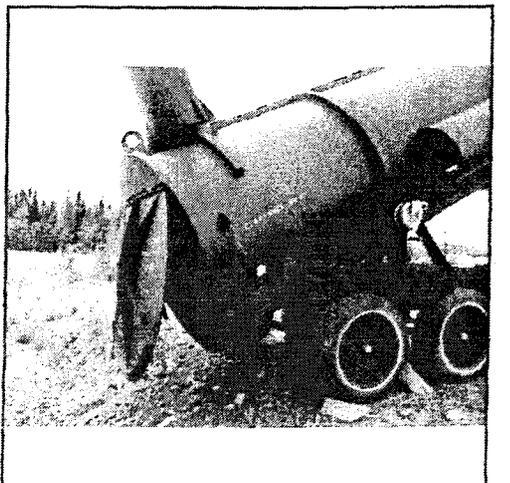
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Two trailers mounted  
Rear view



c:\my documents\kokiak burn units.jpg

Trailers  
front view



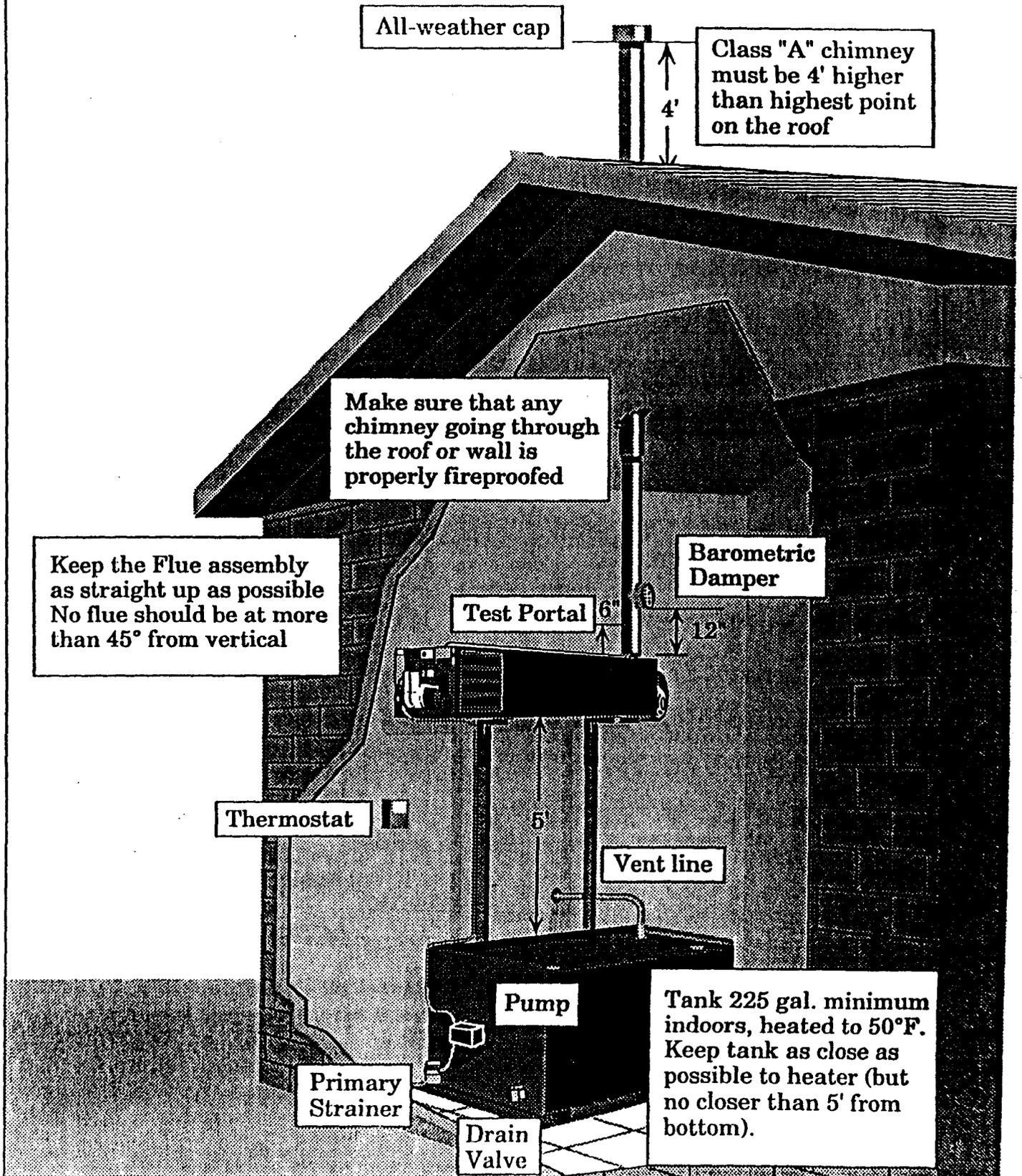
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Trailer tipped  
for clean out  
old style with crank  
1000 + 0 21 11 1



# Typical Furnace Installation

This illustrates a typical furnace installation.  
Use this page as a reference through out your installation.



# FUEL COST COMPARISON

Cost comparison for equivalent heat generated from 1 Gallon of Waste Oil,  
(Waste Oil 142,000 BTU per gal.)

IF YOU ARE HEATING WITH...		
*Electricity -	1 Gallon Waste Oil is Worth	<b>'2.00</b>
*Propane -	1 Gallon Waste Oil is Worth	<b>'2.62</b>
*Fuel Oil -	1 Gallon Waste Oil is Worth	<b>'1.00 +</b>
*Natural Gas -	1 Gallon Waste Oil is Worth	<b>'1.03</b>
<b>*Waste Oil</b>	<b>FREE HEAT</b>	

\*Cost comparison based on electricity \$.07 per KWH propane at \$1.03 per gal.  
fuel at \$1.00 per gal. and natural gas at \$.0073 CU FT

## Recycling.

*Is it right for you?*

*Find out. Take the 30*

*second quiz:*

How many gallons  
of used oil do you  
generate per week

X 52

Multiply times 52

Annual Used Oil Generated

Multiply times  
\$1.50 per gallon  
of used oil  
average heating  
savings

X \$1.50

Annual Heat Savings

Add to total  
any hauling  
or environmental  
disposal fees

Annual Gals.   
X Disposal Cost/Gal. \$

Annual Disposal Cost

Total payback  
per year through  
recycling.

Annual Heat Plus Disposal Savings

## DOLLAR SAVINGS USING A BLACK GOLD BURNING WASTE OIL VS. FUEL OIL AND NATURAL GAS (Over a 10 year heating period)

GALLONS OF WASTE OIL PER YEAR	FUEL OIL COST SAVINGS PER TEN YEAR PERIOD	NATURAL GAS COST SAVINGS PER TEN YEAR PERIOD
2,000	\$ 43,480	\$ 42,300
1,500	\$ 32,585	\$ 31,725
1,000	\$ 21,730	\$ 21,150
500	\$ 10,885	\$ 10,575

NOTE: Above estimated cost savings are based on 5% annual fuel price increase,  
using standard efficiencies.

**Question:** Are You Essentially GIVING AWAY  
Thousands of Dollars Each Year?

**Question:** How Many Dollars Do You Have To  
Generate Each Year To Pay For  
Heating Your Building?

And You're Still Not Burning Your  
Waste Oil?!

**START SAVING NOW!!**

Become One of Our Satisfied Customers Who  
Have Profited By Turning Waste Oil Into A  
Valuable Resource!

**Call Today For A Free Assessment**

**1-800-347-9575**



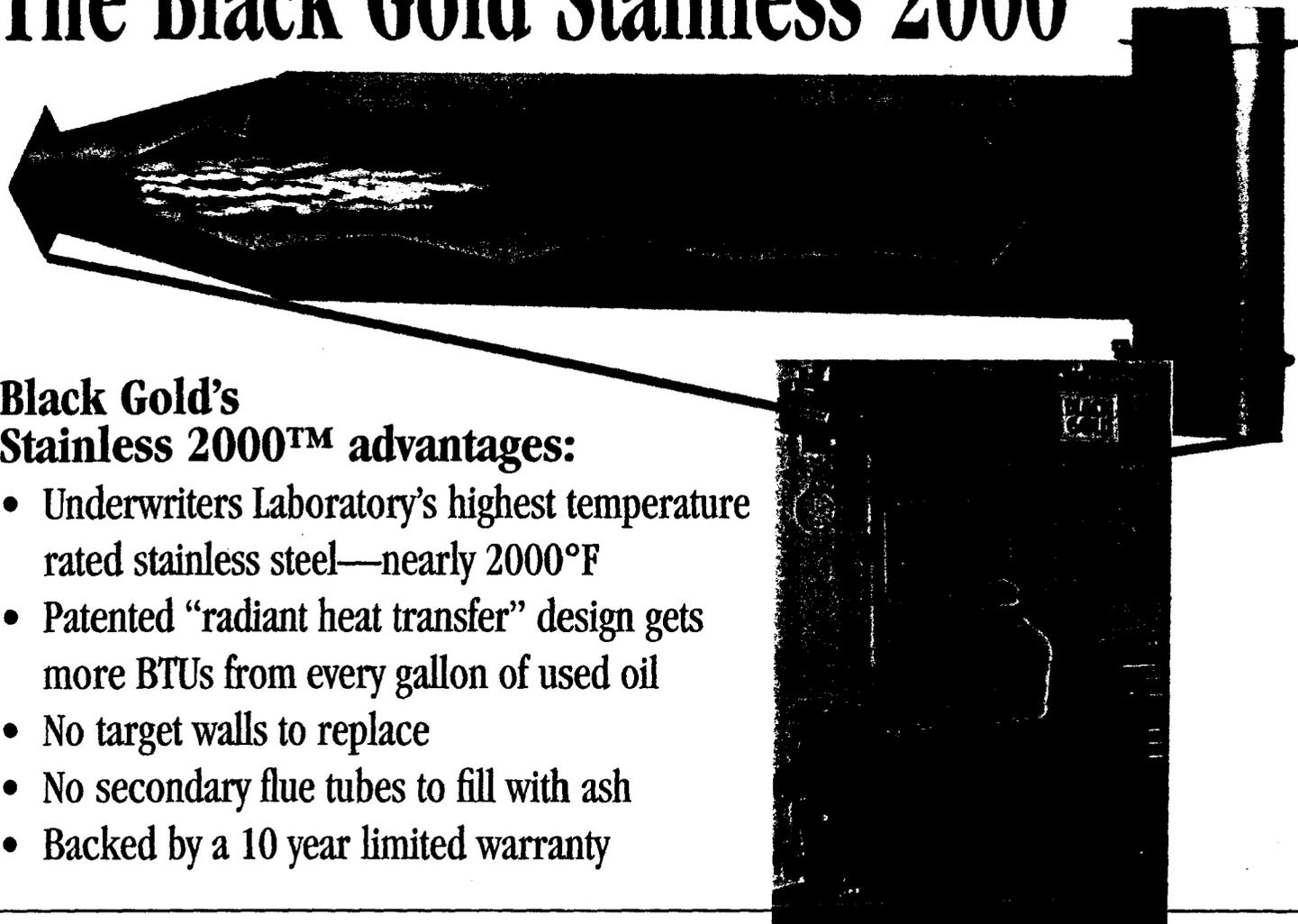
# Black Gold Used Oil Heating System Model 200 Specifications

Item	Feature	Benefit
UL Approved Fuels	Used crankcase oils, used ATF, No. 2 fuel oil	Uses a wide variety of fuels to eliminate hauling fees and SuperFund liability while reducing utility expense.
Fuel Metering Pump	Automatic operation	No manual adjustment needed. No air pollution when fuel's viscosity changes
Exhaust Air Quality	Zero ppm hydrocarbons and zero percent carbon monoxide	Ultimate clean air protection. No soot fires; no exposure to cancer causing hydrocarbons. Burns all the fuel for maximum savings.
UL Certification	Complete system, including heater and tank, are UL Tested and Listed.	No fire marshal or fire insurance problems. Meets NFPA standard.
Built-in Air Compressor	1.0 cfm at 10 psi	Saves valuable shop air compressor. Saves energy. Allows heater to run overnight.
Fuel Flow Rate	1.4 gallons per hour	Saves up to \$1,029 per month.
BTU Input	200,000 BTUs per hour	Heats average 5000 square foot building with 16' ceilings down to 0°F
Warm Air Temperature Rise	100-120° F	Rapid warmth, feels hotter, big on comfort compared to 60° F rise in other brands.
Air Flow Squirrel Cage Blower Air Outlet Dimensions	2000 cfm 16"W x 16"H Ductible dual outlets Air outlet can be right or left side	Better air flow and distribution of heat. Louvered fins allow you to direct heat. Can be ducted up to 30 feet to put heat where you want it. Quiet operation.
Heat Exchanger Material	18 gauge ultra-high temperature stainless steel. UL rated at 2000°F. (Compared to 930° F for regular steel)	Gives system long life. Prevents hot spots and metal deterioration.
System Dimensions Heater Cabinet With Blower and Burner Total System Height Tank	18"H x 18"W x 77"L 18"H x 18"W x 105"L 11"5" 36"H x 32W x 60"L (68"L w/pump)	Workbench tank configuration allows floor space to do double duty. Can also be ceiling mounted.
Hour Meter	Clocks only actual burn time, not blower	Helps you know when its time to clean. Shows you how much you are saving.
Built-In Barometric Damper	7" diameter, factory pre-set	Eliminates dangerous tin snipping. Standard at no extra cost.
Draft Gauge	Measures 0.05 to 3 inches of water	Comes standard, not expensive option. Easily see if draft is correct.
Exhaust Flue Diameter	8" diameter	Uses standard, commonly available pipe.
Fuel Tank Standard Tank Optional Tank	Single wall, 250 gallon workbench Double wall workbench available	Can be used as workbench. Keeps entire system UL.
Electrical requirements	Normal operating current 15 amps Maximum circuit protection requirement 115 VAC, 60 Hz, 25 amps	Works with standard wiring and circuits.
Shipping Weight System with Standard Tank System without Tank	740 lbs. 315 lbs.	

*The Best Used Oil Heater Just Got Better...*

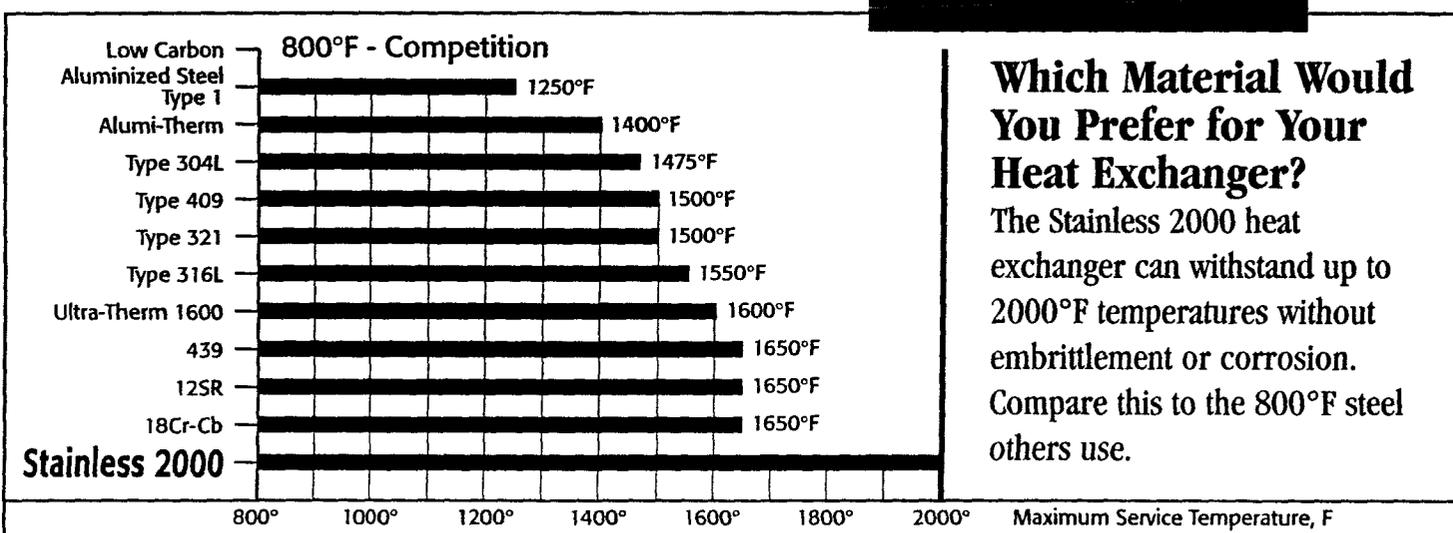
*With Highest Rated Stainless Steel Heat Exchanger and No Target Wall*

# The Black Gold Stainless 2000™



## Black Gold's Stainless 2000™ advantages:

- Underwriters Laboratory's highest temperature rated stainless steel—nearly 2000°F
- Patented “radiant heat transfer” design gets more BTUs from every gallon of used oil
- No target walls to replace
- No secondary flue tubes to fill with ash
- Backed by a 10 year limited warranty



### Which Material Would You Prefer for Your Heat Exchanger?

The Stainless 2000 heat exchanger can withstand up to 2000°F temperatures without embrittlement or corrosion. Compare this to the 800°F steel others use.

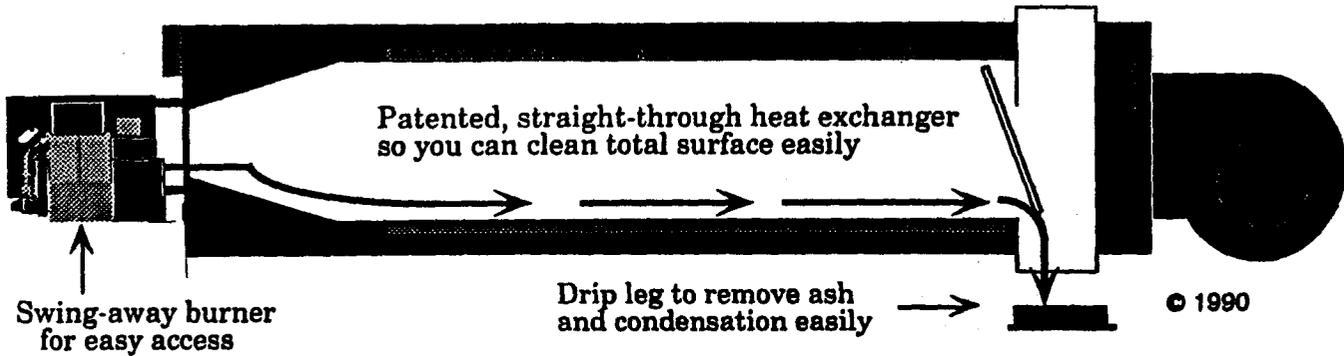


**Black Gold Corporation**

240 Great Circle Road, #344,  
Nashville, TN 37228-1707 • 1-800-351-0643  
615-251-0680 • FAX: 615-251-0682

Distributed by:

**"Quickest and easiest waste oil system to install and maintain."**  
*Auto Service Today*



### Why Black Gold is *Simply the Best*

#### Simple to Install, Use

- Turn-key system includes everything but the flue
- Toll-free customer support and "how-to" video
- No combustion chamber or target wall (see above) to replace
- Straight-through design (shown above) cleans in minutes, twice a season

#### Clean, Safe

- Quiet and odorless
- Unique hot filter (see lower right) cleans and pre-heats oil for efficient burning
- Praised by Oil Heating Institute for "zero smoke"
- UL-listed; exceeds UL, EPA, & NFPA requirements

#### Cost-Effective

- Saves fuel and hauling costs; ends hauler liability
- Built-in air compressor (see lower right) —no shop air needed



**FREE 3 YEAR  
 WARRANTY**

### Specifications

Model 200

#### Black Gold Recycling System:

Power requirements: 115 volts, 60 Hz, 20 amps

Burner: Patented multi-oil, swing-away plug-in

Firing rate: 1.4 GPH; 200,000 BTUs/hr.

Outlet air temp: 200° F max.

Listed fuels: waste crankcase oil, lube oils, and ATF; Nos. 1 and 2 fuel oil

Heater: 200 lbs.; 81" L, 18"W, 18" H

Fuel tank and workbench with support stands: 450 lbs.

Tank: 72" L x 36" W x 36" H

Patent #: US4487571, C1220127, US4955359

Massachusetts State Fire Marshal Approval #: WOHA16C

Safety tested and listed as UL's Waste Oil Burning Appliance #: MH15602.

#### Black Gold Options:

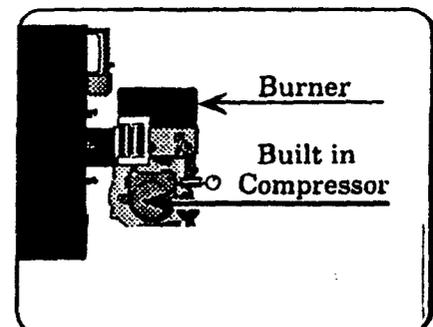
Water Heater for all-year use

The Shuttle™ for oil collection and transfer to your tank

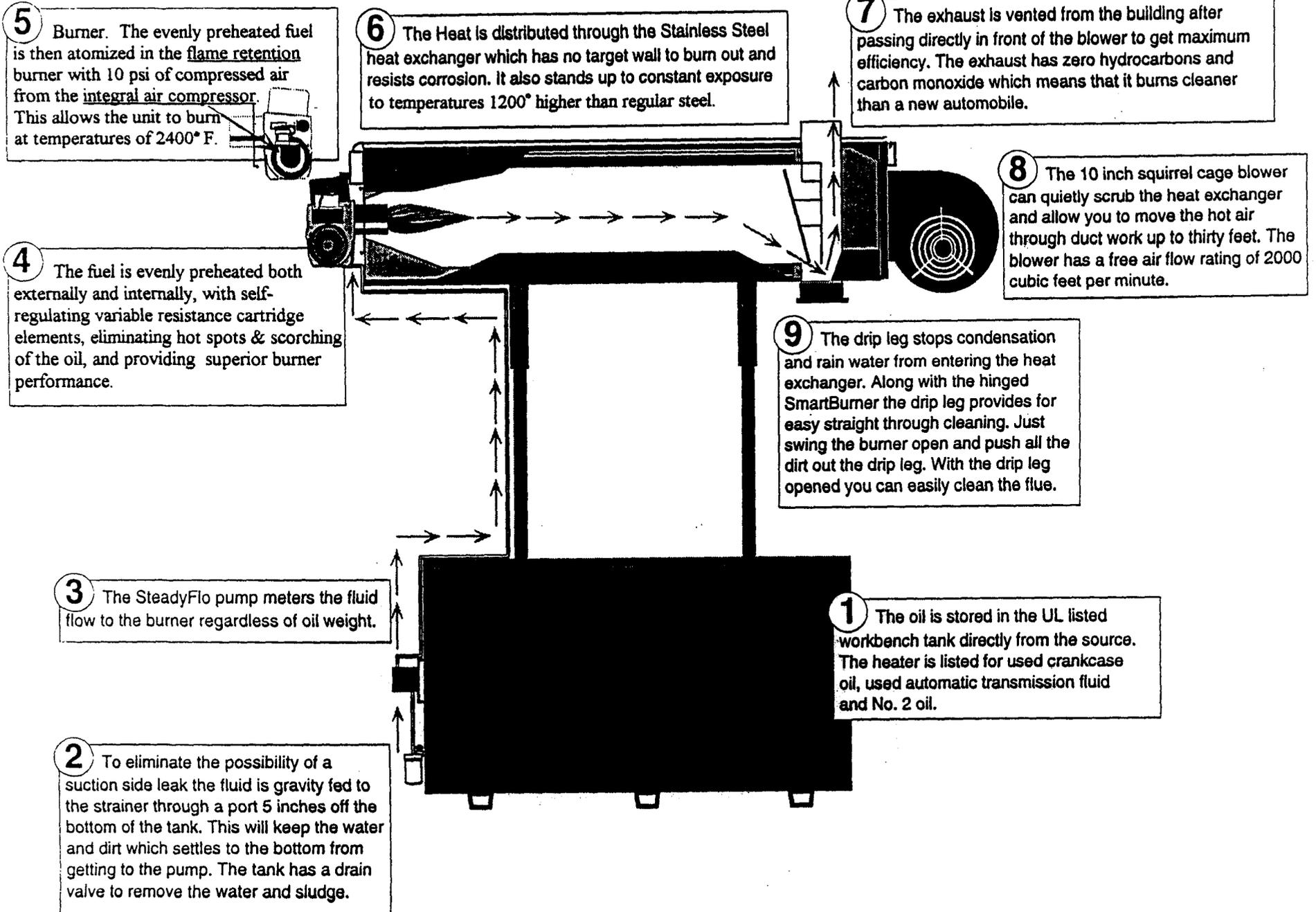
Through-the-Wall Flue to cut venting costs

Energy Recovery Unit for even greater heating efficiency

Specifications subject to change without notice



# Black Gold Process Schematic



# NUERA CORPORATION

E-mail:

PO Box 5357

Kent WA 98064-5357

AK: 907.345.6411

1-800-347-9575

## Pricing Black Gold Equipment & Accessories\* FOB Seattle (Effective 8-1-04)

MODEL 140 FURNACE (140,000 BTU)	\$5,298
• MODEL 200 FURNACE (200,000 BTU)	\$5,698
MODEL 340 FURNACE (340,000 BTU)	\$7,698
<i>Furnace included accessories: Three Year Parts Warranty, Integral Air Compressor, High Temp Stainless Steel Chamber/Heat Exchanger, Fuel Metering Pump, Squirrel Cage Ductible Blower, Filtration w/ Spin-on Filter &amp; Vacuum Gauge, Thermostat, Barometric Damper, Draft Gauge, Hour Meter, Pre-wired Electrical Harnesses, &amp; Misc.</i>	
<b>BOILER 200</b> (200,000 BTU)	\$7,898
Add for domestic hot water coil (5 gpm) @ \$345	
<b>BOILER 500</b> (500,000 BTU)	\$14,785
Add for domestic hot water coil (8 gpm) @ \$475	
<b>OPTIONS:</b>	
• 250 Gallon workbench tank with furnace stand	\$1,198
• Plumbing & hardware package and tank gauge	\$94
Flue materials (standard through ceiling chimney package with 8" Metalbestos)	\$695
Complete turn-key INSTALLATION package: materials and labor (variable with travel requirements and building parameters). Customer supplies 120 volt, 20 amp circuit to eq. & permitting if req.	\$1,000
• <b>Model 200 COMPLETE SYSTEM Furnace Package</b> (Includes Workbench Tank, Tank Gauge, Plumbing & Hrdw. Pkg.) Customer installed. PLU S 8" Chimney	\$6,990
SHIPPING TO FAIRBANKS, 820#:	695
	<u>270</u>
<b>TOTAL</b> into Fairbanks AK: (valid thru 12/31/06)	\$ 7,955
<b>TERMS:</b> Initial 50% deposit, balance upon delivery/installation Lease/Purchase programs available @ \$175/mo. (36 month term)	

\*Prices subject to change without notice



Adding Profit to Your Business

### COMPETITIVE PRICING GUARANTEED

We guarantee the best price for your Black Gold System. Contact Steve for details.

## *~~About the Smart Ash~~*

**The Smart Ash, fueled by the clean combustion of oil soaked or other combustible waste meets EPA & DEC regulations for an accepted method of on-site disposal. When used in conjunction with the Smart Heat Energy Recovery Furnace it provides free fuel, creating an auxiliary heat source for your facility.**

**It's easy to use. Simply load a 55 gallon open head drum, attach the Smart Ash lid, plug it in and light it. Two 110 volt blowers create a powerful cyclone of air, fanning the fire into a white heat, eating up oily waste and other combustibles. The unique design of the Smart Ash eliminates smoke and traps fly ash making it a sensible disposal option. There's no residue, no half burned material and no smoldering cake. 100% of the oil soaked waste is reduced to 3% ash.**

**The Smart Ash is a safe, efficient and convenient disposal option which helps keep our environment clean by reducing landfill use and pollution while eliminating worry over long-term and second person contamination liabilities. Currently there are over 375 units operating in the State of Alaska.**

**The unit is easy to assemble and comes with a complete set of assembly and operating instructions. Ask your local authorized dealer if you have specific questions not covered in the operating manual or this booklet.**

# The Smart Ash success stories keep stacking up

Our Smart Ash portable incinerators have had **fantastic success around the world**. We have sold **over 1,000 units** that are used for incinerating absorbents, filters, oily rags, and general refuse. Customers have written telling us how great a job the Smart Ash does for them. If you want to see how good a job the Smart Ash can do for you, see your dealer for details, or contact us directly by fax or e-mail at the address below.

**BRITAIN OILFIELD SERVICES**  
Settler, AB

fantastic!

Dear Elastec,

I have recently purchased a Smart Ash Model 100 Incinerator. I find it to be very good for my business. Because it is new in this area, all oil and gas companies are very interested. They are surprised at how the air injection system heats to high temperatures so fast, how clean it burns and the fact that it is portable is definitely an asset.

I have been incinerating small volumes of oil filters, glycol filters, oil rags, etc. and this unit seems to be doing the job for now, but if I get any busier, I might need another one!

Gale Brittain

**SKW/ESKIMOS, INC.**  
Anchorage, Alaska

great

Dear Elastec,

I am a heavy equipment mechanic for SKW Eskimos, Inc. I work in the Native Villages on the Arctic Slope. Waste is becoming a problem. The company purchased a Smart Ash 100. It is quite impressive to say the least. I burn the old oil and air filters and plastic oil jugs, oil absorbent pads etc. Metal oil filters are completely burnt out to just a shell. Smoke emitted during burning is minimal. Quite the efficient unit.

I'm impressed!  
Randy Ritz

**Interlake Steamship**  
Detroit River, Michigan

Dear Elastec,

I must admit I was more than a little skeptical about the performance of your Smart Ash unit as I unpacked it from the box. Wow, was I surprised when I fired it up. The cyclone effect of the flame inside the barrel reduced our waste to ash so completely, I almost couldn't believe it. With no smoke! Combustion was so complete the only thing that appears to come from the exhaust stack was HEAT. Thanks for a great product.

Tracy Burk  
1st Assistant Engineer

**METCO**  
Cape Girardeau, MO

WOW!

Dear Elastec,

We have 3 Smart Ash burners and they have been performing greatly. We use them to burn up our solid trash. The main reason is to burn up the filters that have been changed out on our main engines and generators. It usually cost about \$5.00 a filter for disposal and at 14 filters a change every 700 hours that can start to add up. Thank you!

Kenny Robinson

**CROUNSE CORPORATION**  
Maysville, KY

Dear Elastec,

The portable air incinerator (Smart Ash) has proved to be a good product. It has saved our company both time and money in disposal of trash and filters. It has helped me by not having to store oily filters and rags until getting to a suitable place to put them off. It is also helping to conserve the environment which needs to be a big concern.

Bill Pro  
Chief

**DUKE ENERGY FIELD SERVICES INC.** Ada, OK

Dear Elastec,

Until we received your Smart Ash we had a daily dilemma on what to do with our waste oil and filters. In order to sell waste oil you have to be very careful not to get water in it. Also, it is very expensive to dispose of. We have not had the Smart Ash in service very long but we are already satisfied with its performance. It is a great relief not having to worry about having to store and dispose of our waste oil and filters. Thanks for your help.

A. W. McFarlin  
Southeastern Oklahoma Supervisor

Thank  
You!

**US COAST GUARD**

Dear Elastec,

We from USCG AIDS TO NAVIGATION TEAM would like to say that your Smart Ash Model 100 is an excellent product. I suggested that we should have one due to our excess of waste products from our lighthouses...we now have two!! We use them for just about anything (as long as it is up to regulations). Thank you for your promptitude with our order.

excellent!

**ELASTEC**  
**AmericanMarine**  
Working Together for a Cleaner World

121 Council Street, Carmi, IL 62821 USA  
Phone: (618) 382-2525 Fax: (618) 382-3610  
E-Mail: elastec@elastec.com www.elastec.com

EM3 Richard S. Hoyt

# **HELPFUL HINTS FOR BURNING MATERIALS IN THE SMART ASH**

## **SECTION 1 - ABSORBENT TYPES**

### **A) CELLULOSE**

These types of absorbents burn very well. They burn clean and leave very little ash.

### **B) 100% COTTON**

These types also burn well. Some types absorb water as well as hydrocarbons so the moisture content must be low for a clean burn.

### **C) POLYPROPYLENE & COTTON MIX**

This material will repel water commonly so moisture content is not a problem. Some states will allow only 20% by volume of poly products to be incinerated.

### **D) CORN COB**

This material does very well if it is not overly saturated with fluid.

### **E) PEAT MOSS**

This is a very hot clean burning absorbent that works well when it is saturated with diesel or oils.

All of the above items work well with the Smart Ash. Their burning characteristics are the same. When burning these materials (particularly poly sorbents), lining the bottom of the drum with clean dry cellulose absorbents is helpful. This will catch any fluids that leach out during operation of the unit as well as cutting burn time significantly. Always load the drum 2/3 full (do not overfill) and add a proper amount (6 to 10 pages) of newspaper to start the burning process. The Smart Ash will, on average, burn 50 lbs per hour. The burn time of the unit will depend on the absorbent type and volume loaded in the drum.

# LIST OF BURNABLES FOR SMART ASH

## 1. ABSORBENT TYPES

- a) Cellulose base types
- b) Cotton
- c) Polypropylene & cotton mix
- d) Corn cob
- e) Saw dust
- f) Peat moss

## 2. HYDROCARBONS

- a) All types of crudes
  - b) Waste oils
  - c) Used motor oils
  - d) Transmission oils  
(all types and weights)
  - e) Lubricating greases
  - f) Hydraulic oils
  - g) Diesel fuels #1 and #2
  - h) Kerosenes
  - i) Jet fuels (flash point above  
100 degrees Fahrenheit)
- See (appendix 1) for disposal  
of above liquids

## 3. FILTERS

- a) Spin on and cartridge oil  
filters from cars, trucks and  
heavy equipment
- b) Air filters of all types (car,  
truck & industrial types)
- c) Poly & fiberglass filters
- d) Natural gas pipeline filters  
(glycol filters)

## 4. PAPER PRODUCTS

- a) Newspapers
- b) Office wastes
- c) Cardboards
- d) Fast food paper wastes
- e) Computer papers
- f) Sensitive documents

## 5. WOOD PRODUCTS

- a) Saw dust
- b) Scrap at construction sites
- c) Tree limbs & leaves
- d) Shipping pallets
- e) Any type of wood products  
will fit this category

## 6. PLASTICS

This unit will incinerate a wide variety of plastics. The volatile emissions emitted by these types of material are sometimes not acceptable. (see section 6)

## 7. MISCELLANEOUS

- a) Clothing
- b) Gloves
- c) Oily rags
- d) Packaging material

**SECTION H:**

**PART 9**

**OPERATION PLAN**

**- SPILL**

**RESPONSE**

**PROCEDURES/  
TRAINING**

# CITY OF TANANA

P.O. Box 249  
Tanana, Alaska 99777  
(907) 366-7159 · Fax (907) 366-7169

## LANDFILL OPERATIONS & SAFETY TOPICS

<b>HOUSEKEEPING</b>	<b>TRENCHES &amp; EXCAVATION</b>
Egress Areas Clear	Benching & Sloping (MAX = 1.5/1)
Gate and lock operation	Entry/Egress Means (> 4 foot depth)
Signs Visible	Lateral travel to egress (less than 25 feet)
Equipment Storage	Perimeter Protection
Material Storage	Water accumulation Control
Trash Removal	Explosive Atmospheres
<b>HAZARD COMMUNICATION</b>	Heavy Equipment Location
Current Chemical Inventory	<b>FALL PROTECTION</b>
Posted MSDS	Controlled Access Zones
Container Labeling	Openings covered/protected
Use of PPE	Safety fencing
<b>PERSONAL PROTECTIVE EQUIPMENT</b>	<b>CONFINED SPACE</b>
Hard hats	
Safety Shoes	<b>CHEMICAL HAZARDS</b>
Eye Protection	Gasoline
Hearing Protection	Diesel
Appropriate Clothing	Solvents
Respiratory Protection	Metals
<b>HAND TOOLS &amp; EQUIPMENT</b>	Oil
General Tool Condition	Grease
General Tool Storage	PCBs
Monitoring Equipment	Carbon Monoxide
<b>LADDERS</b>	Compressed Gas
General Condition	Pesticides
Ladder Placement and Use	Other:
<b>ELECTRIC AND UTILITY LOCATE</b>	
Underground Utilities	<b>DISPOSAL AND RECOVERY UNITS</b>
Overhead Utilities	SW Burn Unit
Electrical	Smart Ash Incinerator
<b>ENVIRONMENT</b>	Energy Recovery Furnace
Radiation	
Biologic	<b>HEAVY EQUIPMENT OPERATION</b>
Lightning	See attached inspection checklists
Water	
Fire	<b>STORMWATER INSPECTIONS</b>
Nuisance Animals	
Unstable Surfaces	<b>SPILL RESPONSE TRAINING</b>
Cold / Heat Exposure	

## **SPILLS RESPONSE PROCEDURES TRAINING**

Spill response operations must commence immediately upon discovery of the spill or release. Action priorities during an oil spill are as follows:

1. Assure safe conditions;
2. Assure that the source of the leakage has been stopped;
3. Contain the spreading of fuel or hazardous liquid;
4. Clean up the spill

Operating personnel on the scene will be responsible for initiating and conducting spill response operations until the spill can be reported to the spill prevention supervisor. All spills will be reported immediately to the supervisor who will, thereupon, assume direction of the countermeasures. If the source of the spill or leak cannot be identified or if it cannot be sealed-off, advice or assistance will be requested from specialists such as oil spill response contractors or ADEC.

Drips and small spills will be cleaned-up by operating personnel to preclude further discharge or migration such as those escaping to storm water drainage ditches. If fuel has entered or threatens to enter drainage ditches, a snow or sand bag barrier will be constructed to surround the release.

Releases from tanks with secondary containment will automatically be contained. A spill from vehicle overfills and leaky fuel spills will be contained in the coarse sand, snow or absorbent pads depending on the season and situation. The spill material will then be collected by adsorbent material and drums.

## **SPILLS RESPONSE PROCEDURES TRAINING (continued)**

The following training checklist exam will be given to employees on a pass fail basis:

- ✓ Knows and understands potential spill sources and hazards;
- ✓ Knows and understands clean-up procedures for minor spills and leaks;
- ✓ Knows and understands clean-up procedures for medium-size spills and leaks;
- ✓ Knows and understands clean-up procedures for large/major spills and leaks;
- ✓ Understands and explains reporting procedures; and,
- ✓ Knows location of emergency phone numbers and contact list.

## **EMERGENCY SPILL EQUIPMENT**

Emergency spill response kits should be maintained at the maintenance building and power plant. Limited spill kits should also be located in each of the trucks. Trash bags are not recommended as they will not be strong enough to hold spent absorbent clay or snow.

Each spill kit should contain at a minimum:

- ❑ Protective gloves;
- ❑ Caution tape;
- ❑ Protective suits;
- ❑ Bundles of adsorbent pads and clay;
- ❑ Short handle shovel;
- ❑ Drums;
- ❑ General first-aid supplies;
- ❑ Hand tools necessary to repair any leaks; and,
- ❑ Health and safety supplies.

**CITY OF TANANA**  
P.O. Box 249  
Tanana, Alaska 99777  
(907) 366-7159 · Fax (907) 366-7169

**CONTACT AGENCIES**

**Table 1: Agencies to be Contacted in the Event of a Spill**

AGENCY	SPILL SIZE	VERBAL REPORT	PHONE NUMBER	WRITTEN REPORT
U.S. Coast Guard	Any size on or threatening navigable water	Immediately	800-478-5555	Not required
U.S. Environmental Protection Agency	Any size on land and any discharge to water	Immediately	1-800-424-8802 or (907) 271-5083 (days)	If spill is 1,000 or more gallons or if second spill over 12 months
Alaska Department of Environmental Conservation	<u>Waters</u> Any Discharge to water	Immediately	800-478-9300	Within 15 days of end of clean-up
Alaska Department of Environmental Conservation	<u>Land</u> >55-gallon	Immediately	800-478-9300	Within 15 days of end of clean-up
Alaska Department of Environmental Conservation	<u>Land</u> 10 to 55-gallon	48 hours	800-478-9300	Within 15 days of end of clean-up
Alaska Department of Environmental Conservation	<u>Land</u> <10-gallon	Monthly Reports	800-478-9300	Monthly
Alaska Department of Environmental Conservation	All hazardous substance spills	Immediately	800-478-9300	Within 15 days of end of clean-up

Please post in Maintenance Building

# REPORT ALL

# OIL AND HAZARDOUS SUBSTANCE SPILLS

ALASKA LAW REQUIRES REPORTING OF ALL SPILLS

**During normal business hours**

contact the nearest DEC Area Response Team office:

**Central Area Response Team: Anchorage**

**phone: 269-3063**

**fax: 269-7648**

**Northern Area Response Team: Fairbanks**

**phone: 451-2121**

**fax: 451-2362**

**Southeast Area Response Team: Juneau**

**phone: 465-5340**

**fax: 465-2237**

**Outside normal business hours, call: 1-800-478-9300**



**Alaska Department of Environmental Conservation**  
Division of Spill Prevention and Response

Alaska Department of Environmental Conservation

# Discharge Notification and Reporting Requirements

AS 46.03.755 and 18 AAC 75 Article 3

Notification of a discharge must be made to the **nearest** Area Response Team during working hours:

Anchorage: 269-3063  
269-7648 (FAX)

Fairbanks: 451-2121  
451-2362 (FAX)

Juneau: 465-5340  
465-2237 (FAX)

OR

to the 24-Hour Emergency Reporting Number during non-working hours: **1-800-478-9300**

## Notification Requirements

### Hazardous Substance Discharges

Any release of a hazardous substance must be reported as soon as the person has knowledge of the discharge.

### Oil Discharges

#### ■ TO WATER

- Any release of oil to water must be reported as soon as the person has knowledge of the discharge.

#### ■ TO LAND

- Any release of oil in **excess of 55 gallons** must be reported as soon as the person has knowledge of the discharge.
- Any release of oil in **excess of 10 gallons but less than 55 gallons** must be reported within 48 hours after the person has knowledge of the discharge.
- A person in charge of a facility or operation shall maintain, and provide to the Department on a monthly basis, a written record of any discharge of oil **from 1 to 10 gallons**.

#### ■ TO IMPERMEABLE SECONDARY CONTAINMENT AREAS

- Any release of oil **in excess of 55 gallons** must be reported within 48 hours after the person has knowledge of the discharge.

## Special Requirements for Regulated Underground Storage Tank (UST) Facilities\*

If your **release detection system** indicates a possible discharge, or if you notice **unusual operating conditions** that might indicate a release, you must notify the Storage Tank Program at the nearest DEC Office **within 7 days**:

Anchorage: (907) 269-7504  
Juneau: (907) 465-5200

Fairbanks: (907) 451-2360  
Soldotna: (907) 262-5210

\*Regulated UST facilities are defined at 18 AAC 78.005 and do not include heating oil tanks.

# Managing Oil Spills

**You dump it, you drink it.**

## How to manage oil spills:

- 1 Take steps to prevent spills.** Keep machinery, equipment, containers and tanks in good working condition and be careful when transferring used motor oil. Have clean-up materials, such as rags, booms or sand, readily available.
- 2 Stop the oil from flowing at the source.** If a leak from a container or tank cannot be stopped, put the oil in another holding container.
- 3 Contain spilled oil.** Spread sand or other clean-up materials over the oil and surrounding area.
- 4 Clean up and recycle used motor oil.** Remove the used oil from any clean-up materials, don't mix it with anything and send it to a re-refiner when possible.
- 5 Remove, repair or replace the defective tank or container immediately.**



Solid Waste and  
Emergency Response  
EPA530-H-02-001S  
Winter 2003  
[www.epa.gov](http://www.epa.gov)



**SECTION I:**

**PART 9**

**OPERATIONS**

**PLAN –TANANA**

**EMERGENCY**

**INCIDENT/  
ACCIDENT**

**PROCEDURES**

## **CITY OF TANANA EMPLOYEE EMERGENCY RESPONSE PLAN**

### **Emergency Incident/Accident Procedures**

If an emergency incident/accident occurs, take the following actions:

- Step 1: Notify the City Manager and assess existing and potential hazards.
- Step 2: Request assistance from outside sources and/or allocate personnel and equipment resources for response.
- Step 3: Evacuate site personnel and nearby public and contain hazard IF POSSIBLE.
- Step 4: Prepare the Incident and Accident report (attached).

### **6.2 Emergency Injury Procedures**

If an injury occurs, take the following action:

- Step 1: Get first aid and/or medical attention for the injured party immediately, if safe.
- Step 2: Notify the City Administration Manager.
- Step 3: The first responder will assume charge during a medical emergency, until relieved by a more qualified individual.
- Step 4: If additional emergency assistance is necessary, prevent access to the area until off-site responders arrive. The first responder will transfer control to the responding agency.
- Step 5: Prepare the accident reports. Within 24 hours of the incident, the City Maintenance Manager is responsible for its preparation and submittal to the City Administration Manager who will undertake the necessary investigations.

## City of Tanana Emergency Telephone Numbers: POST WHERE NEEDED

<u>TITLE</u>	<u>NAME</u>	<u>PHONE NUMBER</u>
<b>City Police Department:</b>	Emergency	366-7158
<b>City Fire Department:</b>	Fire Chief Stan Zuray	366-7114
<b>Tanana Health Clinic:</b>	Physicians Assistant Curtis Summers	366-7222 366-7223
<b>Fairbanks Hospital:</b>	Fairbanks Memorial	(907) 452-8181
<b>Local Ambulance/Rescue:</b>	Tanana Search & Rescue Donna Fogler	366-7244
<b>Poison Control Center:</b>	(In Fairbanks)	(907) 456-7182
<b>Northern Area [Hazmat] Response Team</b>		(907) 451-2121
	Outside Normal Business Hours	1-800-478-9300
<b>Fairbanks Hazmat Team Coordinator</b>		(907) 459-1481
<b>Alaska Interagency Coordination Center (AICC) – Alaska Fire Service (AFS)</b>		
	Wildfire Emergency	1-800-237-3633
	Fairbanks Office	(907) 356-5511
<b>City Administrator:</b>	Bear Ketzler	366-7159
	Fairbanks cell:	978-5848
<b>City Mayor:</b>	Donna Fogler	366-7164
<b>City Maintenance Operator</b>	John Huntington	366-7151
<b>Special Projects Director</b>	Pat Moore	366-7129
<b>Tribal Environmental Specialist</b>		
	Kathleen Zuray	366-7160
<b>Tozitna Limited</b>	General Manager Cheryl Wright	366-7255
<b>Power Company:</b>	Tanana Power Co. Emergency	366-7101 366-7130
<b>Telephone Company</b>	Yukon Telephone Co. Inc.	366-7110

**What assistance will the Team expect from you:**

- See next page for actions required by the Local On-Scene Coordinator (LOSC) in the event of a Hazmat incident
- Firefighting assets (if available)
- Local radio frequencies for coordinating emergency services
- Maps and other information about the area
- Respirator air pack refill capability (if available)
- Possible use of community facilities for command and control, decontamination, and other purposes
- Air monitoring capability (if available)

**For More Information, Contact:**

- ADEC (Prevention Section, 269-7683, or other DEC contact numbers provided in this brochure)
- Anchorage Hazmat Team Coordinator (267-5052)
- Fairbanks Hazmat Team Coordinator (459-1481)
- 103<sup>rd</sup> Civil Support Team (AKNG) Weapons of Mass Destruction (WMD) Response Coordinator (384-9494)
- EPA Alaska, Region 10 (271-3616)
- Valdez Hazmat Team Coordinator (835-4560)
- Kodiak Hazmat Team Coordinator (486-8040)

**ALASKA STATEWIDE HAZARDOUS MATERIALS RESPONSE TEAM**

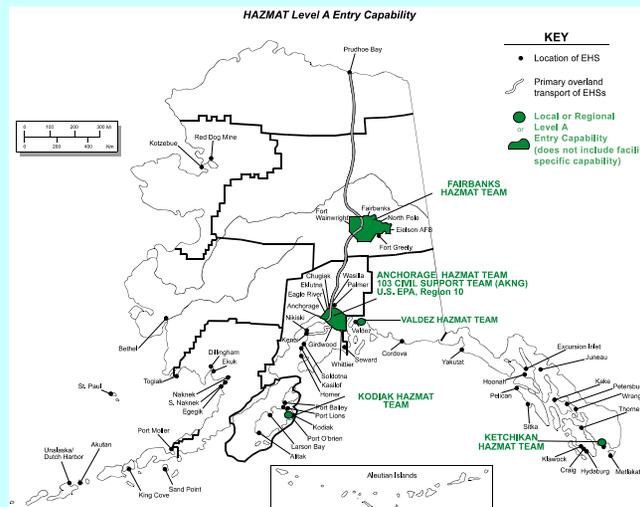


**What is the Statewide Hazardous Materials Response Team?**

The Statewide Hazmat Team is composed of several teams capable of deploying to any location in the State to respond to a Hazmat release. The Team is 'Level A' capable (i.e., the highest level of capability for response). The Teams are based in Anchorage, Fairbanks, Kodiak, and Valdez and are available for callout through the Alaska Department of Environmental Conservation. The teams are available for emergency response only, and not for cleanup and recovery operations. Once the emergency phase is terminated, the teams will be returned to their location of origin.



**Fairbanks Hazmat Drill – Feb 22, 2003  
Simulated Railcar/Truck Accident**



## Incident Pre-Planning and Prevention Measures

- Be familiar with the potential Hazmat release hazards in your area (fixed facilities, transportation routes)
- Develop and maintain your local emergency response plan in a current status. At a minimum, ensure the following procedures are included:
  - Notifying the public
  - Securing the site
  - Evacuating or sheltering in-place
  - Requesting Hazmat assistance (including key contact numbers)
  - Identification of key response resources (equipment and personnel) in the local area
- Be familiar with the Federal/State Unified Plan and subarea plan for your area. These are available on the Alaska Regional Response Team (ARRT) website at:  
<http://www.akrrt.org/plans.shtml>
- Periodically test your plan and modify based upon lessons learned



Seward Vessel Hazmat Drill – March 2004

## How Do You Request the Team?

To request the team, contact the nearest DEC Area Response Team office:

**Central Area Response Team:** 269-3063  
Anchorage

**Northern Area Response Team:** 451-2121  
Fairbanks

**Southeast Area Response Team:** 465-5340  
Juneau

Outside normal business hours, call:  
1-800-478-9300

**103<sup>rd</sup> Civil Support Team (AKNG) for Weapons of Mass Destruction (WMD) Incidents:** 428-7100 or 1-888-462-7100

**State of Alaska** (contact any of the above DEC offices to report a Hazmat release)

**Federal Government**  
National Response Center



## What are the responsibilities of those involved in the response?

- **Responsible Party:** Report the release immediately to the Federal and State authorities. Notify local community of the release and hazards associated with the product, if known.
- **Local On-Scene Coordinator:** Within local capabilities:
  - Restrict access to the scene.
  - Call for additional assistance, if warranted. Provide as much information as possible regarding the incident.
  - Determine if general populace is at risk and either shelter in-place or evacuate the impacted area.
  - Care for any injured personnel (do not attempt to initiate rescue if not properly equipped to enter the area)
  - Meet with the Hazmat Team upon their arrival and brief the team leader on actions taken.

NOTE: The Local On-Scene Coordinator is in charge unless he/she relinquishes on-scene command to arriving federal or state authorities.

- **Federal On-Scene Coordinator:** Serves as the lead agency for federal resources at the scene.
- **State On-Scene Coordinator:** Serves as the lead agency for state resources at the scene. Coordinates general support for the Hazmat Team.

**SECTION J:**

**PERMIT  
APPLICATION  
PART 10 –  
LANDFILL  
MONITORING  
PLAN**

# *APPENDIX G*

## *PART 10 MONITORING PLAN*

## **Part Ten: Monitoring plan.**

The applicant must submit a monitoring plan that meets the requirements of 18 AAC 60.800 – 860 and that includes;

1. The procedures for visual monitoring along with a checklist as required under 18 AAC 60.810;
2. A surface water monitoring plan if required by 18 AAC 60.810 including a quality control and quality assurance plans, with design details for all sampling stations and the background water quality data; and
3. Outlines of responsibilities or procedures for taking appropriate and immediate remedial action to repair erosion damage or other problems discovered and for clean up of any improper waste disposal.

## PART 10 MONITORING PLAN

The following numbered answers are in the same sequence as the questions in Part 10 of the application.

1. Visual monitoring will be completed using the attached EPA Storm Water Management Visual Inspection Fact Sheet and inspection worksheet.
2. No sampling data or background water quality data exists. As noted in Part 8 in Appendix E, the most recent ADEC inspection of the landfill in 1999 noted intermittent surface water appeared to collect in the disposal trench. There was no indication that surface water in contact with waste migrates offsite.

Therefore, unless surface water runoff in contact with waste is visually noted offsite, there is no scheduled water quality sampling scheduled at this time. If sampling is warranted, sampling locations and parameter tests will be completed after onsite inspections are completed by trained personnel.

3. Erosion and sediment repair as part of landfill upgrades will follow attached design specifications as a guide. As noted in Part 8 and 9, The City will be replacing/upgrading berms around the landfill perimeter and trench cells where needed, as well as onsite grading during the Summer 2007 landfill expansion/upgrade. It is expected offsite surface water runoff into the trench will be minimized or eliminated after the upgrade.

In the event surface water runoff goes offsite and escapes the berms and swales, the landfill area is surrounded by closed mixed and pure forest stands acting as a vegetative buffer. This buffer allows for surface water infiltration, minimizing the likelihood of onsite surface water contaminating offsite waters of the United States.

Refer to Part 9 in Appendix F for clean up of improper waste disposal.

In the future as funding becomes available, The City will be completing and implementing a SWPPP to comply with EPA regulations.



# Storm Water Management Fact Sheet Visual Inspection

## DESCRIPTION

Visual inspection is a Best Management Practice (BMP) in which members of a Storm Water Pollution Prevention Team visually examine material storage and outdoor processing areas, the storm water discharges from such areas, and the environment in the vicinity of the discharges, to identify contaminated runoff and its possible sources.

In a visual inspection, storm water runoff may be examined for the presence of floating and suspended materials, oil and grease, discoloration, turbidity, odor, or foam; and storage areas may be inspected for leaks from containers, discolorations on the storage area floor, or other indications of a potential for pollutants to contaminate storm water runoff.

Visual inspections may indicate the need to modify a facility to reduce the risk of contaminating runoff.

## APPLICABILITY

The U.S. EPA has recognized visual inspection as a baseline BMP for over 10 years. Its implementation, however, has been sporadic. Implementation may increase as more facilities develop Storm Water Pollution Prevention Plans. Implementation may also increase as facility management recognizes visual inspection to be effective both in protecting water quality and in reducing costs.

## ADVANTAGES AND DISADVANTAGES

Visual inspections are an effective way to identify a variety of problems. Correcting these problems can improve the water quality of the receiving water.

Limitations associated with visual inspections include the following:

- Visual inspections are effective only for those areas clearly visible to the human eye.
- The inspections need to be performed by qualified personnel.
- To be effective, inspections must be carried out routinely. This requires a corporate commitment to implementing them.
- Inspectors need to be properly motivated to perform a thorough visual inspection.

## KEY PROGRAM COMPONENTS

Visual inspections for signs of storm water contamination should be performed routinely. Flows should be observed during dry periods to determine the presence of any stains, sludge, odors, and other abnormal conditions.

Visual inspections should also be made at all storm water discharge outlet locations during the first hour of a storm event, once runoff has reached its maximum flow rate. Inspectors should examine the discharge for the presence of floating and suspended materials, oil and grease, discoloration, turbidity, foam, or odor.

Inspection frequency interval may be determined by the storm water discharge permit, by storm frequency, or by the potential risk from the site. Inspections should be made at least once a month in areas with frequent storms; inspections may be less frequent where storms are less frequent. Finally, inspection frequency may be based in part on the history of previous spills and leaks. Experienced personnel should evaluate the causes of previous accidents, assess the risks for future accidents, and determine an inspection schedule based on these risks.

Proper records of inspection results must be kept. The record for each inspection should include the date of the inspection, the names of the personnel who performed the inspection, and their observations.

Visual inspections of a facility should focus on the following key areas:

- Storage facilities.
- Transfer pipelines.
- Loading and unloading areas.
- Pipes, pumps, valves, and fittings.
- Tanks (including internal and external inspection of the tank for corrosion and inspection of its support or foundation for deterioration).
- Primary or secondary containment facilities.
- Shipping containers.

In addition, a visual inspection should include assessing the integrity of the storm water collection system; checking for leaks, seepage, and overflows from sludge and waste disposal sites; and ensuring that dry chemicals and dust from industrial areas is not exposed to wind or other elements that may move them into the runoff.

## IMPLEMENTATION

A visual inspection BMP program should be incorporated into every storm water discharger's record keeping and internal reporting structure.

Outfall flow rates and the presence of oil sheens, floatables, coarse solids, color, and odors will probably be the most useful indicators of potential problems. Specific parameters to look for in completing a visual inspection include the following:

- **Odor:** Discharge odors can vary widely. Some may indicate the source of contamination. Industrial discharges may smell like a particular spoiled product, oil, gasoline, a specific chemical, or a solvent. For example, the decomposition of organic wastes in a discharge will release sulfide compounds, creating an intense smell of rotten eggs. Significant sanitary wastewater contributions will also cause pronounced and distinctive odors.
- **Color:** Color may indicate inappropriate discharges, especially from industrial sources. Industrial discharges may be any color. Dark colors, such as brown, gray, or black, are most common. For instance, flow contaminated by meat processing industries is usually a deep reddish-brown. Paper mill wastes (plating-mill wastes) are often yellow. Wash water from cement and stone working plants can cause cloudy discharges. Contamination from industrial areas may come from process waters (slug or continuous discharges); from equipment and work area wash water discharged to floor drains; or from spills washed into storm drains.
- **Turbidity:** Turbidity is often affected by the degree of gross contamination. Industrial flows can be cloudy (moderately turbid) or opaque (highly turbid). Undiluted industrial discharges, such as those coming from continual flow sources or intermittent spills, are often highly turbid. Sanitary wastewater is also often cloudy in nature.

- **Floatable matter:** A contaminated flow may also contain floatable solids or liquids. Identifying floatables can aid in finding the source of the contamination, because these substances are usually direct products or byproducts of the manufacturing process or the sanitary system. Examples of floatables of industrial origin are animal fats, spoiled food products, oils, plant parts, solvents, sawdust, foams, packing materials, and fuel.
- **Deposits and Stains:** Deposits and stains (residues) are any type of coating that remains after a non-storm water discharge has ceased. Deposits or stains usually are of a dark color and usually cover the area surrounding the storm water discharge. They often contain fragments of floatable substances, and, at times, take the form of a crystalline or amorphous powder. For example, contamination from leather tanneries often produces grayish-black deposits containing fragments of animal flesh and hair. Another characteristic example is the coating of white crystalline powder formed on sewer outfalls by nitrogenous fertilizer wastes.
- **Vegetation:** Storm water discharges often affect surrounding vegetation. Industrial pollutants often cause a substantial alteration in the chemical composition and pH of the discharge water, which can affect plant growth even when the source of contamination is intermittent. For example, nutrients from various food product wastes increase plant growth. In contrast, the discharge of chemical dyes and inorganic pigments from textile mills may decrease vegetation, as these discharges are often very acidic. In either case, even when the pollution source is gone, the vegetation surrounding the discharge will continue to show the effects of the contamination.

In order to accurately judge if the vegetation surrounding a discharge is normal, the observer must take into account recent weather conditions, as well as the time of year. Increased or inhibited plant growth

near storm water discharges, as well as dead and decaying plants, is often a sign of pollution. However, it is important to distinguish whether plant damage is caused by contamination or by the physical effects of increased flows, such as scour. This can be done by chemically analyzing the flow or by confirming its source through additional visual inspections.

- **Structural Damage:** Structural damage is also a sign of industrial discharge contamination. Cracked or deteriorated concrete or peeling surface paint at an outfall usually indicates the presence of severely contaminated discharges. Contaminants causing this type of damage are usually very acidic or basic and are usually of industrial origin. For instance, discharges from primary metal industries may cause structural damage because their batch dumps are highly acidic.

The effectiveness visual inspections in reducing storm water runoff contamination is highly variable and dependent upon site-specific parameters. These factors include inspectors' motivation level, the types of industrial activity occurring at the facility, and the facility's maintenance procedures. Because familiarity with facility operations is essential in performing effective visual inspections, the inspections should be assigned to qualified staff such as maintenance personnel or environmental engineers. Figure 1 provides a sample visual evaluation worksheet that can be used to record the results of the inspections.

## **COSTS**

Costs for performing the visual inspection BMP are minimal and consist of direct labor and overhead costs for staff hours spent on training, planning inspections, inspecting, and completing follow up activities. Annual costs can be estimated using the example in Table 1. Figure 2 can be used as a worksheet to calculate the estimated annual cost for implementing a visual inspection program.

Outfall # _____	Photograph # _____	Date: _____
Location: _____		
Weather: air temp.: _____°C	rain: Y    N	sunny                      cloudy
Outfall flow rate estimate: _____ L/sec		
Known industrial or commercial uses in drainage area?            Y        N		
Describe: _____		
<b><u>PHYSICAL OBSERVATIONS</u></b>		
<b>Odor:</b>	none            sewage            sulfide            oil            gas            rancid-sour	other: _____
<b>Color:</b>	none            yellow            brown            green            gray	other: _____
<b>Turbidity:</b>	none            cloudy            opaque	
<b>Floatables:</b>	none            petroleum sheen            sewage	other: _____ (collect sample)
<b>Deposits/stains:</b>	none            sediment            oily	describe: _____ (collect sample)
<b>Vegetation conditions:</b>	normal            excessive growth	inhibited growth
	extent: _____	
<b>Damage to outfall structures:</b>		
	identify structure: _____	
	damage:            none / concrete cracking / concrete spalling / peeling paint / corrosion	
	other damage: _____	
	extent: _____	

Source: Pitt, et. al, 1992.

**FIGURE 1 VISUAL INSPECTION WORKSHEET**

**REFERENCES**

- |  |  |
|--|--|
| <p>1. California Environmental Protection Agency, 1992. Staff Proposal for Modification to Water Quality Order No. 91-13 DWQ Waste Discharge Requirements for Dischargers of Storm Water Associated with Industrial Activities, Draft Wording, Monitoring Program and Reporting Requirements.</p> <p>2. Pitt R., D. Barbe, D. Adrian, and R. Field, 1992. <i>Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems-A Users Guide</i>. U.S. EPA, Edison, NJ.</p> | <p>3. U.S. EPA, 1981. <i>NPDES BMP Guidance Document</i>.</p> <p>4. U.S. EPA. Pre-print, 1992. <i>Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices</i>. EPA 832-R-92-006.</p> |
|--|--|

**ADDITIONAL INFORMATION**

Center for Watershed Protection  
Tom Schueler  
8391 Main Street  
Ellicott City, MD 21043

**TABLE 1 EXAMPLE OF VISUAL INSPECTION PROGRAM COSTS**

Title	Quantity	Average Hourly Rate (\$)	Overhead* Multiplier	Estimated Yearly Hours on SW Training	Estimated Annual Cost (\$)
Storm Water Engineer	1	x 15	x 2.0	x 20	= 600
Plant Management	5	x 20	x 2.0	x 10	= 2,000
Plant Employees	100	x 10	x 2.0	x 5	= <u>10,000</u>
<b>TOTAL ESTIMATED ANNUAL COST</b>					<b>\$12,600</b>

\*Note: Defined as a multiplier (typically ranging between 1 and 3) that takes into account those costs associated with payroll expenses, building expenses, etc.

Source: U.S. EPA, 1992.

Title	Quantity	Average Hourly Rate (\$)	Overhead Multiplier	Estimated Yearly Hours on SW Training	Estimated Annual Cost(\$)
_____	_____	x _____	x _____	x _____	= _____ (A)
_____	_____	x _____	x _____	x _____	= _____ (B)
_____	_____	x _____	x _____	x _____	= _____ (C)
_____	_____	x _____	x _____	x _____	= _____ (D)

Source: U.S. EPA, 1992.

**FIGURE 2 SAMPLE INSPECTION PROGRAM COST WORKSHEET**

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 David Bulova  
 7535 Little River Turnpike, Suite 100  
 Annandale, VA 22003

Oklahoma Department of Environmental Quality  
 Don Mooney  
 Water Quality Division, Storm Water Unit  
 P.O. Box 1677  
 Oklahoma City, OK 73101-1677

Southeastern Wisconsin Regional Planning Commission  
 Bob Biebel  
 916 N. East Avenue, P.O. Box 1607  
 Waukesha, WI 53187

United States Postal Service  
 Charles Vidich  
 6 Griffin Road North  
 Windsor, CT 06006-7030

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Mail Code 4204  
401 M St., S.W.  
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# Storm Water Technology Fact Sheet Flow Diversion

## DESCRIPTION

Flow diversion structures (such as gutters, drains, sewers, dikes, berms, swales, and graded pavement) are used to collect and divert runoff to prevent the contamination of storm water and receiving water. Flow diversion structures can be used in two ways. First, flow diversion structures may be used to channel storm water away from industrial areas so that it does not mix with on-site pollutants. Second, flow diversion may be used to carry contaminated runoff to a treatment facility.

One of the most common methods for diverting flow is through storm water conveyance systems. These systems can be constructed from many different materials, depending on the design criteria and specifications for the site. Common materials used for these systems include concrete, clay tiles, asphalt, plastics, metals, riprap, compacted soils, and vegetation. These conveyances can be temporary or permanent.

Flow diversion structures are often modified by incorporating them into other pollution control BMPs. For example, diverted flow can be fed into an infiltration drainfield system, an infiltration basin, a constructed wetland treatment facility, or an onsite treatment facility for discharge under the NPDES program.

Another common modification is to construct a temporary flow diversion to determine its effectiveness. If the diversion structure is proven effective, it may then be made permanent.

## APPLICABILITY

Storm water flow diversion systems work well at most industrial sites. The systems can be used to direct storm water downslope, away from industrial areas, and into channels or drain systems. This has two advantages. First, if storm water is potentially contaminated, it can be directed to a treatment facility. Second, if the runoff has not been contaminated, it can be kept separate from runoff that has been in contact with contaminated areas.

A good example of the utilization of a diversion structure is the Isle La Plume Wastewater Treatment Plant in La Crosse, WI. The area immediately surrounding the facility has been regraded in order for the storm water runoff to be directed into the process tanks. Here, the runoff is treated along with other wastewater.

## ADVANTAGES AND DISADVANTAGES

Some advantages of using storm water conveyance systems to divert flow include:

- Storm water flow is directed around industrial sites, preventing contamination of the storm water, and also preventing flooding of the site.
- System maintenance requirements are low.
- Such conveyances are erosion-resistant.
- System installation may not require extensive construction.

Potential disadvantages of flow diversion may include:

- Erosion problems due to concentrated flows.
- Potential groundwater contamination if conveyance channels have high infiltration capacities.
- Inadequately treated discharges to undersized water treatment facilities.
- Space limitations can make diversion structures impractical.
- Diversion structures may be too expensive for small facilities or for a site that has already been constructed.
- Maintenance is required after heavy rains.

## DESIGN CRITERIA

Planning for flow diversion structures should incorporate data from the typical storm water flow. Also, the patterns of storm water drainage should be considered so that the channels may be located to divert and collect the flow efficiently. When deciding the type of material for the conveyance structure, planners should consider the material's resistance to erosion, its durability, and its compatibility with any pollutants it may carry.

Diversion systems are most easily installed during facility construction. The diversion system should be designed to incorporate the site's existing grades. This will reduce the BMP's design and construction costs. The site should be graded to allow for continued movement of runoff through the conveyance system. (Note: care must be exercised to limit flow velocities through the diversion system to reduce the possibility of erosion.) A typical diversion swale is shown in Figure 1.

See attached drawing.

Source: SEWPRC, 1991.

**FIGURE 1 TYPICAL DIVERSION SWALE DETAILS**

## PERFORMANCE

Properly designed storm water diversion systems are very effective for preventing storm water from being contaminated and for routing contaminated flows to a proper treatment facility. For example, at Denver International Airport (DIA), flow diversion techniques intercepts 80 percent of the glycol used in airplane deicing and prevents it from entering Barr Lake, the local receiving waterbody. At the La Crosse, WI, Wastewater Treatment Plant, approximately one-third of the facility's storm water runoff is diverted into the plant's treatment process.

## OPERATION AND MAINTENANCE

A maintenance program should be established to ensure that the system functions properly. Storm water diversion systems should be inspected to remove debris within 24 hours after a significant rainfall event since heavy storms may clog or damage the system. Flow diversion structures should also be inspected annually to ensure that they meet their hydraulic design requirements. This will ensure peak performance.

DIA has been in operation since 1995 and a continuous maintenance program is being implemented. Some techniques include conveying deicer-contaminated runoff from passenger aircraft deicing pads to a Pond or the Spent Glycol Storage Tanks for subsequent recycling and offsite reuse, if the runoff is in sufficient concentration. The deicer-contaminated storm runoff from other areas is diverted to storage ponds for pumping to Metro Wastewater Reclamation District (Metro).

## COSTS

Costs vary depending on the type of flow diversion structure used. For example, the Southeastern Wisconsin Regional Planning Commission reports that vegetated swale costs vary between \$41.83 and \$246.06 per linear meter (\$12.75 and \$75 per linear foot), depending upon swale depth and bottom width (SEWRPC, costs adjusted from original 1991 document based on 1998 personal communication). Costs for the Denver International Airport flow diversion system are in the low millions of dollars

range, however exact capital cost information has not yet been released.

## REFERENCES

1. Denver International Airport, 1999. *Aircraft Deicing Fluid Collection and Treatment*.
2. James M. Montgomery, Consulting Engineers, Inc., 1992. Site Visit Data.
3. Minnesota Pollution Control Agency, 1989. *Protecting Water Quality in Urban Areas*.
4. Southeastern Wisconsin Regional Planning Commission, 1991. *Costs of Urban Nonpoint Source Water Pollution Control Measures*, Technical Report No. 31.
5. U.S. EPA, 1981. *NPDES BMP Guidance Document*.
6. U.S. EPA, Pre-print, 1992. *Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices*. EPA 832-R-92-006.
7. Washington State Department of Ecology, 1992. *Storm Water Management Manual for Puget Sound*.

## ADDITIONAL INFORMATION

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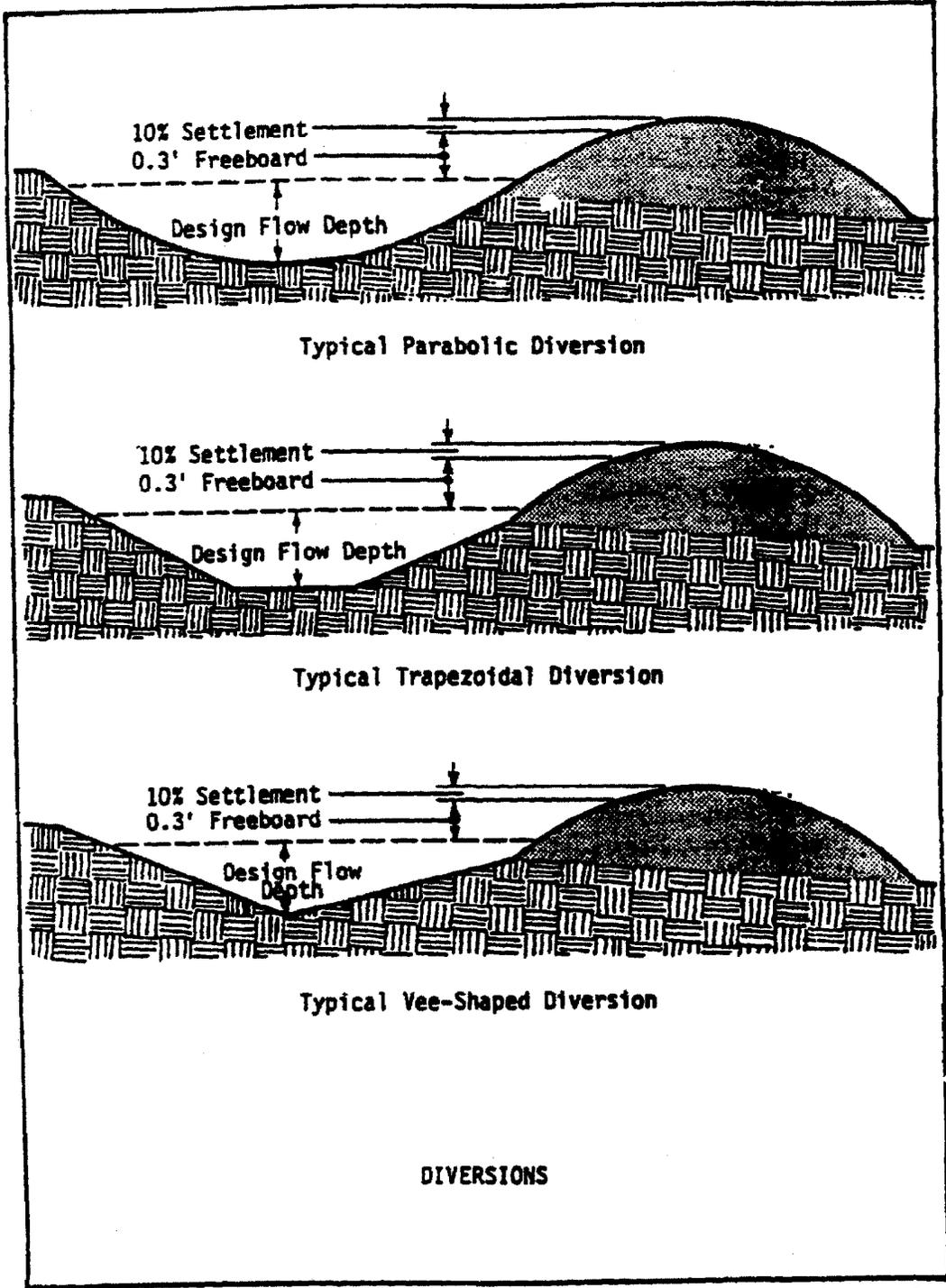
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Mail Code 4204  
401 M St., S.W.

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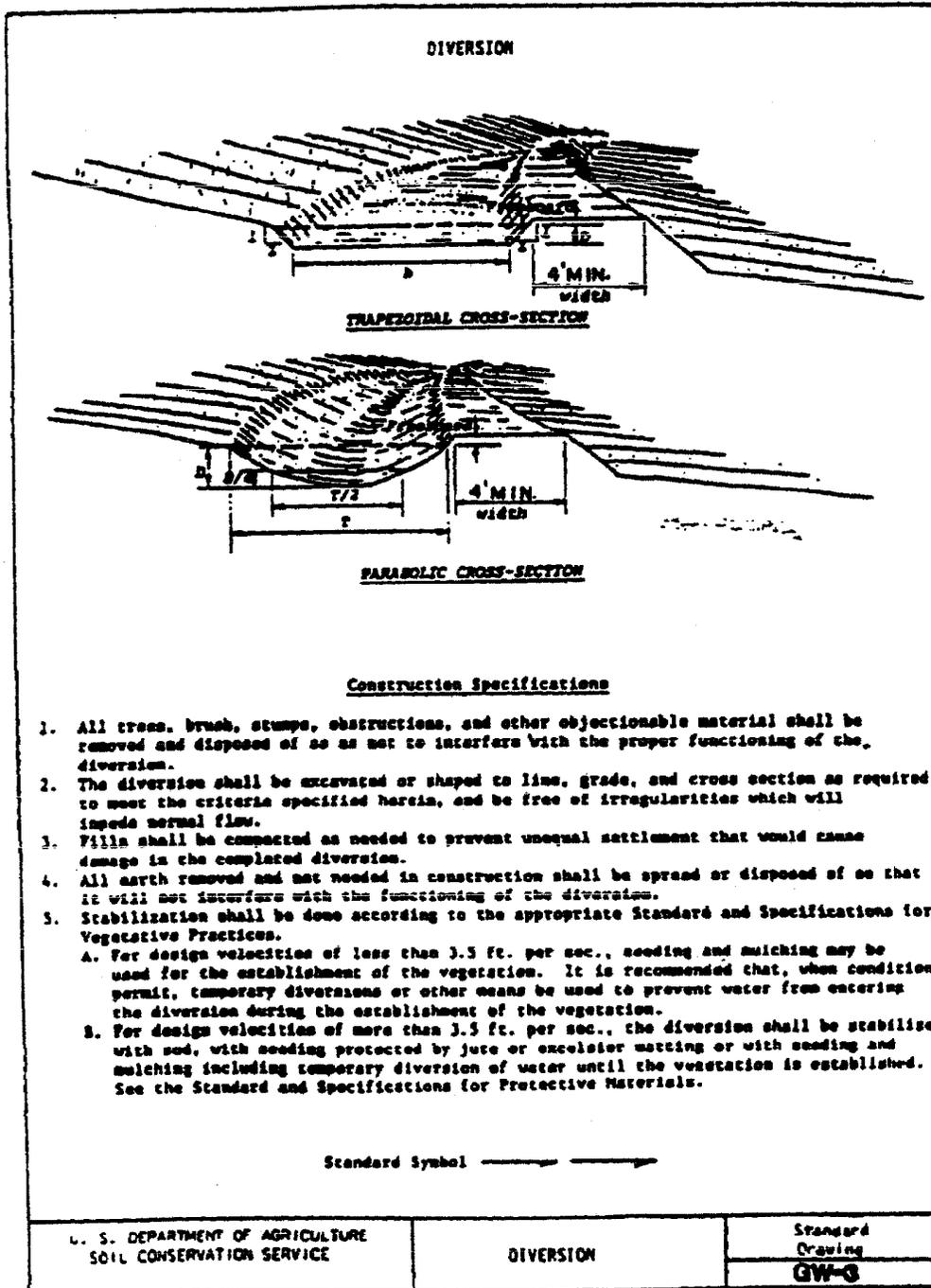


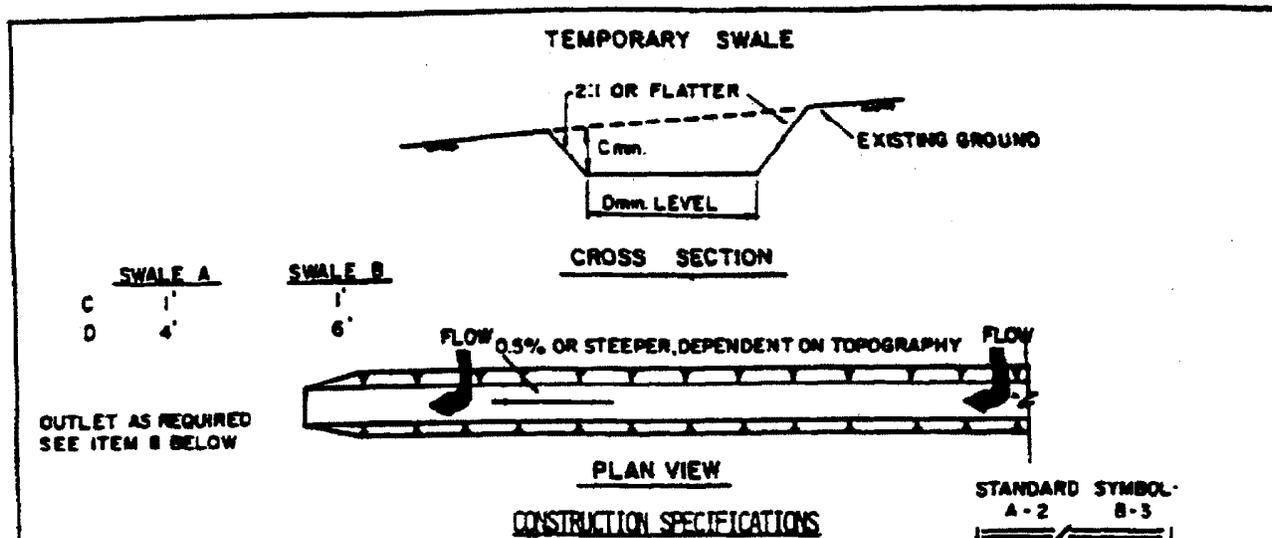


Source: Va SWCC

Plate 1.18a

**Figure 4.36  
Diversion Detail**





1. ALL TEMPORARY SWALES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED ON CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE SWALE.
8. STABILIZATION SHALL BE AS PER THE CHART BELOW:

FLOW CHANNEL STABILIZATION

<u>TYPE OF TREATMENT</u>	<u>CHANNEL GRADE</u>	<u>A (5 AC OR LESS)</u>	<u>B (5 AC - 10 AC)</u>
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED USING JUTE OR EXCELSIOR
3	5.1-8.0%	SEED WITH JUTE OR EXCELSIOR; SOO	LINED RIP-RAP 4-8" RECYCLED CONCRETE EQUIVALENT
4	8.1-20%	LINED 4-8" RIP-RAP	ENGINEERED DESIGN

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	TEMPORARY SWALE	STANDARD DRAWING
		TS - 1

**SECTION K:**

**PERMIT  
APPLICATION  
PART 11 -  
LANDFILL  
CLOSURE PLAN  
AND ESTIMATES**

# *APPENDIX H*

## *PART 11 CLOSURE PLAN WITH COST ESTIMATE*

## **Part Eleven: Closure plan and cost estimate.**

Each permit applicant must submit a closure plan that meets the requirements of 18 AAC 60.245, 18 AAC 60.390, and all other requirements of 18 AAC 60 related to closure and post closure of Class III landfills including:

1. A description of the final cover and appearance of the facility, and the methods and procedures for installing the final cover,
2. The anticipated post closure (future) use of the property;
3. Conceptual drawings of the facility;
4. The location of any proposed survey monuments or permanent markers;
5. The steps necessary to close the MSWLF at any point during the facility's active life and a demonstration that the proposed cover system design will meet the standards of 18 AAC 60.390 when constructed;
6. A schedule for completing all activities needed to satisfy the closure standards of 18 AAC 60.390;
7. Estimates of the largest area of the MSWLF likely to require a final cover and of the maximum inventory of wastes to be onsite over the life of the facility; and
8. The total present-day equivalent cost estimates for the closure and post closure care of the facility.

## PART 11 CLOSURE PLAN AND COST ESTIMATE

The following numbered answers are in the same sequence as the questions in Part 11 of the application.

The City will use the attached Post-Closure Maintenance and Site End Use guide to assist in the landfill closure. Although this guide is more for Class I and II MSWLFs, it will help The City complete a proper landfill closure. The guide also contains a post closure monitoring form that will be used by The City to conform to the ADEC requirement of annual post-closure monitoring (18 AAC 60.396) for 60 consecutive months (five years).

1. Final soil cover will be taken from two main sources: 1) a hill located west of the landfill; and 2) bio-remediated former petroleum contaminated soil located west of the landfill. Soil type from the hill is expected to be poorly graded sand with silt, similar to soil in the expanded landfill area. Former petroleum contaminated soil will have originated from the downtown Tanana school and the hospital compound demolition.

Approximately 700 cubic yards (cy) of petroleum contaminated soil consisting of similar sandy silt (loess) was removed from the school site less than 25 feet from the Tanana River in 2006. The report documenting the removal is on file at ADEC. Estimates of 2000 cy of additional contaminated soil is expected to be excavated from the hospital compounds.

Both sources of petroleum contamination came from buried heating oil tanks. The school contaminated stockpile is currently located at a location just west of the landfill. Hospital contaminated soil will also be stockpiled there after removal. The City will soon be completing a Stockpile Remediation Landfarm Plan for that site. The plan will be implemented after ADEC approval. No soil from the remediated landfarm will be used for cover until final test results have been approved by ADEC.

As required by 18 AAC 60.385, final cover depth will be a minimum 24 inches above grade at time of cover. Cover material will be collected using existing heavy equipment to excavate and spread cover. Soil will be roughed greater than 12 inches deep with tracks perpendicular to the slope to minimize erosion and allow faster germination and growth. Seeding will occur immediately following with quick growing grass such as ryegrass. Seedlings and saplings may also be transplanted from the surrounding areas and replanted onsite. Fertilizer will be added as per manufacturer's recommendations.

2. The anticipated future use of the landfill site is to become naturally re-vegetated moose browse and grouse habitat. There is no expected building or other type of construction to take place on the former landfill. Since the site will be initially vegetated with grasses and a few trees, grasses may prevent shrub and tree species from occupying the site for a period of time.
3. There are no conceptual drawings as there is no expected building to occur at this location. Refer to existing photographs of the site and surrounding area to conceptualize a re-vegetated site. As mentioned before, the surrounding site consists of mixed stands with paper birch and aspen dominating. Typical understory shrubs are willow, alder, prickly rose and high bush cranberry.

4. According to The City of Tanana Refuse Disposal Site Boundary Survey drawing presented in Appendix C, the 10 acre site has four (4) No. 5 x 30" rebar with aluminum cap that were set during the 1989 survey. There were also two standard BLM iron pipe monuments running north to south near the western boundary, although only one was recovered. The survey markers will be searched and marked again during landfill expansion.
5. It is anticipated the existing fenced portion of the landfill will be permanently closed following the filling of the last cell and expansion completion of the remaining portion. See answer 1 above and the attached closure plan guide for details. The gated fence will remain continually locked to prevent resident access. Warning signs will be posted at the gates to deter vandalism or disturbance.
6. As required in 18 AAC 60.390, The City will complete the attached ADEC Notice of Closure form and submit the completed form to ADEC within 90 days of closure. The fences will remain until the end of the five year inspection period.

As required in 18 AAC 60.396, after the last post closure inspection The City will record on the property deed the written notation to any potential purchaser or leaseholder of the property that:

- 1) The property was used as a Class III MSWLF;
- 2) The property may not be suitable for some uses;
- 3) Maintenance and repairs to the property might become necessary to prevent pollution problems at the site; and,
- 4) Any activity that results in damage to the final cover of the property must be corrected to control potential pollution problems.

A copy of the recorded deed with notation will be submitted to ADEC after filing.

Additionally, The City will complete a written report to ADEC that as required in 18 AAC 60.396 (c) contains:

- 1) Photographs of the facility;
  - 2) A description of any problems detected during visual monitoring; and,
  - 3) All water monitoring data collected, if any.
7. The largest area that will need to be covered over the entire landfill is approximately seven (7) to eight (8) acres. The remaining two (2) to three (3) acres are used as buffer and roads and are not expected to need cover. The roads will require cleanup of trash and scarification of the soil to allow seed germination.

A rough estimate of the maximum inventory of waste onsite over the life of the facility was calculated by taking the current estimate of waste dumped per year and multiplying it by the estimated total life of landfill of approximately 81 years.

$91 \text{ tons/year} \times 81 \text{ years} = 7,371 \text{ tons of waste deposited over the life of the landfill.}$

8. Mr. Ketzler estimates the total cost of closing the 10 acre landfill at \$20,000. That estimate is based on using current City labor and equipment with minimum outside assistance. Post closure maintenance is estimated at approximately \$2,000 to \$3,000 per year for the five (5) years required. Final reporting requirements are estimated at approximately \$3,000.

# Post-Closure Maintenance and Site End Use Guide

## 9.1 Introduction

After a cover system has been constructed, it must be monitored and maintained for some timeframe (i.e., the post-closure period). As discussed in Sections 1.2.6 and 8.1, post closure maintenance must be conducted as long as the waste poses a threat to human health and the environment. The post-closure period of 30 years given in RCRA regulations has generally been considered by EPA to be the minimum timeframe for performance monitoring and maintenance for MSW and HW facilities. For CERCLA facilities, the minimum timeframe for cover system maintenance and monitoring is also often assumed to be 30 years, and the EPA is required to evaluate the performance of the cover system at least once every five years to assure that human health and the environment are being protected by the implemented remedy.

Regulatory requirements for post-closure maintenance of MSW landfill cover systems are contained in 40 CFR §258.61 (a)(1):

*“(a) Following closure of each MSWLF unit, the owner or operator must conduct post-closure care. Post-closure care must be conducted for 30 years, except as provided under paragraph (b) of this section, and consist of at least the following:  
(1) Maintaining the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover.”*

For MSW landfills, 40 CFR §258.61 (b) provides the following flexibility with respect to the length of the post-closure period:

*“(b) The length of the post-closure care period may be:  
(1) Decreased by the Director of an approved State if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is approved by the Director of an approved State; or  
(2) Increased by the Director of an approved State if the Director of an approved State determines that the lengthened period is necessary to protect human health and the environment.”*

Analogous requirements for HW landfills are contained in 40 CFR §264.310 (b)(1) and (5). Regulations for MSW landfills presented in 40 CFR §258.61(c) and regulations for hazardous waste facilities presented in 40 CFR §264.118 require facility owners or operators to prepare a written post-closure plan that includes a description of the post-closure maintenance activities and the frequency of such activities. The purpose of these activities is to ensure the integrity of the cover system and functionality of any monitoring equipment. Maintenance activities include those conducted in response to observations made during periodic inspections and monitoring

and scheduled routine activities, such as pump maintenance or replacement. An example of a post-closure inspection, monitoring and maintenance schedule is presented in Table 9-1. An example of a post-closure inspection form, used by the U.S. Army Corps of Engineers, is presented in Table 9-2. This table can be used to document the condition of a landfill cover and identify any required post-closure maintenance activities. In addition to regularly scheduled inspections, a thorough inspection of the cover system should be conducted after major storm events.

The maintenance (and monitoring) activities to be conducted at a closed waste containment facility or remediation site depend on the end use of the site. For example, as discussed in Section 9.3.5, when a mountain bike challenge course was constructed on top of a cover system, routine cover system maintenance included repairing ruts made by the bike tires. It is recommended that personnel conducting the maintenance activities be familiar with the function of the cover system, rather than only familiar with the site end use (e.g., sports facility). If maintenance is not correctly performed, cover system or monitoring system integrity may be impaired.

**Table 9-1. Example of waste containment facility or remediation site monitoring and maintenance schedule.**

<b>Component</b>	<b>Inspection and Monitoring Frequency<sup>1</sup></b>	<b>Methods<sup>2</sup></b>
Cover System Vegetation	Monthly	Visual
Cover System Erosion	Monthly and After Major Storms	Visual
Cover System Intrusion	Monthly	Visual
Cover System Subsidence	Quarterly	Visual
Cover System Slope Stability	Quarterly	Visual
Cover System Drainage Outlets	Quarterly	Visual
Cover System Grades (Survey)	Every 5 Years	Survey/GPS
Gas Extraction System	Monthly	System Check
Surface-Water Management System	Quarterly and After Major Storms	Visual
Leachate Collection and Removal System/ Leak Detection System	Monthly	System Check
Perimeter Security (fence, gate, locks)	Quarterly	Visual
Access Roads	Quarterly	Visual/RT/PC
Groundwater Monitoring System	Quarterly	System Check
Gas Monitoring System	Quarterly	System Check
Survey Monuments	Annually for First 5 Years, at 5 Year Intervals Thereafter	Survey
Post-Earthquake Condition of all Systems/Structures	After Earthquakes	All Above

<sup>1</sup>Frequency of inspection and monitoring may be reduced (or increased) based on observed conditions during the post-closure period.

<sup>2</sup>GPS = global positioning system; RT = rut depth for unpaved roads; and PC = pavement cracking for paved roads.

This chapter discusses cover system maintenance and site end use. Other types of post-closure maintenance activities typically associated with waste containment facilities or remediation sites are not addressed herein. These include maintenance of leachate collection and removal systems, leak detection systems, groundwater monitoring systems, and gas management and monitoring systems. The condition of these systems must be monitored during the post-closure period to assure adequate performance of the site in the long term and to comply with various regulatory requirements.

# POST CLOSURE MONITORING FORM

<b>Site Name:</b>	<b>Date of Inspection:</b>
	<b>Weather:</b>
<b>State:</b>	<b>Temperature:</b>
	<b>Site Map: Attach</b>
<b>Inspection Team:</b>	<b>Note: Indicate the location of any deficiency noted below on the site map</b>
<b>ITEM</b>	<b>REMARKS</b>
<b>COVER SYSTEM SURFACE</b>	
<b>1. SETTLEMENT (LOW SPOTS)</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>2. CRACKS</b> Yes ( ) No ( ) Length: Width: Depth:	
<b>3. EROSION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>4. HOLES</b> Yes ( ) No ( ) Areal Extent: Depth: Suspected Cause (Rodent or Other):	
<b>5. VEGETATIVE COVER</b> Yes ( ) No ( ) Grass: Yes No Condition: Trees/Shrubs Yes ( ) No ( ) Size:	
<b>6. ARMORED COVER</b> Yes ( ) No ( ) Material Type: Condition:	
<b>7. BULGES</b> Yes ( ) No ( ) Areal Extent: Height: Suspected Cause (gas pressure or other):	
<b>8. WET AREAS</b> Yes ( ) No ( ) Ponding: Yes ( ) No ( ) Areal Extent: Seeps: Yes ( ) No ( ) Areal Extent: Estimated Flow Rate: Soft Subgrade: Yes ( ) No ( ) Areal Extent:	
<b>9. SLOPE INSTABILITY</b> Yes ( ) No ( ) Slides: Yes ( ) No ( ) Areal Extent: Probable Slide Interface: Suspected Cause: Exposed Cover Components:	

## POST CLOSURE MONITORING FORM (CONT)

<b>BENCHES</b>	
<b>1. FLOW BYPASS BENCHES</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Description of problem:	
<b>2. BENCH BREACHED</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Description of problem:	
<b>3. BENCH OVERTOPPED</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Description of problem:	
<b>LETDOWN CHANNELS</b>	
<b>1. SETTLEMENT</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Areal Extent: Depth:	
<b>2. MATERIAL DEGRADATION</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Material Type: Areal Extent: Degree of Degradation:	
<b>3. EROSION</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Areal Extent: Depth:	
<b>4. UNDERCUTTING</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Areal Extent: Depth:	
<b>5. OBSTRUCTIONS</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Type: Areal Extent: Size:	
<b>6. SLOPE INSTABILITY</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Type: Areal Extent:	
<b>COVER PENETRATIONS</b>	
<b>1. GAS VENTS</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Active ( <input type="checkbox"/> ) Passive ( <input type="checkbox"/> ) Functioning: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Condition: Routinely Sampled: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> )	
<b>2. GAS MONITORING PROBES</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Functioning: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Condition: Routinely Sampled: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> )	
<b>3. MONITORING WELLS</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Functioning: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Condition: Routinely Sampled: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> )	
<b>4. LEACHATE EXTRACTION WELLS</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Functioning: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Condition: Routinely Sampled: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> )	
<b>5. SETTLEMENT MONUMENTS</b> Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Located: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> ) Condition: Routinely Surveyed: Yes ( <input type="checkbox"/> ) No ( <input type="checkbox"/> )	

## POST CLOSURE MONITORING FORM (CONT)

<b>COVER DRAINAGE LAYER</b>	
<b>1. OUTLET PIPES</b> Yes ( ) No ( ) Functioning: Yes ( ) No ( ) Condition:	
<b>2. OUTLET ROCK</b> Yes ( ) No ( ) Functioning: Yes ( ) No ( ) Condition:	
<b>DETENTION/SEDIMENTATION PONDS</b>	
<b>1. SILTATION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>2. EROSION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>3. OUTLET WORKS</b> Yes ( ) No ( ) Functioning: Yes ( ) No ( ) Condition:	
<b>4. Embankment</b> Yes ( ) No ( ) Functioning: Yes No Condition:	
<b>RETAINING WALLS</b>	
<b>1. DEFORMATIONS</b> Yes ( ) No ( ) Horizontal Displacement: Vertical Displacement: Rotational Displacement:	
<b>2. DEGRADATION</b> Yes ( ) No ( ) Description of damage:	
<b>VERTICAL BARRIER WALLS</b>	
<b>1. SETTLEMENT</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>2. PERFORMANCE MONITORING</b> Yes ( ) No ( ) Type of Monitoring: Frequency: Evidence of Breaching: Yes ( ) No ( )	
<b>GROUNDWATER SYSTEMS</b>	
<b>TYPE OF SYSTEM:</b> Containment ( ) Treatment ( ) Functioning: Yes ( ) No ( ) Condition: Routinely Monitored: Yes ( ) No ( )	

## POST CLOSURE MONITORING FORM (CONT)

<b>PERIMETER DITCHES/OFF-SITE DISCHARGE</b>	
<b>1. SILTATION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>2. VEGETATION GROWTH</b> Yes ( ) No ( ) Areal Extent: Type:	
<b>3. EROSION</b> Yes ( ) No ( ) Areal Extent: Depth:	
<b>4. DISCHARGE STRUCTURE</b> Yes ( ) No ( ) Functioning: Yes No Condition:	
<b>FENCING</b>	
<b>FENCING DAMAGE</b> Yes ( ) No ( ) Description of damage:	
<b>PERIMETER ROADS</b>	
<b>ROAD DAMAGE</b> Yes ( ) No ( ) Description of damage:	
<b>SITE ACCESS</b>	
<b>ACCESS RESTRICTIONS</b> Yes ( ) No ( ) Description:	
<b>GENERAL</b>	
<b>1. VANDALISM</b> Yes ( ) No ( ) Description of damage:	
<b>2. CHANGED SITE CONDITION</b> Yes ( ) No ( ) Description:	
<b>3. LAND USE CHANGE</b> Yes ( ) No ( ) Description:	
<b>INTERVIEWS</b>	
<b>1. INTERVIEW ON-SITE WORKERS</b> Yes ( ) No ( ) Problems: Suggestions: Attach report:	
<b>2. INTERVIEW NEIGHBORS</b> Yes ( ) No ( ) Problems: Suggestions: Attach report:	
<b>3. INTERVIEW LOCAL OFFICIALS</b> Yes ( ) No ( ) Problems: Suggestions: Attach report:	

## POST CLOSURE MONITORING FORM (CONT)

<b>REVIEW DOCUMENTS</b>	
<b>1. GROUNDWATER MONITORING RECORDS</b> Abnormalities: Yes ( ) No ( )	
<b>2. GAS GENERATION RECORDS</b> Abnormalities: Yes ( ) No ( )	
<b>3. SETTLEMENT MONUMENT RECORDS</b> Abnormalities: Yes ( ) No ( )	
<b>4. OPERATION AND MAINTENANCE PLAN</b> Plan in Place? Yes ( ) No ( ) Plan is Being Followed? Yes ( ) No ( ) Plan is Adequate? Yes ( ) No ( ) Optimization is Being Considered? Yes ( ) No ( ) Systems with Optimization Potential? Yes ( ) No ( )	

### 9.2 Cover System Maintenance

#### 9.2.1 Overview

There are a number of routine activities that should be conducted as part of a long-term cover system maintenance program. These activities can generally be divided into the following major categories:

- vegetation-related activities;
- erosion-related activities;
- subsidence-related activities;
- other surface layer performance related activities;
- drainage layer related maintenance;
- surface-water related activities; and
- monitoring system-related activities.

These maintenance categories, which are discussed in more detail below, are not all inclusive for a facility. For example, site access control must also be maintained. In addition, for facilities with gas control systems, there may be certain maintenance activities required under the CAA. Further, there are likely other site-specific categories that need to be considered for waste containment and remediation sites put to beneficial use.

## **9.2.2 Vegetation-Related Maintenance**

Cover system vegetation maintenance may include periodic irrigation and fertilization, as least until vegetation is established, reseeding or replanting areas where vegetation has failed, cutting young trees before they get too large and their roots disturb the cover system components, and mowing. In virtually all cases, some degree of maintenance is necessary until the cover system reaches a state of equilibrium with its inherent environment. Maintenance of cover system vegetation is especially important for alternative cover systems that rely primarily on ET to limit percolation.

As discussed in Section 2.2.3, grasses on cover systems located in humid or temperate climates are usually mowed periodically to discourage the growth of deep-rooted plants, such as trees and certain shrubs. Deep-rooted plants are usually undesirable because their root systems could plug the drainage layer or penetrate and increase the hydraulic conductivity of the hydraulic barrier, if the barrier consists of only a CCL or GCL without an overlying GM. Trees can also create problems if they are blown over, uprooting large masses of soil and leaving a crater in the surface. Many shrub species are shallow-rooted, do not require trimming/cutting, and are sufficiently dense in their ground surface covering so as to prevent larger (deep-rooted) trees and bushes from germinating. Mowing on a regular basis is expensive, thus its avoidance by proper selection of shrub vegetation is an important design consideration.

## **9.2.3 Erosion-Related Maintenance**

Cover system erosion, primarily by water, has been a problem for a number of cover systems, as discussed in Section 2.2.5.1. It is important that significantly eroded areas be repaired in a timely manner after they are observed to prevent progressive erosion and damage to cover system components. Furthermore, it is easier to repair erosion rills prior to their development into larger erosion gullies. As discussed in Section 2.2.5.2, rills can be removed by tilling the soil surface. Gullies, on the other hand, generally cannot be repaired this way. Instead they should be cut out and backfilled with soil that is blended into the adjacent soil.

## **9.2.4 Subsidence-Related Maintenance**

As cover system settlement occurs, the surface grades of the cover system often decrease. If the grades decrease substantially (and more than considered for design), the flow of water within any cover system internal drainage layer and/or the flow of stormwater runoff may be impeded. Regrading of a cover system is difficult not only from soil availability and placement perspectives, but also from complications arising from pipes, piers, and other appurtenances extending through the cover system. For example, a MSW landfill with an active gas extraction system and leachate recirculation system may have numerous wells penetrating its cover system and surface piping extending across the cover system, thereby requiring relatively small construction equipment for maintenance regrading. Production rates with small equipment are low. Obviously, the surface vegetation must be replaced after maintenance grading, and, in the interval before vegetation is established, a temporary erosion control material may be necessary.

The cover system may also exhibit localized differential settlements that cause ponding of water and breaks in cover system piping. The existence of such depressions may lead to localized areas with increased rates of percolation through the cover system. Whenever differential settlement is visually observable, maintenance is necessary. If the cover system drainage layer, hydraulic barrier, or finer-soil-to-coarser-soil interface, in the case of a capillary barrier, has also subsided, the cover system will need to be reconstructed to bring the surface of these layers to grade. For a capillary barrier, this repair must be carefully constructed, as described in Section 3.6.1, to reduce the potential for preferential pathways for infiltrating water. Besides causing localized increases in percolation, cover system depressions also generate tensile strains in the cover system components. As discussed in Section 2.5.2.5, tensile strains can cause barrier materials to fail if the strains are excessive. Depending on the shape of the depression, and the resulting tensile strains, a barrier material may need to be replaced in the depressed area. In other words, bringing the surface of a CCL to grade in a depressed area will not be sufficient if the CCL has failed due to excessive tensile strains. Instead, the barrier would have to be repaired in some manner (e.g., by reconstructing the CCL or by bringing the CCL to grade and placing a GM over the repaired area).

In addition to the above, subsidence-related maintenance may include adjusting the boots around penetrations of the cover system barrier as the cover system settles.

### **9.2.5 Other Surface Layer Related Maintenance**

To minimize percolation through the cover system, the integrity of the surface layer should be maintained. Significant cracks or holes in the surface layer should be repaired, especially for cover systems with ET or capillary barriers. The cracks may be caused by wet-dry cycles or may be an indication of slope instability. Holes may be caused by burrowing animals.

### **9.2.6 Drainage Layer Related Maintenance**

Drainage layer maintenance generally consists of clearing outlets of any obstacles, such as debris, sediment or ice.

### **9.2.7 Maintenance of Surface-Water Management System**

Maintenance of surface-water (i.e., stormwater) management systems is often required after significant storm events. Excess sediment or other obstacles in drainage channels should be removed, and damaged channel linings should be repaired. In areas where erosion has undercut drainage channels (see Figure 7-19), the channels should be reconstructed. It is important that these undercut areas are not just backfilled with soil if they are gully-like. As discussed above in Section 9.2.3, gullies have to be cut out and reconstructed. Otherwise it is easier for the gully to reform along the same flow path.

Drainage downchutes, outlets, energy dissipaters, and other areas where cover system stormwater flows concentrate or substantially change energy state often require regular maintenance and repair. These types of structures deserve careful attention during post-closure

monitoring and need to be maintained in good operating condition. Gross et al. (2002) provide several examples of damage to these types of structures resulting from stormwater flows.

### **9.2.8 Maintenance of Cover Monitoring System**

Maintenance of the cover system monitoring system may include period re-calibration of monitoring devices, replacement of batteries in data acquisition systems, and replacement of damaged or non-functioning monitoring system components.

## **9.3 Site End Use**

### **9.3.1 Overview**

Increasingly, beneficial post-closure land uses are being considered in the design of cover systems for waste containment facility closures and remediation sites. As of February 2001, more than 190 cleaned up CERCLA sites have been returned to productive use (EPA, 2001b). EPA's Superfund Redevelopment Initiative reflects the Agency's belief that contaminated sites should be cleaned up in a manner that is protective for reasonably anticipated future land use (EPA, 1999a; EPA, 2001a). EPA does not favor one type of reuse over another, as land use is a local decision. Further, the Agency believes that reuse should help to ensure proper maintenance of the remedy (or cover system for waste containment sites) while providing tangible benefits to key stakeholders, especially the surrounding community. The possible benefits of reuse include (EPA, 1999a):

- *“Positive economic impacts for communities living around the site including new employment opportunities, increased property values, and catalysts for additional redevelopment activities;*
- *Stakeholder acceptance of the municipal landfill presumptive remedy because of potential time and cost savings, and increased involvement in the restoration and redevelopment process;*
- *Enhanced day-to-day attention, potentially resulting in improved maintenance of remedy integrity and institutional controls; and*
- *Improved aesthetic quality of the area through discouragement of illegal waste disposal or trespassing on restricted portions of the site, as well as increased upkeep of the site by future site occupants.”*

For CERCLA sites, EPA must balance this preference for future land use with other technical and legal provisions, including ARARs. Only if the remedy is anticipated to achieve cleanup levels that allow the site to be available for the reasonable anticipated future land use, will EPA support that reuse.

The reuse selected for a given site is a function of a number of factors, including the stakeholders, site features, environmental considerations, site ownership, land use considerations and environmental regulations, community input, and public initiatives. These factors are

discussed in EPA (2001a). The three major categories of site end use that have been employed at waste containment facilities and remediation sites are: (i) ecological enhancement; (ii) recreational reuse; and (iii) industrial and commercial reuse (EPA, 1999a). Each of these categories is discussed in more detail below, and case histories illustrating these categories are presented. Additional detail is provided in EPA publications (available for download at the EPA website <http://www.epa.gov/superfund/programs/recycle/newdocs.htm>) on the recreational reuse (EPA, 2001b) and commercial reuse (EPA, 2002) of CERCLA sites. About half of the 190 CERCLA sites mentioned above that had been developed by February 2001 are being used for industrial or commercial purposes (EPA, 2002).

Whatever the type of end use, there are site design issues, such as settlement, gas management, and surface-water management, which are often common to many sites. In addition, some types of sites and end uses may have more issues than others. For example, when developing a former MSW landfill site as a retail shopping complex, there is extra concern about foundation settlement and gas migration to enclosed structures. If the site were developed as wildlife habitat, settlement and gas migration would likely not be as much a concern.

The selected end use can have a significant impact on cover system design. For example, if a site is to be used for a golf course or other facility with a vegetated surface layer that requires irrigation, the cover system may require an internal drainage layer and a barrier that includes a GM to control percolation through the cover system. It is important that the site end use be considered during the design phase of the cover system so that any special features needed to support the post-closure use can be incorporated into the cover system at that time. It can be significantly more expensive to retrofit a constructed cover system to support a specific site end use than to design the cover system to support the specific end use from the start. These end-use designs will have their own monitoring and maintenance requirements. Personnel maintaining the end-use facility should be aware of the maintenance requirements related to the prior disposition of the facility (i.e., waste containment facility or remediation site).

### **9.3.2 Ecological Reuse**

Closed waste containment and remediation sites located in ecologically significant areas have been used as wildlife restoration areas or wetlands. Besides providing a nurturing environmental for plants and wildlife, wetlands filter sediments and contaminants from surface water and can absorb floodwaters, which reduces the flooding potential for lowlands.

### **9.3.3 Recreational Reuse**

Closed MSW landfills are a natural fit for reuse as recreation areas because they typically have a large surface area, and the cover system can generally be contoured to meet the specifications for recreational facilities, such as ball fields or golf courses (EPA, 2001b). Recreational reuse has included trails for hiking, mountain biking, or horseback riding, camping facilities, picnic areas, parks, playgrounds, sledding areas, playgrounds, ball fields, and golf courses. In many cases, a site that will be developed for recreational purposes will support more than one type of recreational activity. For example, a site developed as a general use park may also accommodate

sports fields, playgrounds, trails, or other recreational features. In other cases, recreation may be secondary to a primary use, such as a commercial development. Detailed information on the development of recreation facilities over waste containment facilities and remediation sites is presented in EPA (2001b) and is not repeated herein.

### **9.3.4 Industrial and Commercial Reuse**

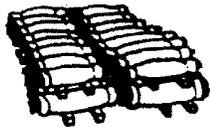
The beneficial use of closed sites is particularly attractive in areas where developable real estate is limited and expensive. In major urban areas, closed waste containment and remediation sites are increasingly viewed as offering potential for traditional urban developments, such as office parks and retail centers. In such settings, these facilities may not be suitable for ecological or recreational use. Industrial and commercial reuse has included parking lots, restaurants, retail shopping stores or complexes, office buildings, intermodal transportation facilities, port cargo handling facilities, and airports.

One impediment to the design of structures over closed waste containment facilities or remediation sites is that the underlying materials (waste or contaminated materials) may have much different properties than soil. The foundations for these structures should be carefully designed to be protective of the cover system and prevent structural damage. If the waste or contaminated material is anticipated to experience large settlements (e.g., as is typical for MSW), the use of shallow building foundations (e.g., spread footings, reinforced concrete mats, grid foundations with column footings tied together with a system of grade beams and usually an integrated concrete floor) is generally limited to small lightly loaded structures that can tolerate some differential settlements (Dunn, 1995). These shallow foundations are typically located above the cover system barrier layer and contain more reinforcing steel than is required for foundations on conventional sites. Structures on shallow foundations can also be designed to accommodate differential settlements by using tilt-up wall construction, where both the wall sections and the footings are broken up into discrete sections with control and leveling joints between them, by casting the slab in separate sections connected by cable linkages, or by other means (EPA, 2002).

If settlements are anticipated to be too high, site improvement techniques can be considered. Dunn (1995) offers these techniques for reducing the total settlement of structures constructed over MSW landfills:

- *allowing the MSW to reach an acceptable level of decomposition, either by delaying construction or enhancing decomposition ...;*
- *supplemental compaction of the MSW, which is usually limited to relatively shallow MSW depths of no more than two or three meters;*
- *surcharging, with settlement monitoring;*
- *dynamic compaction; and*
- *grouting or fly-ash injection.*

Care of Seedlings Until Planted



Seedlings should be planted immediately. If it is necessary to store moss-packed seedlings for more than 2 weeks, one pint of water per pkg. should be added. If clay-treated, do not add water to pkg. Packages must be separated to provide ventilation to prevent "heating". Separate packages with wood strips and store out of the wind in a shaded, cool (not freezing) location.

Care of Seedlings During Planting



When planting, roots must be kept moist until trees are in the ground. Do not carry seedlings in your hand exposed to the air and sun. Keep moss-packed seedlings in a container packed with wet moss or filled with thick muddy water. Cover clay-treated seedlings with wet burlap only.

Hand Planting



Insert bar at angle shown and push forward to upright position.



Remove bar and place seedling at correct depth.



Insert bar two inches toward planter from seedling.



Pull bar toward planter firming soil at bottom of roots.



Push bar forward from planter firming soil at top of roots.



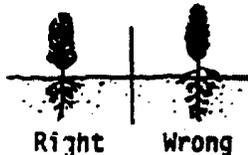
Fill in last hole by stamping with heel.



Firm soil around seedling with feet.

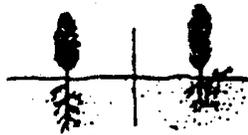
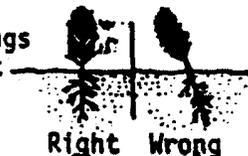


Test planting by pulling with seedling.



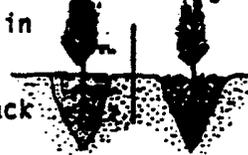
Don't expose roots to air during freeze or plant in frozen ground.

Plant seedlings upright - not at an angle.



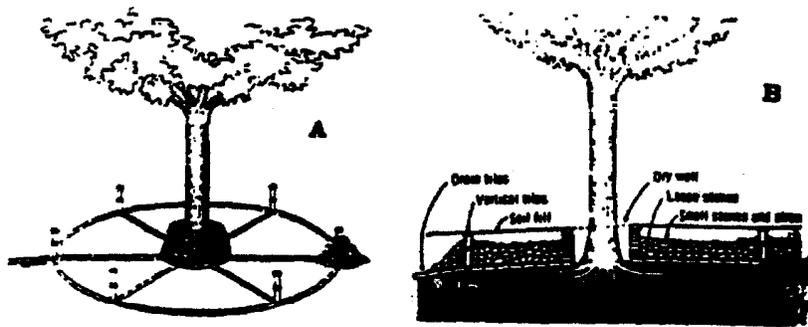
Do not bend roots so that they grow upwards out of the ground.

Always plant in soil - never loose leaves or debris. Pack soil tightly.



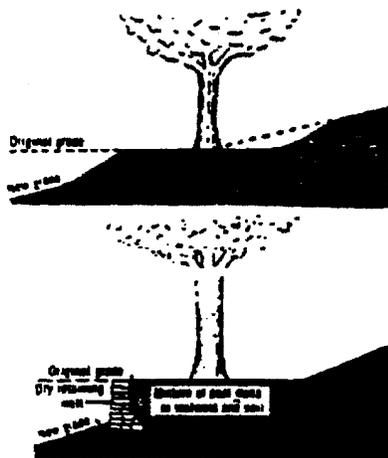
**PLANTING BARE-ROOTED SEEDLINGS**

Figure 1



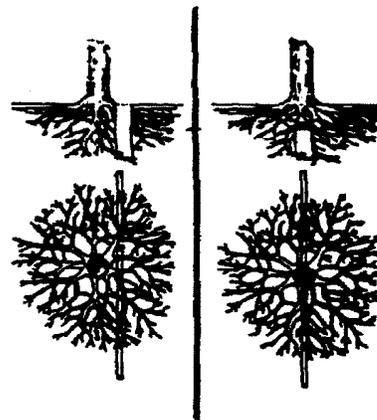
A tile system protects a tree from a raised grade. A, The tile is laid out on the original grade, leading from a dry well around the tree trunk. B, The tile system is covered with small stones to allow air to circulate over the root area.

Figure 2



A retaining wall protects a tree from a lowered grade.

Figure 3



Tunnel beneath root systems. Drawings at left show trenching that would probably kill the tree. Drawings at right show how tunneling under the tree will preserve many of the important, feeder roots.