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3R'S : Reduse, Reuse, Recycle  
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# **Institutional readiness of local bodies in the governorate of Ramallah and Al Bireh for solid waste management**

## **Abstract**

This study was conducted between February and November, 2009, based on three categories of respondents: heads of local body in the governorate of Ramallah and Al Bireh (81), the heads of divisions of health and solid waste (6), and experts in the field (13), in a comprehensive, accidental and purposive sampling respectively. This study is important because it completes the previous studies in the field of Solid waste at the local level. and thought to will provide rich scientific material that can be helpful in the formation of joint services councils, and in planning for solid waste management at the local and perhaps at the national level.

To achieve the objectives of the study, a questionnaire was designed in five aspects, demographic information (6 paragraphs), measuring the readiness of local bodies to manage solid waste in different areas: (possession of information, plans, planning, coordination and networking, control, physical and human resources, and financing (88 paragraphs), the problems and difficulties that hinder the readiness (25), the means and mechanisms that promote the readiness (16), and (11 paragraphs) to distinguish the local bodies from each other. The descriptive method was adopted, and the data was analyzed and displayed using the Statistical Package For Social Sciences (SPSS) and Excel.

The results showed that the majority of respondents were heads of village councils, holders of bachelor's degree in the fields of business administration, arabic language and literature, and engineering. The majority have work experience of (1-5) years. It also showed that the local bodies, have a weak readiness from the second –level, (avg. 1.61) in solid waste management in the governorate of Ramallah, while the readiness in the field of information possession is great - first level. In the areas of planning for solid waste management, coordination and networking, control, human and financial resources, and funding, the results showed that the readiness ranges from weak first-level (avg. 1.68-1.99) to weak second-level (avg. 1.34-1.67).

It may be noted that, the highest readiness was from the first-level (2.01-2.33) in the areas of possession of information about sources and quantities of wastes, and population density in the areas served, as well as in domestic funding through the waste collection fees (avg. 2.24).

The readiness appears weaker in the third level (avg. 1:00 to 1:33) in planning for reuse of solid waste (avg. 1.16), in programs for capacity building (avg. 1.24), and preparing appropriate staff for future plans (1.26).

The study found that, the most important obstacles for the readiness of local bodies in solid waste management, great degree in the second-level, are: financial problems (avg. 2.58), the lack of waste disposal landfill according to international standards (avg. 2.54), lack of equipments (avg. 2.47), low educational level of waste handling workers (avg. 2.36), problems related to the Israeli occupation (avg. 2.36), absence of a national plan for solid waste management (avg. 2.32), the lack of vehicles (avg. 2.28), and the lack of professional staff (avg. 2.29).

Based on the results, following are the most important means, with averages of great degrees in the second level, to strengthen the readiness for Solid waste management: a national plan of integrated solid waste management (avg. 2.52), the implementation of related laws and legislation (avg. 2.51), effective networking between the parties involved in the solid waste management (avg. 2.42), and the exchange of available potentials between the local bodies (avg. 2.35).

Main suggestions of the study are: establishment of a national plan of integrated solid waste management, activation and implementation of related regulations and laws, the promotion of cooperation and coordination between local bodies, the exchange of human and financial capabilities, raise of community awareness about the importance of solid waste management and related environmental and health impacts, and the work to provide human and material resources and adequate funding to ensure the success of solid waste management, at the level of local bodies and national level.



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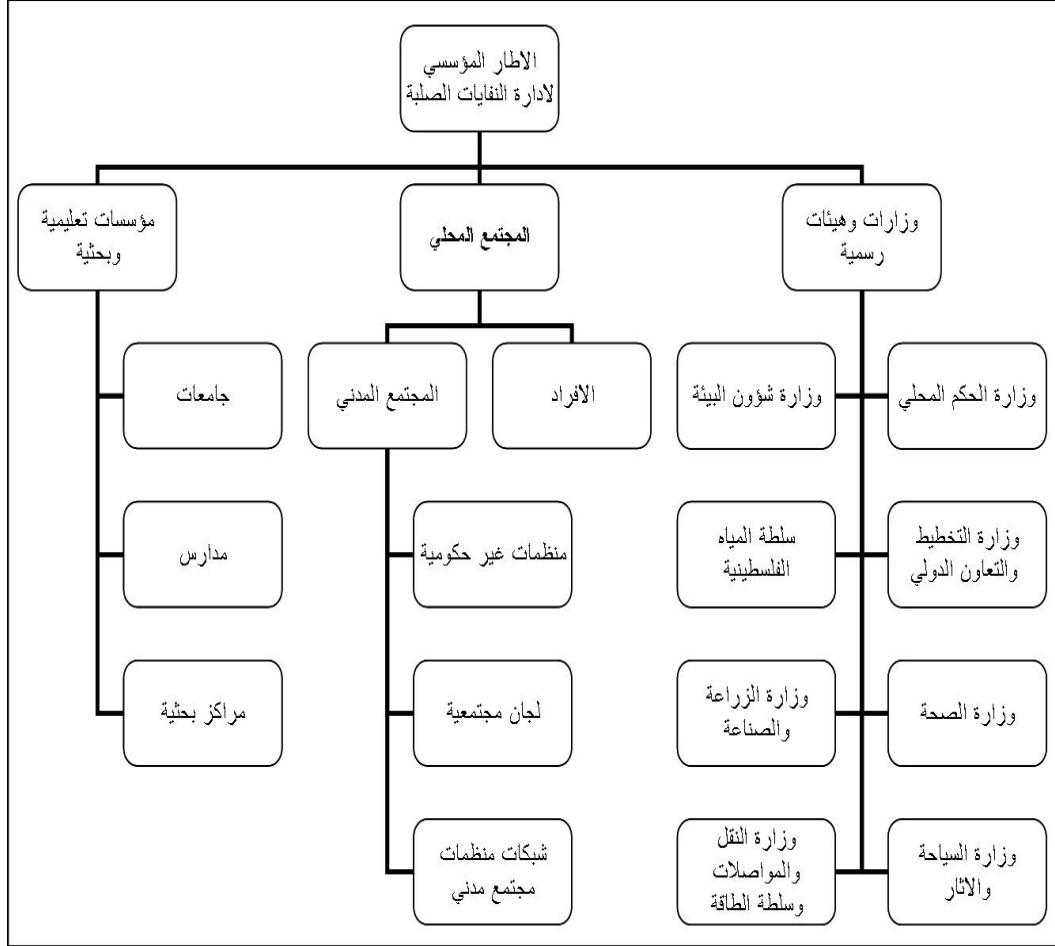
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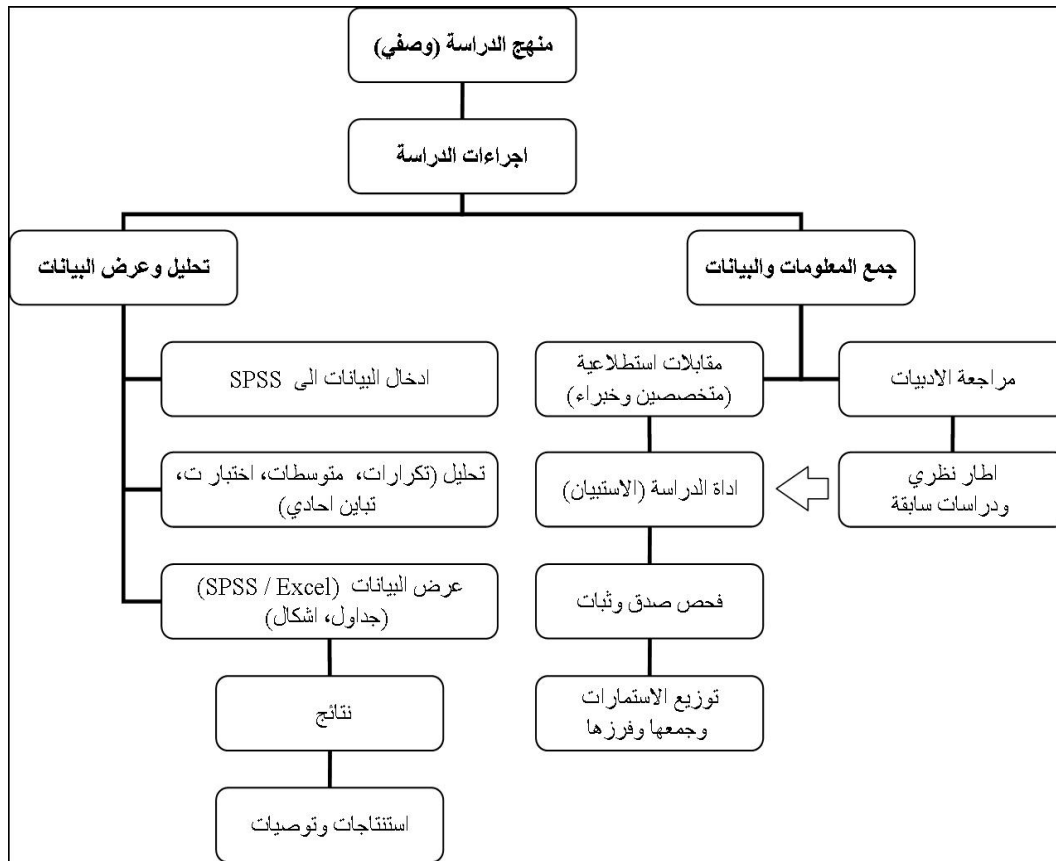
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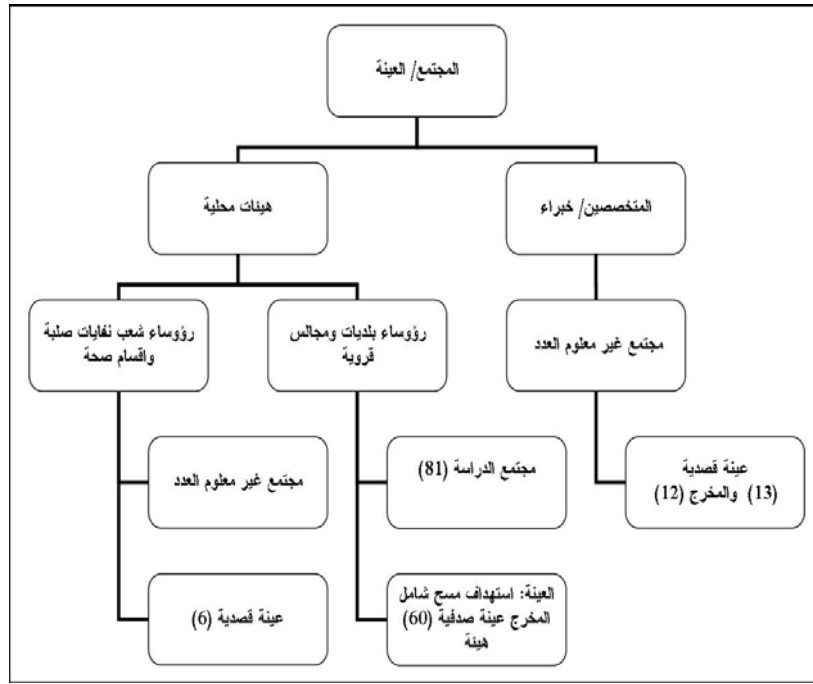
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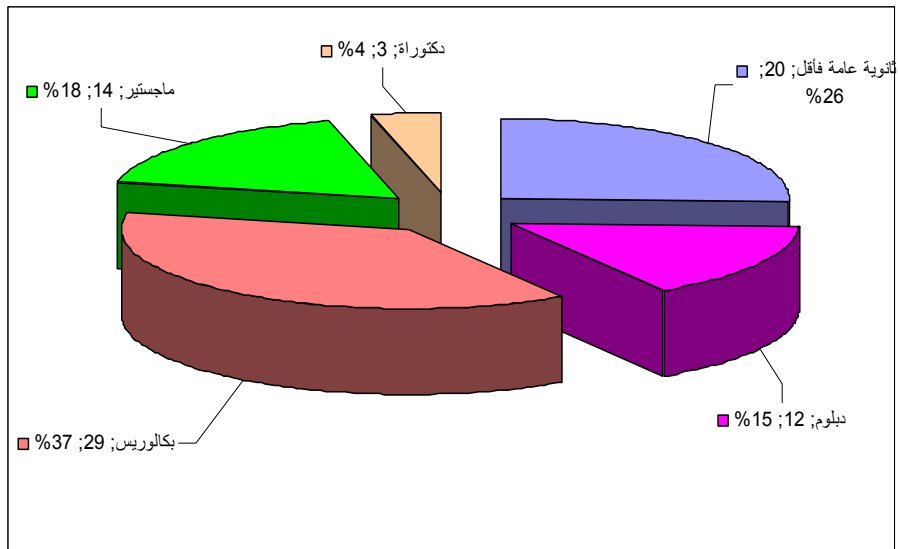
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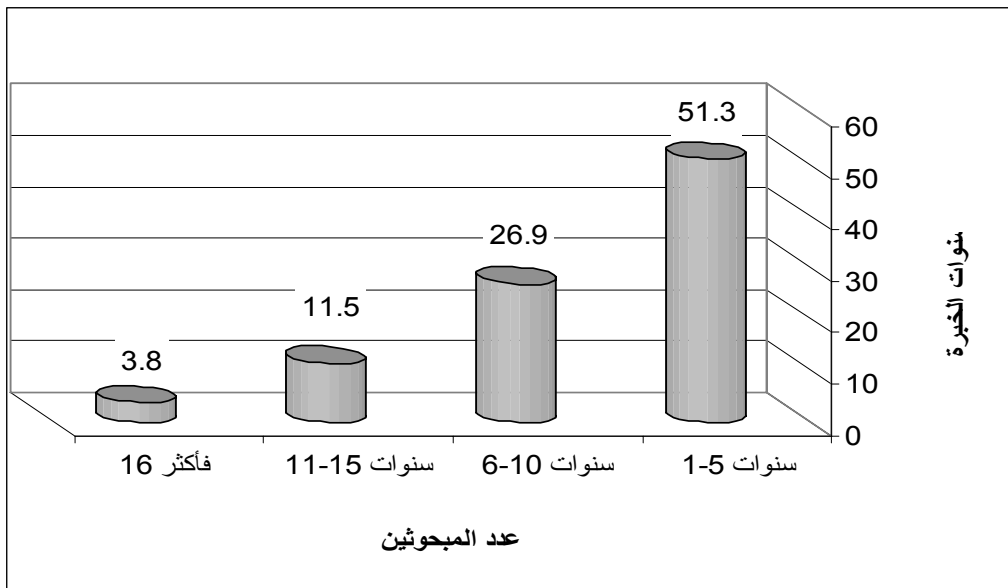
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0.774	1.90	26	30	19	( )	6
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0.680	1.51	45	24	8		<b>4</b>	
0.497	1.16	68	5	4		<b>5</b>	
0.542	1.19	66	5	5		<b>6</b>	
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0.619	1.53	41	31	5		<b>9</b>	
0.746	1.90	25	34	18	(	<b>10</b>	
0.699	1.66	36	31	10		<b>11</b>	
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0.776	1.76	34	27	16	) (	<b>13</b>	
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0.677	1.57	41	28	8	) (	<b>16</b>	
0.718	1.49	49	18	10	) (	<b>17</b>	
0.658	1.44	50	20	7		<b>18</b>	
0.710	1.61	40	27	10		<b>19</b>	
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0.471	1.32	52	25	0		<b>4</b>
0.661	1.49	46	24	7		<b>5</b>
0.524	1.32	54	21	2		<b>6</b>
0.656	1.59	38	31	7		<b>7</b>
0.637	1.42	50	21	6		<b>8</b>
0.585	1.37	52	21	4		<b>9</b>
0.558	1.28	59	14	4		<b>10</b>
0.510	1.36	50	26	1		<b>11</b>
0.548	1.32	55	19	3		<b>12</b>
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0.654	1.60	37	32	7		<b>14</b>

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0.555	1.34	53	20	3		<b>18</b>	
0.735	1.57	43	22	11		<b>19</b>	
0.780	1.80	44	22	9		<b>20</b>	
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0.516	1.30	55	19	2		<b>22</b>	
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0.702	1.64	37	30	10	) (	<b>25</b>	
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0.782	1.97	24	30	22	(... )	5	
0.738	1.53	46	19	11		6	
0.667	1.35	57	11	8		7	
0.697	1.60	39	27	9	) (	8	
0.793	1.78	33	25	17	) (	9	
0.716	1.69	34	30	11		10	
0.724	1.69	21	36	18		11	
0.733	2.05	18	35	22		12	
<b>0.543</b>	<b>1.68</b>						

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0.688	1.86	23	38	13		1
0.634	1.37	52	16	6		2
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0.731	1.70	34	29	12		4
0.791	1.89	27	27	19		5
0.746	1.64	39	24	12		6
0.653	1.36	54	13	7		7
<b>0.511</b>	<b>1.59</b>					

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0.611	1.30	59	11	6		1	
0.733	1.59	42	23	11		2	
0.425	2.01	19	36	20		3	
0.775	1.97	23	30	21		4	
0.662	1.44	49	19	7		5	
0.488	1.24	59	14	2		6	
0.528	1.26	58	14	3		7	
0.494	1.54						

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(1.33-1.00)

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**.7.2.4**

.(9.4)

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0.768	2.24	15	27	33	( )	1
0.555	1.34	53	20	3	)	2
0.662	1.46	48	21	7	( )	3
0.511	1.28	56	18	2		4
0.538	1.23	62	10	4		5
0.644	1.34	57	12	7		6
<b>0.361</b>	<b>1.48</b>					



(9.4)

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	↑ ↑ ↑	3		3.00-2.68
		2		2.67-2.34
		1		2.33-2.01
		*		2.00
	↓ ↓ ↓	1		1.99-1.68
		2		1.67-1.34
		3		1.33-1.00

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( -11.4) (-11.4)

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0.756	2.47	12	16	48		1
0.743	2.04	19	34	22		2
0.726	2.28	12	30	34		3
0.829	1.96	27	24	24		4
0.794	1.93	26	28	21	)	5
					(.....	

: -11.4

0.894	2.19	24	13	39	) (..	6	
0.770	1.88	27	30	18		7	
0.749	1.84	28	32	16		8	
0.833	2.15	21	22	33		9	
0.780	2.36	14	20	42		10	
0.795	1.96	25	28	22		11	
0.799	2.11	20	27	29	) (...	12	
0.745	1.77	31	30	14		13	
0.728	1.82	27	33	14		14	
0.760	1.82	29	30	16		15	
0.662	2.58	7	17	50		16	
0.782	2.54	13	7	53		17	
0.763	2.10	18	31	26		18	
0.813	2.36	16	16	44		19	
0.755	2.32	13	25	38		20	
0.712	2.15	14	36	26		21	
0.727	2.10	16	35	24		22	
0.844	2.00	26	22	26		23	
0.825	2.34	17	16	43	_____	24	
0.812	2.07	22	26	28		25	
<b>0.474</b>	<b>2.13</b>						

$$(2.13) \quad \begin{matrix} (-11.4) & (-11.4) \\ & (2.67-2.34) \end{matrix}$$

$$(1.99-1.68)$$

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	↑ ↑	3		3.00-2.68
		2		2.67-2.34
		1		2.33-2.01
		*		2.00
	↓ ↓ ↓	1		1.99-1.68
		2		1.67-1.34
		3		1.33-1.00

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0.756	2.52	12	12	52	<b>1</b>
0.718	2.51	10	17	50	<b>2</b>
0.771	2.48	13	14	50	<b>3</b>
0.774	2.48	13	13	50	<b>4</b>

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0.750	2.42	12	20	45		<b>5</b>
0.739	2.35	12	26	39	) (...	<b>6</b>
0.816	2.41	16	13	48		<b>7</b>
0.782	2.40	14	18	45		<b>8</b>
0.720	2.47	10	20	46		<b>9</b>
0.713	2.41	10	25	42		<b>10</b>
0.788	2.33	15	21	41		<b>11</b>
0.771	2.33	14	23	40		<b>12</b>
0.765	2.38	13	21	42		<b>13</b>
0.712	2.37	10	27	38		<b>14</b>
0.736	2.46	11	19	47		<b>15</b>
0.843	2.29	19	16	42		<b>16</b>
<b>0.603</b>	<b>2.41</b>					

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	↑ ↑	3	3.00-2.68
		2	2.67-2.34
		1	2.33-2.01
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		3	1.33-1.00

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0.758	2.10	18	32	26	)	.1
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0.761	2.04	20	32	23		.2
0.843	1.81	35	20	21		.3
0.783	1.69	38	23	15		.4
0.766	1.69	37	25	14		.5
0.727	1.63	39	26	11		.6
0.785	1.75	35	25	16	)	.7
					(...	
0.674	1.60	38	30	8		.8
0.634	1.60	36	34	6		.9
0.673	1.80	26	39	11		.10
0.698	1.78	28	36	12		.11
0.551	1.77					

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0.347	0.032	0.863	0.788	0.479	0.082	0.030	0.669	0.245	0.935	0.198	
0.470	0.443	0.227	0.059	0.062	0.278	0.267	0.018	0.233	0.055	0.488	
0.470	0.443	0.227	0.059	0.062	0.278	0.267	0.018	0.194	0.055	0.488	
0.016	0.745	0.368	0.015	0.103	0.010	0.003	0.094	0.474	0.039	0.210	
0.979	0.245	0.703	0.881	0.764	0.767	0.451	0.625	0.112	0.994	0.741	
0.725	0.284	0.875	0.159	0.397	0.442	0.070	0.148	0.011	0.267	0.169	

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"solid waste characterization,quantification and management practices  
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Journal of Environmental Management, 91. 1131-1138.

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2486720	2486726			1
2404431	2406445		*	2
2815825	2815825		*	3
2898616	2898436		*	4
2892584	2892357		*	5
2806822	2806501			6
2860112	2860110			7
2484353	2484353			8
2900784	2900754		*	9
2811477	2810536		*	10
2805055	2809116		*	11
2896455	2896455		*	12
2963214	2963215		*	13
2890031	2890032		*	14
2809567	2809567		*	15
2807363	2807363			16
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2868043	2986323		*	1
2980759	2481515		*	2
	2980759			3
	2865558			4
	2482521		*	5
			*	6
	2803350		*	7
			*	8
	2956752		*	9
	2344047		*	10
	2485673		*	11
	2964223		*	12
	2987892		*	13
	2971044		*	14
	2488833			15
	2957936		*	16
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	2893579		*	18
2811516	281073		*	19
	2807572		*	20
	2982919		*	21
	2480866			22
	2483249		*	23
2401333	2810666		*	24
	286572			25
	059976743		*	26
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	2481222			29
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	2481616		*	31
2483043	2899533		*	32
	2866822		*	33
	2902662		*	34
	2485160		*	35
	2485466		*	36
	2488247		*	37
2864501	2864503		*	38
	2804115		*	39
	2810945		*	40
	2905005			41
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2893386			*	43
			*	44
	2862511			45
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	2802055		*	47
	2489848		*	48
	2816262		*	49
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44	.....	3.9.3
44	.....	4.9.3
46	.....	5.9.3
47	.....	6.9.3
<b>48</b>	.....	:
49	.....	1.4
50	.....	2.4
50	.....	1.2.4
51	.....	2.2.4
53	.....	3.2.4
55	.....	4.2.4
56	.....	5.2.4
57	.....	6.2.4
58	.....	7.2.4



59		3.4
	.....	
<b>63</b>		4.4
	.....	
66	.....	5.4
68	.....	6.4
68	.....	1.6.4
68	.....	2.6.4
70	.....	7.4
<b>75</b>	..... :	
75	.....	1.5
76	.....	2.5
<b>78</b>	.....	
<b>100</b>	.....	
<b>101</b>	.....	
<b>102</b>	.....	
<b>104</b>	.....	